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***Of Saviours and Punks:
The political economy of the Nile perch marketing chain in Tanzania***

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Abstract

The paper is a fieldwork-based case study of the 'commodity chain' for the Nile Perch fish from Lake Victoria, Tanzania. This fish first began appearing in significant numbers in the lake in the early 1980s and within a few years a large 'artisanal' fishery developed around it. 'Commodity chain' analysis focuses on how a commodity is produced, marketed, distributed and consumed, which groups are involved in each of these

stages, how they are organised and how they interrelate. The aim is to identify principles of market structure and organisation and the basic pattern of distribution of earnings and profits.

The paper traces the restructuring of the market for Nile Perch especially after the opening of the first industrial processing plants on the lake in 1990. It links this analysis to issues concerning the social and economic characteristics of marketing chains in marginal economies, and to ones concerning the sustainability of economic growth based on unregulated natural resource extraction.

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1 Introduction

The Nile Perch is a fatty white fish found apparently exclusively in freshwater lakes in central and eastern Africa, overwhelmingly in Lake Victoria. Although neither especially tasty nor accessible to international markets, probably 40,000 ton of Nile Perch frozen or chilled fillet was being processed at upwards of 30 factories around the lake and exported to developed country markets by the mid-1990s. Some thousands of tons of salt dried Nile Perch were also being processed 'artisanally' and exported to neighbouring countries, principally Zaire, while within the three countries bordering the lake there were further significant domestic trades in chilled, whole frozen, salt dried, smoked, and fried Nile Perch and in the remains of the fish.

In Tanzania since the second half of the 1980s, when a significant 'artisanal' fishery for Nile Perch first emerged, the fish has often been nicknamed *mkombozi* (saviour). The fish's emergence and capacity to penetrate ever wider markets reversed the apparently intractable decline of the fishing industry in a region already suffering from falling production of its other staple, cotton. By the mid-1990s, thousands of young men had found employment as fishermen and, while the main beneficiaries were obviously the owners of the processing plants, some local vessel-owners were accumulating on a previously undreamt-of scale. This whole process occurred overwhelmingly as a result of the spontaneous working out of different types of 'market forces', and with only minimal state involvement.

At the same time, important questions began to be raised locally, both about the outcomes and the sustainability of this chain of development. In particular, public discussion was being broached about its relation to local diet and food security, about the relative distribution of returns between the main groups of actors (including the Tanzanian state itself) and about its physical sustainability. The number of processing plants in Kenya had already fallen from a maximum of 15 to 11 in the wake of declining catches (E. Jansen, personal communication), and the first reports of declining unit catches in the Tanzanian section of the lake date from 1994. Most of these questions feed into international debates on the same subjects, as well as into more abstract debates concerning the long-term sustainability of economic growth based on 'free' markets, especially when economic growth rests on a boom in the extraction of natural resources.

This paper examines these questions, but in the course of addressing a somewhat different general focus, namely what the Nile Perch production and marketing systems in Tanzania, and their international extensions, tell us about the economic and social characteristics of spontaneously emerging marketing chains and private enterprise generally in deregulated but still predominantly marginalised economies.

The main conceptual framework adopted here is derived from recent studies of global and national commodity chains by, amongst others, Gereffi (1994), Harriss-White (1995) and Bernstein (1996). In these studies, commodity chains are analysed with respect to sequences of production and circulation in 'core' and related chains, the divisions of labour accompanying them, the distribution of earnings and profits they entail, and the forms of social and economic power through which market power is organised to perpetuate or subvert their distribution. In this paper, the latter are approached as an outcome of the interaction between a given set of wider social and economic structures on the one hand, and strategies employed by specific groups of actors and actresses in the marketing chain on the other. A secondary framework will also be used for discussing the relation of the Nile Perch chain to more general processes in the current world economy. This framework arises out of elements of the recent critiques of 'globalisation theory' by Ruigrok and van Tulder (1995) and Hirst and Thompson (1996).

The study of the Nile Perch chain is part of a wider project of the author to examine emergent marketing chains in post-liberalisation Tanzania. Besides Nile Perch, studies were also undertaken of the prawn and *dagaa* fishery chains during a 6-month period of fieldwork between November 1995 and April 1996. A study of the cotton sector, which unlike fisheries was very highly regulated, and where also investment pay back periods are likely to be much longer, is planned for July-October 1997.

The Nile Perch study involved exactly 100 extended interviews carried out around Lake Victoria and at markets in Tabora, Singida, Dodoma, Dar es Salaam and London. Interviewees comprised fishermen, traders of various kinds, artisanal processors, *matajiri* (proprietors of boats and other fishing equipment), transporters, trawler operators and crew, factory owners, managers and workers, and government staff and offices. With exception of the last of these categories, interviews followed the lines of individual or corporate 'business histories', using check-lists inspired by that found in the appendix to Harriss-White (1995). Over a dozen different check-lists were used, tailored to different roles in the chain. Interviewees were chosen on the basis of membership of a given division of labour category or sub-category in the chain and of availability, in collaboration with research assistants with extensive prior knowledge of the local fisheries. Interviews were usually held in *Kiswahili* with questions and answers translated from and back into English. Interviewees were told that I was working on a background study of private business in Tanzania, sponsored by DANIDA as part of its preparations for redirecting some of its assistance from government to the private sector. They were told also that the study did not involve making recommendations for support either to the fisheries sector in general nor to any individual or company within it. [The main research assistant for this study was R Mhekele. Additional assistance was provided by F. Matimbo (Dar es Salaam), L Mkwizu (Dodoma, Singida, Tabora) and M Medad (Mwanza). The author would also like to acknowledge the assistance of E Jansen and C Sørensen in sharing with me information from related studies in progress. Lis Bluhme (CDR) typed the first draft of this paper. Many thanks to all those mentioned.]

The paper opens with a sketch of the local physical and socio-economic settings which form backdrops to the development of the chain. This is followed by a discussion of the trade's macro-economic significance. Subsequently the paper turns to a description of the division of labour within the chain, and for the commodities intersecting with it either as inputs, services or goods produced and

sold together with Nile Perch. Next comes a discussion of the social character of the actors and actresses in the chain and of the strategies and structures through which they interact. This is supplemented by information on earnings and profits in some branches of the chain. In conclusion, the paper turns to general questions concerning the production and contract form in African fisheries, market power and development, enterprise development and accumulation, and the emergent relation of Tanzania to the 'new' international division of labour.

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2 The International Setting

2.1 *The International Economy*

In the 1970s several European commentators (notably Frobel et al., 1977) developed the concept of 'New International Division of Labour': This basically denoted a postulated tendency for large-scale firms in the developed countries to export the greater part of their production to less developed countries, principally in order to take advantage of lower local labour costs. On the other hand, the home countries of these large firms were to remain centres for the now-international enterprises' strategic direction (facilitated by advances in communication and transport technology), research and development and global marketing functions. The actual degree of realisation of this postulated tendency even during the 1970s itself is unclear. But by the end of the 1980s, discussion of it had largely been displaced by two other conceptions of the emerging international division of labour. In the first, influenced by the efforts of companies like Ford to create a 'world car', large firms were seen as becoming 'globalised', i.e. as exporting vertically-integrated production and sourcing functions to a wide variety of countries in order to produce a single basic model corresponding to a single basic type of 'mass' international demand.

In the second, influenced by one of the most important emerging competitors to Ford, Toyota, large firms were seen as being 'glocalised' rather than globalised. This implied a relocation of production facilities to a relatively small number of sites, all created in the 'triad' of developed regions (North America, Europe and East Asia), relying on creating greater efficiencies in sourcing from independent local suppliers rather than a vertical integration, and producing high value-added products in forms significantly influenced by local tastes.

According to Ruigrok and van Tulder (1995) and Hirst and Thompson (1996) each of these concepts more closely resembles a programme of desired outcomes for particular enterprises than an empirically-supported understanding of more general trends with regard to the activity of multinational companies, foreign direct investment and international trade. It is true that the level of total economic activity accounted for by multinational companies is rising, as is the level of total production and consumption accounted for by international trade and the level of total investment accounted for by foreign direct investment (FDI). But an increasing share of FDI and international trade occurs between developed countries themselves and the overwhelming majority of multinational cooperations are neither global in any meaningful sense, nor particularly systematically 'localised' within their external areas.

Hirst and Thompson go little beyond this critique, but Ruigrok and van Tulder go on to suggest a framework for analysing different forms of firm internationalisation processes, on a continuum which includes all three of the strategies described above as well as others. This framework will not be described or criticised in detail. Suffice it to say that it does not provide grounds for anticipating any role in the global economy for less developed countries than increasing marginalisation, mitigated only by being sites for greater multinational corporation import penetration and occasional investments by giant oil companies. Indeed, these countries are barely mentioned in the analysis at all.

If the framework advanced by these authors is broadly correct, but a more explicit and less unidimensional elaboration of the position of less developed countries in the current international economy is desired, then an obvious strategy is to try to derive various secondary processes atwork in the latter, which might impose limitations on other marginalisation or set off tendencies countervailing it. In this respect can be distinguished particular branches of international capital which are more likely to retain a strong interest in investment in less developed countries on the one hand, and countervailing tendencies released within certain more important less developed countries themselves by, e.g., greater multinational import penetration, on the other. In practice these processes may overlap.

Several branches of international capital can be considered likely to retain strong interest in maintaining or even extending an investment base in less developed countries even in the context of the trends described above. The first and most obvious are branches depending on non-substitutable inputs geographically located only or mainly in such countries: the oil companies mentioned by Ruigrok and van Tulder, but also mining companies, tobacco and tropical food companies, oil seed manufacturers, seafood corporations and tropical tourism hotel chains come to mind. A second are branches producing public goods, like electricity generation equipment for whom national governments in less developed countries remain very important customers and in relation to which setting up local or regional production capacity is often a correlate of supplying such goods. A third is branches producing and distributing goods such as cement, beer and petroleum, for which there is high effective demand even in poor countries and strong 'natural' barriers (for example transport costs) to competition. Here, relatively small local investments can easily guarantee local or regional market domination - as well as can be very high profits - at least where the investments in question are in discounted former state assets made available in privatisation 'fire sales'. Finally one can consider capital earned in illicit branches of international trade like drug or unofficial weapons dealing (both of which are very high in the rank order of internationally traded commodities by value) and which for legal reasons are hard to invest openly in the core triad of regions. Each of these kinds of external investment - sometimes on a significant scale - have been evident in Tanzania since 1992-93, against a general background of severe industrial decline.

Greater multinational import penetration in less developed countries will hit hardest at capitals in the latter which are already oriented toward main production for domestic markets. This implies capitals located in CDCs which while relatively poor on an international scale nevertheless possess large markets with a certain degree of purchasing power. The latter tend to be found in the regionally dominant states, such as South Africa, Nigeria and Kenya in Africa. It is unrealistic to see all of these capitals being outcompeted or absorbed by multinationals. A more likely scenario is that they respond to intensified competition by seeking to expand into neighbouring country markets (possibly by establishing neighbouring country production basis - particularly, if these are available cheaply via privatisation) or by shifting into low technology locally-based expert branches where knowledge about local factor supply conditions may provide a comparative advantage. Since 1994, in Tanzania there has been a shift of large South African companies

into (inter alia) the beer and petroleum distribution sectors and of generally rather smaller Kenyan Asian businesses into a wide variety of others.

2.2 The International Economy of Food

Production of food commodities is subject to broadly the same general tendencies evident in the international economy generally, with the reservations that certain food commodities have always had a special political significance in all countries, and that there are objective climatic restrictions on what commodities can be grown where. The commodity of greatest and widest political significance has always been grains and regulation of food production and trade on a world scale has always centred on regulation of grains.

Largely because of this fact, the developed world has for a long period been more than self-sufficient in grains, and through extensive state support has had the opportunity to develop a fully industrialised grains sector. The combination of physical surpluses and technical advances which followed from this industrialisation led to the parallel industrialisation of the livestock sector through the animal feeds connection and to the increasing substitution of tropical crops (e.g., vegetable oils, sugar) by grain-based alternatives (soya oils, corn syrup sweeteners) (Friedmann, 1993). It was also associated with the emergence of several very large integrated multinational, but usually US-based, food companies.

Japan and the Soviet Union represented exceptions to the rule of developed country grain self-sufficiency. The Soviet Union imported large quantities of grains from North America, at least until its collapse in 1989-90. According to Friedmann (ibid.), Japan by contrast developed a policy of 'strategic multi-sourcing', helping through a programme of diversified small-scale investment to create as many exporters as possible to allow importers to pick and chose and, presumably, keep prices down.

Increased affluence in developed countries generally has meanwhile created new markets for certain specialized foodstuffs, including a number which can only be produced in tropical or semi-tropical countries. According to Friedmann (ibid.) these markets have largely been supplied by a group of 'New Agricultural Countries' including Brazil, China and India which have combined the promotion of high value added exports with their own domestically-led industrialisation of parts of the grain and livestock sectors. It is not part of Friedmann's argument that the food multinationals are involved in the trade in high value added fruits and vegetables, although some are now using tropically-grown materials again in the production of feedstuffs.

In a recent contribution Watts (1994) has gone well beyond Friedmann's observations to claim that there are renewed systematic tendencies toward the internationalisation of food products and trade, centred around high value-added fruits and vegetables from tropical and semi-tropical countries. This is said to be based on a continuation of the 'growing transnationalisation of agro-food capitals' on the one hand and the application of Japanese-style 'pick and choosing' strategies on the other. Because the crops involved are only of interest to affluent northern hemisphere consumers if they correspond to specific norms of quality and presentation, and because they also typically do not lend themselves to mechanisation, their growing is normally contracted out rather than being undertaken by the multinationals directly. The result is 'flexible accumulation in the fields'.

Watts provided little direct evidence to support his arguments, either with respect to the global expansion of demand and supply of high value added fruits and vegetables, nor for the systematic involvement of transnational corporations in this process. In fact it

seems likely that the bulk of transnational corporation interest in tropical food crops remains in tea, coffee, cocoa, bananas and pineapples as it did a half century ago (or in most of these cases, even earlier). Moreover, it seems further likely that because of the high capital content and level of infrastructural dependence of high value fruits and vegetables, their production in tropical and semi-tropical countries will tend to be highly physically concentrated around the already developed poles.

2.3 The International Economy of Fish

The analysis developed so far suggests that there is likely to be little direct international interest in promoting production or trade in 'new' tropical foods in countries like Tanzania, except perhaps on a relatively small scale by capitals from the more developed parts of the same region. However, developments in the specific international economy of fish mean that in the case of this type of food, certain modifications need to be introduced to this picture. The obvious difference between fish and most other foodstuffs is that fish are a non-renewable resource: the story of the industrialisation of the fishing industry is therefore simultaneously the story of the systematic depletion of international fish stocks. This tendency and industry responses to it lay at the heart of understanding the current international economy of fish.

The industrialisation of the north Atlantic and north west Pacific table fish fisheries began in earnest in the 1950s and 60s, associated with major increases in industrial country demand, the formation of vertically integrated seafood corporations in the US, the Soviet-Union, Japan, Korea, and Taiwan, and the associated construction of a number of factory freezing fleets. Evidence of overfishing of Atlantic cod already emerged by the end of the 1960s and by the early 1970s it also became clear that North-east Asian stocks had been heavily depleted. Producer responses to these trends have included movement to different species and different fishing grounds and have coincided with an industrialisation of a large number of new fisheries, even as the decline of Atlantic cod was making redundant the first generation of factory freezer vessels.

While the traditional North Atlantic and North-east Asian fisheries remain active, though on a reduced scale, the last two decades have seen a growth of international fishing effort in four main directions. One has involved the development of a very large-scale international fish meal complex, based on the serial targeting of various small surface-based species for industrial processing for feed. The target species concerned have been anchovy, pilchard and sardine. Fishing for millfeed possibly accounts for about a third of all consumption from industrial fisheries today. A second direction has been a concentration at the other end of the market on capture of certain very high value species such as tuna, squid and prawn. In the case of tuna this has involved the development of very high technology fishing systems incorporating satellite data analysis and air-based reconnaissance. In the case of prawn (and salmon) it has mainly involved movement in a third direction- the promotion of aquaculture, some of it very highly intensive. [This is discussed in a parallel paper on prawn (Gibbon, 1997a).]

A fourth direction has already been indicated - the serial exploitation of substitutes for the main traditional developed country mass table fish markets. One recent example of this trend was the 'discovery', incorporation, exploitation (and then exhaustion) of 'Southern Hake' stocks off Chile during the 1980s (Schurman, 1996).

Besides a general intensification of technology (larger boats, larger-scale gear, small size meshes, etc.) each of these trends has been associated with shifts in fishing grounds, to steadily more remote regions. By the 1990s almost all the world's largest marine

expanses, and most of its freshwater ones, had been overfished. Significant parts of the North and West African seaboard were overfished by EU (mainly Spanish) vessels over a very short period in the 1980s, for example. In the face of increasing regulation by governments in most regions, mainly taking the form of extensions of territorial waters, there was also a tendency for changes in ownership patterns to occur, with large internationally-mobile fleets declining and with more local flagging joint ventures and charter assignments, as the large international players found themselves obliged to 'localise' their operations.

In a context of continuing very strong demand in developed country markets, promoted both by rising average incomes and by the gradual weakening of the market image of meat, the underlying world price for table fish has risen steadily. So too have price fluctuations occasioned by temporary blips in supply. Meanwhile there have been developments in international transport technology, chiefly the generalisation of refrigerated container transport on a world scale, which have relatively cheapened secondary costs. All of this has created opportunities for windfall profits by producers of fish such as Nile Perch which only a few years earlier would have been considered born insufficiently attractive and insufficiently profitable to be internationally tradeable. On the other hand, such species are favoured by northern hemisphere importers precisely because of their ability to dampen international price increases generally. If their own prices rise to that of staples like cod, they cease to be of interest.

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3 The Local Setting

3.1 The Economy of the Lake Victoria Region

The Nile Perch fishing grounds are located around the entire shoreline of Lake Victoria although they are concentrated in certain areas more than others. By 1996, when this study was undertaken, the busiest areas on the Tanzanian shoreline were in the south west corner of the lake, on the islands in Muleba, Geita and Sengerema districts. A second area of concentration was Ukerewe, a very large island in the south east corner of the lake. Besides fishing, most artisanal processing of the fish was also being carried out on these islands. By contrast, industrial processing of the fish was overwhelmingly concentrated in Mwanza town, Tanzania's second largest settlement and located more or less at the mid-point on the lake's southern shore. Factory processing there had also spawned a second branch of artisanal processing, based on fish waste products. This was scattered between one large and three smaller sites around the town.

Lake Victoria is the largest inland water surface in Africa. It is difficult to properly group its size. The lake is large enough to have its own 'sounds', 'gulfs', channels and groups of islands. Modern passenger ferries circumnavigate it rather than sail across. The trip from Mwanza to the two other largest ports in the Tanzanian part of the lake (Musoma and Bukoba) takes around nine hours each. If the current generation of industrial trawlers wished to fish in the centre of the lake, the sailing time for Mwanza would be close to 18 hours. By 1996 much of the shoreline, especially on the Ugandan site was being choked by water hyacinth (*magugu maji*). On the Tanzanian shore some inlets tended to be blocked for a few days, but in general the Nile Perch fishery had not been badly impeded.

[The hyacinth, and another secondary plant which tends to accompany it, was in 1996 particularly prevalent in Smith Sound. Fish trapped by it are vulnerable to asphyxiation and nets are subject to clogging. Water hyacinth probably presents a more severe problem for the dagga fishing than the Nile Perch one however, as the reduced water temperature and darker water body generated by it impedes the development of this fish's main foodstuff, plankton.]

The lake lies in the middle of a flat and gently rolling plateau, at a height of around 1100m. Throughout the plateau are spectacular granite outcrops and close to Mwanza these form cliffs around the shore. Offshore are more granite outcrops, including the one which drained the MV Bukoba with the loss of several hundred lives in mid-1996. With the advent of colonialism the lake and its shoreline was divided between the three East African territories, and efforts were made by the colonial government to integrate each of the lake regions into their respective 'national economies'. Around what became the Tanzanian shoreline the bulk of the population belonged to the Wasukuma people. These practised farming (maize, cassava, groundnuts, sweet potatoes and chick peas) in the high rainfall area close to the lake and herding in the less densely populated and more arid areas at a distance from it (McLoughlin, 1969).

After 1945, when British economic and political priorities dictated shift to an explicitly 'developmentalist' agenda, Sukumaland became the subject of probably the most comprehensive set of state interventions in the history of the country. Under the 'Sukumaland Development Scheme' the area was designated for peasant cotton cultivation. Huge areas of bush were cleared particularly in Geita and Biharamulo districts, local water supplies developed, cattle off-take quotas introduced, cotton production promoted and land use and cultivation methods carefully monitored. To police the entire operation an overarching 'native authority', the Sukumaland Federation, was set up. Most of the objectives of the Sukumaland Development Scheme failed miserably, but especially in the newly opened-up areas cotton production grew vigorously, buoyed by a rising world price in the post-Korean War period. Reliable data on acreages are lacking, but seed cotton output increased from 50,000 (180 kg) bales/year in 1950-52 to 227,750 bales/year in 1962-64.

After independence, cotton continued to increase in importance until the early 1970s, whereupon its cultivation stagnated and then contracted. Farming systems studies conducted during the region in the 1980s demonstrate an increasing substitution of maize and rice for culture on better soils and in higher rainfall areas. The bulk of these crops were also traded, but in the developing network of regionally-based private markets around the lake rather than in the nationally-based and state controlled ones centred on Dar es Salaam, as cotton had been (Meertens et al. 1995).

Increased local marketing of maize and rice was part of a general restructuring of the economy of the southern lake area during the 1980s. Two other important elements were a revival of the local gold mining industry (dominant since the 1940s), and an apparently huge increase in smuggling with Kenya following the reopening of the common border in 1983. The story of 'artisanal' gold mining industry in Geita district is told in Chachage (1995). Gold 'rushes' by artisanal miners, some of them laid off by the formal sector mines in neighbouring Shinyanga, began at Nyaruguru in the late 1970s and by the time that claims were officially issued in 1984 around 50,000 people were present on the site. Later in 1980s further rushes occurred at Buziba-Rukarakata, at Rwamagaza and at Mgusu, all south-west of Geita town. Until around 1990 (and again since 1995) the great bulk of the gold produced was smuggled out to Kenya; some of the proceeds were used to smuggle consumer goods back into Tanzania, but the latter trade also had a life of its own with beer, cigarette, *khanga* and soap as the main unofficial imports.

Considerable fortunes were made both in gold and in smuggling. One of Mwanza's two most eminent African capitalists today began

his career as a local maize and rice trader, suffered imprisonment for smuggling in 1983 but resumed in 1984 as a semi-official importer of goods from Kisumu and Nairobi 'under the patronage of a prosperous Asian he knew in Uganda' (Truelsson, 1996). As the 1980s progressed he gradually formalised his activities, amongst other things going on into cotton seed oil production in 1990 and most other links of the cotton chain by 1996. By the mid-1990s his large storage-cum-office block cum Bureau de Change next to the main bus station, rebuilt in red Ugandan brick after being burnt down (allegedly by a rival) had come to literally tower over the town's African business district. Other 'big money from *magenta*' (smuggling) went into gold.

This recent history has contributed to Mwanza town's rapid growth (with a population somewhere between 0.25 and 0.5 million it is Tanzania's second largest settlement) and to its contemporary 'wide-open' feel. Evidence of new money is not hard to find. Capri Point, directly overlooking the lake and the most spectacular granite outcrop in the town itself, is dotted with very expensive-looking new houses, which can also be found on the outskirts of town at Nyegezi, Nyakoto and Nyamanoro. Older local Asian capital together with even more recent foreign capital, mainly from the Canadian, Australian and South African formal sector mining houses who are now pushing out the artisanal producers, may be observed at play together at the recently-opened Mwanza Casino [The casino is owned by a Dar es Salaam - based company, managed by a Frenchman and staffed roughly evenly between Bulgarian and African croupiers. The African croupiers are virtually the only Africans to be seen there. One of the Bulgarians told me she and her companions were lured to Mwanza by talk of a high - rolling international resort; they could not leave the country because the owners had not paid their income tax.] and at Capri Point's Tilapia Hotel.

3.2 The Lake Victoria Fisheries

The promotion of fisheries on Lake Victoria never constituted an important element of the development agenda of any government in Tanzania, either colonial or independent, although it was a colonial government technical intervention of the early 1950s which laid the foundation for the current Nile Perch boom.

There have been commercial fisheries on the lake almost the whole of the 20th century. Garrod (1961) dates the first adoption of factory-made nets by 'native fishermen' as 1908 and the first large scale commercial fishing boom as 1917-20. At the beginning of a second boom (in 1930) there were already 1.7 m pieces/year of the indigenous *Tilapia O. esculent* (*ngege*) being transhipped by rail from Kisumu into central Kenya, and at its end in 1940 there were 5 m pieces/year. The commercial fishery in Tanganyikan waters developed more slowly, but between 1923 and 1926 230 ton/year of dried *ngege* were also being transported by rail from Mwanza (Graham, 1929). In both Mwanza and Mara there were also more local trades.

While the bulk of the lake's biomass this century seems likely to have primarily comprised the little-exported *Haplochromis* (*furu*), and while there have been commercial fisheries throughout for *Bagrus* (*hongwe*), *Labeo* (*ningu*), *Clarius* (*mumi*) and one or two other species, the main commercial fishery until the 1980s was always for Tilapia, to be traded in a dried or smoked form after artisanal processing. Fishing for it from the beginning of the century seems to have been by methods not far removed from the dominant ones today - mainly setting gillnets overnight in long stationary chains, and processing methods (gutting, then sun drying on rocks or smoking on earth kilns) also remained largely unchanged. However, until the mid-1980s there was still a clear annual fishing season (wet season and early dry season) and even the commercial fishery was largely part-time in nature (Bituro, 1974).

Ngege was never a prolific breeder and its main feeding grounds (waters at a depth of 4-20 m with a grassy floor) were easily accessible by canoe. It is therefore not surprising that from a very early date concerns were raised about its overfishing. Graham's (1929) report stemmed from these concerns. He recommended a ban on gillnets with meshes smaller than five inches and indicated that discussion was already occurring about the possible introduction to Lake Victoria from the nearby freshwater sources of two exotic species: the Nile Perch or Lates niloticus (*sangara*), and the Tilapia O. niloticus (*sato*).

According to Garrod (1960, 1961) a third phase of rapid expansion of the commercial fishery occurred in 1949-53, especially in Kenyan waters, which towards the end was accompanied by the introduction of nylon nets and of outboard motors. In inshore waters unit catches fell rapidly after 1945. An increasing movement of fisheries to camps in the islands was reported and in 1956 Graham's net size regulation was abandoned as unenforceable. It was around this time that the Nile Perch and O. niloticus were introduced to the Ugandan part of the lake as part of a fish replenishment programme.

According to Reynolds and Greboval (1988), Nile Perch first began appearing in significant numbers in catches in the Tanzanian part of the lake in 1982. Nobody I interviewed had fished it commercially prior to 1984, but by late 1986 a Norwegian survey reported in Reynolds and Greboval (ibid.) found that almost half of all gillnetters (themselves 84 per cent of all fishermen using vessels) were using meshes of more than six inches - more or less specific to Nile Perch.

This was partly an effect of the rapid development of a market for Nile Perch. Local markets for fresh Nile Perch and markets which were both local and regional for fried and smoked Nile Perch were established already by early 1986. But it was also an effect of the general impact of rising stocks of Nile Perch on the population of other favoured lake species. Nile Perch was carnivorous and its targets included the indigenous Tilapia as well as *hogwe*, *mumi* and *furu*. Amongst remaining fish in the lake the impact on the exotic Tilapia sato appeared to be roughly neutral, while the main beneficiary was the sardine-like R. argentea (*dagaa Mwanza*) which competed for food with *furu* but which was generally found at different depths to the Nile Perch.

In 1987 the first frozen Nile Perch fillet was exported from Kenya and by the end of the year no less than ten Kenyan factories, in Kisumu, Nairobi and Mombasa, were exporting the fish - primarily at this time to Israel, where the main customer was the Israeli armed forces. Production was at first on a small-scale (4000 tons/year) and it seems likely that even the bulk of Kenyan catches were at this time being consumed domestically.

This was also true of Tanzania until 1990-81. Interviews conducted during the study suggest that during the late 1980s the Nile Perch trade was primarily local, not least through the take-off of a major market for fried *sangara* in Mwanza town, and inter-regional, with the opening up of a national market for smoked Nile Perch (*sangara moto/sangara moshi*) and a market in Dar es Salaam for frozen and semi-processed wholefish. The main export markets at this time were initially dominated by Tanzanian traders taking the fish as far as Ngare, but from 1988-89 slowly taken over by Zairean traders buying in Mwanza.

During 1988 the long-distance trade in artisanally processed fish became more extensive and better organised. The landing at Kirumba just outside Mwanza town (the main local centre for informal transport around the lake) became its main entrepot, as well as taking over from Mwanza central market as the main site at which fresh Nile Perch was locally traded.

