Invisible Nets

Women and Children in Kerala's Fishing

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ABSTRACT Women's and children's roles in fishing have to this day remained 'invisible'. Making these roles visible may, however, turn out to be crucial for understanding the relation between artisanal fishermen and the marine environment. Using a combination of anthropological data collected in a Kerala village and secondary source material this article contributes to filling the gap in our knowledge of women's and children's fishing. In addition, it explores the interaction between what they do and the marine environment. It shows that marine depletion not only has a negative impact on the livelihood of adult fishermen, but on that of women and children as well. As the fishing yield tends to diminish, it is up to women and children to derive a living outside fisheries. This offsets the loss of income of the men, who can therefore intensify the fishing effort. In the short term, Kerala fisheries have thrived on the resilience shown by the households of artisanal fishermen. But this very resilience has also exacerbated the process of depletion, thereby jeopardizing the conditions for the existence of these very households in the long term.

Introduction

There has been a growing concern for the interface between fishing technology and marine resources. Studies of the impact of marine depletion on labour have been fewer, and overwhelmingly concerned with fishermen at sea, thus largely neglecting gender and age specific effects. This neglect can be traced to the widely held belief among development experts, economists and not in the least anthropologists, that women's and children's roles in fishing are only marginal. Experts and researchers apparently find the work of women and children too mundane to warrant serious concern. This assumption is related to the fact that the fishing activities of women and children are held in low esteem because they rely on very simple equipment and yield mostly fish for domestic use. Yet, it disregards the significance of their contribution to the livelihood of the fisherman's household. The object of this article is to show that the rationality of artisanal fishing and the serious environmental problems it faces, cannot be fully understood unless women's and children's roles are brought into focus. I will advance the view that the future of artisanal fishermen depends very much on the way in which women and children face the diminishing returns from fishing. Insofar that it supports the intensification of the fishing effort, their very resilience may well lead to an unforeseen type of marine depletion.

The preoccupation with the material and technical constraints on fishing that characterized much early work on maritime communities has been an important reason for the emphasis on the 'manly' aspects of fishing. An added reason for

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dismissing the fishing activities of women and children as insignificant has been that anthropologists were usually males (Pálsson 1989:11). However, it cannot be denied that in most coastal societies women and children play an important role in gathering molluscs and in subsistence fishing (Chapman 1987). Nor can it be denied that in fishermen's households, women and children support the men by performing activities such as net and basket making, fish marketing, salting and drying. The act of male fishing is indeed embedded in, and supported by social relations of which the division of tasks and responsibilities within the family is no doubt the most crucial (Dewes 1982; Nieuwenhuys 1983; Ram n.d.; Chapman 1987; Pomeroy 1987; Yater 1982).

The main focus of the research on women's and children's work in developing countries has been on peasants. This type of research has extensively documented how development programmes have sidetracked the importance of the activities of women and children because they tended to equate work with cash earning activities and also how they have contributed to the marginalization of women and children from production. Research has shown that even when women's and children's activities take place in the realm of subsistence and yield only marginal returns in cash, they may still be of crucial importance for the livelihood of the household. While failing to open up new opportunities for paid work, development programmes, and the technological innovation and environmental degradation that came in their wake, have on the whole adversely affected women's and children's access to natural resources (See for a discussion on India Aggarwal 1986; Lieten et al. 1989).

In fishing, as in agriculture, gender and age roles are clear-cut. It is men who fish at sea and who control and use sophisticated equipment. But the success of their expeditions very much depends on operations that have to be performed onshore. Many of these tasks are the responsibility of women and children. As in agriculture, the type of work, the value attributed to it and the way it is rewarded are very much influenced by the ideology of gender and seniority. The relation of women and children to fishing differs therefore considerably from that of men.

Yet fishing also requires a fair degree of interdependence and complementarity in the intra-household allocation of tasks, and this makes women and children more independent of the earnings of men than in peasant communities (Davis and Nadel 1988; Chapman 1987; Ram n.d.). Focussing on the situation in the rich prawn fisheries of the state of Kerala in Southwest India, I will argue that the technological modernization of fishing did not render children's and women's work altogether redundant. The introduction of more sophisticated methods of fishing could not drive out methods that rely heavily on low-cost human energy. The abundance of low-cost labour discouraged the large scale adoption of new methods of fishing, and in particular the use of motorboats. In the context of Kerala, the increase in the productivity of labour did not appear to be the most important consideration. For the big owners-cum-merchants large profits could be realized more easily by acquiring a strategic position in long-distance trade than by investing directly in the productivity of fishermen. Tech-

nological modernization therefore only moderately marginalized women's and children's productive roles. However, as international commercial networks developed, the first signs of marine depletion began to appear. For the men to be able to cling to fishing, the women and children had to seek additional sources of income outside the ambit of the fishing economy. But this was not a viable solution. In the long run fishermen and their families got even more firmly entangled, as I will show, in a vicious circle, created by an indiscriminate commercial exploitation of marine resources.