According both to Reynolds and Greboval (op.cit.) and to my own interviewees, virtually all the Nile Perch caught at this time was fished between the Kenyan waters and just west of the Mwanza Gulf. There was little fishing in Sengerema district and virtually none in Geita district or along the Bukoba shoreline: 'the *Wahaya* were hardly involved and even in Geita people thought of fish like they thought of frogs'. [Statements in single quote marks are either verbatim translations by my research assistants from direct speech in Kiswahili by interviewees, or verbatim quotations in English.]

In 1990-91 market conditions began to change fundamentally. As more and bigger processing plants opened in Kenya, their owners started buying fresh Nile Perch in Tanzania. They worked mainly through Tanzanian agents, who were provided with motorised collector boats, vans and trucks. The prices offered by the Kenyans easily exceeded local prices 'and we all saw scales for the first time on a beach'. Simultaneously, both in Zaire and in southern Tanzania, demand - and hence competition - for fish was further stimulated by the local adoption of salt drying, which increased shelf life (and cheapened processing costs by eliminating the need to purchase fuelwood).

3.3 The Sites of Production and Trade

Since 1990 the Nile Perch fishery has spread to the whole of the Tanzanian Lake shoreline. The most intensive fishing is conducted from *makambi* (camps) rather than villages. A majority of camps are situated on the islands (mainly in the Lake's south-west corner) as fish stocks in the area reachable from the shore by canoe or sail-powered vessel have been depleted. *Makambi* may be more or less permanent and more or less organised and have populations ranging from a dozen to over a thousand people. A handful of vessel owners (*matajiri*) are powerful enough to be able to set up and run large camps on their own, but most *makambi* comprise a series of sub-camps organized by different *matajiri*. Besides fishermen, the camps are populated by would-be fishermen trying to find employment, by specialised fish processors, netmenders and other tradesmen (*fundu*), cooks (all women), and sometimes the wives and children of a *tajiri*. On the periphery of some of the larger camps are kiosks, bars, tailors' premises and even video halls. The population is normally a floating one, in more than one sense: 'all kinds of people are attracted here', one camp chairman told me, 'youths who have been chased away from their houses or their villages, women who have run away from their husbands, men who have killed'. Law and order is rough and ready, and basically vested in the *matajiris* and their *meja* (supervisors, literally majors). Most camps are visited by agents from the factories in Mwanza on a daily basis or as part of 'rounds' thrice or twice weekly. At all the larger landings there are permanent wooden structures to hang the agents' scales and provide them with *ofisi* (offices).

In 1996 factory purchases of fresh Nile Perch accounted for probably three quarters of all Nile Perch caught. Fish that the factories were unable to collect, because of delays in arrival at camps or arrival without adequate supplies of ice, as well as fish which the factories rejected as too small or as 'stale', were processed artisanally in the camps themselves. The largest physical site for the bulking and resale of artisanally processed fish in Tanzania was still Kirumba mwalowi. Between two and three kilometres north of the centre of Mwanza town, the landing had become a walled compound covering an area of about 250 x 800 m, on a sandy bank rising evenly from the lake like a terrace at a football ground. It was divided into areas specialising in different commodities including, besides processed fish, bananas, building poles, firewood and charcoal. In each of the areas except the ones where wood was traded, goods were stored on stands built of rough-sawn thick cypress planks resting on granite blocks. The stands were mostly 2-3 m long and 0.5 m off the ground and some were stacked to a height of 2-3 m. Most were covered in blue tarpaulin sheets stencilled with the letters 'UNHCR', presumably emanating from the camps in neighbouring Kagera region at that time housing Rwandan refugees.

Kirumba mwaloni bore certain signs of recent formalisation. Besides the boundary wall and gates there were a couple of water taps, a public toilet and the offices of four or five cooperative societies, three of them dealing with fish. These were solid-looking wooden huts with desks, chairs, filing cabinets and telephones, and walls covered with direct telephone dialling codes for Tanzania and neighbouring countries. Next to the *mwaloni* was a retail market and beyond it a relatively prosperous African suburb. The road leading to the *mwalo* was lined by bars and 'nightclubs', eating places, guest houses and hair saloons and not far behind it lay at least one respectable modern hotel and an international telecommunications office.

Kirumba was actually in decline as a centre for fish trading, though not as an informal passenger and cargo port. Its golden years were as a market for fresh fish, just before the generalisation of the presence of factory agents. The trade's centre of gravity in Tanzania is now firmly at the factories themselves. In April 1996 there were seven functioning plants in Mwanza town and one in Musoma, as well as a number in various stages of development, including a further four in Mwanza town alone. They were a mixed bunch, ranging in appearance from a small converted tyre *godown* (warehouse) without running water and with just one or two small plate freezers and a small flake ice machine, to a purpose-built plant of 1250 m² currently under construction, which will have two automated lines with their own tunnel freezers, 96m² of cold storage and 'everything imported from Finland except the cement'.

The last important element of the local physical setting were the sites where the artisanal processing of factory fish waste occurred. In 1996 the largest of these was at Nyegezi, around four kilometres south of the main groups of factories in Mwanza town, along the Dar es Salaam road. Driving along this road in 1996 was never easy, not merely because of its appalling condition and steep gradient, but because of frequent encounters with groups of four or five youths pushing *trolli* (hand-carts with axles, wheels and tyres cannibalised from pick-ups). Each *trolli* was spilling over with between one and two tons of stinking fish carcasses, bought by traders (also known as *matajiri*) at the factory gates for processing at the c. one hectare Nyegezi site. Clouds of flies swarmed round this site, which could be smelt at some distance away, and above them swarmed quantities of swallows and a variety of hunting birds. Upwards of 200 people were using the site in some way or another, about half of whom were women- many with accompanying children. Although squalid, there were signs of formalisation even here, with running water, an enclosed toilet, a site office under construction and three or four kiosks.

3.4 The Nile Perch Boom and National Economic Policy

The Nile Perch boom, like the boom in prawn (see Gibbon, 1997a), coincided with the adoption and elaboration of structural adjustment policies in Tanzania and owed a considerable amount to them. For a decade and a half prior to adjustment Tanzania had followed a path of 'socialism and self-reliance', which involved nationalisation of the 'commanding heights' of the economy, 'confinement' of most productive activity and trade to parastatal or state-run cooperatives and holding the exchange rate at a very high level in order to subsidise the import of capital goods. Simultaneously the rural population was forcibly resettled in villages, resulting in a massive disruption of agricultural production. Marketed agricultural output also declined as parastatal margins steadily rose, resulting by the end of the 1970s in a sharp decline in staple exports and a severe foreign exchange crisis.

From 1979 onwards, while the Tanzanian government and the international financial institutions were deadlocked over the terms on which the latter might extend balance of payments support, there was a widespread contraction in official economic activity and a

growth in the so-called 'second economy'. The latter term subsumed both the mass diversification of popular livelihood sources away from export crop agriculture and official marketing channels generally, and the more specialised trends of smuggling, diversion of official imports, hoarding, and illegal dealings in confined goods and forex.

After efforts to suppress these trends ended in fiasco and the death of their main architect, a gradual official opening began in 1984. The Tanzanian shilling was allowed to rapidly depreciate and traders holding hard currency were allowed to import goods into the country on a 'no questions asked' basis. This latter measure regularised a lot of already existing 'second economy' activity. As deconfinement of exports and an easing of regulations governing the right to retain earned foreign exchange followed, growth in exports as well as imports was stimulated.

The prawn boom was led for a very long period by relatively small-scale large numbers of locally-based traders making large profits from the difference between low Tanzanian shilling-denominated local costs and high hard-currency denominated international prices. These profits were often supplemented by large profits made on exploiting pent-up demand for luxury imports purchased with export earnings, or by selling undeclared hard currency earnings locally to realise their still considerable parallel forex market premium, or both (see Gibbon, 1997a).

The Nile Perch boom occurred only towards the end of the period in which such 'supplementary' benefits were important. From a policy viewpoint, the decisive factor bringing Kenyan buyers to Tanzania was the real lowering of local costs brought about by devaluation. Their buying agents of course benefitted from the other money-making opportunities which the trade opened up for them, but these were generally of secondary importance.

From 1992-93 the Kenyans were forced to set up plants in Tanzania itself by the banning of whole (and later 'semi-processed') fish exports. Many would have probably shifted to Tanzania anyway to take advantage of low local costs and factories were also built by citizens. The cost of their investments was cheapened by the various investment incentives which were made available between 1990 and 1995 (tax holidays, remission of import duties and sales taxes on capital equipment, 100 per cent forex retention, automatic access to leases on land for intended investment sites), while their recurrent costs were cheapened by the de facto deregulation of Tanzanian labour laws brought about by growing state incapacity. On the other hand, these advantages were partly offset by the very high costs entailed by the appalling state of the local infrastructure.

By 1996 the international financial institutions were proclaiming Tanzanian market liberalisation a decisive success. However, they were also expressing strong concern about the failure of state revenue collection to keep pace with improved levels of economic growth. This proved to be one context for a substantial increase in royalties, levied on the factory exporters from April 1996 (there were other contexts too, see below). Combined with a steady but very strong appreciation in the price the factories were having to pay for fresh Nile Perch, and with a stabilisation of the international value of the Tanzanian shilling, this was to lead to some factory owners publicly wondering about the continued viability of their investments. However, the factory owners had still not accepted the relevance of the ostensibly more fundamental question, namely the length of time in which the Nile Perch might be expected to be still available for economic extraction at current rates.

4 Nile Perch and the National Economy

The discussion here will consider Nile Perch exports in various forms, as well as the internal trade in Nile Perch, from a quantitative standpoint. It will also make some very preliminary observations concerning the numbers of persons involved in the Nile Perch industry and about some elements of the local income generated by it. The preciseness of the figures appearing in the tables needs to be taken with a pinch of salt, as will become clear.

Official published figures on Tanzanian fish fillet export volumes and values could be traced only for 1993 and 1994 and are found in Table 1, along with official figures for 1992 given in van der Hoeven and Budeba (1993) and an 'officially-based' figure for ex-Mwanza export volumes and values from Mwanza derived from examining individual record of export declarations made at Mwanza Region Fisheries Office (RFO). To this should be added an estimate of exports from Musoma.

The export earning figures declared by exporters in each year are systematically understated and Table 1 includes a rectification of them for 1996. It may well be that several companies also systematically underdeclared their real export volumes. Two company managers both told me 'we are the only ones who don't do it'. On the other hand, because their export earnings underdeclarations were being taken at face value until 1996, there was no particularly strong incentive to underreport volumes also, and in the case of exports by rail the volume records of the Tanzania Railways Corporation more or less correspond to declarations made at the RFO. Even if currently reported, volume figures for 1995 are not a good guide even for 1996, since twofactories only started up in the course of the year and the largest underwent a major expansion of capacity.

Table 1

Nile Perch fillet exports 1992-96, Tanzania

	Volume (tons)	Value (USD)
1992	a 2850+	8.3 m
	b 7000	
1993	6123*	(6.1 m)
1994	8454	(8.6 m)
1995	9904+	(10.1 m)
1996	15, 000	49.5 m

Sources:

1992 a:Actual Tanzanian production

1992 b:Estimated export to Kenya (calculated as fillet equivalent on basis of fillet: wholefish ratio of 38 per cent), van der Hoeven and Budeba (1993)

1993-94:Wizara ya Utalii, Maliasili na Mazingira (annual reports)

1995:Booked exports for royalty payment purposes, Mwanza RFO

1996:Based on personal estimates of individual factory outputs, April 1996 and catch data (see below) applying a fillet: wholefish ratio of 38 per cent

1996 values:Based on estimated average export price of USD 3.3/kg

Key:

*Includes fillets other than Nile Perch

+Excludes production in Musoma

()Indicates systematic underdeclaration on price

When factory managers or owners were interviewed in March-April 1996 they were asked (inter alia) what their current production was, whether it exceeded levels of 1995 and what they thought the total current factory throughput was for the Tanzanian part of the Lake. Most were rather evasive about their own production level, a fact no doubt influenced by the dispute with the Tanzanian government over underdeclaration on price which had just broken out. On the other hand, all stated that their products exceeded the levels of 1995 and there was a surprising degree of agreement on estimates about total current throughput. On this basis, an estimate for fillet exports for 1996 has been generated.

Nile Perch is exported in several other main forms besides fillet, namely as *kayabo* or *sangara chumvi* (dried salted steaks), 'chips' (dried salted belly flaps? and fillet trimmings), and *mabondo* (maws or gas bladders). The *mabondo* trade is sufficiently different to be considered separately (see below). There is also an export trade in fins, tails and skeletons but this is not particularly significant.

Table 2

Exports of artisanally-processed Nile Perch, 1995, Tanzania

		Volume (tons)	Value (USD)
Kayabo (dry salted)	a	170	
	b	300	
	c	1793	1.79 m
'Chips'	a	75	
	b	370	0.13 m
Minimum totals		2163	1.92 m

Sources:

Kayabo volumes: a: Mwanza RFO; b: Kirumba mwalo market office, based on local estimates of unit weights of *tenga* at 700 kg and *pakacha* at 200 kg, and estimating sales for 1-15 January (missing in receipts books) as the same as for 11-31 January; c: Mwanza South railway freight office, Owners' Risk Goods Consignment Note counterfoils.

Kayabo values: based on average wholesale purchasing price in Mwanza of Tsh 550 (USD 1)/kg

Chips volumes: a: Mwanza RFO; b: Mwanza South railway freight office, as above.

Chips values: based on average purchasing price (processed) in Mwanza of Tsh 200 (0.36 USD)/kg

No official figures of any description have been published on any of these trades, although some quantitative information is available by sifting through a number of unpublished sources. These include individual records of export declarations by foreign traders made at Mwanza RFO, individual records of sales recorded as exports by market officials at Kirumba mwalo, and counterfoils of Owners' Risk Goods Consignment Notes prepared at Mwanza South Railway freight office for traders using the Mwanza-Kigoma goods service (during 1995 the main export route to Zaire).

None of the total export figures derived from these sources can be taken particularly seriously, both because of systematic underrecording to avoid market levy and royalty payments, and possibly also to reduce rail freight charges. Secondly, artisanally processed fish is never sold by weight, but rather by the piece, so weight figures recorded by market offices tend to be based on estimates of the volume of the containers (normally very large parcels (*pakacha*) or baskets (*tenga*)) which are used to shift fish from one place to another. A further complication is that such *pakacha* and *tenga* of different standard capacities are used in different parts of the country, meaning that where volumes are recorded in terms of numbers of containers rather than weights, consistent aggregation is difficult. Figures for export values of artisanally-processed *kayabo* and chips given here are based on prices paid by exporters in Mwanza itself and do not represent true f.o.b. values. Transport costs to the border with Zaire (the

destination for almost all of these exports) will be considered in a later section.

Table 3

Internal Tanzanian trade in Nile Perch, ex-Mwanza, 1995 (tons)

'Fresh'/frozen	a. 679 b. 860
sub total	1539
Dry salted	a.1018/ b.3000
Smoked	a. 740/ b.1500
'Punk'	a. 470
sub total	2228-4970

Sources:

1. Fresh frozen:a. ATC, Mwanza. Excludes export cargoes carried by ATC and all cargoes by other carriers; b.Eestimated on basis of passenger parcels counterfoils, January-April, Mwanza Town station
2. Dry salteda. Kirumba mwalo market office; see note 6 on Kayabo/Table 2; b. Own estimate
3. Smokeda. As per 2a above; b. own estimate
4. PunkBased on traders' estimates of 6 trips/week by 3.5 ton trucks during dry seasons (22 weeks) from all artisanal sites in Mwanza.

No official figures exist for the internal trade in Nile Perch either, although quantitative information of various kinds is again available from diverse sources. For the internal trade in frozen and so-called 'fresh' Nile Perch, which is conducted exclusively by air and by passenger train, information may be derived from counterfoils of individual weight bills for air freight held at the Air Tanzania office in Mwanza and counterfoils of Owners' Risk Goods Consignments Notes for passenger parcels loaded at Mwanza town railway station. As for the trade in dry salted and smoked Nile Perch is concerned, more or less the same reservations apply to the sources employed here as were elaborated a moment ago in relation to artisanally-produced exports. The basis for my own estimates concerning these

trades are stated later in the text.

After installation of a new director at the Mwanza RFO in 1995, a serious fisheries census was undertaken for the first time in living memory. By the time of my own stay in Mwanza, returns had been received from all the districts in Mwanza Region which bordered the lake except Geita. No similar census had been undertaken in Kagera or Musoma Regions although it is almost certain that the industry in Mwanza dwarfs that in neighbouring regions. Numbers of Mwanza-based fishermen specifically involved in the Nile Perch fishery has been estimated on the basis of other information in the census concerning the distribution of all enumerated gear between different fisheries. Estimates of numbers of other types of workers in the trade have been generated according to principles explained in the notes to Table 4 and justified elsewhere in the text.

Table 4

Estimated population directly involved in Nile Perch fishing industry in Mwanza region, 1995

1. Fishermen	a. all districts except Geita	11700
	b. Geita	1300
2. Processors and 'assistants'	a. Fishing grounds	3000
	b. Mwanza towns	300
3. Auxiliaries	a. Net menders/fundi	650
	b. Cooks	650
4. Collectors supplying factories	a. Factory + employees	300
	b. independents + employees	350
5. Traders	a. Kirumba	60
	b. Mwanza town	110
	c. Other areas	60
6. Shore-bound employees of the factories		1300
7. Trawler crews		75
8. Local transport (independents)		50

Sources:

1a. Calculated from Mwanza Region fisheries census and assuming the Nile Perch fishery represents two months of all fishery employment.

1b. Own estimate.

2a. Assuming 1 processor for 10 fishermen.

2b. Own estimate; majority at Nyegezi; large number working in own houses.

3 a,b. Assuming 1 cook and 1 net mender/fundi for every 20 fishermen.

4a. Based on 3 crew members for every factory collector boat (75 registered between February 1992 and March 1996) plus pick-up, truck and land-based agents.

4b. Based on 3 crew members for every non-factory collector boat (59 registered between February 1992 and March 1996; many other unregistered or registered under other users, possibly 75 in all); remainder bicycle traders in Ukerewe and Mwanza Gulf and a few pick-up traders. N.B., a large majority of 'independent' collector boats owners are factory sponsored.

5a. Own observation.

5b. Comprises c. 15 airfreight traders; 30 'punk' traders; 65 others.

5c. Own estimate. Most either serve the Geita minefields via Nkome or inland areas of Magu from Nyamikoma.

6. Own estimate.

7. Own estimate, based on 15 functioning trawlers prior to trawler ban.

8. Mainly trolli crews and pick-up truck drivers on Kirumba-Mwanza south and Nyegezi-Shinyanga and Nyegezi-Magu routes.

Table 5

Main local incomes from 'outsiders' in the Nile Perch industry, Mwanza, 1995 (M. Tsh)

a). Factory expenditure on whole fish	7818
b). Zairean trader expenditure on chips and kayabo	1056
c). Dar es Salaam and Moshi/Arusha trader expenditure on "fresh"/frozen fish	970
d). Purchases in Mwanza of salt dried fish by Tanzanian traders	1145

e). Purchases in Mwanza of smoked fish by Tanzanian traders	560
f). Non-Mwanza trader purchases of punk	145
g). Factory wages	273
Total	11967
	(= USD 21.75 m)

Sources:

a. based on wholefish equivalent of declared production of 9904 t, assuming fillet: wholefish ratio of 38 percent and assuming 1995 average buying price of Tsh 300/kg. (includes commission to collector).

b. local currency equivalent of values in Table 2.

c. based on price to Karickoo wholesalers of Tsh 0.63 m/ton excluding transport, and volumes given in Table 3.

d. based on wholesale price given in note on kayabo values, Table 3 and average of two volume figures given under 'dry salted a' in Table 3.

e. based on wholesale price of c. Tsh 500/kg and average of two volume figures given under 'smoked' in Table 3.

f. assuming average price of Tsh 315/kg at markets in Shinyanya and Magu and volumes stated in Table 3.

g. Assuming average wage of Tsh 17,500/month and employee numbers stated in Table 4.

N.B. Mabondo had been excluded because of difficulty apportioning overall returns.

Estimates of total income generated for the population of Mwanza region by the trade have been made by estimating total expenditure by 'outsiders' (mainly factory owners) on different kinds of fish. An effort has been made to avoid double counting but it may well be that some has still occurred. There is a probable overstatement of the item on factory expenditure on whole fish and understatement of the item on employment, for in 1995-96 several factories were turning from purchasing from more or less independent artisanal fishermen to developing their own fleets of fishing vessels.

Even on the basis of the very rough figures indicated here, it is clear that the macro-economic significance of the trade is very considerable, and grossly underestimated in official statistics covering exports and GDP. On the other hand it is probable that official statistics seriously understate levels of exports and GDP across the board, meaning that trying to calculate the Nile Perch fishery's share of either is a futile exercise. What can be said with some certainty is that huge amounts of money have been made in the trade

and that the factories have been its main beneficiaries, not least at the expense of state revenues. Equally certain, the trade also supports a broad swathe of the population of Mwanza region and very considerable sums have been recycled in the local economy - in 1995, probably around half of all export earnings.

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5 The Marketing Chain

Unlike in the case of prawn, there is today only one major marketing chain for Tanzania Nile Perch - although this chain is a tangled one, resembling a river system with different tributaries, collection points, outlets and short-cuts between them. This section concentrates on the structure of the chain in 1996, while the next will discuss the nature of the actors and addresses found at its various links, the social relations between them and the strategies which they have employed in order to establish, maintain and improve their position. The simplest way to describe the chain's structure is to take the process of fishing as a starting point and to work downstream.

5.1 Production Functions

Until 31 December 1995, when trawlers were banned from the Tanzanian (and apparently the Ugandan and Kenyan) waters of Lake Victoria there was both semi-industrial and 'artisanal' fishing for Nile Perch. At this time there were about 20 trawlers licensed to operate in the Tanzanian part of the Lake, of which 17 were based in Mwanza. All were extremely small, between 9 and perhaps 18 metres and with engines of only 65-175 BHP. None had on-board processing or freezing/chilling equipment and only a few had fish-finding equipment. The largest had a crew of 4 and 2 officers. They were mostly using four inch trawl nets.

The vessels had a mixed history. Trawling on the Tanzanian part of the Lake dated from the early 1970s when the Dutch built a plant to mill the then still plentiful *furū* for the local animal feed industry and three vessels (in 1996 still the largest) were imported to supply the plant and became the property of the parastatal TAFICO. Three others originated from overseas assistance programmers to government-owned local fishing institutions dating back long before the Nile Perch boom. Seven were vessels originally registered in Kenya, which followed the factory owners south along the lake shore in the early 1990s, while the remaining were locally-built and privately owned in one case by a factory. Some of the latter were designed for *furū* trawling and a few since the late 1980s for Nile Perch. Unlike with the marine trawler fleet, there was no special central registration and licensing system for the vessels, except that their existence had to be notified to the Mwanza RFO as well as to a District Fisheries Office (DFO). Prior to the ban the only regulations applied were that trawling was restricted to waters of 20 m or more and to daylight hours.

The ban had been announced in an amendment to the Fisheries Regulations made as early as October 1994. This amendment appears to have been a trade-off for the 'adoption' of fisheries institutions around the lake by the United Nations Environmental Programme, but the exact mechanisms of this process are not known. Nor is the precise reasoning behind the ban, although in a

general sense it obviously stemmed from concerns about overfishing. Actually, the nature of the trawling possible before the ban was restricted not merely by the regulations but also by the nature of the vessels involved and the local infrastructure, and this made its actual contribution to any generalised overfishing doubtful. Without space for processing, cold rooms or crew accommodation, the range of the trawlers was limited to a tour of a day; the state of the roads further meant that their anchorage could not be much more than 100 km from the factories. As a result, the main trawler grounds were in the Speke Gulf in the lake's south eastern corner, about half an hour's sailing time from the anchorage of Nyamikoma, Magu district (about two hours by road from Mwanza and a little more to Musoma). When operating, the trawlers all delivered direct to factory jetties. Functioning factories directly owned four of them. The operators of the others (which included a factory under construction) mostly had semi-formal contracts with specific factories; only one 'sold to anybody'.

The trawler ban was not strongly opposed by the factories as a whole, although it was clearly an inconvenience to them. The lack of opposition was probably related to the relatively low share of trawler catches in their total throughput, and possibly to the expense of running them. Average daily catches were mostly in the range 1 - 1.3 t/day/vessel in 1995, or equivalent to 7300-9500 tons/year for the whole trawler fleet.

Government owned 'research' vessels, of which there were three operating out of Mwanza, were exempted from the ban and as they had done before it was introduced - continued to supply the factories. At the end of February 1996 the vessels owned by the parastatal TAFICO were also exempted and one private operator told me that he also anticipated an exemption shortly. This issue will be returned to later.

There was one more or less unique by-product of the trawler fishery. The four inch trawler nets which were being used tended to clog after about 500 kg or so had been caught and the subsequent catch was indiscriminate, with a high by-catch content. The commonest saleable by-catch was juvenile Nile Perch, of around 8 cm, locally called *jowa*. Around the trawlers' main anchorage a localised trade in *jowa* developed prior to the trawler ban. The presence of larger trawler catches of *jowa* also provided cover for it to be traded by the owners of illegal small-mesh beach seines operating in the same area. *Jowa* was 'barbecued' on the beaches by the trawler crews and net operators by being laid between layers of grass which were then set on fire. Bicycle traders buying 40-80 kg were the main customers; for the most part they were carrying the *jowa* to internal markets in Magu where it was resold in small quantities.

The remainder of the adult Nile Perch catch was accounted for by the 'artisanal' fishing fleet. The size of this fleet is unclear. According to the Mwanza Region fisheries census in 1995 there were a total of around 4000 registered and unregistered fishing vessels active in the region, excluding Geita district, where there were possibly another 500-1000. Assuming vessels to be distributed in roughly the same proportions as those assumed for fishermen, this implied perhaps 3000 craft involved in the Nile Perch fishery in Mwanza region and perhaps 3500 on the Tanzanian part of the lake generally.

A supplementary source of information about the Nile Perch artisanal fishing fleet in Mwanza is provided by the boat registers of the Mwanza DFO, which could be inspected as far back as the beginning of 1992 commonly said to be the starting point of the local boom. Perhaps because Mwanza is the town with a DFO most frequently visited by vessel owners, and/or perhaps because many owners living in other district of Mwanza region are not particularly anxious for the extent of their ownership to become local public knowledge, a disproportionate number of vessels in Mwanza Region are registered here. Between the beginning of 1992 and the end

of 1995 there were 1450 vessels registered at Mwanza DFO whose primary purpose was clearly fishing or collection, or more than half of all the vessels which in the census are recorded as registered ones. 790 of these 1450 were vessels equipped with gillnets, and a further 103 were vessels equipped with other types of gear specific to the Nile Perch fishery. A further 129 were collection vessels. Assuming that there was one unregistered vessel entering the fishery for every two registered ones (the proportions pertaining to all fishing vessels in Mwanza region, according to the census), at least 1500 vessels had entered the fishery in the previous four years. The peak year of recorded entry was 1995, when no fewer than 285 vessels carrying gill nets, 25 others with Nile Perch-specific gear and 61 collector boats were registered. 8.6 per cent of vessels carrying gillnets which registered after 1992 were motor powered; in 1992 the proportion of all lake fishing vessels with outboard motors in Wilson's survey had been only two per cent (Wilson, 1993). Almost all the collector boats were powered.

From the outset gillnetting has been by far the commonest fishing method for Nile Perch. In 1987, when Reynolds and Greboval (ibid.) visited the Tanzanian part of the Lake, most fishing operations consisted of a single paddle-powered planked canoe carrying between 10 and 30 (occasionally up to 50) six inch nets of about 90 m unhung (c 40 m hung), operated by a crew of two or three. Vessels carrying smaller numbers of nets and crew tended to be dugouts, those carrying larger numbers were all constructed from plank. Since manufactured nets were still largely unavailable at this time, gear tended to be made from unravelling polythene sacking or unravelling tyre thread. Nets were set in a chain in late evening, then returned to and hauled early the next morning. Catches were so high that no particular strategy was followed to increase them. At this time, fishing effort was mainly confined to the 15-21 darker nights during the lunar month.

When Ward et al.(1994a) conducted fieldwork in Ukerewe in 1994 the typical net size had fallen to five inches and most vessels observed at the landings were now plank boats carrying 40-70 factory-produced nets. A significant element of the fishery was no longer based in the closest onshore areas and sail power was now frequently employed. Crews had begun to stay on the lake overnight with their nets. A concentration in ownership was observed but Ward et al.did not comment on how operations were coordinated between groups of vessels owned by the same *tajiri*.