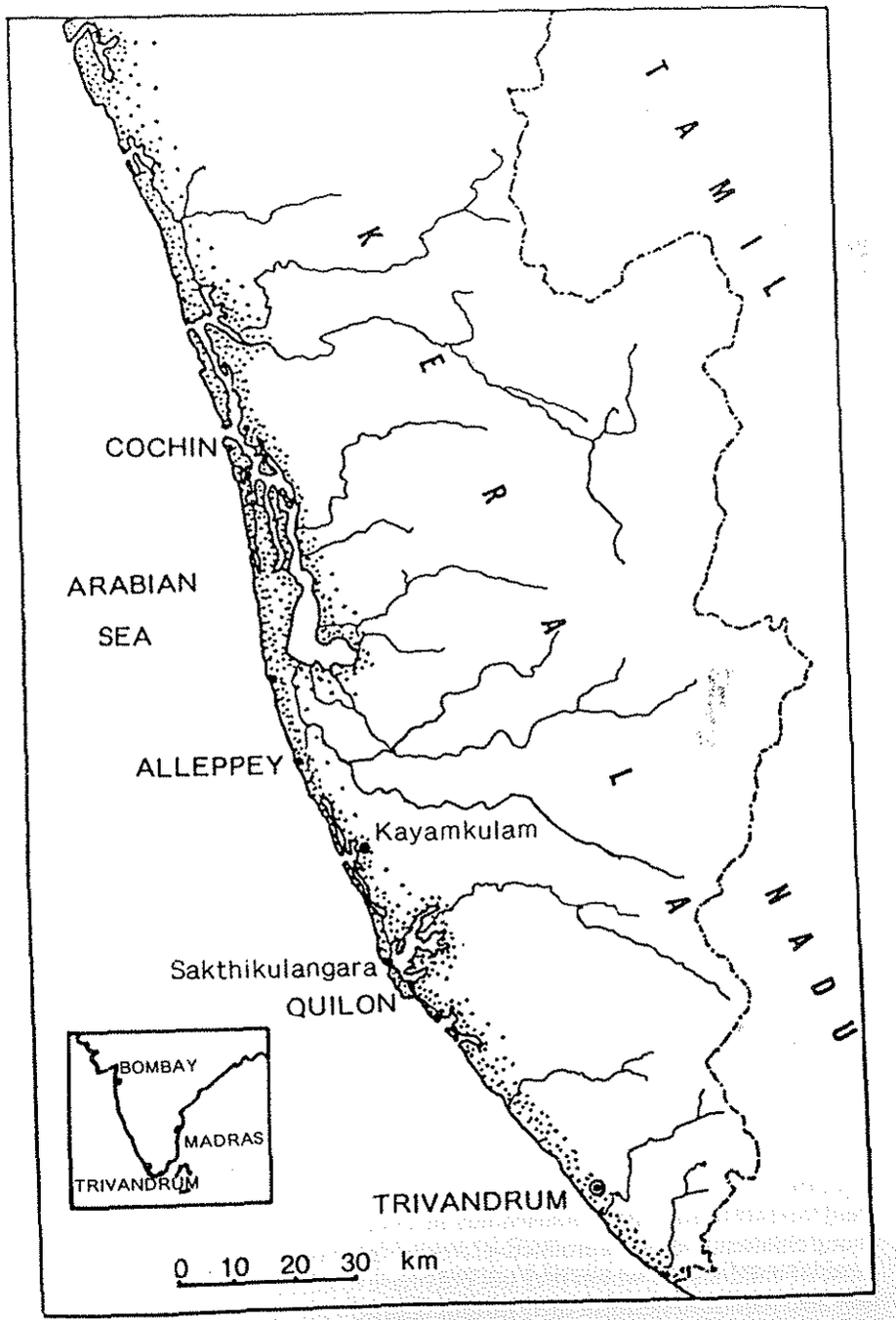
This article draws on extensive anthropological-sociological fieldwork[1] in a Muslim fishing community on the coast of the Indian state of Kerala, which I will call Poomkara. The first part portrays women's and children's roles in fishing, comparing the insights gained from my fieldwork with the scattered material available on women and children in the state fisheries. In the second part I discuss women's and children's roles against the background of the technological innovations that have been introduced in Kerala's fisheries. Thirdly, I show how these roles relate to the intensification of fishing operations in a depleted environment. Fourthly, I conclude by discussing the vicious circle into which Kerala's fisheries seem to be trapped.

Women and Children in the Fisheries

Making generalizations on the organization of Kerala's fisheries is no easy matter. The dissimilarities among the various fishing communities are manyfold. A difference that would strike even a superficial observer is the one between the modern and the artisanal sector. The centre of modern fishing is Sakthikulangara, near Quilon, that has by far the largest fishing harbour. During the prawn season (from June to September) up to 60% of the 3,000 odd modern boats that fish in the state's waters unload their catches on its jetties. Some 40% of the fishing is for prawns, that have become of growing commercial importance during the last twenty years. The rest of the catches consist either of smaller quantities of exportable fish or of sardines and anchovies, which are sold to local consumers.

The modern fishery sector is, however, small when compared to the artisanal one. An estimated two thirds of Kerala's marine production is landed by artisanal craft launched from the open beach, as in Poomkara (Kurien and Thankappan Achari 1988:18). In terms of people, artisanal fishery is even more important, employing as it does 86% of the 131,000 active sea fishermen and the vast majority of the 680,000 people who depend upon them for their living (Thankappan Achari 1987).

Artisanal fishery is but a general term for fishing techniques that are far from homogeneous. The design of the craft used along the coastline varies, being closely adapted to the physical geography of the coast and the habits of the fish. It ranges from the large and costly dug-out or plank-built canoe found in the north to the rudimentary catamaran of the south that consists of just five logs of wood tied together. The size, shape and material of nets used by these boats



Map of South Kerala

show an even greater range of variation. Broadly speaking, in the south a fisherman often owns his catamaran. By contrast, in the centre and north a fisherman is more likely to be recruited by one of the few men of substance who possess a large canoe. Also, their distinct cultural identities set the hundreds of fishing communities apart from each other. They have different religions: 37% are Catholic, 30% Muslim and 27% Hindu. Within these religions, they form endogamous subdivisions: Arayans, Mukkuvans, Latins and Mappilas are only generic terms for kin-centred communities that have little social intercourse.