By 1996 mesh sizes of the same magnitude were still being used but further changes could be observed in most other aspects of gillnetting. It was clear that a strong differentiation had taken place in the fishery and that there had been both an extensification and an acceleration of the intensification of operations as they were observed by Ward et al.(1994a). There were still some hundreds small-scale operations in the fishery, with single dugout canoes (*mitumbwi*) and perhaps 10-20 nets. It is not clear however if these were operated by the same people referred to by Reynolds and Greboval. More likely, a large proportion of them were probably capital-poor new entrants 'encouraged' by the example of the growth of larger-scale operations. By now a clear majority of operations consisted of one or more planked canoes. These operations were differentiated according to how many plank boats were operated and how many nets each carried. A middle sized operation consisted of three or four vessels, a large one anything more than this number. Most seemed to be now carrying upwards of 60 nets, invariably hung double in order to entrap Nile Perch swimming at lower depths. A significant number of vessels, particularly those in the larger fleets, were carrying more than 80 nets and many were carrying more than 140. Double hanging was said to have been introduced in 1994. By 1996 some vessels had adopted triple or even quadruple hanging. Increases in numbers of nets used meant that bigger crews and larger vessels were necessary. Most of the newer planked canoes which had entered the fishery since 1994 were upwards of 8 m long and had crews of four men. The largest were up to 10 m long.

Where multiple vessel ownership existed, sail power had been increasingly supplemented by the use of outboard engines. Boats equipped with the latter were used less for fishing itself and more for towing canoes to the fishing grounds and for patrolling to prevent theft of nets and fish. Net theft is reported by Bituro (1974) to have already been rife in the Tilapia fishery in the early 1970s, but had reached very serious proportions by 1996. One reason for this was clearly increased opportunities, for nets were being left overnight every night of the year, as well as in some cases for considerable periods of daylight.

Declining unit catches and larger fleets of vessels had stimulated the use of more systematic and less intuitive fishing strategies. Fleets entering a new area would typically start a fishing cycle by stationing sets of nets at a considerable distance from each other. According to where concentrations of catches were detected at particular points in this 'picket', the fleet of nets would be redeployed according to calculations about patterns of fish movement. Depending on the net fleet size, net chains of a dozen kilometres or more had become common.

Next to gillnetting, the most common fishing method followed in 1996 was beach seining. According to the 1995 Mwanza Region's Fisheries Census there were 324 Nile Perch seines operating in the region, not including Gieta the district which probably had the highest concentration. Seines were banned at the same time as trawlers, but unlike in the latter case, attempts to enforce this ban were comprehensively and publicly abandoned almost immediately (see below); by the time of my fieldwork beach seine owners made no effort to hide them or stay silent about them even during visits by Fisheries Department staff.

Unlike gillnetting, beach seining for Nile Perch was mainly carried out between 2 pm and 11 pm. Most seines I observed were 300-400 m in length with meshes of about an inch and a half at the cod end. They were shifted from beach to beach on a daily or 3-4 times weekly basis and set in the water using one or two canoes. All were setting and hauling more than one a day and some smaller ones were doing so four or five times. The smallest hauling crew I saw was eight men, the largest upwards of 30.

It seems that, locally, the third most common method of fishing for Nile Perch, long lining, was becoming more popular at the expense of gillnetting. According to its practitioners this was mainly as a response to the prevalence of gillnet thefts, but more obvious reasons were that long lines had far lower capital costs and were highly productive. Long lines whose operations I observed were typically around 4-6 km in length, with up to 2000 hooks baited with live *furu* and set up at 2-3 m intervals along the line. The lines were typically set in a stationary position and left overnight, although it was quite common for a second setting of them to have been introduced, particularly in the middle of the long rains, 'when fish tend to die in the water'. Setting and hauling was by paddle or sail-powered canoes with crews of three. I also heard of long lines being trolled from moving vessels, but never observed it.

The practitioners of every single method complained of declining unit catches, despite the substantial intensification of production methods and the greater mobility of much of the fleet, whose effective range where camps were being used had now increased to perhaps 12-15 km from the mainland shore. Hard evidence about catch levels in earlier periods is hard to come by; only Ward et al. (1994a) seem to have collected any systematic daily catch data and this was limited to *mwalo* in Ukerewe. The catches thus reported were 240-300 kg/vessel/day during the rainy season and 57-90 kg/vessel/day during the dry season, from vessels with between 40 and 70 nets.

I personally interviewed around 25 vessel owners at the end of the inter-rain dry season and the first week of the main raining season in 1996, concerning catches from vessels using between 40 nets at one end of the scale and 200 at the other. These were getting daily catches varying between 10 kg and 250 kg/vessel. Most interviewees' catch levels fell into one of four categories of roughly equal size, corresponding to around 10-20 kg/vessel, 20-40 kg/vessel, 50-60 kg/vessel and 80-100 kg/vessel respectively. Perhaps an overall average was 40 kg/vessel/day. Those catching over 50 kg/vessel/day all had 80 nets or more. The interviews were divided evenly between Ukerewe and Geita/Sengerema. Although the sample is extremely limited, the data does seem to point to a clear downward trend.

Three beach seines owners were interviewed in Geita/Sengerema at the beginning of the main rainy season. Their seines were fairly constantly returning catches of around 200 kg/haul. Long line boat owners I interviewed were getting catches in a range of 80-200 kg/vessel/day, at the end of the inter-rains dry season and using one setting a day. No comparable data is available from earlier periods for the last two of these fishing methods. [Making the conservative assumption that of the c 3500 vessels engaged in the Tanzanian Nile Perch gillnet fishery in 1996, 2500 (including a total factory fleet of perhaps 300) were plank boats with catches of 40 kg/day over a year of 330 fishery days and 1000 were dugouts with catches of 5 kg/day over a year of 250 fishing days, the total gillnet catch would have been about 34,250 tons/year. Assuming the operation of 300 beach seines with average catches of 100 kg operating 350 days/year and 200 planked long line boats with catches averaging 60 kg/day operating 330 days/year, the total artisanal non - gillnet catch would have been around another 14,500 tons. Assuming the continued operation of the publicly - owned 6 trawlers with an average catch of 1.15 ton/day, operating 350 days/year, the total trawler catch would have been 2600 ton/year. This gives a total outtake of about 51,350 tons/year, slightly less than the estimates currently used by the Fisheries Department (but whose basis I never discovered). The factories accounted for a minimum of 80 per cent of this outtake (the majority of the remainder representing fish the factories declined to purchase).]

5.2 Trading Functions

Most people I spoke to in the fishery thought that a majority of boats were tied to the factories in terms of supply of gear and counter-supply of catch. My own feeling was that this perception probably rested on a slight confusion. The great majority of fishermen predominantly supplied the factories, one way or another, but the factories tended to offer significant sponsorship only to fishermen who were 'established', i.e., who already had at least one vessel and who could use the sponsorship for acquiring the gear for a second. By the same token, almost every *tajiri* I encountered who owned more than one gillnetting vessel had received some nets from a factory.

Sponsorship normally took the form of providing partial sets of nets, and occasionally (to those already owning a few vessels) engines. Nets seemed to be most commonly (though not only) distributed in units of about 10-50/vessel, the latter amount equivalent in value to Tsh 1 m (USD 1800). Systems and strategies for distributing them will be examined later. 15 HP engines cost around the same amount, 25 HP ones half as much again. These were distributed to an elite of *matajiri* with already proven records of fish supply, either to enable them to expand their direct fishing capacity, or for towing fishing vessels (for which the larger size engines were required), or for collecting fish from other fishermen, or for all three. In the cases of both nets and engines *matajiri* were expected to repay in delivered fish; the usual system was for 50-60 per cent of the latter's purchase price to be withheld by the factory as repayment of the principal, although there were also instances of contracts with fixed-sum repayments (also denominated in fish).

Formerly at least no interest was levied, despite an annual inflation rate of 30-40 per cent.

Table 6

Distribution of ownership of vessels in the Nile Perch fishery (excluding trawlers and collection vessels) registered January 1992 - March 1996

a) Including factory fleets										
Nos. of boats owned	1	2	3	4	5	6-10	11-20	21-50	51-99	100+
% total owners	82.2	12.9	2.1	1.5	0.2	0.5	0.2	0.2	0.2	0.2
% total vessels	51.2	16.1	3.9	3.6	0.5	2.2	1.4	4.1	5.3	11.4
N owners = 618N vessels = 992										
b) Excluding factory fleets over 6 vessels										
Nos of boats owned	1	2	3	4	5	6-10	11-20	21-50		
% of total owners	82.5	13.0	2.1	1.5	0.2	0.5	0.2	0.2		
% of total vessels	61.5	19.4	4.7	4.4	0.6	2.7	1.7	5.1		
N owners = 616N vessels = 826										

Source:

Data base derived from Mwanza DFO boat register

Table 7

Nile Perch vessel owners registering vessels involved in other activities on Lake Victoria (excludes factories), January 1992 - March 1996

Other activity	No. of owners	No. of vessels in fleet

Dagaa fishing	21	51
Transport, collection, passengers	23	94
Dagaa fishing plus transport, collection etc.	4	16

Source:

Data base derived from Mwanza DFO boat register.

In all cases loans were made in kind rather than cash, although presumably a *tajiri* could have sold his gear or engine in cash if he had been so inclined. I never encountered a case of capital being advanced for the purchase of a boat, on the other hand. New planked fishing boats varied in cost between Tsh 0.15 and 0.3 m (USD 270-550) depending on size and the wood used; I was unable to establish a reliable price for a *dugont*. I also encountered no cases of factories sponsoring either beach seine operators (whose capital investment for a 400 m seine was in the range of Tsh 1 m (USD 1800) or long liners (cost of a 2000 hook line about Tsh 50,000 (USD 90). It was unclear to me why this type of investment was not undertaken, either by the factories or by independent collectors.

As Tables 1-3 above indicate, there were only two significant buyers of fresh fish: the factories and their agents, and individuals sending frozen or chilled fish by air or train to Dar es Salaam. Supply shares of fish destined for freezing were 95 per cent or more in favour of the factories. Besides being supplied by trawlers, the factories in 1996 were obtaining fish from their own 'artisanal' fishing fleets, secondly from tied and untied vessel-owners either direct to their jetty or via a system of tied collectors and collectors' agents (some of whom were also tied fishermen), and thirdly by independent collectors. Each of the different factories pursued a different strategy with respect to their specific combination of these methods. In particular there was considerable variation in investment in 'own' fishing operations and in the nature and status of collectors whom the factories engaged.

After the trawler ban, while no factory procured anywhere near a majority of its catch from its in-house 'artisanal' fishing effort, four were supporting in-house fleets of various sizes and compositions. The largest comprised 113 registered vessels, almost all constructed in the factory's own boatyard, while another had 53 registered vessels distributed between three camps in Ukwere, Geita and Muleba.

The bulk of all the factories' output came from their collection systems. In most cases these were radically decentralised, although each of the factory's had a chief agent (*karani*, pl. *makarani*) based at the factory jetty who was responsible for lake-based intelligence, strategic coordination (including making recommendations about price), distribution of working capital and buying from small independent collectors operating close to the factory itself. Decentralisation was usually to a number (5-15) of field agents, distributed between the different fishing grounds and operating from stations equipped with large collector boats and ice. These were responsible for the selection and location of sub-agents, allocation to them of working capital and transport (including smaller collector boats), making decisions about whom of the local *matajiri* should receive loans (and if so, to what amounts), buying from small local independent collectors and bulking and dispatching loads to the factory jetty or gate. The sub-agents were responsible for most 'front line' collection, both from own tied vessel owners and from anyone else they could buy from. They might deal regularly with 20 vessel-

owners, implying loads of perhaps 0.5-0.6 ton/day and receipt of daily advances of Tsh 0.2 m (USD 363). Field agents would normally be in charge of 3-5 sub-agents.

Such operators were sustained by infrastructures of more or less extensive collector boat fleets, ranging between a handful of vessels and almost 30, as well as smaller fleets of pick-ups and trucks. The only factories with collection fleets of less than five vessels were collecting primarily from Speke Gulf area by road (the only fishing ground served by a tarmac road from Mwanza). Collector boats generally varied in size between 10 and 15 m, with fishholds of 1.5 to 10 tons, and had engines up to 48 BHP. In most cases they remained the property of the factory.

All agents and sub-agents worked off capital advanced by the factory and received instructions about maximum price. Systems for remunerating them were many and varied and ranged from implied commissions (the sub-agent being paid by simply keeping the difference between the instructed price and whatever he had to pay to get the fish) to actual commissions, to mixtures of wages, commissions and bonuses. Actual commissions seemed to be the commonest system.

Private individuals with large fleets of their own, most of them had been sponsored by at least one factory in the acquisition of nets and/or engines, tended to be dealt with separately from smaller sponsored and untied *matajiri*. They might have longer-term and more favourable price contracts and/or double as semi-independent collectors responsible for a specific area around their *kambi*. The largest factory in Mwanza made a point of sponsoring larger *matajiri* to become independent collectors, by allowing them to buy back not only the gear and engines advanced them, but collector boats themselves. Sponsoring collection by *matajiri* rather than through specialized agents was indeed the main collection strategy of this factory. Larger *matajiri* would normally deal directly with field agents, or in the case of the largest, with factory *makarani*.

In Mwanza region there was only one large-scale independent collector who was not a *tajiri*. This was a former trawler-owner and air freighter. He was renting two large collection boats and buying 6-7 tons/week from his own network of *matajiri* and small collectors around the Lake. He had delivery contracts, one written and one verbal, with two different factories. This was also the case with some of the large *matajiri*-collectors, although it was probably more common for them to engage in serial than multiple contracting.

The much smaller independent collectors referred to were mostly bicycle and *karua* (small planked passenger/cargo vessel) traders. It was widely agreed that their number was dwindling rapidly and that they were found in particular niches rather than in competition with more organised elements. The most important such niche was Mwanza Gulf itself, close enough to factories to allow easy and cheap delivery but no longer with enough fish to justify concentrated investment in production. Here several motorized small *karua* traders, a number of bicycle traders (including one combined operation of four traders with three cycles) and a couple of independent pick up traders operated out of *mwalo* like Nyegezi and Kikongo. Another niche was *mwalo* where the dominant fishing methods were non-sponsored ones like beach seining and long lining. Such *mwalo* included Mchangane, near Nkome (Geita) and bays and inlets along the northern shore of Speke Gulf. Independent collectors around Mwanza and Speke Gulf tended to deliver directly to the factories and to factory field agents based in Nansio town respectively; those operating in Mchangane took the fresh fish direct to the mining areas nearest to Geita. Finally there was still a handful of traders buying fresh fish at Kirumba and reselling it to the factories. The amounts in question were not large; I was unable to establish from whom it was being obtained.

With the exception of a couple of the air freighters (see below), nobody except the factories themselves were in a position to undertake significant sponsorship of the fishing fleet. Independent collectors and the lowest rang of factory collectors nevertheless often did offer sponsorship of a kind to *matajiri* not contracted to the factories via the supply of nets and engines. This took the form of providing small cash advances or advances in kind of consumption goods. Such advances in fact seemed to be extremely widespread.

As indicated, the trade with Dar es Salaam in frozen Nile Perch was longer established than the export trade. Reynolds and Greboval (1989: 59) report that in 1987 'air freighters' were buying fish gutted and cleaned at Mwanza Soko la Kati (central market) and having it frozen (or, more probably, chilled [Recommended deep freezing temperature for fish is - 30 ° C or below. If properly packaged and handled, such fish will not visibly deteriorate for a few days after leaving the freezer. Chilling involves reducing the fish's temperature to only 0 ° C and involves less expensive plant (e.g. home freezers (in reality, home cold stores)) and the consumption of less energy. If a fish is to be transported by air and arrives at its destination within a few hours, chilling should be sufficient to prevent its visible deterioration. Mwanza air and rail freighters also used the category 'soft frozen' to designate something between chilling and 'hard freezing' .]) at the National Cold Chain Organisation (NCCO) plant before sending it to the capital. Actually, probably the largest single 'air freighter' of this time (and for a considerable period after) was a partnership of three local businessmen who were obtaining fish from three wooden trawlers which they owned. Somewhere along the line this group seems to have acquired a lease on the NCCO's freezing plant, which they sublet to other air freighters on a contract basis when not using it themselves. The partners had their own outlets in Dar es Salaam, at the old NCCO plant there and in the fresh fish section of Kariakoo market.

By the time of a study by Ward et al. (1994b), the partners seem to have dropped out of the trade except as letters of freezing and chilling space. The bulk of the air freighted trade now comprised fish bought at the Igombe mwalo half an hour by vehicle from the airport. The trade was now monopolised by individuals connected to Air Tanzania Corporation (ATC)'s Mwanza operation, supplying a small number of regular customers in Dar es Salaam. According to Ward et al. (1994b) the main outlet was more formal butcher-cum-fish shops around the city; they put the trade's size at somewhere between 400 and 600 tons/year.

In 1995 officially recorded freight cargoes of frozen/chilled wholefish to Dar es Salaam amounted to 520 tons, averaging 1.6 t/ consignment. A further 155 tons, in slightly larger average size consignments, was sent from Mwanza to Kilimajaro International Airport (KIA), midway between Arusha and Moshi towns. Some fish was probably still bought at Igombe mwalo. Air freighters were important customers for many *matajiri* here and one I interviewed had been tied to an air freighter by the supply of an engine. Others had been promised engines and it was said that sometimes 15 tons/day was being delivered to this individual. Other air freighters were obtaining catches at the islands simply by offering significantly above the market price. It was not completely clear where the fish sent by this route was now being frozen/chilled/stored. The old NCCO plant, which was taken over by the fisheries parastatal TAFICO in 1991, was still the main source of rented blast freezer space in Mwanza and in 1995 worked at full capacity (2 tons/day). [TAFICO was charging Tsh 40/kg for freezing.] However, it was clear that most of its customers were not air but 'rail freighters', since sending fish by rail to Dar es Salaam involved a journey of at least two and a half days and therefore required something resembling 'hard' freezing. [Actually the TAFICO blast freezer could not get down to more than - 20 ° C, with obvious implications for the quality of the fish frozen there.] Both freezing and chilling space was said to be also available for rent at the Mwanza Refrigeration Company, which must have had a capacity of something like 800-900 tons/year for all the small-scale freezing and chilling trade to have been covered, and which must have been used by the air freighters.

At the ATC office in Mwanza I was allowed to examine all the counterfoils for air cargo between Mwanza and Dar es Salaam issued in 1995 (total figures and average consignment sizes were derived from this source). The names of the senders and receivers of all frozen wholefish consignments between 1st February and 30 June were recorded and analysed. The 121 consignments between Mwanza and Dar es Salaam involved only 14 senders and 13 receivers; the top five senders jointly accounted for 81 of them and the top five receivers for 93. The 37 consignments between Mwanza and Kilimanjaro involved only three senders and two receivers. ATC staff confirmed that all the senders still worked for the airline or the airport authority. The characteristic second-hand cardboard cartons, held together with string and spilling sawdust, used to transport Nile Perch from Mwanza by both air and rail, [These parcels, each around 150 kg, are known as bayi .] could also be observed being loaded onto flights of carriers other than ATC (e.g. Air Afrique) bound for Dar es Salaam. It was not clear whether these were processed at the ATC office or not.

The estimate of a rail traffic of 800-900 tons of frozen Nile Perch from Mwanza is based on an analysis of counterfoils of Owner's Risk Consignment Notes issued for parcel luggage carried on passenger trains from Mwanza town railway station from January to April 1995, when a total of 213 tons of frozen fish was carried. These were mostly in the form of slightly smaller consignments than the air freighted Nile Perch. 80 per cent by weight was destined for Dar es Salaam, the remainder for various points along the Central Line up to and including Dodoma - but mostly for stations close to the gold fields around Kahama (Shinyanga). Common sense suggests that a large number of the parcels were sent by staff of the Tanzania Railways Corporation (TRC). Because of the admitted or suspected involvement of ATC and TRC staff in these trades, it is probable that the volumes carried have in both cases been understated.

Ward et al.'s (1994b) study reported the control of the Dar es Salaam market for airfreighted Nile Perch by five leading 'receivers', just as my own analysis of weigh bills showed. Ward et al. went on to trace the activities in Dar es Salaam of these receivers. The largest owned three butchers' shops as well as some home-based cold storage equipment and a pick-up. He rented cold storage at the airport and distributed the fish to his own outlets and to the places where the other leading receivers stored their fish. Some of these also owned butchers' shops. The receivers traded most of the fish they obtained on a wholesale basis however. Ward et al. (1994b) state that a total of 15 butchers' shops around the capital were supplied in this way, as well as some large-scale frying operations in Kariakoo itself, who bought fish the wholesalers considered too 'stale' to sell on.

My own fieldwork turned up a different, though also very small, group of receivers controlling most of the Dar es Salaam market for rail-freighted 'frozen' Nile Perch. Five of them were based in the so-called fresh fish section on the ground floor of Kariakoo market hall. One whom I interviewed had a mixture of owned and rented domestic freezers with a total capacity of around 1.3 tons and employed a supervisor (a qualified butcher) and two assistants. She was turning over around 3.5 t/week which was ordered by phone from a regular supplier and collected at Dar es Salaam railway station with a hired pick up or, for small consignments, a taxi. She was selling most of the fish as 'fresh', after allowing it to thaw. Until 1994 her biggest customers were locally-based Zaireans who took the fish downstairs to the Kariakoo blast freezer where they paid for it to be re-frozen (!) before being dispatched to an unknown destination. These days she was selling mainly to 'suburban fishmongers' in weights of 30-50 kg. Private individuals were also buying in Kariakoo, in quantities of 0.5 to 5 kg.

5.3 Factory Processing and Export Functions

The factories operating in Mwanza in April 1996 were with one exception located along the lake shore, either close to Mwanza South docks and railway yard or off the road to the airport north of the town, at Ilemera. Only two of the seven operating were purpose built; the remainder occupied old godowns or textile plants, although most either had or were building new extensions. Plant mostly comprised plate and blast freezers, cold storage, ice-making equipment and generators. One plant, which dealt only in chilled fillet, had only cold rooms. Total rated freezing capacity was perhaps 120-150 tons per 24-hour period, giving an overall capacity utilisation rate of less than one-third.

However there was considerable variation both in capacity and in utilisation. One plant had a capacity of over 40 t/day and was working at over 60 per cent capacity; in the second rank came three plants with capacities in the range of 20-25 t/day, which were each working at less than half capacity. One of the smaller plants was also working at more than 60 per cent. The lower capacity utilisation ratio appeared to be mainly an effect of choices about length of the working day rather than shortage of inputs (most of the factories had taken deliberate decisions to work only one shift). All the factories produced ice, but no calculation was made of total production. Ice seemed to be used only by the larger factory collection operations and was not really distributed through the chain.

The plants had virtually identical labour processes, beginning with unloading and proceeding to selection, washing with chemicals, skinning, gutting, filleting and removal of *mabondo*, cleaning the fillet with a chemical wash, trimming, washing for a third time, packing and then freezing or chilling prior to storage and export. Employment inside the plants varied between 80 and perhaps 400.

After completing export documentation and customs clearance (organised through Mwanza RFO) the factories were exporting to northern hemisphere countries and Australia, by four different routes. Each of the four Kenyan-owned factories was ferrying its fish in refrigerated containers by road to Mombasa, where it was loaded onto container vessels. The two Tanzanian-owned plants were ferrying their fish in refrigerated containers on flatbed rail wagons from Mwanza South to Dar es Salaam port. One of the Kenyan-owned plants was also sending chilled fish by air (ATC) to DSM for airfreight export to Europe. [This trade was not counted in the figures given earlier for the domestic airborne trade between Mwanza and Dar es Salaam.] The remaining plant, owned by a European expatriate, had been sending chilled fish by the same method but using a different carrier (a private Zairean-owned airline). When the latter company ceased operating it was unable to get space on ATC and began sending by road to Dar es Salaam airport, but using the tarmac road via Musoma, Kisumu, Nairobi and Arusha rather than the direct unpaved route.

By the time the factories opened in Tanzania, an international market for Nile Perch had already been established. Operators of the Tanzanian plants told me that from 1992, 'the market made itself. Enquiries came to us rather than the other way round'. Particularly decisive was a temporary shortage of Atlantic Cod in 1995, which pushed the international average price of frozen Nile Perch fillet almost to USD 4/kg, f.o.b. Subsequently it fell to around USD 3.3/kg by April 1996 (chilled Nile Perch averaged nearer USD 4.2/kg). On the other hand these average prices concealed sharp variations between markets in different parts of the world and for different types of customer. This point will be returned to.

Table 8

Distribution of recorded Nile Perch fillet exports by destination, Kenya 1987 and Tanzania 1995

	1987 (Kenya)	1995 (Tanzania)*	
	%	weight(tons)	%
Israel	55	300	3
Spain	23	60	0.1
Holland	8	2650	26.8
Gibraltar		2500	25.2
U.K.		1750	17.7
Ireland		640	6.5
Greece		530	5.4
HongKong		330	3.3

Sources:

1987, Kenya: Reynolds and Greboval (1989:18); 1995, Tanzania: booked exports for royalty-payment purposes, Mwanza RFO (* excluding Musoma).

Table 8 shows Nile Perch's apparent conquest of increasingly mainstream markets in the years between 1987 and 1995. One contributing factor to the demise of Israel as the main destination was that Israeli vessels ceased calling at Dar es Salaam. A considerable proportion of the Nile Perch arriving at the three currently dominant destinations - most obviously Gibraltar - probably ended up being reexported, so no very firm conclusions can be drawn. The exports bound for Gibraltar were accounted for by a single factory, which only began producing in bulk in the last five months of 1995.

Exact information on total investment by the factories was hard to come by, except in the cases of three purpose-built plants currently under construction. Excluding fish collection and transport investment operations, start-up investment in these three plants ranged between USD 0.6 and 3.5 m. The largest of existing plants, which had just been considerably expanded, was the only one to remotely approach the upper end of the scale. This plant was said to have had new machinery installed from the outset. In the remaining, smaller plants, there tended to be a mixture of reconditioned as well as new machinery. Some of the Kenyan-owned plants had developed their Tanzanian operations while reequipping at home, transferring their old machinery to the Tanzanian branches in the process. Other plants had started with reconditioned machinery, but as their profitability had been demonstrated, had invested in new machinery. Total investments in the existing plants varied between perhaps USD 0.2 m and USD 2.5 m with the majority falling in the upper part of the range.

Besides plant, the factories had to invest in fish procurement and transport, local and long-distance. Investment in fish procurement included investments both in fishing vessels and gear and in collection; if investment in self-built sail-powered fishing vessels with gear was around USD 3000/unit and if investment in self-built 25 BHP outboard-motor powered collection boats was around USD 4000/

unit, then the factories had each invested up to around USD 0.15 m in their current in-house collection fleets and USD 0.45 m in their current in-house fishing ones.

On the other hand, engines had only a limited life on the lake, particularly in the hands of collectors. One factory, which had a collection fleet of around ten vessels and an in-house fishing fleet which included about 20 powered boats, and which had sponsored about 40-50 artisanal fishermen (not all with engines, but some with more than one) since opening in 1992, had been obliged to import around 150 engines in all since this time at a total cost of around USD 0.45 m. Cumulative investment in these fish procurement methods may therefore have been around 50 per cent higher than the figures given above.

Investment in gear and engines for resale to artisanal fishermen on hire purchase cannot really be considered as direct investment by the factories. Rather, where the loans were repaid, they were direct investments by their ultimate purchasers and a long-term element of working capital as far as the factories are concerned. Default on loans made by specific factories ranged between zero and 30 per cent (these figures could be generalised to working capital generally, for default rates by agents buying on working capital advanced by the factories was broadly similar).

Assuming on the basis of Table 6 that almost a quarter of the artisanal plant boat fleet targeting Nile Perch were part of private fleets with two or more vessels, and that the total plank boat fleet was around 2500, then over 600 vessels were part of medium or large-scale fleets. Assuming all of these to have been sponsored (on the principle that they were all probably added to the fleet by fisherman 'established' prior to 1992), that they were sponsored to an average of 30 nets/vessel and that 10 per cent (65) were also sponsored with engines, then the long-term working capital injected by the factories into the lake was probably in the region of a further USD 0.9 m. The lowest long-term working capital investment of this kind by a factory was worth around USD 40,000; the highest perhaps ten times this amount (i.e. being well over 200 vessels). These sums need to be discounted somewhat in order to take account of various remissions on import duties and taxes enjoyed by the factories, however.

Some factories had invested in road-based collection, although most of these tended not to be the same ones as had made heavy investment in fishing and water-based collection. Road collection 'fleets' averaged about four vehicles, generally pick-ups or three ton trucks with total values of perhaps USD 60-70,000. Because of the appalling state of roads in the area, the life of these vehicles was not long and most factories had to replace about a quarter of their fleet every 18 months. The factories using road transport to the ports also had their own long-distance transport fleets, comprising articulated flatbed units for carrying refrigerated containers. In some instances the factories owned the refrigerated containers too, in others they were rented from the shipping companies. An articulated flatbed unit capable of taking a 20 ton container cost perhaps USD 50,000 new; some factories had five or six.