I conducted my fieldwork in a tiny settlement of artisanal Muslim fishermen in Central Kerala who were using a combination of large canoes and beach-seines. Poomkara,[2] as I have called the locality near Kayamkulam where these fishermen live, is a subdivision of a populous village (*panchayat*), with more than 30,000 inhabitants, situated on the densely populated coast between Alleppey and Quilon. The economic life of the locality centers around the processing of coconut products on the one hand, and fishing and fish trade on the other. The coir yarn ('Aratory') spun in Poomkara, is excellent for weaving carpets, matting and other floor coverings. It is spun by women and children, and marketed to the trade centre at Alleppey, where it is either processed locally or exported. Agriculture only plays a minor role, and few men are engaged as full-time agricultural labourers to till the land and tend the coconut trees. Only a few hundred men are permanently employed and stick to their work throughout the year. Most of the others are casual workers and find employment on an irregular basis receiving a wage that is mostly based on a piece-rate system. They may be fishermen, porters, boatmen, beedi rollers, etc., as occasions present themselves. About half of the women are coir workers, the rest being mostly engaged in housekeeping and child care. Roughly one half of the female coir workers are hired by other women. The other half run their own tiny coir manufacturing business, relying on hired workers to supplement their labour and that of their children. Only few women earn a living in trades such as plaiting mats and coconut fronds and crushing stones for building contractors. Women used to be engaged in drying prawns and later on in peeling, a job that has now largely disappeared, as I will discuss below.

Poomkara's 4,400 inhabitants live in about 700 hundred households with an average of a little more than six members.[3] The population is extremely young. Particularly among Muslim households, birth rates have long been very high. It is quite normal for a Muslim woman to deliver her first child between sixteen and twenty and to have children at intervals of two years until her first born has married. Women spend most of their married life in the company of their children, the older generation of women being far too few to be of much help. As many as two thirds of the households in Poomkara are nuclear families with young children. Women's productive lives are therefore inextricably enlaced with those of children, for whom they not only have to care for but whose assistance they also require to perform their various chores. This family structure is of crucial importance in understanding how women's and children's work is embedded in the organization of artisanal fishing.

In spite of growing opportunities for trade and Poomkara's favourable position on a stretch of coast famous for its bumper catches of large prawns, fishing techniques have remained basically the same for centuries. In Sakthikulangara, just some thirty kilometers to the south, hundreds of motorboats trawl for prawns, and jetties, cold storage facilities, insulated vans and international commercial links provide the harbour with a relatively modern infrastructure. In Poomkara, by contrast, the traditional boats are still largely paddled and tugged ashore by muscle power. The bulk of the catches of cheap fish are still sold directly to the consumers and transported along inland paths in baskets carried on the head. Only the commercially more valuable prawns are brought by bicycle to the nearest cold storage house some three kilometers to the north. True, some modernization has taken place. The nets used by all-season boats are made of nylon, and ice is used to conserve major commercial catches. There have also been some experiments with fitting outboard motors to the boats during the high season. But otherwise much has remained the same. Wood and coir are still the only materials used to make and repair the boats. They are seasonally smeared with the fish oil the fishermen obtain from sardines. The second most important piece of equipment, the large beach-seine (*kambavala*), is still made of cotton and coir.

Of the 200 odd fishermen in the locality, eight own some kind of equipment. Only two of them own canoes (*tankuvallams*) suited for fishing throughout the season. These two owner-fishermen have recently also acquired outboard motors which, during the high season, enable them to undertake more than the usual one or two daily expeditions. A third man owns a large beach seine and an old canoe. The others possess small boats and seines of only seasonal importance. The rest of the fishermen have no craft or fishing gear of their own. They work as members of a crew on a large canoe, either in Poomkara itself or in a neighbouring village. Of these fishermen, 145 have a permanent labour relation with an owner-fisherman, which they have entered into by taking a loan which they have to repay on leaving. They are all adults. The others, two thirds of them boys in their early teens, are only employed to pull the shore-seines.

Men who fish at sea find employment for nine to ten months a year, either with their boss or as migrant labourers. Their wages are calculated as follows: the owner of the boat is entitled to one third of the value of the catch, and the rest is shared among the 14 or 15 men of the crew, each receiving 3 to 5% of the value of the catch, depending on the number of workers, their skill, physical strength and age. If an outboard motor has been fitted to the boat, one third goes to cover the cost of petrol. The men may then receive as little as 2 to 3%. All adult fishermen, be they part of a sea-going or a shore crew, live a hand-to-mouth existence that does not allow them to maintain their families the whole year round. During the lean period most of them migrate for months on end on uncertain fishing expeditions in the north of Kerala and are often unable to send money home. When fishing falls off there too, they return home to wait for the beginning of the new season. Sea fishermen inevitably face periods of starvation every year, which they take with a great deal of stoicism. They sleep

long hours and spend most of the day with their family and friends, resigned to a forced vacation with an empty stomach. They do not, as a rule, do any work other than fishing and the maintenance and repair of boats and fishing gear.

Those who only fish from the shore by working the seines, are different. Most of them are boys in their early teens. The few adults are mostly casual workers who take up whatever other work they can get during the long periods in which the shore-seines are not used. The reason that most of these workers are children is that the returns from seine fishing are miserably low, except for a few days or weeks during the seasonal high tide. The owner of a beach-seine takes as much as 50% of the value of the catch, sharing the rest among the 30 to 50 workers that are needed to haul the net. Adult seine-fishermen therefore invariably experience their work as degrading and shameful, and desperately seek alternatives in small business, fish vending, etc.