The absolute minimum short-term working capital a factory required was perhaps the equivalent of 100 tons whole fish (at early 1996 prices of USD 81 c/kg), USD 80 000) plus the costs of collecting this amount and of processing it. On the basis of the above calculations, total investments (excluding buildings) by the generation of factories operating in 1996 probably ranged between around USD 0.5 m and around USD 2.5 m; while combined short- and long-term working capital requirements ranged roughly between USD 0.12 and USD 0.5 m.

5.4'Artisanal' Processing Functions and Trade in 'Artisanally' Processed Fish

As already indicated, the trade in artisanally-processed Nile Perch has two quite distinct sources: processing on the islands and on lakeshore *mwalo* away from Mwanza, of fish not purchased by the factories; and processing in and around Mwanza town of fish or parts of fish that factories had purchased and then discarded. The first was easily the larger of these trades.

There were two basic artisanal processing methods for Nile Perch on the islands. For most of the 1980s, and possibly in the early 1990s, too, the most important was smoking, to produce *sangara moshi*. The labour process involved removing guts, *mabondo* and scales, then splitting into three pieces and washing before smoking for 8-16 hours under a papyrus mat in multi-rack kilns built of earth and usually set on a mound. Kilns were of various lengths and might be roofed or open to the elements; they were all more or less temporary structures. Earlier, fish of all sizes were smoked, but by 1996 smoking was mainly of smaller-sized fish (2 kg or less), which were said to be more suitable. The product is brittle and easily damaged during transport. It has a shelf-life of around a month.

By the time of my fieldwork the most popular artisanal processing method had become drysalting, to produce *kayabo* (known in Dar es Salaam as *sangara chumvi*). This form of processing is not mentioned in Reynolds and Greboval (1989). The labour process involved the same initial preparation as *sangara moto* except that washing was with a wire brush rather than by dipping. After this, incisions were made for salting and salt applied, on average on a 20 per cent by weight basis. The poorer the condition of fish, the more salt was used. More salt was used also in the rainy season, when risks of deterioration increased. The fish was left overnight to 'absorb the salt' and then dried for about three days on makeshift cypress wood table frames with tops set at an angle and covered with papyrus mats. *Kayabo* travels well and has a shelf life of up to three months.

The fish 'artisanally' processed on the islands was fish which the factories were unable or unwilling to buy. Inability to buy generally implied breakdown of collection vessels or running out of ice, or cutting short of journeys because of bad weather, etc. Unwillingness to buy referred to fish size and/or quality. The factories were not interested in fish of below 2 - 2.5 kg, since these were unsuitable for filleting. Secondly, agents on the lake rejected any fish suspected of having started to deteriorate. Agents and sub-agents were simply not paid for fish which were rejected at the next step up the chain, although they would have themselves paid for them from their advances from the factory. Hence there were strong incentives to reject fish of doubtful quality.

Fish not bought by the factories were generally sold to processors operating in the camps themselves or close to landings, although a few were retained for feeding camp members themselves or given to various categories of camp 'helpers' as *mboga* (literally 'side dish', but in this context a token or supplementary payment). Processors fell into three main categories. Firstly there were those - on various scales of operation - who were based most of the time at a specific landing or permanent camp. Secondly there were those, this time mainly small-scale, who were based more or less permanently at inland, market centres, who came to specific landings on a more or less regular basis to buy and process *in situ* before returning with the processed fish to 'their' market centre. Thirdly there were those, usually on a larger scale and found overwhelmingly in the *kayabo* trade, who shifted together with the larger more mobile and more productive camps from one location to another.

All processors bought by the piece rather than by the kilo; in March 1996 an average sized piece cost Tsh 500 (US 90c); some large pieces were fetching up to Tsh 1000. 'Artisanally'-processed fish was also always sold by the piece. In respect of *kayabo* there were clear rules allocating processed fish to one of two quality grades and three (Mwanza) or four (Dar es Salaam) size ones, but no such

clear guidelines existed for *sangara moshi*, partly because there was greater size standardisation for the type of fresh fish considered appropriate for smoking.

Rejection rates by fresh fish collectors visiting the camps were said at most places to be roughly 10 per cent. Processors in the fishing grounds perhaps 'captured' a further 5-10 per cent of total catches, from purchases from untied fishermen in areas where the factories' presence was weak and from fish 'accidentally' uncollected. At any rate, there were a surprisingly high number of processors everywhere, particularly at the larger camps where there was usually one processing operation for every two vessels. Since a large proportion of processors were also involved in mobile trading of one kind or another, they were usually obliged to hire assistants. In all there were perhaps one processor or processor's assistant in the fishing grounds for every four or five fishermen. Of these at least three quarters were working with *kayabo* processing. The only area of the Tanzanian part of the lake where smoking still seemed common was at the mainland landings (not the islands) in the extreme south west corner of the lake, although most larger camps elsewhere also usually had a smoker or two.

Evidence of the decline of smoking was graphically visible in many places. The lakeshore was dotted with crumbling kilns, and even in those areas where smoking was prevalent there were so many kilns vacant that those wishing to use them did not have to pay rent. Two main reasons were generally given for this decline (and the unresponding rise of *kayabo*). Firstly, as already indicated, smoked fish did not travel well and were unpopular with traders because of losses in transit. Secondly, demand for smoked fish appeared to be much more price sensitive than for *kayabo*. The effect of increased competition for fish in the lake had led to a steep increase in the price of smoked fish, which in turn appeared to have almost eliminated it from the diet of the wide swathe of previous purchasers in the lake's hinterland who had adopted it over the previous decade. On the other hand the market for *kayabo*, which was mainly either in neighbouring countries or in traditional fish consuming areas of Tanzania which were well away from the lake, proved to be comparatively price inelastic. The decline may have also been influenced by the rising price of firewood, although outside of Mwanza relative to salt the former was still extremely cheap. [In some places, e.g. western Ukerewe, where wood was still plentiful, a m² of firewood could still be obtained for Tsh 1000. This would have been enough to smoke 500 fresh whole pieces (roughly one ton of fish). In Nkome (Geita), where wood was harder to come by, the same amount cost Tsh 3000. To produce *kayabo*, one ton of fresh fish would need 200 kg of salt, at a cost of Tsh 32,000. In Mwanza, where it was in extremely short supply, a m² of firewood was c Tsh 8000, but if bought in smaller quantities could be Tsh 16 000.]

Of course, there was still a market for *sangara moshi*, although it is difficult to make reliable statements about its size. According to lists of officially recorded transactions at Kirumba, somewhere between 740 tons of *sangara moshi* [Equivalent to around 1500 tons of fresh fish assuming a 50 per cent freight loss during processing.] were traded there in 1995. Officially recorded transactions are normally around 50 per cent of trade that actually takes place, [The system in most markets is that most transactions are recorded at half their actual volume for levy purposes. Half of the remaining unpaid levy is then retained by the trader; the other half is paid to the market official as a bribe.] but even so there was no evidence at all of *sangara moshi* being bulked at Kirumba during my own fieldwork in the first third of 1996. By this time the trade seemed to have three main directions, two of them originating mainly from landings in Geita district (Mwanza) and the neighbouring Biharamulo district (Kagera region). The first was direct to the mining areas south of the Lake in Geita district and around Kahama (Shinyanga region). The second was direct to Mwanza town rather than via Kirumba. The markets served in Mwanza town were the old central market (Soko la kati) and several new *magenge* markets around the town. [Magenges are stall holders in semi - formalised open air markets, usually situated in high density areas.] The latter

were also supplied by processors smoking at the larger landings near to Mwanza town, like Igombe. At Soko la kati, where there were about fifteen stalls selling *sangara moshi*, the main customers were consumers from Mwanza town and wholesalers from the main towns in neighbouring regions, notably Shinyanga and Tabora, with transactions of up to 500 pieces. [c 0.25 ton of processed fish, assuming an average wet fish weight of 1 kg/piece.] Traders at Soko la kati also reported regular sales to traders from Dar es Salaam, but it is difficult to believe that this trade was particularly significant.

A third direction of the *sangara moshi* trade was from the islands, passing through Kirumba only to pick up transport (and pay levy), direct to down-country destinations. Kirumba market receipt books for the domestic trade were examined for February, June and October 1995. While because of under-recording the figures in them cannot be used to read off total volumes of the trade, they can perhaps be used as a guide to its direction (assuming all transactions have been under recorded in the same way, then the shares of volume recorded by destination would be the same as those occurring in reality). Dar es Salaam accounted for almost 70 per cent of recorded transactions by weight; no other centre of consumption accounted for more than 7 per cent.

The Lakeside *sangara moshi* processors who were based most of the time at specific landings or permanent camps operated on a variety of scales. The smallest, producing under 200 pieces/month, tended to simply receive visiting traders, almost all of them *magenge* from the mining areas or (at Igombe) Mwanza town. Traders from areas away from the lake who came to buy fresh fish for smoking tended to operate on a similar scale. Those based at the landings and producing between 200 and 500 pieces/month tended to leave the landings to sell inland themselves, either at local markets like Nkome, or in the mining areas, or at Mwanza Soko la kati. Purchases by traders from the mining areas visiting local markets like Nkome were on the same scale. [The day I visited Nkome there were 28 *sangara moshi* transactions, all involving one or two *tengas* (200 - 400 pieces), i.e. a total of around 4 tons. I was told this was typical for a weekly market.] Those producing over 500 pieces/month were the ones likely to be shipping and selling downcountry, more often than not directly to regular customers at Kariakoo market in Dar es Salaam.

Just as at Kirumba, it is probable that receipt record books under-recorded the real volumes passing through Karakoo market by half. In 1994 2252 *pakachas* of *sangara moshi* (known in Dar es Salaam as *sangara moto*) were recorded as having been traded; in 1995 the number was 2050. A Dar es Salaam *pakacha* is around 500 pieces (0.25 ton). Unlike the case of *kayabo/sangara chumvi* (see below), the customers in Dar es Salaam for *sangara moto* were said by Kariakoo traders to be heavily local: the main purchasers were local *magenge*.

To sum up, given the confusing information about the *sangara moshi* trade at Kirumba, it is hard to estimate its overall size, but in 1995 it was possibly around 400 t/year around the lake hinterland, 1000 tons for the Dar es Salaam market and 100 tons for the rest of the country (equivalent to about 3000 tons wet fish in all).

The trade in *kayabo/sangara chumvi* was longer distance, larger and more centralised. A large proportion passed through Kirumba mwaloni and the largest single market for this was Bukavu in eastern Zaire. The central players were a group of 50-60 active (of about 170 registered) *kayabo* traders at Kirumba. Many of these typically worked in partnership with a roving lake-based collector and also bought from incoming traders or processor-traders from the islands. The large roving collectors typically bought 5-10,000 pieces/month catch in two collections; incoming traders or processor-traders at Kirumba were generally bringing in single collections of 1000-1500 pieces/month each; there were a lot more of the latter than the former and they probably accounted for the bulk of total

kayabo purchasers on the lake. Both would be buying from small and medium-scale processing operations of perhaps 100-600 pieces/month. Those processing more than 600 pieces/month themselves would almost certainly be taking them direct to Kirumba, or if they were producing more than 2000/month probably direct to Dar es Salaam. Traders from Dar es Salaam and other down-country centres by-passing Kirumba and going direct to the islands would be buying from the same small and medium scale processing operations already described, probably also in total loads of 1000-1500 pieces. There was no local trade in *kayabo*, which was not announced anywhere around the lake itself.

Processing by the *kayabo* method was introduced to the Mwanza area by visiting Zairean traders in 1989. Earlier efforts by Tanzanians to produce a regionally-marketable salt-dried Nile Perch had failed. From 1990 until 1992 processor-traders based around the lake and traders at Kirumba itself were taking *kayabo* by road to the borders of Rwanda and Burundi, and sometimes - where they could find 'hosts' (see below) - just beyond it. As both visa and export licensing procedures were relaxed between 1991 and 1993, incoming Zairean traders rapidly took over the main part of the cross-border trade. Over the same period, traders at Kirumba managed to ensure that they achieved a near-monopoly in selling to them.

By 1996 there were probably 50 Zairean *kayabo* traders coming to Kirumba on a regular (on average six times a year basis). Until the Rwanda war of 1994 they were coming by road through Kigali, bringing gold which they bought in Zaire for resale at banks in Mwanza. In 1994-95 the gold price in Tanzania fell and the RPF stopped them crossing Rwanda, claiming that they were supplying the Hutu militias in the camps around Goma. By 1996 they came with hard currency, using the longer route across Lake Tanganyika from Uvira to Kigoma and then by train (changing in Tabora) to Mwanza.

Since they were all from the Kivu province in eastern Zaire, these traders could speak Kiswahili and theoretically could therefore conduct business on their own account. In practice, they all used local agents working on commission (known at Kirumba, for reasons which will be explained, as *magofi*) to do their buying, to deal with Tanzanian officials of various descriptions, and to organise the homeward carriage of their purchases. The peak period of Zairean purchases was in the wet season of January-May, when demand in Tanzania itself tended to be at its lowest. It was during this time that supplies from Lakes Albert and Tanganyika, where their traders normally obtained their fish, tended to fall.

Normally, visiting Zairean traders never purchased less than 1000 pieces (roughly equivalent to 1.75 ton). An average in 1996 was probably 1500 - 3000 pieces (c 2.5 - 5 tons) and a maximum 10,000 (c 17.5 ton). Through their agents, the Zaireans would place their orders, then wait around for a week or two until their load was assembled. On payment and completion of formalities consignments were packed (in *tengas*), labelled individually and a truck was hired jointly with other Zaireans to take them the five kilometres or so across town to Mwanza South rail freightyard. Here the group of traders would jointly hire a 13 or 40 tons freight car to transport the fish to the ferry terminal at Kigoma, where it was taken by a hired transport-boat across to Uvira or Kalumba and then on by road to Bukavu. The consignments were resold in Bukavu in relatively small amounts to traders from within 100 km of the town.

According to market receipt books at Kirumba only around 300 tons of *kayabo* were sold for export at the market in 1995. This figure would appear to have little relationship to reality. In the first place, counterfoils for Owner's Risk Goods Consignment Notes equivalent to almost 1800 tons were issued at Mwanza South rail freight office for *kayabo* consignments between Mwanza and Kigoma in 1995. In the second place, there was general agreement amongst all those interviewed at Kirumba that the external trade comprised close

to half of the total for this commodity, whereas in market records it was under a quarter. As will be described in a moment, there was some *kayabo* bound for Zaire which the Kirumba traders did not control, but it is unlikely to have exceeded more than 100 tons/year. The Zaire *kayabo* export trade through Kirumba was therefore at least around 1800 tons/year and possibly over 2000.

Most of the domestic trade in *kayabo* was to the Indian Ocean coast; very little was consumed in the interior. As with the *sangara moshi* trade, Kirumba market receipt books for the domestic trade were examined for three months in 1995. These showed 56 per cent of the domestic trade by volume being bound for Mtwara and Lindi, 21 per cent for Tanga and Muheza and 13.7 per cent for Dar es Salaam.

Mtwara and Lindi, nearly 2000 km from Mwanza in the south east of Tanzania, are areas with virtually no livestock and almost certainly have the highest per capita fish consumption in the country. Certain Mtwara-based traders interviewed at Kirumba personally owned chains of 'fish shops' in each of the main towns of the area (Mtwara and Lindi themselves, Nachingwea, Newala, Masasi and Tunduru) and were shipping very large cargoes for distribution between them. One trader I interviewed had flown to Mwanza via Dar es Salaam and was supervising the assembly of a 20 tons load. On completion, he was planning to organise another 30 tons load before returning home. According to him there were probably 30 others who, like him, came to Mwanza perhaps six times a year and bought perhaps 10 tons *kayabo*/a visit, (equivalent to 1800 tons/year). This trade was all by road.

Unlike the Zairean traders, those from Mtwara, Tanga, Dar es Salaam and other domestic centres did not purchase from Kirumba alone, or even mainly from Kirumba. They were at liberty to buy direct from processors on the islands and had strong incentives to do so if they discovered, via local intelligence, that fish could be obtained significantly cheaper on the lake itself. However, they were generally still obliged to physically pass through Kirumba and pay market levy there as a rule, for there was no alternative landing - at least in Mwanza region - where a 10-20 ton truck for transport down-country could easily be hired without costly and complicated pre-arrangement. The largest incoming traders seemed to mainly buy from Kirumba itself, while the smaller ones tended to buy directly on the islands. This decision was clearly related to the respective costs of assembling large and small loads from the islands themselves. Unlike some larger processor-traders based on the islands themselves, the Kirumba traders were only extremely rarely taking consignments to Dar es Salaam in 1996, although many observed that this had been common a few years earlier, and in 1990 had been the main form of the trade. The reasons for this change will be examined in the next section.

I never discovered much about the *kayabo* trade between Mwanza on the one hand and Tanga and Muheza on the other, except that according to rumour, informal export on to Mombasa was an important component of it. The trade with Dar es Salaam was also predominantly an intermediary one, for *kayabo/sangara chumvi* is not consumed widely in the capital. Here the onward trade was principally once more to Mtwara and Lindi.

Whereas in the *sangara mushi* trade, traders from the islands were mainly shipping themselves to Dar es Salaam, in the *kayabo* trade, the Dar es Salaam trade was dominated by traders coming from Kariakoo and elsewhere to the Lake. These traders came to Mwanza individually, obtained market intelligence concerning where on the lake *kayabo* was currently most plentiful and cheap, proceeded to purchase it and then returned to Kirumba to arrange transport. Consignments were smaller than those going direct to Mtwara and Lindi, implying that transport had to be shared either with other Dar es Salaam traders and/or with those shipping to other important destinations near the coast like Morogoro and Chalinze. Those with very small consignments (one or two *pakacha*), who

were generally based not in Kariakoo but in other markets in Dar es Salaam were probably mainly using the passenger train luggage service - as were smaller traders from centres along the Central Line generally.

The Mtwara and Lindi buyers who came to Kariakoo to buy *kayabo/sangara chumvi* were clearly in the second rank of these regions' traders, although this had not always been the case. So long as most of the trade out of Mwanza was accounted for by outward journeys by Kirumba traders, Dar es Salaam traders remained in Kariakoo and 'received' traders of all sizes from Mtwara and Lindi. When Kirumba traders ceased making outward journeys, larger traders from Mtwara and Lindi started travelling direct to Kirumba itself while smaller ones remained 'faithful' to Kariakoo. This corresponded to a sharp decline in the *kayabo/sangara chumvi* trade through Kariakoo itself. Receipt books at Kariakoo market office record only 910 *pakacha* of *kayabo* passing through the market in 1994 and 825 in 1995 (i.e., c. 228 and 206 tons respectively).

My own estimate is that the internal (including Tanga/Muheza) trade in *kayabo* was somewhere around 3000 tons/year, and that the total internal and external *kayabo* trade may have been 5000 tons/year, equivalent to around 10,000 tons of wet fish; the total trade in *kayabo* and *sangara moshi* was perhaps 6500 tons/year or equivalent to around 13,000 tons/year of wet fish.

It is important to underline that while almost all of the larger of the two trades under consideration (*kayabo/sangara chumvi*) passed through Kirumba, part of the Kirumba trade emanated not direct from artisanal processors on the islands, but from processors at Kirumba itself. On the shore at the end of the market furthest away from Mwanza town there was a regular procession of 3 ton trucks from the factories unloading reject fish weeded out in the factory's own selection process. It is unclear what proportion of the factory intake was rejected in this way; given the stringency of selection on the lake itself it was probably not more than 10 per cent. These fish were bought on the spot for Tsh 400-700/piece depending on size, either by Kirumba or outside traders, and immediately prepared for drying by teams of highly organised casual labourers who assembled as if by magic the moment a truck pulled in. *Kayabo* processed in this way was dried on racks at a site a couple of hundred metres further down the road, alongside other Nile Perch products which will be described in a moment.

Kayabo made from fish dumped at Kirumba by the factories made up part of the poorer grade II quality - most of which was said to be destined for Zaire. The remainder of grade II quality *kayabo* was sold by the factories themselves. The most substantial sales were by the factory with the largest in-house artisanal fishing fleet (133 fishing vessels registered at Mwanza RFO). Although Zairean traders were apparently the sole exporters of this second category of fish, a group of local *magofi* had managed to insert themselves as commission agents and took care of all direct dealings with the factory (the ex-factory price was similar to that at the dumping area in Kirumba itself).

The final element of the trade in *sangara* consisted in the sale or disposal, further processing and subsequent resale of waste fish products from the factories. Waste products were of two basic kinds: waste generated in the production of fillet and waste generated in the finishing of fillet.

The Tanzanian trade in waste generated in the production of fillet dates from 1993, according to legend, when local fish friers (and smokers) found that they could no longer obtain fresh fish at the landings around Mwanza town. The story passed around that the factories at Mwanza South were giving away the remains for free and a number of friers and smokers set up a processing camp about

300 m south of the gate of the largest factory, at a place called Mwalo ya Pamba (Cotton Landing). This mwalo, just below the old railway engine shed which gave the district its name (Sheddi) had for some time been used as a dumping ground for cotton husks, which were used by the friers and smokers as free fuel. Of the fish remains which the factories discarded in this way, the only part certain to contain meat was the head. This was therefore sliced from the rest of the frame, opened up or split, and then usually smoked over an open fire on a wire mesh supported by stones. Around the same time the square shaved ('flat-top') hairstyle popularised in the US by Carl Lewis and in England by Ellery Hanley took off amongst Mwanza's male youth. As with many other imported items, cultural or material, it took on a Kiswahili version of the northern hemisphere name for a similar object rather than the actual one: 'punk'. Since the heads of the *sangara* were also 'shaved', they became christened '*punki*'.

From the onset, the processor-traders at Sheddi began getting complaints about the smoke and the smell from people living around the site. After a series of manoeuvres they eventually shifted to the site at Nyegezi in April 1994. By this time the factories had started to sell the waste rather than giving it away free, and a market had begun to be established for the product, mainly amongst previous consumers of fried and smoked *sangara* proper.

At Nyegezi in early 1996 processing had become highly organised. Traders went to the gates of the factories at fixed times when frames were being sold and bought job lots. They then organised their transport by *trolli* up to Nyegezi where around 200 casual workers, themselves organised into different specialisms and remunerated at different rates, prepared *punki* for smoking or frying. The principal division of labour was between splitters and washers/driers, each hired by the piece. Subsequently most of *punki* was smoked in the same way as normal *sangara* on one of the site's 38 kilns, by the trader and/or a minder. Cotton husks were still used as fuel. Most of the kilns belonged to the bigger traders using the site and those not owning them had to pay a fee. Pieces in poorer condition and deemed to be unsuitable for smoking were fried in pans over open fires, using oil scraped from the fish intestines with a knife or fingernails into a basin and subsequently 'refined' by boiling and then left to cool and finally bottled. Intestines were bought or begged for this purpose by a distinct group of 'scrapers' also based at the site. A similar group could be observed at Kirumba (the factories themselves also refined and sold fish oil). Finally the smoked or fried fish were packed into *tenga*, a vehicle was hired by a group of traders and the *punki* was taken to one of a number of weekly markets in the Mwanza and Shinyanga region hinterlands (Madaha, Malanpaka, Hulyumalwa, Salawe, Nyasamba and Isaka).

Most of the traders using Nyegezi site were local, but traders from other areas could and did use it. I encountered *punki* traders as far away as Tabora and Singida town markets who came to Mwanza, bought frames at the factory gates and then organised the processing of *punki* for wholesaling to other traders in their 'home' markets. In the case of all the local markets mentioned the main customers were described as 'local traders from the villages'. A second, much smaller and relatively unorganised *punki* producing site was located on the airport side of town at Ilemera (Mwanza North) where there were about 10 processors working in April 1996. There was also a considerable home-based smoking and frying trade in several parts of Mwanza town, especially Pasiansi.

The *punki* trade was concentrated in the dry season, when alternative foodstuffs were in short supply around the lake. Most of the approximately 50-70 traders involved nevertheless brought rice, maize or cassava back from the hinterland. There was considerable differentiation between the traders, but more in terms of their ownership of capital equipment (i.e. kilns) at the site than in levels of trading activity (a *trolli* load of 1000 pieces appeared to be a standard consignment size for both Mwanza and externally-based traders, costing either Tsh 15-30 or Tsh 70-90/piece at the factory gate, depending on size). At the same time a 'good size' processed

piece cost around Tsh 130 on site at Nyegezi. Altogether the total *punki* trade was approaching 500 ton/year.

The term '*punki*' may have been a Tanzanian invention, but a trade in waste fish products from the Kenyan factories was already noted by Reynolds and Greboval in 1987 (Reynolds and Greboval, 1989). The Kenyan factory owners in Mwanza said that the equivalent trade in Kenya was more extensive and expressed surprise and regret that the Tanzanian one was not larger. One told me that his Kenyan plant could pay all its local overheads out of its income from selling frames: in Tanzania he was having to pay for most of his factory's waste to be disposed out of town.

The main waste generated in the finishing of factory-produced fillet was trimmings from cut fish steaks made by filleters to leave fillets of standardised sizes for packing. These trimmings, ranging in size from 10-200 gm, were known locally as chips. A trade in them started only in first half of 1995. Zairean traders were the main players, but again they acted only through intermediaries.

The trade in this case was under the control not of the Kirumba traders but mainly of small groups of 'master processors' who were operating at several sites around town. One group had reopened the old *punki* site at Sheddi and built about 20 drying tables there under the watchful eye of a large colony of storks. The Zairean traders would approach the processors and pay them an all-in fee, either wholly or 50 per cent in advance. The factories charged Tsh 100-150/kg for the trimmings; the traders were giving the processors money to buy the chips and paying them an equivalent of about Tsh 250/kg for purchasing, transport, salting (as per *kayabo*), drying and packing into gunny sacks. The drying process took around three days, so the processors could dry 0.5 - 1 ton/week each. There was a shifting pool of casual labour, of whom only the salters were paid. Chips processors also shared the much larger drying site close to Kirumba used for ex-factory *kayabo* processing.

The Zairean chips traders mostly also traded *kayabo*. The same *magofi* organising their relations with Tanzanian officialdom and their onward transport covered both *kayabo* and chips. At Sheddi, some of the Zaireans were buying enough to keep all five processors occupied (i.e. up to 2 tons). According to counterfoils of Owner's Risk Goods Consignment Notes held at Mwanza South rail freight office, 370 tons of chips were shipped in freight wagons from Mwanza to Kigoma between April 1995 when the trade started, and the end of the year.

Chips was a popular commodity amongst traders. It was easy to handle and instantly 'took off' with customers in Zaire, not least because of its availability in smaller and more divisible units than *kayabo*. According to traders, it also cheapened the cost of giving bribes at Zairean army roadblocks: 'they always ask us for 100 of whatever we're carrying; 100 pieces of chips costs us a lot less to give away than 100 pieces of *kayabo*'.

The *sangara* chain had experienced several transformations up to the time of my fieldwork. A few months later it was to experience another profound one when fighting which had been simmering in eastern Zaire for some time exploded into all-out war. Bukavu was seized by opponents of the Zairean government, with the probable support of the Rwandan army, and hundreds of thousands of Rwandan Hutus who had been in UNHCR camps around the town either dispersed toward Kisingani or were obliged to return to Rwanda. How much of the processed *sangara* exported to Zaire was destined for the camps is unclear, but even if none had been, the trade would almost certainly have still been severely disrupted.

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6 Intersecting Chains

A number of product and service chains intersect with, or branch out from, the Nile Perch one at different points. They include the chains for fishing, factory production, artisanal processing and trading inputs, for transport, and for the commodities fished, processed and or traded side by side with Nile Perch. A few words will be said about each of these chains, with special reference to the relation between how they were organised and whether and how they conferred control over the Nile Perch chain proper.

6.1 Production Inputs

Nile Perch production units on the lake comprised trawlers, *mitumbwi*, plank boats, sails, gillnets, other gear, and outboard engines. Some dimension of the distribution of control over these inputs have already been described. Ownership of trawlers was mainly in the hands of public institutions and factories. In practice, the public institutions rented out their trawlers to private individuals who were under formal or informal delivery contracts to certain factories. The identity of these individuals and events after the trawler ban will be described in a subsequent section. Ownership of *mitumbwi* was extremely widely distributed. On the one hand, in some parts of the lake, every household has access to one. On the other, if an owner had any capital, he would have a plank boat built rather than acquire a second *mtumbwi*. There was a very large *mtumbwi* fleet but because of their very limited range and low capacity for carrying nets, their productivity was low and steadily declining. I was unable to establish whether there was a trade in this type of vessel.

Plank boats were built to order by specialist boat builders, usually at landings on the shore of the mainland or Ukwere, and also from 1995 in some of the factories, using wage labour. A new 8 m vessel cost around Tsh 0.25 m (USD 500) in 1996; one which could take an outboard motor might be three times as expensive. In the gillnet fishery, ownership of these vessels was relatively concentrated and becoming more so (see Table 6). At least 30 per cent and possibly far more of all vessels were in small fleets of more than one boat but less than 10; another 15 per cent were in fleets larger than 10. The factories themselves directly owned at least half the vessels in these larger fleets. The distribution of nets was almost certainly more skewed than this. Vessels in fleets, large or small, invariably carried more nets than vessels which were owned individually. On the other hand, the very largest fleets did not always have the most nets/vessel, since there was a recognition amongst the most 'progressive' *matajiri* that marginal additions to productivity were best achieved by adding additional vessels to fleets rather than buying additional nets for existing vessels. Distribution of engines was also skewed, more or less in the same way. In fleets, engines were much more commonly encountered than with individually owned fishing boats, but the highest concentrations in relation to total numbers of vessels was in the smaller fleets, since there was again a recognition amongst larger, 'progressive' *matajiri* that the most efficient use of engines was in towing an number of vessels, rather than equipping all of them to move the same distance at the same speed.