The lower the returns of a particular type of equipment, the more likely it is for boys rather than for adults to be engaged to work it. The income generated by boys in fishing is therefore marginal by definition. Children may undertake four types of activity:

a Fishing and foraging for subsistence.
b Small-scale fish vending.
c Rendering services to the crew of a large canoe during onshore operations.
d Work in a shore-crew.

The sequence in which these are listed reproduces a hierarchical ordering based on gender and seniority. Only the first activity, fishing and foraging for subsistence, is open to both boys and girls, even when very young. Girls, however, have but a short-lived part to play in fishing, after menarche their place is considered to be primarily in the home. The other types of activity are therefore the preserve of boys, who will undertake them with growing zest and will to learn as they develop skill and physical strength over the years. A long process of socialization marks their initiation into the male world of fishing. As boys display their eagerness in becoming full-fledged fishermen, they have to adapt to a subordinate position during an extended period of intensive labour, accepting, as do the women, to do what the full-fledged fishermen regard as inferior work (cf. also Fjellheim 1989:135ff.).

The prime mover for children's interest in fishing is want of food. Fish is not only important from a nutritional point of view in a diet composed of little else than rice and peppers. It is also a gourmandise which all coastal children relish. The way fish is served and shared within a family is an important expression of feelings of respect and affection. If there is no fish to prepare a curry, women and children, sometimes children as young as five, may angle in the backwaters in the evenings. Although angling is primarily undertaken for domestic use, on coming of age boys may become quite expert, and catch even large karimeen, a palatable flat-fish in great demand among the wealthier housewives. Foraging for fish during the landing of the catches of sea-fishermen is another way for children to obtain fish for domestic use. Custom demands that if fish have been driven into the nets of fishermen, nobody should go hungry. In practice this

means that when there are bumper catches of cheap fish such as oil sardines, anyone present during the landing will be given simply 'for having brought good luck.' For the rest, only fish that has fallen on the ground can be taken.

A child that shows an early interest in fishing by foraging on the beach is not only tolerated but also encouraged to mingle freely with the working fishermen, particularly if it is a boy. A boy's activities fit admirably well into artisanal fishing. They are also the first step towards a more specialized apprenticeship in fishing and fish vending, which starts when a boy is eight or nine, i.e. old enough to be of some help in the last stages of hauling the shore-seine or landing the catch of the canoe. He may also help cleaning, washing and spreading out the net in the sun, and carrying paddles, sinkers, floats, ropes and other implements to the boss's house for storage during the night. In appreciation for his help, he may be allowed to keep a little fish recovered from the meshes of the net or the corners of the boat. Often he may also be given a little additional fish, either for domestic use or for sale. Most fish is readily brought home, and a boy finds the grateful glance of his mother when he hands over his takings very rewarding.

The fish foraged by children from the beach or angled from the backwaters, does not amount to much. It does, however, contribute substantially to the protein content of the food basket of the poorest households in the locality. How much exactly is difficult to tell. Most people do not like to admit eating fish of inferior quality. An indication may however be found in the data collected through a year-long budget-study of 12 poor households. About one quarter of the fish consumed by households with at least one boy between 5 and 15, had been foraged. By contrast, households with only very young boys or none, had to buy 93% of the fish they ate.

If the fish foraged by a boy is more than needed for a curry, he may decide to sell some. The art of vending fish is something boys are keen on learning. At first it is like an exciting game, carried out with no other initial capital than a bit of fish and a little luck. A boy may freely dispose of his first gains and spend them on snacks and sweets. He will normally quickly discover that it is unwise to spend everything, and that one needs reserves to expand a business. A few years later, when he is ten or eleven, a boy will start a more specialized training, all depending on his physical and mental maturity. If he is endowed with better mental than physical talents, he may opt for the lonely life of the fish monger. Alternatively, he may feel more attracted towards heavy physical work in a crew of fishermen. He will by then start to be considered, to use Firth's term, a 'growing participator in work,' although it will take years to gain the status of 'full working member' (cf. Firth [1946]:72).

It is relatively easy for a boy to join the crew of a shore-seine. There exist outspoken notions about boys' place in seine-fishing and they seem to be firmly rooted in shared beliefs about the nature of artisanal fishing. As no one can predict in advance whether the fishing season will be good or bad, an owner-fisherman needs to be certain that he will be able to mobilize a crew to work the net whenever he needs one. He may therefore send small gifts on ceremonial occasions to the families of boys who seem fit to do the job, thereby notifying

them that he wishes to be able to count on the boy's labour. To some extent, the practice of tying boys' labour by offering advances is based on mutual interest. If the season is good, the owner-fisherman is assured that other net-owners will not seek to attract his boys by paying them higher rates. By contrast, if the season is poor, the boys' families can take advances to buy food, while the boys may look forward to an occasional snack which the owner of the net normally offers even in the event of failing catches. But even though the relation is based on mutual interest, it is in no way reciprocal: for while the boys are virtually powerless and depend largely on the owner's good disposition towards them, the owner benefits disproportionately whenever good luck strikes. The boys are obliged to come whenever requested, while the opposite is not the case. The owner has them called only when full-fledged labourers are either at sea or prefer business onshore because the returns from shore-seine fishing are too poor, i.e. in the slack season. When prospective returns are substantial, during the prawn-season for instance, only adolescent boys are included in the crew. One of the obvious reasons is connected to the social status inherent to the age-hierarchy. By and large Poomkara people believe the economic roles of children to be rather immaterial, and in this they hardly differ from general opinion. In a situation of great pressure on employment as is the case in Kerala, this attitude has the by-effect of setting an upper limit to what children can earn. Whenever this limit is reached, the general feeling is that a child threatens the earning prospects of adult men who have a family to care for. Children's income is therefore bound to remain within socially accepted brackets even in cases in which their productivity is comparable to that of adults. This reinforces the conviction that their contributions to production and to the income of their families is only marginal.[4]