In my estimation, most of those with fleets, large or small, were currently tied or had been tied earlier to specific factories though receiving nets or engines on hire purchase. But nets could also be freely obtained from shops in all the main towns around the lake, and most of the nets being used even by those tied to the factories were probably obtained in this manner. There seemed furthermore to be a widespread trade in stolen nets and a process of accumulation of nets by stealing 'to order', although this was obviously a subject it was difficult to get hard information on. Engines could also be obtained new, either through the factories (although the latter were extremely selective in their distribution) or from one or two commercial outlets in Mwanza town. There was no real second hand market for engines because of their short lifespan (rarely longer than two years). Longlines and hooks were also freely available, though beach seines were produced only to order and only by local craftsmen. Concentration of ownership was relatively slight in both the latter cases, and unrelated to control over trade. In sum, there was a degree of control which the factories exercised through supply of certain (but by no means all) material Nile Perchuts for the gillnet fishery. But this control was a product of the favourable terms on which no factories were able to offer these inputs rather than stemming from non-availability from other sources. At the same time, the extension of this control was associated with a differentiation process amongst vessel and gear owners, firstly between plank boat and gillnet fishers and the owners of other types of vessels and gear, and secondly within the plank boat/gillnet owners themselves.

6.2 Factory Production Inputs

Factory production in Nile Perchuts include machinery, chemicals and packaging. In the international fish trade generally, importers tied to specific retail operators provide own-brand packaging materials. Importers who are brokers would not; the Mwanza plants were mostly working with both varieties and were therefore using both externally supplied and locally-produced packaging. In the case of the Kenyan-owned plants, these were typically obtained through the parent operator. Both types of importers mentioned were also offering assistance with the financing import and installation of new or reconditioned freezing machinery. These were of course conditions attached to such offers, which broadly resembled those on the nets which the factories supplied to vessel owners; tied supply at below-market prices to repay a debt which was probably calculated at above-market prices. It is not clear how many of the plants, or their parent companies in the case of the Kenyan-owned ones, had entered such agreements, for it was one of the subjects which owners and managers were very reluctant to discuss. On the other hand, even if they had entered such agreements their long-term implications for control of the marketing chain were probably not particularly great. As in the case of nets, such debts as were incurred could probably be redeemed over a relatively short period.

It is also important to note that, given the general nature of the labour process and the general level of qualification of the labour force (including managers) the technologically absorptive capacity of the plants was not particularly great. One owner told me, 'We're simply not sophisticated enough to get proper use of a fish grading machine' (which might cost USD 80,000). This could be construed as implying a probably beneficial incapacity to become dependent on importer supplies of more complex technology.

The Kenyan-owned companies obtained not only packaging but also some factory furniture, most chemicals and technical support for complicated repairs through their parent companies. One manager told me, 'only the fish and the labour are local'. Even the ones without parent company services relied upon suppliers and/or individuals in Kisumu, Nairobi, Dar es Salaam, Cape Town or even Europe. One told me, 'even to get a motor rewind you have to go to Kisumu. Nobody in Mwanza can even make a stainless steel

table'. In fact, some of the mechanics (*fundi*) in the larger camps on the lake could have done either job, had they had the materials.

6.3 Artisanal Processing Inputs

Artisanal processing inputs included kilns, wire meshing, papyrus mats, building poles, fuel, salt, machetes, salting or chopping surfaces, wire brushes, scraping knives, and bowls, bottles, baskets and gunny sacks.

Earth kilns could either be built personally by their owner, or he or she could pay someone to build one. The most sophisticated I saw were at Nyegezi, most of which were 10-12 m long and 0.6 -0.7 m high and wide, with (second-hand) corrugated iron roofs. These held several racks with a total capacity of 400-800 pieces of fish, depending on the latter's size. The owner of one newer one told me that he had paid Tsh 100,000 (c USD 180) to have it built; most of those nearby had cost around Tsh 70,000 (USD 127). This investment should be recovered fairly rapidly, for rental charges to non-owners at Nyegezi were Tsh 2000/24 hours. Kilns I saw in other areas were generally smaller and uncovered and, as indicated, in over-supply.

Most of the materials used in kiln building were not in scarce supply, but locally on the islands and in remoter parts of the lake wire mesh could not be easily obtained. Those traders at Mwanza Soko la kati who were being supplied from these areas were providing 'their' smokers with this mesh, although the ones making the trip to Mwanza could presumably have obtained it from one of the many hardware shops located only a few metres away from the market buildings.

The materials used for making the tables used for drying *kayabo* and chips were all obtained locally at low cost (especially low in Ukerewe, where wood was more easily available). Drying table construction costs were a small fraction of those for kilns (c Tsh 5-10,000/table). However, the cost of hiring such a table at Kirumba was virtually the same as hiring a kiln (c. Tsh 2 - 5000 for a 2-3 day period), presumably reflecting the high level of demand from Zairean traders. Out on the islands drying tables commanded much lower rents (on Ukerewe, Tsh 300/day) and were often lent free of charge.

The relative costs of fuelwood and salt have already been discussed. Around Mwanza, fuelwood had almost ceased to be used by artisanal processors, having been replaced by cotton husks whose cost was close to zero. At Nyegezi traders got together to hire a *trolli* (at Tsh 2500(USD 4.50) /trip or a pickup (at Tsh 5000(USD 9)/trip) to go to the nearby cotton oil plants where they were discarded; a pickup load could fuel up to 10 kilns for a 24 hour period.

On the islands fish splitters normally possessed their own machetes (*panga*), which could be purchased at any shop for Tsh 2500, and cutting boards made from local wood. In Kirumba and Nyegezi some splitters were too poor to own their own machetes, and instead rented them at Tsh 100(US 18 c)/day. Chopping boards were also used for salting, although this was more frequently carried out on the ubiquitous UNCHR tarpaulins. The other tools used by different types of processors (e.g. wire brushes for *kayabo*, basins and knives for cooking oil refiners) could all be obtained in local shops at relatively low cost.

Gunny sacks and very large baskets (*tengas*) were normally the property of traders who supervised processing operations rather than processors themselves. Gunny sacks (*gunia*) were available locally in shops with capacities ranging between 15-20 and 55-60

kg. *Tengas* appeared to be made to order by specialists. I was unable to discover their costs, but both were guarded closely by traders. Artisanal cooking oil refiners favoured large (300 cl) second-hand plastic bottles because of their cheaper unit price. Both they and 150 cl glass bottles cost a Tsh 50 (US 9c) 'deposit' when bought containing soda.

6.4 Trading Inputs

Other than *gunia* and *tenga* the main inputs used by traders of all sizes were collector boats, fuel and ice, and short and long-distance road and rail transport. Porterage was another important input.

With few exceptions collector boats were either owned by the factories and operated by factory employees or 'lent' by the factories to tied *matajiri*, or were the property of *matajiri* who were tied to factories (inter alia) through the supply of an engine for the boat. Independent collectors might own them themselves or rent them.

Matajiri 'borrowing' collector boats from the factories paid no rent for them, simply delivering all their own catch and those of other fishermen at pre-arranged prices. The factories supplied and charged for ice and fuel. The *tajiri*-collector benefitted from this relationship by retaining the difference between the spot price on the lake and the pre-arranged price at the factory jetty against which the factory had advanced capital to him. In some cases valued *matajiri*-collectors were furthermore given a premium price on the part of the delivery made up from the catch of their own vessels. Virtually the same conditions applied concerning collector boats which were the property of *matajiri* sponsored by particular factories.

There were a lot of large (12-16 m) sail and/or outboard motor-powered vessels on the lake, and large-sized engines to rent, which were not under the content of the factories. The former comprised the lake's light cargo and passenger fleet; almost 300 such vessels were registered at Mwanza DFO between January 1992 and March 1996. Despite the size of this fleet, rentals were quite high (relative to the coast, at least). Renting a collector boat with a fishhold of 5-10 tons, and a 48 HP engine cost around Tsh 150,000 (USD 272)/week and a 25 HP engine alone Tsh 60,000/week in February 1996.

Boats delivering to the factories could pick up both fuel and ice there. There were other sources of fuel on the lake, but not ice. In the prawn trade on the coast, control of ice conferred something of a permanent advantage to the factories in the fishing grounds and a temporarily one to those traders who had managed to procure it one way or another. On the lake there were less opportunities for small-scale arbitrating in fresh fish, since the factories in Mwanza and Musoma represented over 90 per cent of effective demand. Moreover, small traders could generally better take advantage of what opportunities there were by investing in a bicycle or a boat, rather than a medium-sized ice box, for the Nile Perch was a large fish with a relative low unit value, and a relative slow rate of deterioration. Ice was relevant mainly in bulking functions and long-distance transport, where there were few openings for independents to participate.

The regular light cargo/passenger fleet had its own fairly standardized set of tariffs. For most distances over 50 km a single piece of *kayabo* cost Tsh 30 (US 5 c) (including porterage) to ship to Kirumba in February 1996. Traders taking more than a couple of hundreds pieces were normally allowed to accompany their luggage free. Road transport around the Lake over similar distances tended to be charged at unit tariffs which were almost the same: to carry a 200 kg *tenga* of *sangara moshi* from Nkome the 150

km or so to Kahama cost Tsh 10 000 (USD 18). Arrangements for organising local transport of this kind varied from one route to another. Kirumba mwaloni and the larger landings basically resembled water-based bus stations, with light ferries coming from and going to the main destinations at frequent intervals and at more or less similar prices. Locally-based road transport serving particular markets was thinner on the ground and generally organised on the basis of fairly long-term understandings between groups of traders and particular lorry owner-drivers.

Some aspects of long-distance lorry and rail transport by the factories have already been discussed. The factories were overwhelmingly using their own vehicles and, in the case of the rail traffic, their own refrigerated rail containers. The factories also incurred additional expenditure by equipping their trucks with two way radios for monitoring and security purposes. Several times I was told, 'the basic rule is that the trucks must never stop'. Most plants insisted drivers call in every two hours to give their location and report on progress. The costs of such operations were high but the penalties of losing a load by accident or missing a container boat departure were immense. One factory owner told me, 'my cargo goes all the way on tarmac. It costs me four times as much to send it like that but it's ten times likelier to get there in one piece and on time'.

As far as the long-distance trade for 'artisanally' processed fish was concerned, road transport was the preferred mode for most categories of trader, except those having a special connection to the railway or delivering to destinations where transport by road was impractical. This was because road transport was considerably faster and marginally more reliable. Its speed meant that traders saved substantially on waiting time. For the same reason traders preferred newer-looking trucks when these were available.

Long-distance traffic in Tanzania is controlled mainly by Tanzanian Asian lorry owners. In the long-distance traffic to Dar es Salaam a relatively small number of companies based in Dar es Salaam itself predominate, mainly carrying second-hand clothes, cycles and electrical goods for distribution in the lake region. These employ drivers on a basic wage-plus-allowances basis. Lorries arrive in Mwanza from Dar es Salaam with a load and after discharging it drive to Kirumba. Drivers call the owners in Dar es Salaam to check on whether to return directly or wait for a backload, as well as on how long they should wait for such a backload to materialise. If they get the go-ahead they then try to find a group of traders to negotiate with. Supply and demand is unpredictable. Some days when I was at Kirumba there were up to 40 lorries touting for custom; on others there were fewer than five and it was traders who were touting for lorries. Usually, however, there were at least 10 and there was clearly a buyer's market. As in other deals at Kirumba, *magofi* frequently manage to interpose themselves.

Traders who could fill a whole lorry, even one of the smaller 10 ton variety, on their own account, were a great rarity. In the majority of cases it was a group of traders who negotiated with the driver. *Pakacha*, *tenga* and *gunia* would be labelled separately and reclaimed by the consignee on arrival. In the great majority of cases the latter was the same travelling trader who had dispatched the load. He or she would have travelled back by bus and arrived ahead of the lorry.

There were about 20 lorries regularly using the Dar es Salaam-Mwanza route early in 1996, mostly 10 ton ones but some up to 40 tons. They were making the trip once every couple of weeks. There were jointly about the same number going on to Tanga and Mtwara, although a lot of the consignments for these destinations were transferred to other lorries when they reached Msimbazi Street in Dar es Salaam, the capital's equivalent of Kirumba. Prices on the Dar es Salaam route were denominated by the piece of *kayabo* or *sangara moshi*; at the end of 1995 and the beginning of 1996 they averaged Tsh 100/- for the 1200 km journey. Those Mwanza

traders who could hire a whole truck (20 tons or more) on their own account paid a flat rate (up to Tsh 1.2 m (c USD 2200)) for the trip.

The Zaireans using rail transport also typically combined to jointly rent both rail wagons from Mwanza South and transport vessels across Lake Tanganyika from Kigoma. Each ton cost about Tsh 19,500 (USD 35) to Kigoma and then a further USD 20 (in hard currency) across to Zaire.

Other important trading inputs include stalls for those operating in fixed markets, and portering/general labouring; the question of stalls will be discussed in a later section. Porters/labourers came in a number of varieties. Born in Kirumba and Dar es Salaam there were porters' societies who allocated their members to particular locations on an availability basis and charged fixed unit prices for particular tasks (e.g. for carrying 250 pieces of *kayabo* from the shore to the storage area at Kirumba the charge was Tsh 800). In Mwanza town, outside Kirumba, there was a free for all. *Trolli* were normally owned by 'businessmen in town' who rented them by the day (for Tsh 700-1000 (USD 1.3 - 1.9) to groups of youths. The latter in turn touted for custom outside the main trading sites, including Kirumba and the fish factories. Other casual labourers also tended to work in more or less organised groups, in urban areas at least, always being paid by the piece. Some of these groups will be described in subsequent sections.

6.5 Chains for By-Products

The only significant Nile Perch by-product trade that has not already been discussed is that in the fish's swim bladder or maw, known in Kiswahili as *mabondo*. This was a highly organised and internationalised trade. The swim bladders of large fish species such as shark have always been an important ingredient of a popular delicacy consumed by Chinese communities throughout Asia. The soup, whose other ingredients include sea cucumber and shark fin, is mainly consumed during the Asian winter, peaking around Chinese New Year. A secondary end use is medicinal: *mabondo* mixed with ginseng is eaten in a stew as a post-natal restorative for mothers. Reynolds and Greboval (1989) reported the existence of a *mabondo* trade destined for export via Tanga and Mombasa in 1987. According to van der Hoeven and Budeba (1993) the trade became generalised in 1990. In 1992-93 Chinese and Thai companies set up their own local buying operations (usually in combination with a Dar es Salaam-based operation for sea cucumber and/or shark fin) and competition became fiercer.

In a fresh fish the animal's *mabondo* is surrounded by fat. Processing begins with the separation of the gas bladder (at this stage resembling a large pasta shell) from its envelope of fat, splitting it in half and removing the internal blood vessels. A lot of fat remains in and around the bladder. It can be dried in this state (known as 'dirty dried') or labouriously cleaned and then 'white' dried. In both cases drying in itself takes 48 hours. There is a weight loss from the wet bladder of 30 per cent in 'dirty drying' and a further 20 per cent in 'white drying'. 'Dirty dried' *mabondo* can themselves be subsequently cleaned with roughly similar weight loss. The exported product resembles a translucent golden potato crisp. *Mabondo* is graded for export according to quality and size. Importers are interested only in dried *mabondo* three inches or longer. Two independent exporters told me that pieces of three to four inches should not make up more than 20-30 per cent of an acceptable consignment.

Like the other artisanal processing chains, the *mabondo* chain had two main sources. The first derived from fish which the factories for some reason did not buy, the second derived from fish which the factories had bought. In all the main fishing areas on the lake there were *mabondo* collectors of various sizes. Some toured the camps buying from the processors of reject fish or from camp

cooks; others simply stayed in the main settlements and hung '*mabondo* bought here' from their huts. These organised at least the initial drying of the product and sometimes both stages. Some of the larger collectors were agents of the main independent exporting companies, either working for commission on capital advanced by these companies, or supplying *mabondo* in part repayment of personal loans from the exporter. One independent exporter had advanced engines to his collectors in the same way as the factories had to fishing vessel owners.

Four of the factories exported at least some *mabondo* themselves, sometimes in a dried and sometimes in a frozen form. The other three sold all their *mabondo* (usually 'dirty dried') to collectors or directly to the most recently-established independent exporters. Some 'dirty dried' *mabondo* was also sold at the factory gate by those factories which directly exported. Factory gate buyers included collectors working for the independent exporters and 'brokers' (*madalali*) who simply resold to them. There was a further sub-market at Kirumba, composing both *mabondo* brought for sale to the *mwalo* by small collectors hoping for a higher price than on the islands, and *mabondo* extracted from reject fish that the factories were selling there to artisanal processors.

As far as I could determine, there were four main independent exporters of *mabondo* operating in Mwanza in early 1996. The largest was the newest entry, a young Tanzanian Asian from a family of local retailers who, besides having his own collectors, had persuaded a number of factories to sell it to him direct. He was operating out of a large godown at Mwanza South equipped with drying tables and a large washing and cleaning area supplied by a water tank and employed a labour force of 'up to 60 casuals'.

The largest established of the other operations was a branch of a Dar es Salaam Arab-owned company, whose Dar es Salaam operation was mainly concerned with export of other exotic products (skins, hides and horn tips) to the Far East. The remaining two were both branches of Chinese operations which had originally come to Tanzania for the sea cucumber trade; their local representatives introduced themselves to me as 'Bruce Lee' and 'Jackie Chan' respectively. Each of these companies simply had a yard and a small indoor store, in the case of Chinese companies located in the compounds of private houses in Kirumba.

Jointly they were accounting for the export of perhaps 20-25 tons/month of dried *mabondo* (equivalent of around 2000 - 2500/tons of fresh fish). Declared exports by the factories in 1995 totalled 293 tons, of which around 225 tons were exported in a frozen form (equivalent to 11,250 tons fresh fish) and around 70 tons in a dried form (equivalent to 7000 tons). All export was by container. The factories exported (in order of magnitude) either to their parent plants in Kenya, direct to Hong Kong, or to their European fillet importers. The independent collectors all exported via Dar es Salaam direct to China, Hong Kong, Singapore or Thailand, using hired container trucks.

In 1996, the price paid by collectors on the lake was about Tsh 4000/kg for 'white dried'; most of the independent exporters were buying at Tsh 5000 - 5500 (USD 9-10)/kg at the factory gate, and giving commissions of Tsh 100-300/piece to collectors working on their capital. The exporter who had persuaded factories to sell to him direct was paying Tsh 1500/kg 'dirty dry' and Tsh 4500/kg 'white dried'. Export prices were USD 13/kg for mixed white dried consignments which were 'still oily' and USD 16-18/kg for 'good quality' consignments. In March 1996 these prices had all fallen from peaks 15-30 per cent higher, reached in the run-up to Chinese New Year a few weeks earlier.

The very high unit value of *mabondo* created a lot of temptation. Theft of the product at different links in the chain had become

extremely common. Those factories which had decided not to export it themselves gave this as the reason, 'there's a culture of violence around it. I just want it off the premises as soon as possible'. It also created cash flow problems for the foreign-owned export operations, especially in the period prior to Chinese New Year which in 1996 had coincided with an appreciation of the Tsh against the USD. At this time, an exporter would have had to lay out over USD 125,000 to fill a 10 ton container, although he may still have cleared more than USD 80,000 in the transaction. Total f.o.b. export values for *mabondo* in 1995 must have been close to USD 6.3 m.

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7 Actors, Actresses and Strategies

The main categories of actor and actresses involved in the Nile Perch trade have been identified so far as *matajiri* (proprietors of fishing vessels of various descriptions, including trawler operators), factory owners and agents, lake and town-based artisanal processor-traders, market-based traders and labour in the employment of each of these functions. Understanding the political economy of a particular commodity branch entails other dimensions of analysis besides describing the division of labour between these categories. In particular it involves understanding who the different agents are and how and why they go about business with each other in particular ways. In respect of the Nile Perch marketing chain, some interfaces are more strategic than others and it is these which will be focused on. They comprise relations between factories and factory-sponsored *matajiri*; relations amongst and differentiation between *matajiri* generally; relations between *matajiri* generally and their crews; relations amongst factory owners and between them and the wider business and political worlds; and relations amongst traders in artisanally-produced Nile Perch.

7.1 Factories and Factory Sponsored Matajiri

On the basis of a survey conducted in 1992, Wilson (1993) described Lake Victoria vessel owners as almost exclusively male, on average aged over 40 years, mainly without a background in fishing and mainly with other business interests. My own impression was that little had changed by 1996, particularly amongst the group owning two or more plank boats, from whom those sponsored by the factories were exclusively drawn. It was very common to meet *matajiri* who had entered the fishery since the late 1980s from a background in perhaps running a store or farming, or who had been government employees and who had decided to invest their profits or retirement payment in a vessel or two. On the other hand, it was also common to meet others who had been involved in various roles in the Nile Perch fishery - or perhaps the one for *dagaa* - for a much larger period and who had made money as owner-processor-traders before investing in gillnetting. This latter group tended to have fewer interests outside of the fishery.

In fact, a majority of the very largest *matajiri* - those who had fleets of more than 20 fishing boats came from this background. The largest had almost 90 fishing vessels. This man, a Kuria from Musuma Region, had been a Section Leader (Corporal) in the Tanzanian army during the Ugandan war of 1978-79, and had started fishing a year after being demobbed in 1980. He had established himself as one of the leading *sangara matajiri* from the outset and had accumulated particularly rapidly since 1990,

firstly by combining fishing with *kayabo* processing and trading and then, after the advent of the factories, by concentrating on fishing alone. When I interviewed him in 1996, besides fishing boats (carrying a total of 7000 nets) his own property included four collector boats, a 16 ton lighter for carrying ice and a large mobile workshop with approximately 40 *fundu* and a radio call. A second, from Ukwere, had almost 30 fishing vessels under his ultimate control after having specialised in the fishery since 1986; a third, from Mwanza town had 24 fishing vessels after having fished continuously (first for *dagaa*) for almost fifteen years. None of these three appeared to have interests outside of fishing. On the other hand, the operations of both the latter two had been at one time or another closely associated with relatives who had such interests and who had injected money into their fishing operations. In both cases the relatives had worked in junior or middle management positions for parastatals; in one the relative put money into the fishery by using money obtained from his job to build a fine house, on which he then raised a series of bank loans.

The two remaining large *matajiri* were basically general businessmen (both from the lake area) who had entered the fishery in the late 1980s. One was the owner of a large shop in Sengerema town who 'joined the fishery when *sangara* became famous', the other was a former senior cooperative society official and later Member of Parliament, who when I met him in 1996 was also running two commercial vehicles and had a well-established orange grove. Whether or not these larger *matajiri* had business interests outside fisheries, it is nevertheless clear that the sector had been the overwhelming focus of their investments in recent years.

Tying of *matajiri* and 'their' fishermen through the provision of gear has been reported in virtually every study on the Lake Victoria fisheries conducted in modern times. Novel in the present period is the extent and authorship of tying, the capital laid out on each tied unit and a related 'rationalisation' of the tying process, and finally the fact that some *matajiri* can accumulate capital through being tied.

The extent of tying (perhaps over 600 vessels) and its authorship (almost exclusively the factories) have already been indicated. Unit expenditure on tying seemed to be never less than 10 nets (Tsh 200,000 or USD 363), more often 30 (Tsh 600,000 or just over USD 1000), and occasionally much higher. Some individual *matajiri* were tied through the provision of 1000 nets (Tsh 20 m or USD 36,360), plus engines. The 'rationalisation' process which factories initiated in relation to such high unit investment had a common form, although as will be seen it was articulated to different long-term strategies. Most (but not all) new candidates for tying had to supply a given factory for around three months before being considered for a loan; in many cases (but again not all) they had to come up with a signed guarantee from some locally powerful person, and in all cases they needed a written recommendation from the local agent; nets were then usually given in small numbers while the *tajiri's* 'trustworthiness' was tested. Repayment on the loan did not necessarily begin at this stage however, but often commenced only when the trader acquired additional inputs from the factory. As already indicated, repayments were in kind (fish delivered) and interest free, although the value of gear was denominated in local retail terms rather than their real cost to the factories, and in some cases the value of fish delivered was denominated in the price pertaining when the loan was taken out rather than current market one.

Despite the high value of the gear obtained, and the broadly neutral repayment conditions (lack of interest on premiums offset by inflation-proofing of the value of repayment instalments), loan repayment seemed to be the rule rather than the exception. If a *tajiri* acquired 30 nets at Tsh 600,000 and the fish price was Tsh 350/kg, he would with average catches and with repayment terms of 50 per cent/daily sales repay the loan in a little less than three months from that vessel's catch alone. On the same repayment terms he could fully equip two fishing vessels in a year from a single vessel's catch. Especially since the advent of loans of this scale coincided

with the drying up of credit from the banking system (even from the politically connected) and with the effectual liquidation of many parastatals - traditionally an alternative source of private investment capital - it is hardly surprising that there was no shortage of *matajiri* seeking ties.

For a long period *matajiri* seemed to generally believe that, since loans could be paid off so quickly, maximising their own ties to one or more factories was the swiftest and surest road to accumulate. Those without long experience of the fishery in particular maximised loans for engines as well as for gear, and some could be observed using multiple engine-powered vessels for fishing in highly cost-ineffective ways. Other *matajiri*, particularly the largest one of all, had a more strategic relation to gear acquisition and by the time I interviewed him was only marginally tied to any specific factory.

As far as I could make out, two of the factories were following more or less conscious strategies in targetting highly specific categories of *matajiri* in highly specific ways. The other factories were either not following conscious strategies (i.e. were distributing nets to anyone they could find who met the basic criteria already described) or, if they were, were not willing to disclose them.

One of the smaller factories had made a decision to tie only those *matajiri* with less than 10 vessels. When one of its *matajiri* reached the 10 vessel limit, the factory broke off relations with him through one device or another. The owner of this factory explained that, in his view, as *matajiri* acquired more vessels their bargaining power increased vis-a-vis his. On this basis the *tajiri* could demand more capital-intensive inputs, as well possibly as better price or delivery conditions. The outstanding example was the largest *tajiri*, who had obtained not only a special price contract from one of the factories but had also been lent sonar equipment and an engineer. On the one hand, this was likely to place increasingly heavy demands on the factory's resources. ('What could I offer him? He'd want a truck at least'). On the other, it may well have led to a diminution of unit investment cost-effectiveness. Better to concentrate on the 'smaller', less powerful, *matajiri* who were not in a position to escalate their demands.

Many of the group of largest *matajiri* whom I interviewed had been tied to this smaller factory earlier in their 'careers'. Without exception they had been 'adopted' by the largest of the factories when the smaller one dropped them. In the process they had acquired more gear and engines and sometimes contracts with special conditions such as slightly higher than market prices or acceptance of all fish delivered including rejects, etc. In the process, the *matajiri* recruited in this way often came to take on the additional role of collection on the factory's behalf. This was a contractual obligation of receiving a large engine (over 25 HP), but I was never clear of whether such *matajiri* volunteered to get such engines or were persuaded to buy them on credit. The factory also advanced large collector boats on credit in tandem with the advance of large engines. On his side, the *tajiri*-collector thereby incurred an obligation to deliver to the factory jetty rather than be collected from by the factory collection fleet. In the period immediately prior to my fieldwork this factory also seemed to be insisting that newly recruited *matajiri*-collectors collect from specific 'patches', thus allowing it to rationalise their in-house collection efforts.

7.2 Interrelations and Differentiation between Matajiri

Some statistical material on differentiation in 1996 has already been presented, along with material on the increase of the proportion of vessels equipped with engines, since the first factory started producing in Tanzania in 1992. Also indicated has been factories' singling out of particular categories of *matajiri* for the provision of gear and engines.

The differentiation which was underlined and promoted through tying was that between owners of a single primitive vessel with a few nets and owners of more than one more sophisticated vessel with multiple nets. But, although those who had planked vessels and large numbers of nets already in the mid-1980s therefore had a flying start in the differentiation process, not all of them succeeded in subsequently consolidating their positions. Those who most dramatically improved their position seem to have done so through adopting a fishing system based on the inter-related combination of very high mobility and more or less sealed camps.

When Wilson (1993) conducted his survey of vessels and crews in 1992 he found that around three quarters of vessels never fished from more than their 'home' landing and one another. This was perhaps an expression of a lack of full-time commitment to the fishery. Basically it meant that the great majority of vessels were confined, or had confined themselves, to the most inshore waters of the lake where there was most competition for fish and where fish stocks were almost certainly most depleted. The other quarter of vessels, only a tiny proportion of which were motorized, were involved in fishing from multiple sites. This was almost certainly an expression of more or less full-time commitment and of organisation of the fishing labour process on the basis of camps.

By 1996 the respective sizes of these categories had changed, but not this principle of differentiated. Amongst the category of vessel-owners there was also a clear process of further internal differentiation, which revolved not only around numbers of vessels owned and therefore size and internal organisation of camps, but also degrees of mobility. The larger camps centered on a single *tajiri* tended to have the most sophisticated division of labour (including specialist battalions of net-menders and *fundi*) but also to be the most mobile. If the division of labour was organised efficiently, it was possible to be highly mobile with only a few engines.

The largest *tajiri* on the lake in 1996 was famous for his mobility. News travel fast on the lake, but nobody could ever say with certainty where he was camped. According to one of his ex-captains, he shifted to completely different parts of the lake dozens of kilometres apart at least every two years, and shifted the site of his camp locally (within 10 km or so) at least every two months. The logic of this system was to uncover, and serially exploit in a highly concentrated way, pockets of hitherto undisturbed breeding.

In order to promote his mobility, this *tajiri* told me that he had 'stripped activities in the camp to a bare minimum'. At most camps around the lake, even small ones, there was an entourage of processing operations, including ones sponsored by the *tajiri* himself. There may also have been poultry-keeping and a range of supplementary economic activities providing services to the fishing crews rather than to the fishing operation itself.

Normally too, if the *tajiri* was resident then all his immediate and sections of his extended family would be there too. But this *tajiri's* camp was not only the largest but also the most specialised (fishing operations only) and the most spartan. Nobody was allowed to bring a woman or dependent into the camp and the women who the *tajiri* employed as cooks 'could do business with any man but could not be claimed by them'. The *tajiri's* high mobility was also supported by a unique contract system which tied fishing crews for six month-long unbroken periods (see below).

Even so, by the mid-1990s, the sheer size of this *tajiri's* fishing operation had become an impediment to rapid mobility. In 1994, in an attempt to overcome his logistical problems, he commissioned a 'floating fishing hotel', which at the time of my fieldwork was still

under construction in Pasiansi boatyard near Mwanza town. The 'fishing hotel' was 46 m long with a steel hull and would comprise 200 berths, a kitchen and a recreation area. It was to be powered by two 250 BHP inboard engines. The shipyard manager told me that the contract price was Tsh 138 m, but because of an increase in the cost of steel the delivery price was likely to be around Tsh 250 m (c USD 45,000).

Organisation in camps also conferred other potential advantages, most immediately the related ones of increased control over fishermen and greater security for the *tajiri's* property. Fishermen were considered more easily managed if they were isolated from family, young women, alcohol and 'certain other distractions of life'. This was held to reduce the incidence of quarrelling and eliminate the main reasons for absenteeism and 'loss of concentration'. Furthermore, detailed supervision over fishing crews was said to minimise the likelihood of the *tajiri's* own crews or outsiders stealing the *tajiri's* nets or siphoning off his fish.

The reverse side of this particular coin was that concentration of individual *tajiri* property in specific camps provided a rationale for a security patrolling system which could be used for other purposes. Prevention of net theft seemed to be used by leading *tajiri* as a pretext for armed patrolling of quite wide areas, and the forcible exclusion of competitors from them. In some areas of the lake this was accompanied by punitive strikes at local village-based *tajiri*, on the pretext of 'recovery of stolen nets'.

Both operating from camps and achieving a high degree of mobility implied having access to engines, at least for towing fishing vessels between camps and patrolling. Having access to an engine also conferred the advantage of being able to fish in deeper waters, and in the process of being able to intensify the production of individual vessels by hanging nets double or triple. The advent of the factories increased and simplified the availability of means for becoming more mobile, organising operations on the basis of camps and fishing more intensively, but did not determine it. Those who adopted these mechanisms of differentiation earliest did so not through the factories, but either as a result of some initial primary accumulation or through strategic alliances with others. Two instances of the latter have already been described. Relatives with access to external sources of finance, who were sometimes already in the fishing business, were encouraged to purchase motors whose use could be pooled and whose running costs could be shared. Amongst the leading *matajiri*, the decisive factor in all cases was the strategic integration of engine ownership into a wider vision of fishing system management.

An apparent anomaly in this 'strategic' vision was the general rejection of the possibility of basing one's operations in multiple smaller camps rather than one very large one. Such a method of organisation might have increased flexibility for movement and reduced costs of disruption, without decisively threatening in-camp supervision and security. Each of the larger factory-owned fleets organised their operations in this way. Possible disadvantages may have been reduced capacity for enforcing fishing ground monopolies and the need to delegate very substantial levels of authority to camp supervisors. The latter at least was not an insoluble problem for the factories, which were already familiar with managing delegated authority both inside their plants and in relation to their agents. On the other hand, it could also be argued that for the factory fleets the generation of core volume rather than unit profit maximization was the main objective and therefore that factory supervisors were working under less exacting conditions than a *tajiri's* supervisors would have been. In any event, while there were some 'absentee' *matajiri* who thought they had found the right person to supervise the single fishing camp in which their fleet was organised, there were only one or two in the whole of the southern part of the lake who felt they had enough employees with the capacity and trustworthiness to run multiple camps.

7.3 Matajiri and Fishing Crews

As in other parts of Tanzania, fishing boat crews on the lake were entirely male and mostly aged between 15 and 25 years. Those with vessels operating out of 'home' landings were usually more or less local. Those with vessels operating out of camps were usually from Musoma region or from Ukwere and Maju districts in Mwanza region. Musoma and Ukwere were the only areas around the Tanzanian part of the lake where there were strong cultural traditions surrounding fishing, and men and women from these places were over represented at all links of the chain.

In these areas informal fishing 'apprenticeships' are said to survive, involving sons both carrying out supporting shore-based tasks and serving in the vessels of male relatives, while gradually being trusted to operate gear on their own. But this route into the fishery has been almost certainly contracting in importance as an increasing proportion of both vessels, gear and the workforce becomes organised in large-scale operations. These operations also have an informal apprentice ship system but it is one much more centered on general labouring with little direct involvement in fishing.

Recruitment to a larger-scale fishing operation generally occurred on the initial basis of gaining admission to a fishing camp. This in turn implied introduction by an individual who is already a member of the camp as well as some bureaucratic formalities. Entry was to a pool of casual general labour responsible for tasks such as latrine-making and portage and, in camps with beach seines, assisting in the final stages of a haul. To get a place on a boat meant staying in a camp for some time while surviving only on scraps or tips, becoming gradually known, and then becoming accepted as a substitute crew member. Depending on the rapidity of crew turnover and/or the rate at which new vessels were being commissioned, the substitute might graduate to the status of a more or less regular crew member.

In none of the camps I visited were crew members employed on any kind of formal or permanent basis. On the other hand, in almost all camps, all vessels had regular crews. These were normally selected by vessel captains and would only be deliberately replaced in exceptional circumstances. A more familiar pattern was for crew members to disappear after 'a big payday' or to become sick or suffer injury. Fishing skills were not a requirement for selection, only willingness to work hard under direction and to not cause trouble. One *tajiri* told me, 'I will employ anyone who can show they really want to work: these days they can be trained quickly'.

The vessel-based labour process mostly involved skills of operating sails and paddles and setting hauling and emptying nets without damaging gear or fish. Only the captain (*nahodha*) of a vessel was expected to have all these skills. Captains were normally at the upper end of the crew age range and were sometimes considerably older. Besides these skills, they were supposed to have a sense of where to set nets and some elementary dispute-resolution skills. There is normally a 'captain of captains' or *meja* who would take decisions concerning the overall disposition of the camp fleet in the fishing ground and who would have a more specific supervisory role. Captains would refer unresolvable disputes or 'misconduct' to the *meja* and normally had no first-line disciplinary functions.

Meja would normally also be responsible for organising camp supplies, transport and weighing, unless there were others appointed to cover those specialist roles. Only in smaller fleets of just a few vessels, where there was no *meja* answerable to the *tajiri*, would Lake Victoria fishing vessel captains enjoy a role approximating that usually associated with the title.

In general, fleet-based fishing crews would not be recruited from a *tajiri's* family members. Nor, in larger fleets, would captains. The

latter would simply be selected by the *maja* or the *tajiri* from amongst existing crew members, or perhaps recruited externally on the basis of a recommendation from an existing captain. In smaller fleets, there was a tendency for captains to be younger relatives of the *tajiri*, however, and there was also a clear (though not universal) tendency for *mejas* in larger non-factory owned operations to be *tajiri's* younger immediate family members. When asked the qualifications necessary to be selected as a *meja*, *matajiri* normally mentioned competence, experience, application and trustworthiness. The most desirable form of experience was held to be previous supervision of a beach seine operation 'someone who can manage those people can manage anything'. Such qualifications were obviously ideals, and family members were no more likely to possess all of them than an outsider. Moreover, fundamental problems arose when a family member who had been appointed revealed himself to be seriously deficient on one or more counts, 'a Wasukuma cannot ask his brother to return property if the brother steals it from him, and he cannot force him out of a job he has appointed him to'. On the other hand, given the boom-like physical production and market conditions up to 1996, and the strong incentive-generating implications of the share-based remuneration system present in the fishery, the most important qualifications for a *meja* was probably financial trustworthiness. Despite numerous counter-examples, this was universally considered to be more likely found amongst family members than strangers.

Captains, even in smaller fleets where they had more responsibility, did not typically enjoy a different level of remuneration from ordinary crew members. Instead they normally received regular token payments plus discretioning 'tips' when catches were good, plus their ordinary share as a crew member. *Meja* who were not relatives of *matajiri*, including those running the factory fishing fleet camps, were normally salaried. In relation to their responsibilities, the basic salaries they reported to me were low (Tsh 20-70 000 (USD 36.4-127.3/month)) but were invariably supplemented by various bonuses and privileges - in some cases disposal of the 'reject' catch.

Since captains generally had no distinct disciplinary role, on-board discipline was part of overall camp discipline. All the camps I visited, small and large, managed camp discipline in the first instance through the promulgation of a series of camp rules. Since camps were, in effect, 'total institutions' in which crew members worked, eat, slept, worked and 'played', these rules normally expressed what were considered by *matajiri* to be the most important principles for maintaining social order generally.

Certain core principles, and therefore camp rules, were remarkably similar from one *tajiri* to another. They can be summarised as follows: the protection of property, particularly the property of the *tajiri* in terms of gear and fish; protection of the camp and its products from disease; protection of the social peace; and protection of the continuity of the labour process. Protection of property in general was normally expressed in rules prohibiting theft, while protection of the property of the *tajiri* was expressed in more elaborate rules prohibiting unauthorised landings and the like by crew members. Protection of the camp and its products from disease was normally expressed in terms of rules about toilet behaviour.

Protection of the social peace tended to be expressed more elaborately. The commonest prohibition was on fighting and sometimes on 'abuse'. Next came prohibitions on drunkenness and on possession of various types of drink. Next came prohibitions concerning sexual relations. This was where the greatest variation in rules was found, depending not at all on *matajiri's* ideas about 'morality', but rather their ideas of how to minimize the 'problems' brought about by the presence in all camps of greater or lesser numbers of women cooks.

Like 'bar girls', cooks in fishing camps were employed not only to cook but to be available for business as prostitutes. Most fishing crew members had very clear ideas about what kind of cooks they wanted: they were supposed to be under 25 years old and physically attractive. If they could actually prepare food competently, this was all to the good, but it was not the principal qualification. [Stories abounded of fishing crew chasing away older cooks.]

'The problem is' one *tajiri* told me, 'that men so easily become confused about women'. The main confusion arose when fishing crew members became emotionally attached to particular cooks, claimed them as their personal property and prevented other men from hiring them. *Matajiri* reacted to this in two different ways: some, like the largest one, forbade such attachments with rules such as 'no woman can be the property of a man', others condoned them and then had to introduce rules protecting the 'groom's' property rights, i. e., 'no adultery in the camp'. The latter rule tended to predominate where fishermen were also independently allowed to bring women into the camps as wives, the former where they did not. In many camps there was also a prohibition on rape, which obviously undermined the degree of order which the market-based organisation of sexual services imposed.

The sanctions which were associated with transgressing these different rules varied from camp to camp, but theft of gear or catch was always associated with dismissal without pay and sometimes also with corporal punishment. At the other end of the scale were rules whose transgression attracted only fines. The largest number of rules and also the most draconian system of punishment I heard of was in the largest camp on the lake, where there were said to be 90 rules, [Including prohibiting disclosure of the secrets of the camp . Discovery entailed dismissal without pay and 50 strokes of the cane.] many of whose transgression was punished - inter alia - by 50 strokes of the cane. I asked my informant from this camp whether it was an easy task for a *tajiri* to enforce such a system. It was no problem at all, I was told, 'Just think about these two things. This *tajiri* has people volunteering to give the corporal punishment. He never has to ask a particular individual to do it, and he has never ever had a net stolen'.

Clearly, not every *tajiri* possessed this degree of authority and commanded this degree of compliance. But glimpses of life in other camps suggested that he was by no means unique in these respects. It was common, for example, to hear a *tajiri* interrupt his camp's collective meals to threateningly berate crews for one deficiency or another, and to be listened to in complete and utter silence. More widely in camps there was the institutional atmosphere of a traditional school or of the armed forces; the contrast with the cheerful and democratic anarchy of camps in the Rufiji (cf. Gibbon 1997a) was a profound one.

There were a number of reasons for this contrast, not least the greater dependency of Lake Victoria fishing crew on *matajiri* for employment, the control by *matajiri* over the selling process, and the crew remuneration system which tied payment to crew members' completion of fixed-term contracts and which in turn tied completion of these contracts to crew members' 'good behaviour'.

During his fieldwork in 1992, Wilson (1993) counted 46 different payment systems for fishing crew on the lake. I stopped counting after the discovering that the first 12 *matajiri* I interviewed all used different systems. The systems had three main general characteristics. Firstly, they were almost all based on shares of catches contributed to specific vessels; secondly, in only one case did the crew jointly receive more than a 40 per cent share of the value after 'expenses' were discounted, as they almost always were, against total catch values; thirdly, the systems were usually non-transparent in the sense that *tajiri's* deductions for expenses (including food) were typically made on the basis of non-symmetrical access to price and other information. It is also worth pointing out that many *matajiri* retained the 'right' to make extraordinary as well as regular deductions from the shares of particular fishermen, to cover the cost of

damage to or loss of the *tajiri's* property.

In the beach seine fishery crew payment was normally on the basis of catches (and continuous attendance) over a four-day period. In the gillnet fishery camps 'contract' periods were much longer. The largest *tajiri* offered only a 'contract' lasting 6 months. This had apparently been designed so that crew members were not lost during the relocation of camps. The system I came across most frequently involved a prior deduction of expenses followed by a division of the remaining returns on a two crew: five *tajiri* basis. The two crew shares were then divided equally amongst four crew members. There had been a movement toward less skewed distributions in the beach seine fishery, however, where *matajiri* openly acknowledged that recruiting and retaining labour was a serious problem.

Maintaining the continuity of operations via minimizing labour turnover was actually one of the most serious problems which *matajiri* faced. The very way this problem was generally formulated ('avoiding desertion') gave a clue to its source. Staying all night every night on the lake water surface, sheltered only by a flimsy tarpaulin shared with three others, confined to camps and subject to the military-like supervision of most aspects of their personal lives during their 'free time', brutalised for even minor transgressions, poorly fed and obliged to organize their own shelter, crew members frequently decided to forego whatever the *tajiri* owed them and to runaway. No *tajiri* was willing to reveal rates of 'desertion' from his own camp, but they were all clearly high.

One common story concerning the largest *tajiri* on the lake, whose share system was probably the most favourable to crew members of any in the gillnet fishery, was that he could afford such 'generous' terms (in terms of their effect on absolute wage levels) because so few fishing crew lasted the full six months of the contract period and thereby became entitled to their wages. There had indeed been a major outbreak of diarrhoeal disease in his camp on Maisome island a few weeks before I interviewed him, which had led to deaths and 'desertions'. [This was almost certainly related to his camp's catering system and rules governing crew consumption of food. Crew received an unremitting diet of boiled Nile Perch and black ugali . Uneaten food was returned to the pot and recooked. Throwing food away was punished by a fine equivalent in value to 100 kg ugali and by corporal punishment.]

Despite the appalling conditions and huge disparities in incomes from fishing between fishermen and *tajiri* (see below), I neither saw nor heard evidence concerning collective fishing crew resistance in the camps. 'Desertion', theft of gear and selling fish direct to collectors or other *tajiri* may all be perhaps construed as individual, or in the latter two cases, collective resistance- but not particularly convincingly. Rather, they are more simply explained in terms of resignation or despair in the first case and greed in the second.

The reasons for lack of resistance are not particularly hard to discover. Provided a young man was physically strong, the returns from a few consecutive fishery contracts provided a more or less reliable route to building a tiny capital. The only locally available alternatives for those without land were petty trade and goldmining. Without initial capital, returns in petty trade were very low, while gold mining was equally uncomfortable and oppressive and while the potential returns were greater, the chances of obtaining them were very remote indeed. Secondly, many *matajiri* fishing from camps were closely enough personally involved in supervision to be able to anticipate crises and take preventive or avoiding action. 'The trick', I was frequently told, 'is to be close to one's fishermen'. Thirdly, fear was clearly a common and powerful motive. 'One has to be seen being tough' and 'there's always a time when you need to use force', I was told by *matajiri*.

The largest *tajiri* on the lake, in at least one respect an enlightened man (the only one, for example, who provided fishing crew with life jackets), probably commanded more fear than all the others combined. I was told that he carried a pistol and that he also was seen occasionally cleaning a couple of semi-automatic rifles in public. When I told another *tajiri* that during my interview with him the pistol was not in evidence he shrugged his shoulders and said, 'yes, but the point has been made'.

7.4 Factory Owners and Operators

As already stated, four of the seven factories operating in Mwanza at the time of the fieldwork were branch plants of Kenyan Nile Perch operations. The single factory operating in Musoma was also essentially a Kenyan branch plant, as was one of the four in Mwanza in the development phase. A sizeable chunk of Kenyan business is under Kenyan Asian control and this was reflected in the ownership and management profiles of the Kenyan-controlled plants. Two of the ones operational in Mwanza appeared to be under exclusively Kenyan Asian ownership and management but with some Indian expatriate technical staff, while both the Musoma plant and the Kenyan plant under construction seemed to have Asian and African shareholders and in the former case an African manager. The largest operational Kenyan-owned plant was apparently owned by Mombasa-based Kenyan Arabs and managed with assistance from Indian expatriates by their 'cousins' who had been running a large transport business in Mwanza. The remaining and smallest operational Kenyan-owned plant was said to have been owned by Kikuyu. It was managed by a Tanzanian African and a European expatriate. As far as I could establish the ultimate background of most of these enterprises was the food and drink industry. One of the companies also owned a processing plant for prawn in Dar es Salaam. The three functioning non-Kenyan plants were (at least partly) owned and managed by a Tanzanian of Greek origin, a Tanzanian of Asian origin and a European expatriate and his family.

The family of the Tanzanian of Greek origin had lived in the Mwanza area for three generations and had a number of local business interests. The Tanzanian of Asian origin came from Dar es Salaam, where he had earlier pursued a career in publishing. The European expatriate's background was in the construction industry, primarily donor contracts. One of these plants employed Indian expatriate technical staff also.

One of the three plants in the development phase so far not described were owned respectively by a European expatriate with existing business interests in Dar es Salaam, in partnership with two Mwanza-based Tanzanian Asians. A second was owned by a consortium of an African from Mwanza, an American and a third partner who had also been involved in the shellfish trade in Dar es Salaam. The final plant, where no work had yet started, was to be based on the site of the failed *Haplochromis* fishmeal plant at Ilemera north. The company which had either leased or bought this plant from TAFICO was headed by the most important figure in the Tanzanian marine fisheries business - a well-connected European expatriate who made his initial fortune with a USD 6.2m commission on a military supply contract to the Tanzania People's Defence Force (see Gibbon, 1997a). Amongst the plants in the development phase, the management of the Kenyan owned and the African-Somalia-American owned ones were already visibly active on the local stage; those of the remaining two were not.

Relations amongst the Mwanza plant owners' representatives were not particularly good. There were various levels of enmity and alliance between them, but it was not easy to distinguish how serious most antagonisms really were, what their precise implications were in practice or the degree to which they simply reflected commercial competition. There were said to be feuds involving at least three of the Kenyan parent companies which had plants in operation or under construction in Mwanza. I was told, 'they have

competed with each other in mad ways for years'. But while there was plenty of (sometimes vicious) rumour mongering between these plants, I saw little direct evidence of competition between them outside of 'normal business channels'. A second set of antagonisms was said to have existed between the Kenyan-owned operations already collecting fresh fish from Tanzania for processing in Kenya itself in the early 1990s, and the two operations set up shortly after by the Tanzanian citizens. 'They tried to push the fresh fish price up beyond our resources'. This stage now seemed to have passed however, and both the companies owned by Tanzanian citizens had good relations (eg. borrowing and lending spare parts) with one of the Kenyan ones.

There was however one clearly active difference, which united to different degrees all the Kenyan and Tanzanian-owned against the plant owned and managed by the European expatriate. This appeared to concern this plant owner's decision to declare the unit f.o.b. export value of his fish to the Tanzanian authorities at a considerably higher price than that declared by all his competitors. This was perceived by some of the other companies as endangering their profitability and someone evidently decided to give him a hard time. According to the owner of this plant he had faced a 'Mafia-like campaign of harassment'. People had 'got at' the Tax and Immigration authorities, who were 'coming to the plant every week'. The local police were regularly delaying his trucks from leaving town on the slightest pretext, so causing them to miss flights in Dar es Salaam. He had discovered that bribes had been paid to one or two of his employees to sabotage the engine of his trawler and to put bad fish into his export consignments. The day before I left Mwanza the local radio carried a story, which I was unable to check, that some of his collector boats had been burnt at his jetty. I asked another proprietor whom I bumped into what he thought had happened: 'who knows. He doesn't play ball, that's for sure'.

Early in 1994 the proprietor of one of the locally-owned plants circulated other owners both in Mwanza and Musoma with a proposal to form a 'Tanzania Fish Processors' Association' (TFPA). The organisation was launched later in the year and has functioned ever since. The purpose of the organisation is to discuss and promote the owners' common interests. Basically this meant relations with the state (local and national) and fresh fish purchase price levels on the lake. With the possible exception of the European expatriate owner, there was a high degree of unity amongst the proprietors on the first range of questions, but a strong degree of scepticism about the point of pursuing them. This question will be returned to. There was an even higher degree of scepticism about collectively pursuing the fresh fish price question. From 1993 onward there were several informal agreements reached to try to hold or force down the purchase price on the lake, but until the time of my fieldwork these had all collapsed after a short time.

The TFPA did not play any role in coordinating inter-firm linkages or cooperation along any other lines. This was consistent with one of the three central elements of the general business strategies of most of the companies, insofar as such strategies would be detected - namely a minimization of enterprise dependence on the local environment except as a source of raw material and basically unskilled labour. This strategic line was evident primarily in product choice and in enterprise relations with the state.

As already described, some of the Kenyan companies who eventually invested in production of frozen fillet in Mwanza were reluctant to take even this step without compulsion from the Tanzanian government side, preferring to export semi-processed fish for finishing in Kenya. Forced to set up shop for processing proper in Tanzania, all but two chose to solely produce the line with least value-added, namely frozen fillet. While the technology required to produce frozen rather than chilled fillet is actually more complex and expensive, as already noted, the latter's transport and related communication demands are much tougher. Secondly, the value-added of the chilled product comes from the greater time and care being spent in its preparation. This entails more intensive supervision than the frozen line, with a consequent greater dependence on a certain kind of qualified labour. The qualifications in question were not

necessarily technical and therefore could not be imported off-the-peg, but they did require proper training and motivation.

The relation of the factories to the state was quite simple. Given the nature of government institutions in Tanzania, central and local, there was very little that the factories could expect from them. Any newly investing firm qualified for long-term land leases and relief on various kinds of tax and duty liabilities in its first four years of operation, and all exporters enjoyed the rights to disposal over earned foreign exchange. But there were no other special incentives for exporters and no prioritizing of exporting firms for supply or even repair of basic infrastructural services. Only encountering the state and state officials as collectors of royalties, taxes and fees, official and unofficial, the factories' general strategy was to have as little to do with it as possible: 'you just have to avoid it. The more they became involved, the more they want. A hungry cat on a pile of roe will eat the whole pile if it gets the chance.'

The line between avoiding involvement and avoiding legal liabilities was a thin one which most companies did not recognize and which could easily backfire into increased entanglement. Since all but one of the companies systematically underdeclared on export values of fillet (and fish maws), the anomaly emerged that Zairean exporters of dried salted reject fish were paying export royalty based on a declared export price of USD 2.50/kg, while factory exporters of frozen fillet were paying royalties on a declared export value of only USD 1/kg. [Of course, the Zaireans were massively underdeclaring export volumes, in contrast to the factories.] Royalty levels in both cases were 5 per cent of declared f.o.b. values; in addition exporters had to pay a stamp duty tax of 1.2 per cent of export values. The factories had long complained that this level of taxation was 'penally high' in relation to Kenya and Uganda, where royalties were nominal or non-existent, and privately justified their underdeclaration on value on this basis. For months the TFPA sought a meeting with government ministers to review the royalty level. When the meeting eventually occurred, however, it was told by the Deputy Minister of Finance that not only was the royalty level not open for discussion but that henceforth they too would have to declare on f.o.b. values of USD 2.50/kg. The immediate background to this meeting was, apparently, not the requests of the TFPA, but the 'exposure' of its members to the newly-appointed Prime Minister by one of the local Members of Parliament - himself an important local businessman. [Since the international price of Nile Perch was an open secret in Mwanza, the events precipitating this exposure are not clear.] Sometime after this meeting, the TFPA's members are said to have hosted a further meeting with the Deputy Minister, the Minister for Tourism and Natural Resources, and the Mwanza Regional Commissioner, Regional Development Director and Regional Director for Natural Resources. At this meeting a bribe is said to have been offered, and accepted, to waive the proposed change in declaration levels.

This chain of events became entangled with another: accusations by the country's leading opposition politician against the Minister of Finance himself for accepting a bribe from a group of crude oil importers to waive an increase in tariffs on crude oil used for producing soap, and the initiation of a Parliamentary Select Committee enquiry into these allegations. The chairman of this committee, a close associate of the just replaced President who probably had his own motives, chose to broaden the enquiry to include not only the fish royalty waiver but also customs duty waivers on transit trade through Zanzibar and the conduct of the opposition figure from whom the main accusation arose. Not surprisingly, the outcome was rather confusing. All three ministers involved in the two cases were obliged to resign and it was apparently agreed that henceforth fillet export royalty would be levelled on an imputed f.o.b. value of USD 2/kg (Guardian, 25 August, 1996; 3 October, 1996; 8 November, 1996). Attracting unwanted attention, becoming inadvertently linked to a more important cause celebre, and being unable to call on the public support of more than a single Member of Parliament, [Ernest Nyanda, the ruling party's MP for Busega, launched a spirited defence of the economic contribution of the factories when the committee's report was discussed in Parliament.] all underlined the political inexperience of the factory owners, and the costs of their

decision to isolate themselves from the state.

A second main element of the business strategies of most enterprises concerned a linked but somewhat different question: business information. I was told repeatedly that 'the most important thing to tell any manager in a private enterprise in Tanzania is to do all his own research into prices and running costs'. Shortening and centralising business information supply lines was believed to be a necessary (but not of course sufficient) condition of avoiding both systematic and opportunistic employee fraud, which was in turn frequently cited as one of the major local business risks. Managers often went to seemingly extreme lengths and costs in time of gathering information of this kind, and not just in fisheries. During an interview with a driver for the largest road transport company in the country for example, I was told that 'the *tajiri* always himself tests or independently gets the latest information on all the routes in terms of fuel consumption, other costs, going rates for a load and so on'.

A final, complementary strategic principle was the subcontracting of supervisory and other costs, embodied outstandingly in the shifting of responsibility for the bulk of fishing operations to vessel-owners. Most factories also effectually subcontracted some aspects of financial risk, through the system of advancing to collectors fixed sums of capital against which to buy fixed volumes of fresh fish, with freshness being determined ultimately at a stage further up the chain than initial purchase, and/or by advancing working capital to collectors on a loan basis. Some furthermore subcontracted the bearing of both the supervisory and part of the running costs of collection by making *matajiri* responsible for it.

One or two factory owners tried to justify these practices in terms of the wider social and economic benefits of 'spreading wealth'. The spreading of wealth to an albeit thin layer of *matajiri*, and possibly to another of semi-independent collectors, was certainly a side effect. But the real reasoning behind them was an extension of that behind the previous principle. As one manager told me:

'In this country, whatever enterprise you're in and whatever management system you adopt, most of your employees will try to establish their own margins. The point is to try to work out how to go with the grain of this system and use it. If you try to go against it, it'll consume you.'