The remuneration of fisherboys is so low that it does not even allow them to eat their fill. But it would be wrong to think that their activities are therefore of little economic importance. There are three aspects to this. First, it is clear that without their assistance, artisanal fishermen would be severely handicapped in carrying out their activities. Second, the marked seasonality of fishing adds to the significance of boys' work. By recruiting a crew of teenagers, an owner-fisherman can work his equipment even during the less productive period, in the weeks just before and after the main season. If successful, he is assured of a higher income from his equipment. If returns are disappointing, the whole operation costs him but a trifle anyway. Third, the foraging activities of children, have a bearing on the relation between a crew worker and his employer. As children meet their own consumption needs, they also relieve owner-fishermen from the responsibility of paying the worker enough to feed his family.

Most of the activities undertaken by women and girls, fall outside the ambit of fishery. No single labourer's household is able to live on the gains derived from fishing alone. Women and girls earn additional cash in coir manufacturing, or badly needed food by working as servants for their wealthier neighbours. When her children are still small, a woman may often be unable to earn anything but as soon as her eldest daughter is about six or seven, she can entrust the child

with the care of her younger brothers and sisters and devote herself to supplement her husband's income. Soon her daughter's help will be invaluable in helping her to increase her earnings. These earnings will enable the family to pull through if the adult males are unable to support it. They may even become the only source of income when disease or accident strike the man of the house, or when he abandons them altogether. This is crucial, as it allows men to stay on the job even when catches fail to the point that the returns no longer meet their personal requirements however minimal these may be.

In Poomkara, in sum, both women and children have an important role to play in fishing. Young children of both sexes forage for fish on the beach. But when nearing their teens, only boys continue to be encouraged to assist, in exchange for a little food, the fishermen working on the seashore. The presence on the beach of teenage girls and mature women is hardly tolerated. They are supposed to remain in the vicinity of the home where, in addition to housekeeping, they make coir yarn or work as domestic servants for wealthier neighbouring women. Their earnings enable them to buy food during the lean season and generally help reducing the cost of labour engaged in fishing. Having come so far, one may wonder whether it is legitimate to generalize about the role of women and children in fishing from the Poomkara example, considering that it is located away from the centres of modern fishing that have developed in the past thirty years. In short, how representative is the Poomkara case for the hundreds of thousands of women and children who depend on fishing in Kerala as a whole?

An undue preoccupation with the technical conditions of Kerala's fishing has distracted fisheries research from understanding the nature of the social relations of production. The scarce evidence available, however, suggests that the vast technical differences observed are not associated with an equally broad spectrum of these relations. A tentative comparison of six village studies confirms that there is much less diversity in the living and working conditions of fishermen than a focus on techniques would lead one to expect.[5] As many as 80 to 95% of the fishermen in these six villages concerned, are either completely propertyless or do not have equipment that enables them to work throughout the season. They depend, in last resort, on owner-fishermen having the equipment combination needed for fishing throughout the season, who recruit them on their boats for at least part of the year. With the exception of one village in the far south, where the figure is lower, at least three quarters of the fishermen are indebted to these employers and are de facto bonded labourers. In this respect there hardly seems to be any difference between a remote artisanal village such as Tanur in north Kerala, and Sakthikulangara, where fishermen use only modern vessels (Mathur 1977; Platteau 1984).

Set against this background, it is not surprising that a picture of squalor predominates in the living conditions of fishermen. In 1979, according to a census undertaken in the state, 50% of the 118,000 fishermen's households had incomes below 1,000 rupees a year, against 3% whose income was above 3,000 (Kurien 1985:80). Ninety seven percent of the households lived under the poverty

level as set by the Indian government for 1980 (Cf. Mathew and Scott 1980). This means that, except for a tiny minority, fishermen survive in conditions that are, by and large, very similar to those I have described for Poomkara.

A similar conclusion may be drawn in respect of children's work. Low earnings, insecurity of employment and dependence on masters and creditors all contribute to their early introduction into the world of work. The practice of young children foraging for remnants of the catch on the seashore while the fishermen are at work is common all over Kerala (cf. also Mathur 1977:179-80). Boys, and in the Hindu and Catholic areas girls as well, keenly learn to resell whatever surplus they have to poor neighbours who cannot afford the more expensive fish traded by adult fish vendors (Puthenkalam 1977).

The disparity in cultural traditions and religious beliefs of Kerala's fisherfolk have an impact on the roles of women. For instance, Hindu women are likely to have less children than Muslim and Catholic women, and are therefore less preoccupied with raising a large family. In many places Hindu and Catholic women and teenage girls perform jobs that are directly connected to cash, such as fish vending, money-lending, processing fish and net-making (Abraham 1985; Ram n.d.; Nayak 1986). In the fishing centres in particular, where the population is mostly Catholic, women and girls provide a large amount of cheap labour for prawn processing and peeling (Mathew 1983; Gulati 1984; Baud 1989:147). Even though women's work is invariably performed onshore, their roles are more heterogeneous than those of children, particularly boys. In contrast to the Muslims, Hindu and Catholic women vend fish to coastal consumers, engage in small-scale trading and money-lending and process fish. Whatever they do, however, their work is invariably poorly remunerated and of low status (Gulati 1984:63ff.; Mathew 1983; Baud 1989; Ram n.d.). It is unlikely to yield significantly higher earnings than coir making, for instance. All women have in common that their responsibility lies primarily in childbearing and domestic work. It is in the gender division of labour within the household that similarities are most pronounced. Most women have to combine housekeeping with remunerated work to supplement the income of men, and they rely heavily on their children's help to be able to do so. Just as in Poomkara, women normally withdraw from work soon after marriage, until their eldest daughter is old enough to take over domestic affairs. This may occur when the child is as young as six (Gulati 1984).

To sum up, the heterogeneity of the technical conditions of fishing entails a great deal of local variation. It is therefore not an easy matter to generalize on the basis of available material. However, there is enough reason to believe that labour relations, and in particular its gender and age aspects, have broad common features. In this sense, the Poomkara case does not seem to be exceptional. In the whole of Kerala, as in Poomkara, women's and children's work is primarily oriented towards the continuity and welfare of the household through activities that are of a non-monetary nature, such as domestic chores and foraging. In addition, they also earn additional cash to supplement the income of men. Invariably, their earnings are modest, as their work is generally held in low esteem. The importance of this work for the household is then beyond dispute.

But let us now return to the main question: what is the impact of women's and children's work roles on fishery in Kerala as a whole?

Weapons of the Small

Over the past fifty years Kerala's fisheries have witnessed deep changes. In the 1940s, the government set out on a policy of modernization that included the introduction of nylon in the fabrication of nets, the use of cold storage, the motorization of artisanal craft and gave new impulse to the cooperative sector. Most of the governmental efforts concentrated on the area around Sakthikulangara, which had long been the main trading centre for the export of dried prawns and salted fish to Ceylon (Klausen 1968:139). The efforts first aimed at channelling a growing stream of fresh fish and fish products originating from the artisanal 'hinterland' towards the powerful Sakthikulangara fish merchants. At the beginning of the 1960s, the demand for frozen sea-food in Japan and the USA showed a sudden and phenomenal growth. Being just under 500 tons at the end of the 1950s, exports increased three-fold in barely three years. Prospects for realizing sizeable profits were alluring. While the shore-price for fresh fish landed by artisanal fishermen was only 150 rupees per ton, the export value of a ton could reach 4,000 rupees. In the hectic climate of those years, the Norwegian proposal to help Kerala to modernize her techniques of fishing by building a modern fishing harbour in Sakthikulangara, appeared to the trading elite as a gift from heaven.

The Norwegians introduced a new type of fishing boat, the 'pueblo', that was designed to suit the conditions of small-scale fisheries. These small trawlers, although they looked quite odd in Norwegian eyes, were large enough to revolutionize not so much the relations of production in fishing as those between producers and traders. The use of motorboats made the fishermen who owned them much faster in landing their catches than the artisanal fishermen, with their canoes propelled by oars and sails. However, modernized fishermen were tied to a harbour for landing their catches. In the fishing harbour, catches could be handled quickly and stored adequately. Exporting agents guaranteed comparatively higher prices than those obtained on the beach. These higher prices were necessary to pay off the loans and to meet the higher running costs of the new equipment. But it also allowed merchants to control the prices of fish more directly than ever. This put them virtually in control of the entire internal market. Their command over the large catches of motorized fishermen greatly enhanced their international reputation as reliable and steady suppliers. It gave them a tremendous advantage above the myriads of vendors who had to collect their highly perishable merchandise from remote and inaccessible shores. The Sakthikulangara merchants were therefore the only serious partners with whom Japanese and American fish food importers could deal (Galtung 1974, 1980).

Artisanal fishermen responded to foreign demand by an impressive increase of their marketable surplus. This surplus was obtained by fish traders for prices well-below those of fish caught by modern boats. Kurien and Willman have ex-

plained this phenomenon by relating the shore-price of the fish to the scale of operation of the fishermen. They argue that the smaller the catch of a fishing unit, the fewer traders there are to buy it, and that this has a negative influence on the price obtained by the fishermen. For instance in 1979, prawns caught by catamarans in Quilon district, fetched on average only 3 rupees a kilogram against 4.79 rupees for prawns landed in the fishing harbour by modern boats (Kurien and Willman 1982:42). The differential shore prices of prawns and the willingness of artisanal fishermen to bring to market the varieties of fish that were in demand, discouraged traders from investing in modern fishing methods. They simply had no compelling motive to do so. Their merchandise was either brought to them by agents operating in the artisanal fishing villages, or landed by motorboats in the heavily subsidized fishing harbours. Prompted by the strong price increases powerful traders from outside fishery, some of whom had faced a serious depression in the trade and processing of cashew nuts and coir, joined the prawn business in the 1970s (Kurien 1978:1563). It mattered little whether the fishermen they dealt with had modern or artisanal equipment. By the end of the 1960s new roads had made most of the artisanal fishermen's shores accessible to lorries and insulated vans. New entrants in the prawn business therefore also chose to invest their profits in an even larger number of insulated lorries and freezers rather than acquiring motorboats (Kurien 1985:86 note 91). Over the years this enabled the traders to increase the share of the profits realized in fisheries at the expense of the fishermen (Kurien and Thankappan Achari 1988:23).