It is important to emphasize that there was only one factory whose owner had explicitly codified all three of these principles, or at any rate who was willing to reveal to me that he had codified them. Moreover, while most owners spontaneously volunteered one of them, they were probably also applying a second or a third in only a diluted form or neglecting it altogether.

On the other hand, other than the 'spreading of wealth' argument there were no alternative stories about the logic of the factory owners' corporate behaviour. And where these principles were not followed, owners used the same vocabulary to sum up the consequences. Asked the main difference between working in the fisheries sector and in his previous occupation, the only producer specialising in chilled fillet answered: 'apart from the Mafia shit it's the supervision. I now spend 50 percent of my time supervising'.

7.5 Market-Based Dried Fish Traders in Tanzania

Watu wa mbao (literally, stallholders) in formal markets in large towns comprised the elite of plebian traders in Tanzania. Those in

the dried fish section in the sweaty, windowless basement of Kariakoo and those on the *sangara* stands at the north end of the vast Kirumba market were no exception. In some ways, however, they were quite different groups.

The Kirumba *sangara* traders were divided organisationally into two groups separated, as is so common in Tanzania, along age lines. The *wazee* (elders) controlled the original Kirumba fish traders' cooperative. They were overwhelmingly male and in their 40s or over. Most came originally from Kagera Region or Ukerewe island in Mwanza region, and usually had been long-term residents of Mwanza town. Most had been involved in trading or the fishery or both for most of their lives, but a few came from more elevated backgrounds, including professional ones (the chairman of the society was formerly an engineer in the Mwanza municipality's Works Department, for example). The *vijana* (youth) had in the last few years formed their own society, after being told by the *Wazee* that they could no longer 'borrow' their trading licenses. These were all men aged between 25 and 35, mostly also from Kagera region, who had relatively recently arrived in Mwanza town after working in petty trade or in the Nile Perch fishery itself. Unlike the *wazee* they tended to be well-educated: a majority whom I interviewed had attended secondary school. [Secondary education in Tanzania has one of the lowest coverages by age group in the world - substantially less than 5 per cent.]

Dried fish traders in Kariakoo resembled the Kirumba *wazee* rather than the *vijana* in age and educational profiles, and were organised in a single cooperative society. Otherwise they were a more heterogeneous group than those at Kirumba. About one third were women and, as might be expected in a capital city, a number of the men had employment histories which included blue collar work. A majority had always been traders however, and a large majority came from the country's two traditional centres of fish consumption - Mtwara and Lindi on the south coast and Musoma region on the eastern side of the Lake. It was those from Musoma who were mainly women. The largest *sangara* trader in Kariakoo was a man from Kagera region.

In both these large urban markets entry appeared to be on the basis of a recommendation by an existing trader to the relevant cooperative society. These recommended, or at least those accepted after recommendation, tended to be relatives of the person sponsoring them - 'we would only accept someone if we were confident that there was a person already here who would be responsible for them'. Amongst traders in their first years in these fish markets, market trading was a full-time occupation. Later in the career cycle there was a tendency to diversify. This tendency was definitely more pronounced in Dar es Salaam than it was in Mwanza, although even there a sizeable number of traders owned fishing vessels and others had non-fish trading interests, either elsewhere at Kirumba mwaloni or in the streets around it. An apparent pattern was for more successful traders to diversify into formal sector retailing or ownership of a taxi, but to retain and often expand their fish business, managed by trusted family members. As will be seen, another common business practice was to form quasi-partnerships in order to facilitate one of the parties (or both in rotation) travelling outside the market to buy or sell. All this meant that there were far more licensed traders than stalls in the markets concerned.

My own introduction to the complexities of the economic relations in which these traders were involved began when I received apparently non-plussed responses to my questions asking traders to differentiate their fellow operatives by size of turnover. When I then explained the latter category, I was told 'that's not how it works'. Setting aside the issue of turnover for a moment, how was differentiation then actually recognised? In both Kariakoo and Kirumba, traders' wealth and status was reckoned in terms of 'how many they had to share a truck with when they travelled out.

When they did travel to buy or sell, traders in both markets invariably invested all their working capital in the consignment they took with them or brought back. A 'big' trader was one who needed to find only one or more frequently two others to fill a 10-14 ton lorry, i. e. whose working capital was equivalent to the value of 4-7 tons of dried fish. During my fieldwork, the wholesale price at Kirumba of a ton of artisanally processed *sangara* worked out at around Tsh 1 m or USD 1800. [Market traders actually made their calculations in tenga ; these have been converted to their average metric weight.] Only a handful of traders in both markets had working capitals of these dimensions. Most in the two markets could purchase perhaps 1.5 tons, but a sizeable minority struggled to purchase a ton.

'Travelling out' to buy or sell were only two components of a complex of interrelated trading activities carried out by dried fish traders at Karackoo and Kirumba. Others included taking orders in their 'home' market from outside traders and filling them from one's own stock, stock provided by a 'partner', stock being offered by incoming traders or possibly other resident traders' own stocks; spot selling in one's own market from one's own stock or stock provided by a 'partner'; and storing and selling stocks in one's own market on behalf of incoming traders. The weight occupied in this complex by travelling out to buy or sell depended on the position of the market in the economic geography of the dried fish trade, upon market conditions and upon a trader's own status and stage in the career cycle. Some traders in some markets, including many of the most wealthy ones, no longer travelled out to buy or sell and some did not even rely on a partner to supply them. 'Travelling out to Dar es Salaam is more something for the *vijana*, [Transport of goods belonging to traders in large formal markets was generally on credit, reflecting partly an excess of supply of vehicles over demand by traders, but also a confidence on the part of drivers that they could always trace consignees who were based in such markets.] so they become known in the rational trade', I was told by a trader in Mwanza.

Traders in Kirumba and especially Kariackoo referred to themselves as *majumla* (wholesalers) as well *watu wa mbao*. But incoming traders and even retailers trading a few hundred metres away called them *madalali* (brokers). In reality the markets they operated in combined both these functions, but it was the latter role which predominated, particularly among better established traders.

In Tanzania as everywhere else, a broker is a trader who does not advance his or her own working capital in a deal but simply sells on commission. A high (but almost completely indeterminable) proportion of trade in fish going through large markets entails traders from various parts of the country bringing consignments into large towns on a more or less speculative basis. At the gate of the main formal market (or even at the bus or railway station) they will typically be met by one or more *gofi*. For 'pocket money' the *gofi* would introduce the trader to a *dalali* inside the market hall. Normally the *dalali* would agree only to store the trader's consignment and sell it on his or her behalf. It is up to the incoming trader to nominate a reserve price. The *dalali's* commission is whatever he or she can obtain for the commodity over and above this reserve price. The incoming trader is thereby obliged to wait around until the goods are sold. *Madali* arrange local transport and portage, make incoming traders on-the-spot-cash advances to cover their expenses during the wait and may recommend them a place to stay. This same 'hosting' service is extended to incoming buyers at the market. There were occasional instances where a *dalali* paid cash on the spot to an incoming trader, but this generally seemed to be where he had already sold the same consignment. 'The *dalali* normally makes you wait, even if you are a valued supplier'. 'Valued' and regular supplies may have to wait a couple of days to get their money. This gives them time to relax and perhaps place some orders for commodities to take home. Others who are not known or not valued may have to wait a week or even longer. Therefore they may at some stage have to go back to the *dalali* to negotiate some more living expenses; if they urgently need to get home they will also be obliged to drop their reserve price. In any event, they begin to see their profits evaporating: 'the *dalali* is always the winner'. This

system is called *mali kauri* (literally, 'matters concerning exchange').

The other side of the *mali kauri* system is that a trader travelling out to a large formal market to obtain goods for resale at home will not be extended any kind of credit by traders in the market he visits, instead having to come up with the full payment price in a cash advance. I came across instances where butcher shop owners obtained 'fresh' or frozen-thawed Nile Perch on 50 per cent credit upstairs in the fresh fish section at Kariakoo, but downstairs in the dried fish section I was told that this was almost unknown. Traders travelling into a market were therefore always at a transactional disadvantage, having to give credit if they were selling and being denied it if they were buying.

Only where Kirumba-based quasi-partnerships involving collection from *matajiri* on the lake were concerned, was this system diluted. Even here, the 'partner' responsible for buying *kayabo* would usually be expected to pay cash on the spot. However, if a factory collector had not shown up and a much higher catch than usual had been artisanally processed, and if the roving partner was a 'regular and valued' buyer, he would be offered the excess catch on credit (to be paid in full on his next visit).

Quasi-partnerships were common at Kirumba and there were a few at Karikoo as well. Unlike most European business partnerships they involved no real pooling of capital. In fact, they in some respects embodied within a single, institutionalised business relationship the broader complex of dealings depicted above between traders 'outside' and 'inside' fixed formal markets. In the case of Kirumba-based partnerships, the 'partner' based on the lake would have been probably himself processing, definitely collecting, and setting a reserve price for 'his' fish in relation to the other partner, who de facto would have been selling for him on commission at Kirumba mwaloni itself. On the other hand, the roving processor-collectors would normally also have been receiving advances from the Kirumba mwaloni-based trader to buy on the latter's account, with the relation partly reversed: the *mwaloni* trader would specify a reserve price and the processor-collector retain as commission whatever the difference might be between this and his own buying price. In the few instances where a Kirumba trader worked together with another person (usually a relative) on the basis of a genuinely common capital, it was normally the property of only one of them, with the non-owner receiving only a discretionary share of profits.

Nobody I interviewed seem to know how and when *mali kauri* had started in the fish trade. Like many such institutions it probably had a long history and had simply become more general over the years. When I asked, 'had it always been like this', the replies I got suggested not that incoming traders had ever been paid on the spot by traders inside a market, but only that at one time (maybe in the mid-1980s) they had been allowed to temporarily set themselves up as wholesalers in the market of their destination and sell there on their own account. The process of generalisation of *mali kauri* was therefore one in which resident traders asserted a monopoly over local wholesaling.

The capacity to assert resident trader monopoly implied the existence of a degree of unity and solidarity amongst resident traders in given markets. By the time of my fieldwork it was evident that, by Tanzanian business standards, there were quite high levels of trust generally between such traders. I personally witnessed large cash sums (Tsh 0.5 m (USD 900)) being advanced between traders in the same market on short-term credit, and at every fixed formal market I visited resident traders seemed to be selling goods to each other on credit and receiving credit in return. At the same time it was clear that not all traders in a given market were included in such systems, and that the trust involved was acquired only after a number of years and only after obtaining a reputation for being 'honest with ones's friends'.

Traders in the same market also shared with others (though again, by no means all others) market information on what was happening in supplying areas, at intermediary markets and in markets of final consumption and probably jointly took decisions about whether it was necessary or desirable to travel out to buy or sell. They also cooperated in such things as borrowing or lending stalls and storage space and in renting trucks when they travelled out or in with consignments (here there was a rule of thumb to try to restrict cooperation to those with the same or larger consignments than oneself, however, since the larger number of people putting together a load, the more difficulty would arise in supervising it and setting the bill for it). [] They also acted collectively in maintaining public fictions that their cooperative societies conformed to the model of pooling capital to undertake joint purchases, rather than simply reducing individual members' tax and license fee liabilities.

Besides presumably having acted collectively to prevent incoming traders from competing with them in the local wholesale trade, groups of resident traders in fixed formal markets had sometimes also combined to try to restrict competition in other ways. Most notably, the Kirumba traders had combined inside and outside the framework of their cooperative societies to prevent inroads by outside traders on their supply position on the lake. At least one of the societies had gone to both the District and Regional Commissioner with complaints that by-passing Kirumba, outside traders were reducing revenues to Mwanza Municipality in the form of market levies (the main locally-raised source of local government revenue).

While there is no reason to believe that the district and regional authorities were anything less than sympathetic, it is unlikely that they had the capacity to enforce measures preventing outsiders buying on the lake. However, success was clearly achieved, one way or the other, in preventing the most powerful group of customers at Kirumba from buying on the lake. After incidents provoked by local *dagaa* traders against the Zairean counterparts, both Zairean *dagaa* and *kayabo* traders decided to restrict their activities to purchasing only from Kirumba traders at Kirumba mwaloni itself. [It was dagaa traders who this was primarily aimed at (see Gibbon, 1997b), but it served to intimidate sangara traders too.] One lake-based processor I interviewed told me that he had once tried to sell toa Zairean at Kirumba, outside the *mwaloni*: 'he didn't seem to know what I was talking about. Those fellows are conditioned to buy only on the tables'.

Henceforth, relations between Kirumba and Zairean traders were entirely mediated through the category of intermediaries known as *magofi*. The term '*magofi*' was derived from the registration plate letters ('GOF') of the vehicles used by the Tanzanian Field Force Unit (mobile riot squad): 'they rush around in all directions and always leave victims in their wake'. Similar groups operated in and around similar locations in most market centres in Tanzania, as well as in tourist centres like Arusha and Moshi (where they are known as 'flycatchers' (Chachage, 1997)). Their role was to provide a variety of more or less genuine services to 'strangers', from assisting them in negotiating with government agents to procuring (or pretending to procure) accommodation, transport, certain types of high-value commodity, sexual services and so on.

A specialised group of *magofi* served the Zaireans at Kirumba. They mostly spoke Lingale and Kiswahili and were divided roughly evenly between a number with some personal connection to Zaire, and a number of Tanzanians who had deliberately set out to provide a genuine and comprehensive 'wheel-oiling' service. Nobody in either group bothered to solicit trade at the railway station: 'we are known. The Zaireans pass out addresses to each other. They appear at our doors'. The group took care of all aspects of purchasing, local transport and export for the Zaireans, from Kirumba to the Regional Fisheries Office (export documentation) and on

to Mwanza South goods station (onward transport to Kigoma). In 1996 they were charging a total commission of Tsh 500/*tenga*, plus 'legitimate expenses' (e.g., bribes). The group all had the same price. 'we set it together and review it together'.

Presumably, the economic rationale for the '*mali kauri-in*, no credit-out' system was that it minimised risk for resident traders in fixed markets. It minimised their outlay of risk capital in the form both of money, which given the low-mark-ups in these trades would otherwise have been relatively high, and goods. Such systems make spontaneous sense to traders in fixed markets when they are relatively poor in capital, where trade is mainly carried out on a one-off and speculative basis, and where there is no institutionalised way to recover credit from those in 'foreign places'. But where traders have accumulated enough to buy on their own account, where both supply and demand functions are well established and where regular suppliers and customers in distant places are known and probably traceable if the necessity arose, then the system appeared to reflect the power pretensions of resident traders in different locations rather than any strictly economic rationale.

In the first place the system has an obviously deterrent effect on suppliers who are resident in fixed markets taking responsibility for deliveries to more distant markets, except in periods of bumper stocks when there are no alternative possibilities of disposing of these stocks. Because of this, traders in more distant fixed formal markets have to incur extra costs in travelling diet to purchase supplies, usually personally but occasionally via another person acting on their behalf. In the Tanzanian contexts of appalling infrastructure and pervasive lack of personal security the risks involved are also very high - certainly higher than paying 'at home' for deliveries in cash. In the process the costs of goods in end-destination markets rise higher than transport costs would suggest or justify.

In the second place, given that a trader travelling out to buy is taking a risk simply in the act of trading, and that he or she will not be offered credit in any geographically intermediate market (however formalised that market may be), he or she might as well travel onto the direct source of supply and so also secure the profit which would otherwise have been gained by the trader in the intermediate market. Meanwhile, because sources of supply are being 'invaded' by traders from areas of end-consumption, competition there will be intensifying for suppliers, and it will be these suppliers (rather than the traders in the intermediate markets) who become the main beneficiaries after all.

Of course, some of the long-distance trade in artisanally processed fish was still carried out on a speculative one-off basis by mobile young businessmen who disappeared from the trade as rapidly as they entered it. And of course it was not in the interests of resident traders in fixed markets either to give them credit when they bought or pay them on the spot when they sold. Yet the ongoing presence of such traders was probably more of an effect of the *mali kauri* system than its cause, since the lack of cheap and effective conventions for exchanges between established traders was always throwing up opportunities for arbitrating.

As indicated, the pattern of intensity of physical movements by traders tended to directly reflect the overall pattern of national supply and demand. When there was heavy excess of supply on the lake, traders from the islands would descend on Kirumba, Dar es Salaam, all points in between, and a few beyond. If Kirumba became oversupplied, resident traders there would stop going to the islands and travel out to Dar es Salaam instead. And if supplies ran short in Dar es Salaam there would be a stream of traders from the capital descending on Kirumba and the island camps.

Against the background of this pattern there had nonetheless been a long-term tendency for supply of *kayabo* (and *dagaa*) to

tighten in the Tanzanian consuming areas, as Zairean traders at Kirumba increasingly came to dominate the demand position around the lake. This meant that 'travelling out' to sell, both by traders from the islands (except to Kirumba) and Kirumba mwaloni itself had become steadily more infrequent, while 'travelling out' to buy by traders from Dar es Salaam and Mtwara had become steadily more frequent: 'even established traders (at Kariakoo, P.G.) have to travel out to buy these days'. This was noticeably less true for smoked Nile Perch however, a product unpopular in Zaire and which Kirumba traders had never been much interested in either.

Unsurprisingly, the essentially antagonistic pattern of relations between traders in fixed formal markets in different parts of the country was reflected in unflattering mutual stereotypes. Traders in outside markets were always '*madalali*'; those in Dar es Salaam were always 'smooth talking Waswahili, and so on.

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8 Earnings and Profits

The quantitative information I collected was neither sufficiently comprehensive nor reliable for very precise statements to be made concerning earnings and profits in the Nile Perch chain. In particular it proved impossible to obtain systematic information about the variable costs of the processing plants. [O Riordan (1996) states that for Kenyan processing plants variable costs excepting raw material were Ksh. 12 - 17/kg wet fish, or Ksh 36 - 51 (Tsh 360 - 510 or US 65 - 92c) for each kg of fillet produced. It is not clear how reliable these calculations are, for his other figures appear to seriously understate raw material costs and overstate export prices.] Incomes from *mabondo* are also not considered. However, some very rough indications may be provided about the earnings and profits of certain "artisanal" producers, processors and traders in the whole wet fish, *kayabo* and punk sub-chains. A starting-point of this analysis can be data on catches, expenses, share systems and depreciation in the artisanal fishing fleet.

The analysis can begin with the owner of a single modern but Nile Perch powered fishing vessel (Case A1). Assuming that this planked vessel costs c. Tsh. 0.275 m (USD 500), was equipped with 60 nets costing a total of Tsh. 1.2 m (USD 2200) and was catching about 30 kg/day (less 10 per cent rejects) at a price of Tsh 350/kg with a crew of three working on a post-normal deduction system of *tajiri* 5: crew 2, the results would be as follows. Catches would have fetched Tsh 8910/day plus the sale of one reject fish at Tsh 500/day as captain's tip, leaving Tsh 7410/day. It would be this sum which was shared; the crew would receive Tsh. 2117/day jointly or Tsh 706/day each and the *tajiri* Tsh. 5293/day. However, from this actual income should be deducted the *tajiri's* unrecovered depreciation costs. Assuming the vessel to be depreciating over 5 years and the nets over 4 years, depreciation would come to Tsh. 973/day. The *tajiri's* real income would therefore be Tsh. 4320/day. Respective monthly incomes of *tajiri*, captain and crew would be Tsh 129,600 (USD 236), Tsh 36,180 (USD 66) and Tsh 21,180 (USD 39). Assuming that a *tajiri* with one vessel would not be financing a camp, crew would have to pay for their own reproduction costs while fishing. Incomes of *matajiri* with two or three this number of vessels would be a little above the same per vessel, and they would be deducting costs of running a camp from income, before this was shared.

A second, much larger *tajiri* will now be considered. Assuming he had 26 vessels with a more or less optimal number of nets and of large (35 HP) outboard engines for towing, patrolling and fish transport (four in this case) and that his catches were 40 kg/vessel/day (less rejects), for which he received the producer price indicated above, and also assuming that shares were deducted according to normal procedures and not after depreciation, results would be as follows (Case A2). Investments on vessels would be around Tsh. 7.5 m (USD 13,636), nets Tsh. 31.2 m (USD 56,727) and engines Tsh. 6.8 m (USD 12,363). Catches of 1.04 tons/day less 10 per cent rejects would fetch Tsh. 327,600/day. Reject fish (probable total 28/day) would be sold to *kayabo* traders at Tsh 500/piece and the proceeds added to final shares, following the prevailing share system (20 to the *tajiri*, 8 to all crew). Optimised expenditure on fuel is likely to have been Tsh 30,000 (USD 126)/day, on camp food Tsh 15,000 (USD 27) and on fixed wages Tsh 2,750 (USD 5)/day. The sum remaining after normal deductions would then be Tsh 279,849/day, of which the crew would receive Tsh 79,957 and the *tajiri* Tsh 199,893. Assuming 80 active fishers, fishers' incomes would be around Tsh 1,000 (Tsh 1.8)/day each plus Tsh 50 for reject fish. Making the same assumptions as above concerning depreciation periods for vessels and nets, and assuming that engines have a life of two years, then total depreciation would be Tsh 34,794 (vessels Tsh 4,110, gear Tsh 21,369 and engines Tsh 9,315)/day. The *tajiri's* net income would then be Tsh 165,099/day plus Tsh 10,000/day for rejects (total Tsh 175,099 (USD 318)/day). Monthly incomes would be Tsh 31,500/month (USD 57)/month for fishermen and Tsh 5.25 m. (USD 9,550)/month for the *tajiri*. It should be stressed that these figures assume an optimisation of resources. In the final section of the paper the concrete case of a *tajiri* with an operation of 26 vessels used in a non-optimal way is considered.

Table 9

Monthly earnings, fishery (assuming optimised operations), early 1996: Tsh (USD)

	Fisherman	Tajiri
Case A1	21,180 (39)	0.13 m (236)
Case A2	31,150 (57)	5.25 m (9,550)
Case A3	40,920 (74)	10.84 m (19,715)/
		12.94 m (23,535)*

*includes income from collection operation

Table 10

Prices, artisanally-processed Nile Perch, early 1996: Tsh (USD)

(i) piece of Grade B (c. 1.5 - 2 kg dried salted)	
ex-vessel, pre-processed	500
ex-factory, pre-processed	560

price from lake-based collector to processor	700
price from Kirumba trader to collector or processor	850
price to Kirumba trader from outside trader	1000
price to outside trader, Kariakoo (Dar es Salaam)	1400
price to outside trader, Bukavu (Zaire)	1500
(ii) "good size" punk piece	
ex-factory, pre-processed	80
price to incoming buyers, Nyegezi	130
price to Nyegezi trader at local markets, Magu district	175

Table 11**Approximate monthly earnings, trade in artisanally-processed Nile Perch, early 1996: Tsh (USD)**

Case B1 lake-based processor	23,334 (42)
Case B2 lake-based processor-trader	180,000 (327)
Case B3 lake-based processor-trader	1.48 m (2705)
Case B4 lake-based collector	0.87 (1581)
Case B5 Dar es Salaam trader on lake	0.92 (1673)*
Case B6 Kirumba trader	1.37 (2500)
Case B7 Zairean trader travelling to Kirumba	0.53 (950)*
Case C1 Punk trader based at Nyegezi	0.23 (421)

* per trip

Turning next to the actual business of the largest *tajiri* on the Tanzanian part of the Lake, who had 88 fishing vessels and 5 larger motorised craft and who was catching and selling (no reject fish) 3 tons/day on his own account, the following assumptions can be made (Case A3). The *tajiri's* fishing vessels were probably worth Tsh 24.2 m (USD 44,000), his 7,000 nets Tsh 140 m (USD 0.254 m), his carrier boats and engines Tsh 5 m and 15 m (USD 9,090 and 27,272) respectively. His other gear was probably worth another Tsh 10.5 m (USD 19,090). Assuming a daily income from fish sales of Tsh 1.05 m (USD 1,909), and expenditure of about Tsh100,000/day on fuel, 60,000/day on food and Tsh 30,000/day on wages (Tsh 190,000 or USD 345/day in all), net income before share calculation would have been Tsh 860,000. The *tajiri* was ostensibly dividing this equally between himself and his crew, but in practice he was lying about the price of fish, and crews were receiving only Tsh 120/kg. The crew's total daily income was therefore Tsh

360,000 rather than Tsh 430,000. In any event this left each crew member with about Tsh 1,364 (USD 2.5)/day (this *tajiri* carried no pool of reserve crewmen) and himself with Tsh 500,000. From this has to be deducted daily depreciation costs of Tsh 138,549 (Tsh 13,620 for fishing vessels, Tsh 95,890 for nets, Tsh 2,739 for carrier vessels, Tsh 20,547 for engines and Tsh 5,753 for other capital investments). The *tajiri's* net daily income was therefore Tsh 361,451 (USD 657)/day. Monthly incomes were therefore Tsh 40,920 (USD 74) for fishermen and Tsh 10.84 m (USD 19,715)/month for the *tajiri*. The *tajiri* in question also ran a collection operation of about 1 ton/day, whose running costs were included in his fishing expenses. His margin here was about Tsh 70/kg, or another Tsh 2.1 m (USD 3818)/month.

A first obvious conclusion from this analysis (summarised in Table 9) is that there was an incredible discrepancy between the earnings of fishermen and those of *tajiri*, even when a *tajiri* owned only a single vessel. A second is that if operations were optimised, payback periods were incredibly fast, even in Case 3 where a sum in the region of USD 0.35 m had been invested. In this case investment would be repaid in less than two years; in the other cases the investment payback period would be under a year. Thus there were good opportunities for accumulation in the fishery, but only for those owning plank boats and a lot of nets, and - as will be seen - only for those rationalising their use of engines and fuel and maintaining catches of at least 30 kg/vessel/day.

Two branches of the marketing chain for artisanally-processed fish will be considered here, those for *kayabo/sangara chumvi* and for *punk*. Only one variety of each will be considered, namely Dar es Salaam Grade B *kayabo* (c. 1.5 - 2 kg dried) and "big *punks*" (I was unable to estimate exactly what these weighed). A starting point for this analysis are the prices pertaining to the different products at various sites in early 1996, and the consequent margins on various transactions, applying at the time of the research (see Table 10).

A small-scale and sedentary lake-based *kayabo* processing operation of 300 pieces/month working on a margin of Tsh 200/piece would have had a monthly income of Tsh 60,000 (USD 109) (Case B1). Such operations were typically employing a single helper at Tsh 6,000/month or Tsh 20/piece for all operations (USD 11). The operator would have constructed a drying table at a cost of perhaps Tsh 8,000 with a life of a year, i.e. depreciating at Tsh 666/month. Tools would normally have been the property of the helper. The operator's major cost would have been salt, which would have cost him or her roughly Tsh 100/piece (0.5 kg for a fish or perhaps 4-5 kg wet), or half of his income. The processor's income would therefore have been Tsh 23,334 (USD 42.4)/month.

A medium-sized lake-based *kayabo* processing operation of 1,000 pieces/month, where the processor was selling at Kirumba on 2-3 days' *mali kauri*, would have given him or her a gross margin of Tsh 350/piece or Tsh 250/piece after salt costs, and a gross income after salt costs of Tsh 250,000/month (Case B2). Three tables and two helpers would have been required, with associated total depreciation of just under Tsh 2,000/month and total wages of Tsh 20,000. Transport charges to Kirumba would have been around Tsh 30/piece and levy around Tsh 3/piece. Fares and costs for staying in Mwanza once a month would probably have totalled Tsh 15,000. Net income would therefore have been Tsh 180,000/month (USD 327).

A large-sized lake-based processing operation of 2,400 pieces/month where the processor was selling at Kariakoo market, Dar es Salaam on 2-3 days' *mali kauri* would have given him or her a gross margin of Tsh 900/piece or Tsh 800/piece after salt costs, and a gross income after salt costs of Tsh 1.92 m (Case B3). Eight tables and four helpers would have been required for such an operation, with associated total depreciation of Tsh 5,328/month and total wages of Tsh 48,000/month. Transport and levy payments

to Kirumba would have cost Tsh 33/piece, local labour at Kirumba Tsh 5/piece and transport charges on to Dar es Salaam a further Tsh 100/piece. Fares and costs for staying in Dar es Salaam and in Mwanza while a lorry was organised would probably have totalled Tsh 50,000. Net income would therefore have been Tsh 1.48 m (USD 2,705)/month).

A large collector who was a partner of a Kirumba trader but working entirely on his own capital and collecting 7,500 pieces/month would have had a gross monthly income of Tsh 0.75 m on a gross margin of Tsh 150/piece (Case B4). Assuming he was using entirely hired transport, after transport and levy costs his margin would have been Tsh 116/piece and his monthly income Tsh 0.87 m (USD 1581)/month.