The combined effect of booming exports and massive subsidies did lead most owner-fishermen living near the harbour to adopt motorized boats and trawl nets. The number of boats, only 693 in 1966, grew to 2,636 in 1972, to 3,038 in 1980, and reached 3,400 in 1987. But, in the meantime, artisanal fishermen brought more than twice as many new boats into operation than modern fishermen. The increment in the number of artisanal boats was from an estimated 21,000 in 1961 to 26,000 in 1980, and reached 27,700 in 1987 (Thankappan Achari 1987). The total number of fishermen, mostly recruited by the artisanal sector, nearly doubled: from 74,000 in 1961 it grew to 131,000 in 1980. In addition, artisanal fishing proved to have a few advantages above modern fishing, that were crucial in the years to follow. One was its flexibility when it came to adapt the operation costs to the results of the fishing effort. Operation costs in artisanal fishing entail, in the end, little more than the costs of labour. Given the wide difference in power between owner-fishermen and their crew, this means that the costs of a fishing operation could be reduced to a minimum if necessary.

Artisanal fisheries did witness a genuine revolution. Investments in fishing equipment of all types has proliferated, rendering it increasingly efficient. The use of ice and nylon nets has spread evenly along the coast, and many *tankuvallams* were fitted with an outboard motor in the course of the 1980s (Kurien 1985). This enabled them to return to the shore with their catches faster to explore new, distant fishing grounds. But these technical adaptations did not jeopardize the fisheries' low-cost rationality. Artisanal owner-fishermen retained their ability

to reduce operation costs when catches failed or the price of fish was too low. The cost of petrol was simply deducted from the crew's wages, the men having the option to switch off the motor and use their muscles in the event of their returning empty handed.

The costs of labour in artisanal fishing were then not only very low, they could be reduced at will as well. To understand why, one should consider the interplay between fishermen's work and the activities of women and children. Looking at these activities from the owner-fisherman's point of view, one can distinguish two factors that are important for the final cost of labour. The first one is obviously the direct cost of replacing the energy of labour directly engaged in fishing (direct reproduction). Some labour is cheaper than other, and such ideological factors as gender and age are of importance here. I have discussed above how teenage boys provide a pool of cheap labour necessary for fishing during the slack season or with low-productivity equipment and to assist the fishermen onshore. But there is another factor that plays a role in determining the cost of labour: the cost of replacing the worker in the long run (future reproduction). The host of unpaid domestic activities performed by women and children: their foraging for such products as fish, fuel wood, fruits, and vegetables as well as the additional cash they earn, all help significantly in keeping the cost of the direct reproduction of a fisherman's labour to a minimum. They also form a buffer for maintaining the worker when he is not employed. With respect to future reproduction, the wage should also cover the expenses of bringing up a new generation of fishermen. In artisanal fishing this is the task of the fisherman's family. In a male dominated society such as Kerala's, adult men are supposed to provide their children with food and shelter, while the women mind and train them. But reality is different. The wage income of a crew worker is often so low that he cannot provide for his children. Women are forced to supplement the income of their men, leaving the task of minding the small ones to the girls. Children also have to procure some of the food and money needed for their own maintenance, notably by helping their mothers and by assisting the fishermen onshore. In doing so, women and children defray a significant and flexible share of the costs of reproducing labour. The division of labour in the fisherman's household is therefore instrumental in maintaining and reproducing a vast reservoir of cheap human energy overtime. This gives artisanal fishing a phenomenal advantage over methods of fishing that have to rely on mechanical power.

To conclude, women's and children's work is not only indispensable for the livelihood of fishermen's families, but also for the fisheries as such. The fact that this work is mostly performed in the non-monetized periphery of fisheries provides it with its competitive endurance. Technological innovation, by its localized character, does not jeopardize this division of labour. On the contrary, it sustains artisanal fishermen in their successful competition with modern fishery. But the type of commercialized small-scale fishery that developed in Kerala is in no way 'beautiful'; it thrives on the desperate struggle of men, women and children for basic necessities. And as the symptoms of the depletion of fish stocks become undeniable, its advantage in terms of the cost of human energy

may even turn out to form a serious threat to the marine environment.

Women and Children at a Dead-End

Marine resources have seriously suffered from the intensification of fishing that came in the wake of the prawn boom. While Kerala's total fish landings in the period 1971-75 had reached an annual average as high as 406,000 tons, this figure suddenly declined in the period 1976-80 to a mere 332,000 (Thankappan Achari 1987). Given the increase in the number of workers and the amount of equipment, the declining tonnage of fish landings implied an even sharper decrease in the return per hour of fishing (Meynen 1989:19). While in 1973 one hour of fishing with a trawler yielded on average 82.6 kilograms of fish, in 1979 the return had come down to only 4.2. Artisanal fishing was hit even harder. A yield that dropped from 95.2 kilograms/hour in 1973 to 1.6 in 1979 made the result of fishing still more depressing (Kurien and Mathew 1982:82). The response was, as expected, a further intensification of the effort. The total tonnage of exports could therefore keep growing, although at a lower pace than before, increasing from 22,792 tons in 1962, valued at 277 million rupees to 31,637 tons in 1979, with a total value of 1,096 million rupees (Kurien 1985:78). Meeting export targets under these circumstances was realized by withdrawing fish from the internal market, much to the disadvantage of the poor coastal consumer, in particular the fishermen and their families (Kurien 1987:91; Meynen 1989:20ff.).

The combined effect of falling returns, the rising price of oil and the quick depreciation of the equipment, caused serious management problems for modern fishermen. The owner of a modern boat incurred monetary losses every time an expedition failed. The fish he caught therefore tended to become so expensive that he was forced to seek state support to remain in business. At first sight, artisanal fishing proved better equipped to deal with the problem of diminishing returns than modern fishing, because it relied so heavily on human energy. As he had maintained the share-system, the owner-fisherman met no special difficulties in compensating the fall in return per fishing effort by lower shares for the crew on the beach. If he had an outboard motor, he often simply reserved the use of costly petrol for profitable expeditions, choosing to utilize muscle power, which costs him virtually nothing, for the unlucky ones. Resistance was, in the highly competitive atmosphere in which the intensification of fishing was taking place, simply out of the question. A high rate of population growth had made the ranks of men in need of work swell, and this had only added to an owner-fisherman's power over his crew. As men were forced into submission, women and children finally bore much of the human cost of artisanal fishing's resilience.

Marine depletion affected their work roles in three ways: reduction in domestic fish, loss of employment and devaluation of female and child labour. From my fieldwork I gained the impression that children's customary rights to pick up remnants of the catch are being increasingly denied. Fish for domestic consumption has become scarce. There are a few signs that women's and children's

employment opportunities in fishing have been adversely affected. The use of artisanal fishing gear operated from the beach, such as seines, has declined markedly, thereby impairing the work opportunities of teenage boys (see also Kurien and Willman 1982). Many female jobs, such as net making and fish vending, have declined too, while drying and salting disappeared altogether. Demand for hand-made fishing nets sharply declined. In a depleted environment the more sophisticated machine-made nylon nets have become a must. Many teenage girls and women lost access to this lowly paid but rather stable source of earnings (Gulati 1984; Ram n.d.). Fish vendors, who are mostly women and children, faced increasing difficulties in procuring fish for trade and obtaining credit (Meynen 1989:20). In order to realize sufficient profits, they have, at increasing costs, to travel further afield and remain away from home for longer hours (Nayak 1986). Informants in Poomkara recollected that in the past women and girls used to find seasonal employment in drying prawns and fish all along the coast, a skill that almost totally disappeared with the soaring prices (Beena n.d.). Depletion also threatens the few female and child jobs that commercialization brought in its wake, such as sorting the catches of the trawlers, peeling prawns and transporting ice. Agents of the exporting houses have been hiring thousands of teenage girls and young women to peel prawns (Gulati 1984:114ff.). Women and children had therefore to seek to supplement family income by looking for occupations outside the realm of fisheries altogether, and had to content themselves with the heaviest and least rewarding jobs. Coir manufacture, tailoring, retail sale of snacks and drinks, are examples of these (Ram n.d.). The incomes one can earn in these occupations are even lower than those in occupations allied to fishing. They do not provide viable alternatives to fisheries. What they do rather, is to support the very conditions which lead to the intensification of the fishing effort. In the long run therefore, the resilience of women and children in the face of the ecological crisis, turns out to have led to a dead-end.

The Dilemmas of Resource Management

I have argued that women's and children's roles in fishing have been unduly neglected. Within the family, women and children primarily perform those tasks that allow for the continuity of fishing at low levels of income. This work is mostly oriented towards subsistence and, as a rule, leaves little room for remunerated work. However, conditions in fishing may force women and children to turn their hands to new activities in order to earn additional cash. This has been the case in Kerala's fisheries, where artisanal fishermen have been confronted with an increasing competition following upon a booming foreign demand for prawns. The disturbing devastation of the marine environment that followed threatened those activities on which women and children based their subsistence. In the absence of alternatives to fishing, fishermen have had to cling to their jobs, even though their earnings were insufficient for a family to survive. It was up to women and children to find imaginative ways to make a living. As they bore up against

the effects of the ecological crisis, they could not but add to the further destruction of the environment on which their lives depend. They thus became trapped in a vicious circle from which they may not be able to break out without far-reaching and possibly unforeseen consequences.

Beyond the immediate effects discussed above, two possible consequences stand out: damage beyond repair to the environment and an escalation of violence. While all eyes are turned towards the crude destruction of the environment caused by bottom trawling, another type of damage caused by ever more refined methods of artisanal fishing may very well remain unperceived. However, it is impossible to tell what the long-term consequences of this creeping devastation will be.

The second possible effect may be the escalation of violent conflict. There have been regular clashes between artisanal and modern fishermen on the issue of resource management. Women and children often play a leading role in organizing unions in the south (Meynen 1989:24). Organized action has been instrumental in realizing in the early eighties a government ban on trawling in shallow waters. They have also resulted in other policy measures such as the provision of subsidized outboard motors to artisanal fishermen. But such action seems as yet unable to prevent a widening of the social gap between owner-fishermen and their crew. Organized action has hardly helped relieve pressures on the men of the crew to intensify the fishing effort at their own expenses. Nor has it been instrumental in helping women and children to break out from the vicious circle in which the decreasing incomes of men keep them trapped. Answers sought for halting depletion have therefore until now failed to formulate long-term strategies relevant for the wider social setting of fisheries (Meynen 1989:29ff.). Simply ignoring that women and children are an integral part of fisheries, these answers share the belief that marine depletion can be halted without those who stand to loose. One cannot therefore but fear violent confrontation further to escalate.

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Notes

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2. To protect the identity of my informants I have used fictitious names and slightly changed some of the situations.
3. Quantitative data refer to the period 1978-80. They were obtained through a survey of all households, a year-long budget-study of 12 selected households and from local records.
4. For a discussion along similar lines on girls' work see Nieuwenhuys (1989).
5. This view is based on the comparison of the following empirical studies: Mathur (1977) (Tanur), Platteau a.o. (1981) (Purakkad), Anonymous (1981) and Platteau (1984) (Sakthikulangara), Gulati (1984) (Puthentura), Vattamattam (1978) (Poonthura), Platteau a.o. (1980) (Poovar).

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