A Dar es Salaam-based trader collecting 1,250 pieces on the lake and taking them back to Kariakoo to sell wholesale would have had a margin of Tsh 700/piece (Case B5). Transport to Kirumba, levy at Kirumba, Kirumba labour charges and transport onto Dar es Salaam would have cost a total of Tsh 138/piece and gross income after these costs would have been Tsh 562/piece or Tsh 0.98 m in all. Personal transport costs to and from Mwanza would have cost Tsh 24,000 and costs around the lake for collection, accommodation and food perhaps a further Tsh 40,000 for a 2-week safari. Net income/trip would therefore have been Tsh 0.92 (USD 1673)/trip. Nobody at Kariakoo seemed to be making more than one trip a month and most made considerably less.

A trader at Kirumba with customers from Zaire, Mtwara, Dar es Salaam, etc, buying and reselling 7,500 pieces/month from the partner just described and also selling on commission a further 2,500 pieces/month from collectors from the lake, would have been working on a margin of roughly Tsh 150/piece (Case B6). His costs/piece (levy and labour) would have been around Tsh 10/piece and his costs of working in Kirumba (stall hire costs, cooperative society fees and collective income tax) around Tsh 25,000/month. His monthly income would therefore have been about Tsh 1.37 m (USD 2500)/month. It should be emphasised that this would be in the higher range of Kirumba trader turnovers and that activity from June to December in 1996, after the Zairean traders have departed, would have been at a lower level than this. These considerations also apply to Case B4. It should also be pointed out that a Kirumba trader working entirely on commission would have had an identical income on this same total turnover.

A Zairean trader buying 3 tons of *kayabo* at Kirumba and selling in Bukavu would have had a margin of about Tsh 500/piece on a consignment of about 1700 pieces (Case B7). He or she would have needed to buy another 100 pieces to distribute as bribes in Zaire (although he or she would be allowed to take these free of transport costs, at least on the Tanzanian railway system). This would have given a gross margin, less cost of bribes of Tsh 0.75 m. Transport costs per ton were the equivalent of Tsh 19,500/ton from Mwanza South to Kigoma, Tsh 11,000/ton Kigoma to Uvira and about Tsh 5,000/ton from Uvira to Bukavu, or Tsh 106,500. Gof-organised local services in Mwanza involving local transport, customs clearance, levy payments etc. come to Tsh 3,500/ton. Royalty, if it was fully paid, would have been USD 375 for a consignment this size. Probably the trader ended up paying something over USD 100 (Tsh 55,000) in actually levied royalty plus bribe. Personal transport would have cost around Tsh 20,000 and living costs during a two-week safari perhaps Tsh 35,000. Net income from the trip would have been around Tsh 523,000 (USD 950). An average Zairean trader would have been making 6 trips during the season, giving a monthly income of the sum just cited.

Most traders in punk at Nyegezi were dealing in about 1,000 pieces/trip during the dry season (Case C1). For a "good size" piece traders were paying Tsh 80 at the factory gate. Selling on site at Nyegezi after processing gave a margin of Tsh 50 and selling at a rural market in the Magu hinterland would have given the processor-trader a margin of Tsh 95/piece. From his or her gross margins of

Tsh 50,000 and Tsh 95,000 would have had to be deducted *trolli* hire charges of Tsh 2,500 for punks and a 50 per cent share of transport costs for a similar load of cotton husks (total Tsh 3,750), Tsh 9,500 for labour processes from splitting to packing, Tsh 5,000 for kiln hire and - in the case of Magu markets - Tsh 10,000 for a share of hiring a small truck going to market. Total costs/consignment would thus have been Tsh 18,250 and Tsh 28,250 respectively and net margins/trip Tsh 31,750 (USD 58) and Tsh 66,750 (USD 121) respectively. During the dry season most traders would have been making about three trips out and selling one load at Nyegezi itself over a month, generating a net income of Tsh 0.23 m (USD 421)/month.

It is striking that easily the highest earnings amongst traders were on the one hand those of lake-based processors taking large loads direct to Dar es Salaam, thereby by-passing two or three links in the chain and combining their mark-ups in a single transaction, and on the other those of sedentary traders at Kirumba. The latter's mark-up was not strikingly high in an absolute tense (only 18 per cent of their buying price), but they were relatively high in a general context where mark-ups between different centres often long distances apart seem to have been rather low. Sedentary traders' costs were of course very low, while the volumes they had succeeded in controlling were very substantial.

Amongst bulk processors and processor-traders incomes were lowest amongst those directly commissioning processing themselves and selling locally. Amongst *kayabo* processors it was the low mark-up they had been able to achieve which was the problem, while amongst punk processor-traders it was the relatively high labour-intensivity of the production process.

Table 12

Capital outlays and returns in the artisanally-processed fish trade, early 1996

Trader	Outlay (Tsh)	Return (%)
B1	186,666	12.5
B2	670,000	26.9
B3	1,874,528	78.9
B4	5,505,000	15.8
B5	1,111,500	82.8
B6	6,495,000	21.1
B7	2,027,000	25.8
C1 a.	48,250	32.3
C1 b.	108,250	61.6

A different way to approach the same issue is to look at rates of return on capital in the trade. Very high rates of return went to the travelling traders B5, B3 and C1, although the trader travelling to Zaire (B7) had a rate of return more comparable to sedentary traders in Tanzania.

Secondly, while Kirumba traders had high earnings, in the example given their capital outlays had to be very high to have ensured this. Actually of course, some of them make no capital outlay at all, simply relying on auctioning the property of incoming traders. As such their business primarily relied on turnover and capital outlay was mainly used simply to sustain or increase this.

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9 Conclusion

In conclusion, I sum-up my findings and try to relate them to wider discussions concerning the nature of production systems, markets, enterprise forms and accumulation in Africa, as well as on Africa's relation to the changing international division of labour.

9.1 Understanding the Logic of Production and Contract Forms in African Fisheries and Agriculture

Partly because peasant agriculture accounts for such a large share of total economic activity in Africa, and partly because a number of intellectually more interesting approaches to the development of capitalism in general emerged historically in and through studies of the "agrarian question", the most important contributions to the literature on capitalist development in Africa (including that on production forms) has tended to be found in texts dealing with rural economy.

There are several parallels and connections between peasant agriculture "artisanal" fishing, at least in the latter's classical forms. For a long period property in fishing was mainly in the possession of heads of households who used family labour to work it on the basis of past experience. Production was with simple instruments of labour, by handicraft methods, and heavily dependent on natural conditions and commonly-held resources. In both cases goods produced for exchange were also directly consumed by producers as use-values. Levels of accumulation and differentiation tended to be low. Where means of production were rented out and/or where non-household labour was employed, payment was often denominated in output shares. Both agriculture and fishing were typically carried out seasonally, and most households in which fishing was an activity also undertook agriculture at other times during the year. Inter alia, these parallels have given rise to interpretations of African fisheries using categories such as "peasant fishermen" (eg. Barnes (1976) and more generally to heavy borrowing from contemporary analyses of African peasant agriculture. Critical discussion of such interpretations necessarily therefore involves a problematisation of their wider applications.

The best known effort to illuminate social and economic relations in African fisheries on the basis of a conceptual framework borrowed directly from Marxist writings on African peasant agriculture remains Vercrujssse's (1984) study of the marine fishery in Ghema in the mid-1970s. The study examines the evolution of the artisanal fishery on the basis of internal differentiation from "peasant" type production through three stages of accumulation. The latter is depicted as occurring in two separate but related domains, one internal to the fishery itself and one based in the trading of fish. Vercrujssse argues that the pace of differentiation /accumulation of capital in a money form (in trade) is easily the more rapid and eventually subordinates the process of differentiation/accumulation of capital in the

form of productive assets in the fishery. The resulting relation between these traders and "fishermen" comprised an "articulation of modes of production". Large trading capitals located outside the fishery dominated the latter, but "confined" themselves to sponsorship-cum-tying relation rather than direct control, partly for the same general reasons as those indicated in the "articulationist" literature on agriculture (see below), and partly because of a (weakly defined) "stalemate of class forces".

Verduissje's argument can be divided into two elements: the proposition that the trading system and the production system are two distinct modes of production, and the proposition that "tying" of the latter by the former can be explained in terms of a relation between distinct modes of production. The counter-arguments advanced to some extent repeat those of an earlier joint work (Gibbon and Neocosmos, 1985). Modes of production in a Marxist sense are defined by the content of the specific set of contradictory social relations which underlay them and produce their various phenomenal effects. The capitalist mode of production is defined by an underlying contradiction between capital and wage-labour, embodied in the process of generalised commodity production. The effects of this contradiction include a differentiation of capitals around different economic branches (industry, agriculture, banking, commerce, etc.) on different scales and magnitudes, and in different forms of commodity production. In these forms, actual capitalists, wage labourers and members of the petty-bourgeoisie (the class which combines these functions) - or all three - are distributed in specific relations to different types of productive property, different technologies, different labour processes, different mechanisms of commodity exchange, and so on. The principal forms of capitalist commodity production touched on by Marx himself include handicraft production, manufacturing and machine industry. While these all appeared in a specific historical sequence in a number of European countries, neither the actual range of forms in any specific location, nor the actual sequences in which they may appear can be derived in advance.

In the Ghanaian "artisanal" fishery, Verduissje traces the differentiation of a group of specialised smoker-wholesalers from amongst the fishmonger wives who initially each acted on a direct agency basis for their husbands' personal shares of (originally cooperatively generated) catches. At first this process was paralleled by a similar differentiation of individual vessel owners acquiring large-scale drag nets and employing wage-labour to operate them. Later, government loans allowed vessel owners to acquire engines. But as these loans dried up, it was money advanced by the smoker-wholesalers which enabled a number of vessel-owners to further upgrade their gear to deeper water purse-seines and ring nets. In the process, owners' fish sales became tied to particular traders.

While the smoker-wholesalers Verduissje describes had considerably more wealth at their disposal than the vessel-owners (some were sponsoring 10 or more vessel-owners), and while the labour process in wholesaling and fishing differed in terms of the physical activities performed, it is clear that both vessel-owners and smoker-traders were (relatively) small-scale capitalists within the common framework of a production form organised on the basis of manufacture. As in the case of many discussions involving an "articulation of modes of production", what is actually being discussed are simply relations between two (in this case not even particularly distinct) types of capitalist enterprise.

"Articulationism" classically (eg. Rey, 1971) invokes a so-called relation of "dissolution/preservation" between a dominant and one or more subordinate modes of production- dominant both in terms of relative levels of accumulation and concentration of productive forces and in terms of control over its counterpart. While "dissolution" refers to industrial capitalism's [As far as I know only industrial capitalism has been credited with being able to occupy the dominant position in any articulation discussed in the literature.] destruction of the market for non-capitalistically produced goods, and its systematic separation of (some) producers from their means of

production, etc., the term "preservation" refers to a supposedly simultaneous tendency to reproduce certain production forms and the links between producers and means of production they are based upon - in order that they may be "used" by or within industrial capitalism.

"Articulationism" typically asserts that in this way industrial capitalism can "use" these forms, and elaborates this assertion on the basis of a famous passage in Ch 32 of Vol. III of *Capital* (Marx, 1974:805), in which Marx observes that some peasants indebted to usurers might accept any price for the commodities they repaid their debts in, and that in this process they are subsidized in exchanging the products of their labour at below real production costs by the "cushion" of use values which they produce simultaneously for their own consumption. On the basis of this one observation, which is incidental to Marx's wider theory, has been constructed a general argument that the preservation of "pre-capitalist" modes of production is both widespread and functional to capitalism generally, since it subsidizes the reproduction of labour-power outside of the capitalist system and hence reduces the costs of labour and/or other commodities absorbed by capitalism "proper".

Apart from imputing non-capitalist features to petty-commodity production, the most frequently noted problem of this argument is its functionalist form, which requires the notoriously difficult denomination of systemic benefits and the even more notoriously difficult assumption that systems reproduce themselves on the basis of continuous process of spontaneous incorporation of demonstrated and/or inferred benefits. Even if these issues are disregarded, it remains to be demonstrated in each specific case not only that "incorporation" really generates lower wage or commodity prices - not to mention an lower overall cost of production than in a "fully" industrial capitalist context - but that these are the result of the "cushion" effect of use value production in the subordinated mode.

In the case of Verdussje's "petty commodity producers" the argument seems to be that the "cushion" in question is mainly provided not by the agent, with whom the trader as a representative of capitalism proper "articulates", but by his or her employees - i.e., through the agent's employment of other agents on the basis of a share system where pay is denominated in exchange-values which are at the same time directly consumable by the employee. But since the share is effectively a wage usually paid in cash and the employees - according to Verdussje - mostly own no means of production of their own which they can use to reproduce themselves independently, it is hard to see how they can be systematically paid below their reproduction costs without failing to be reproduced as labourers. [Of course, when catches are very low his share may indeed fall below this reproduction costs.] This means it is correspondingly hard to see the surplus extracted from their labour as anything other than surplus-value and the "articulation" of their employer with the trader as anything other than a relation in which part of his surplus value is redistributed to the trader as rent, and in which struggles take place both over the magnitude of this redistribution and over division of the remaining profit.

The alternative characterisation offered here of the forms of production and exchange described by Verdussje may without difficulty be also applied to certain Tanzanian fisheries, notably the Bagamoyo prawn-fishery and to the plank-boat gillnet fishery for Nile Perch on Lake Victoria, with certain obvious differences. In the first case employment conditions are different and some employers are not themselves tied, but trade on their own account. In the second, the external sponsors are factory owners engaged in industrial production rather than traders-cum-large scale artisanal processors.

Proponents of "articulationism" might well argue that it is less their own theory that is the problem here, but rather the mistaken application of it by Verdussje to circumstances where employment relations have already eliminated or severely reduced use-value

production. On a general plane articulation has typically concerned itself not with such cases but with relations between industrial capitalism and "authentic" peasant producers, ie. producers not separated from their means of production and systematically producing their own use values (as well as exchange values). Two points may be made here.

The first is that even "authentic" peasant producers for the most part turn out under close examination to be petty capitalists subject to the law of value. Insofar as they enter generalised relations of capitalist exchange there is a tendency for their production to become specialised and therefore for an increasing range of the use-values which they previously produced to be replaced by exchange-values produced under industrial capitalist conditions. Moreover, specialisation has a tendency to beget the commodisation of means of production, which in turn creates conditions for individualisation and differentiation with respect to their ownership, and thereby conditions for the separation of some producers from their means of production and the accumulation of such means by others. The second is that it is the operation of the same law of value, not some mysterious process of functional preservation, which reproduces petty capitalist production as a permanent feature of capitalism generally, even while individual petty-capitalists are subject to this continuous process of differentiation. In the general ongoing struggles between capital and wage labour on the one hand, and in competition between capitalists themselves, specific producers are always managing to individually acquire or retain means of production and specific spaces are continually being thrown up where differential surplus profits or rents can be earned to supplement the low profits which are the general rule for petty capitalism.

There are some cases of Tanzanian fishing operations, both on the coast and on Lake Victoria, where family ownership and operation of all the means of production still prevails and where fishing is not systematically targeted to producing exchange values. But such operations are of minor importance in the main commercial fisheries. Nor do the households concerned typically survive on their basis, for most such operations occur as seasonal adjuncts to farming and/or a combination of other means of livelihood. Insofar as use values are produced and consumed by producers, they substitute own production of or purchases of grains, tubers and meat, rather than subsidize the price at which the peasant sells fish. In the commercial fisheries, where separation from at least part of the means of production is a general rule, even in the smallest scale operations specialisation itself often rules out the possibility of "subsidy"; theoretically, Rufiji prawn fishermen could live exclusively from a diet of prawn but in practice the species targeted by this "artisanal" fishery is never consumed by "artisans".

The "modes of production" debate in the literature on African agriculture was from the outset subject to a different critique to that elaborated above. This critique, developed most coherently by Bernstein (1977, 1981) argued that articulationism underplayed the systematically dissolutive effects of the peasantry's encounter with capitalism, which whether or not it dispossessed the peasantry of all its means of production had a tendency to proletarianise its conditions of life. This it did though the economic and political erosion of its ability to meet its own simple reproduction needs on the one hand and a driving down of the price of the commodities it produced for exchange on the other. The outcome was a peasantry which, while still retaining formal possession of the land it occupied, was subject to such a degree of detailed regulation of its other conditions of production that it could be considered "really subsumed".

The background against which Bernstein's argument was formulated was the extension and deepening during the 1970s of the "modernisation" of African agriculture, which in Tanzania incorporated forced villagisation and project-based imposition of green revolution-type input and credit packages. Today, this discourse is (probably only temporary) in abeyance, but Bernstein's arguments have been revived by certain students of contract farming in Africa. Against the background of a particular conception of the changing

international division of labour in which large northern hemisphere agro-industrial input suppliers and crop importers are seen as initiating globalised processes of flexible outsourcing ("flexible accumulation"), it is argued that through extension of the contract farming of fruit and luxury vegetables in Africa, a section of the middle peasantry is being transformed into what are described, in increasingly dramatic terms, as "defacto hired workers", "a glorified self-employed proletariat" and as a "distinct class that may be seen as a fraction of an emerging global proletariat" (Watts, 1994: 57, 64, 71).

Contract farming based on "flexible accumulation" is said to embody three features which gives it an "industrial" character and therefore justifies the above statements. Firstly, it introduces industrialised inputs, and intensifies labour. Secondly, it separates execution of farming operations from their conception; the contractor and not the farmer determines land preparation, sowing, weeding and harvesting dates and techniques; thirdly, it involves payment in piece terms. Supplementary arguments are advanced that labour is retained by politico-legal mechanisms and that incomes have a tendency to be squeezed as deducted input costs rise and crop prices fall. Although nobody has yet applied Watt's arguments to African fisheries, the prevalence of the contract form, the dissemination of a diversity of industrial inputs and the increasing standardisation of production techniques makes it probable that sooner or later somebody will try to do so.

Somewhat surprisingly, Watts fails to provide any examples from Africa of contract systems where the peasant is reduced to wage-labour status. Nor does he try to analyse the basis for the great diversity in types of contract farming described even in his (and Little's) own (1994) collection. Had he done so, a more consistent conclusion would have been that production relations in contract farming are best understood as being distributed along two related but separate continuums. The first is that from very loose contracts to much tighter ones, and the second that from exchange between independent agents to proletarianisation. The tightest contracts seem to be associated with the highest contractor investments by unit value in inputs, and seem to be most frequently with capitalist farmers from whom output levels can be predicted with some certainty. Contracts with de facto proletarians seem to involve lower levels of unit investment in inputs and less predictability of output levels - hence the tendency for the wage form to be a piece rate one.

Wage labour-based contracts, both in African agriculture and African fisheries, appear to arise in very specific circumstances, rather than constituting a general tendency. An example will be given from each sector. That from agriculture is the South African-owned Clark Cotton company scheme in Eastern Province, Zambia, discussed in Chiwele, Muyatwa-Sipula and Kalinda (1997), while that from fisheries is the factory-based in-house fleets found on Lake Victoria. In both cases means of production (land and fertiliser or vessels and gear) were provided to contracted workers, who received an allowance plus piece-based payments. In both cases, the contractors were not transnational companies but only regionally-active ones; they were exporters, not importers; they were actors in relatively low value-added commodity chains and had relatively low levels of capitalisation themselves; and they had invested locally in processing capacity for which economies of scale were important and for which costs of supplying raw material from outside the factory's immediate vicinity would have been prohibitive. In the case of Clark Cotton, large tracts of land had been cheaply obtained too. While perhaps part of a global system of "flexible accumulation", they were not themselves flexible with regard to throughput, and contracting production from self-organised wage labour was the lowest-cost option for stabilising the latter. The issue of "flexible accumulation" and the international division of labour will be returned to below.

The question of production contracts in peasant agriculture has been a central concern of the other major tradition which has given

birth to an analysis of production forms in artisanal fisheries in Africa and elsewhere, namely neo-classically-inspired "institutional economics". In its assumptions about these contracts this theory in effect invests the assumptions found in the work of Watts. Whereas for Watts contracts between large and small-scale capitals are so one-sided that they cannot be considered contracts between enterprises, for rational choice theory, the fact that a contract is made between enterprises implies that the parties to it must benefit from it to roughly correspondingly degrees.

The best known contribution to the literature on artisanal fisheries from this perspective has been J-P Platteau (e.g., 1989), who examines relations between vessel owners and traders in terms of share-cropping contracts. The analysis borrows from Bardhan (e.g., 1984), who argues that sharecropping is founded upon a combination of producers' lack of alternative credit options and lack of market opportunities to realise the value of possessing certain built-in economic advantages such as a superior capacity to mobilise and supervise (household) labour; on landlords' or traders' lack of capacity to predict constantly changing physical production conditions and to monitor wage labour effectively; and on a common lack or access to what are referred to as "insurance markets".

On the side of the contracted producer Platteau's own analysis specially emphasises a lack of alternative credit sources, as well as the physical difficulty of combining fishing with long-distance marketing functions. On the side of the contracting buyer he emphasises the lack of capacity to monitor wage labour and the absence of alternative methods for stabilising turnover at levels close to the contractor's working capital limits.

There are strong grounds for regarding the Bardhan/Platteau position as essentially an ideological gloss on a very unequal contract. Some of the benefits claimed for the contracted supplier do not apply in a series of quite common circumstances, while contracting buyers do not necessarily suffer disproportionately from the disadvantages attributed to them and may use the contract for quite other purposes than those indicated. Moreover, the emergent properties of the existence of a system of such contracts are not considered.

The thesis that proprietors of producing operations enter such contracts because there are no alternative means for them to obtain credit is clearly correct. However, in Tanzania it is only in the prawn fishery where the proprietor has a capacity superior to that of the trader to mobilise and supervise labour: - in Bagamoyo as a result of a historical system of patronage and clientage and in Rufiji because of the proprietor is an owner operator with a single partner or part of a joint operation functioning as an employee-less partnership (Gibbon 1997a). In the Nile Perch fishery most contracted proprietors have no built-in superiority in the mobilisation and supervision of labour and have to invest time in its construction. Moreover, both in the Bagamoyo prawn fishery and on Lake Victoria the maintenance of such capacities carries with it recurrent costs which must be met out of the proprietor's share. As regards the status of the "physical difficulty of combining fishing with long-distance trading operations" as a grounds for entering the contract, it simply should be recalled that some Mwanza factories have used contracts of the kind discussed here precisely to transfer a large part of the "travelling" element of the trading function to the proprietors of producing operations. In Rufiji, the traders who most proprietors are contracted to in the first instance are not peripatetic either, having managed to pass travelling costs to the next link up the chain.

On the side of the supposed disadvantages propelling contracting buyers/traders to enter such contracts, the imputed inability to predict production conditions may be questioned. Production conditions in certain Tanzanian fisheries, particularly *dagaa* Mwanza are unpredictable on a medium-term basis (Gibbon, 1997b), but there is a certain amount of predictability with regard to all but the

short-term availability both of prawn and Nile Perch. In any case such difficulties as there are could be much more efficiently overcome by investments in a trawler rather than in a series of loans to the proprietors of artisanal vessels. The same argument could be made with regard to the question of turnover stabilisation (there is far less day-to-day variation in trawler than in artisanal catches) and to a degree also with respect to that of supervision (which with a trawler could be organised along industrial lines). In both the Nile Perch and prawn fisheries traders are guaranteeing profit, not volume, through share-cropping arrangements; "stability" comes from topping up "artisanal" catches from other sources.

What then do such contracts directly entail? As already indicated, in the first instance they imply a rent. Normally, this rent takes the form of exclusive delivery of fish to a value equivalent to the loan, i.e., to the traders' investment costs. However this rent also contains an implicit additional sum which is the difference between what price for fish the trader actually pays through such an agreement and what he would pay if no vessel-owner was tied. In this case all fishermen would be free to sell their catch to the highest bidder and prices would rise. They would also be free to combine to force the price above this perfectly competitive level. It is not implied that all traders are aware of this implicit addition to their rent, or that there is an easy way to calculate its magnitude. But some are certainly aware of it and gave considerations of this kind as the basis for their own decisions to avoid tied contract sales with, e.g., suppliers of freezing equipment.

The rental/loan arrangement at the same time provides a basis for the trader to offset certain of his own costs against the producers' share of their mutually divided revenue. Firstly the trader achieves a transfer of the supervising costs and risks which he would have entailed if he had foregone his rent and directly entered fishing operations. As already indicated, there is no rational ground for considering that producers possess a competitive advantage in supervision. Secondly, since the arrangement has the form of a fairly rapidly repaid loan, the traders pass onto the producer his long-term depreciation costs. And thirdly he transfers to him all the risk entailed by his capital outlay.

In this general context, Platteau's characterisation of the breaking of tied sales contracts as "moral hazard" also bears reexamination. The issue here is not the list of "moral hazards" which Platteau formulates (asset diversion/misuse and under-reporting of output), both of which are visible even to the most casual observer, but the failure to relate contract breaking to the inequality of the content of contracts, and the implied explanation of degrees of prevalence of contract-breaking simply in terms of opportunities and costs. In this connection a brief comparison of the Rufiji artisanal prawn fishery and the Lake Victoria Nile Perch fishery is in order.

Contract breaking was widely said to be rife in the Rufiji fishery: fishermen would sell to a trader other than the one tying them "for a packet of cigarettes". But in Lake Victoria, contract breaking was usually said to be quite rare. Certainly, the topography of the fishery in Rufiji meant that opportunities for contract breaking were very high, while levels of tying and the nature of trader competition meant that costs of detection may be low and/or very temporary; by contrast, most parts of the lake were accessible to patrol and/or collector boats, making opportunities few, while costs of detection may have been much more considerable. It is important to note however that tied proprietors in the Nile Perch fishery normally had a means of offsetting contract inequality which was not available to canoe owner-operators in Rufiji. The Nile Perch *tajiri* could and did shift a significant element of both costs and risks to his own crews, through the adoption of a remuneration system based on fixed shares of what was left of revenue once all costs had been deducted.

Contracts between *tajiri* and fishing crews are discussed elsewhere in this text. Suffice it to say here that they were thoroughly

oppressive. They were, nonetheless, essentially wage contracts and as such primarily derived their specific content from the general bargaining position of wage labour in Tanzania, which - to say the least - was highly adverse. Labourers in the fisheries sector who were not fishing crew members hardly fared better in terms of conditions of employment (casual piece work was the rule even in the factories) and were frequently far much worse in terms of income.

9.2 Market Development, Restructuring and Power

The restructuring of the market for Tanzanian Nile Perch, which began around 1990 with the advent of agents working for the Kenyan factories and accelerated after 1992-93 when the first plants were opened in Mwanza, took the form in the first instance of a diversion of the bulk of catches from processors working on an "artisanal" basis to industrial processors. Via their local agents, the industrial producers rapidly won market control by the linked expedients of paying higher prices and supplying vessel owners with gear, a strategy which was at the same time associated with increases in total catches. Apart from those purchasing fresh fish for the Dar es Salaam market, local traders did not try to compete on price. It appears that representations about "unfair" price levels were made by some Kirumba traders specialising in artisanally processed fish, but they were told by the RFO and the regional authorities more widely that "the days of price control were over and that there was nothing which could be done". Probably some of the largest Kirumba traders in artisanal fish switched to the fresh fish business anyway, acting as sub-agents for the handful of export license holders who were the direct link in the supply chain to the Kenyan factories (see below); for the remainder, the trade in "artisanally" processed fish remained relatively buoyant even if structurally marginal.

This process wrought a major change in the supply chain for artisanally processed fish, and a subsequent restructuring of the nature and range of its raw materials and end-products. At the stages of factory agent and sub-agent purchase and again in the factories themselves a rationalised process of fish selection was introduced, by fish size and quality. Artisanal processing became the destination for small fish considered stale, as well as the great bulk of fish which the factories were unable to collect. Meanwhile, in the factory itself meat butchering principles were applied to fish for the first time locally. The fish was physically divided into parts with higher and lower exchange values. Those parts of lower value were recirculated by the factories into the "artisanal" market.

"Artisanally"-processed fish products have always been differentiated, but until now the principles of this differentiation had been taste, durability and to a lesser extent size. Since the mid-1980s there had been a steady movement away from smoking, first towards frying and then dry- salting. This was associated initially with an increase in direct local consumption and then with an increase in consumption in very distant markets. Just the fish itself was not divided into parts, so the different "artisanal" products were not classified according to quality and nor did their prices differ in a particularly sharp way. With the dominance of the factories a differentiation of products by quality as well as taste occurred; indeed, the two forms of differentiation became blurred.

"Artisanal" products were now differentiated by quality according to a mirror image of the factory selection process, i.e., firstly according to the nature of the causes and the failure of the fish to be industrially processed, secondly, the stage at which this decision was made and thirdly, - where the fillet had been processed - the different stages at which what remained was discarded. A complex but basically hierarchical order of artisanally processed products emerged, swiftly followed by a basically hierarchical reordering of demand for artisanally processed products. Local markets for smoked and fried fish, which had been opened and broadened in the 1980s, experienced in the 1990s a basic process of shrinkage, as the factories took the great bulk of the fish. By 1995-96 the only

remaining large local market for what was now the top of the range product (smoked *sangara*) was in the mining areas close to the lake, where at least some incomes remained high. Meanwhile, from around 1993 a new bottom-of-the-range local fish product emerged to recapture some of the dwindling band of local customers: punk. By the time of my fieldwork punk had penetrated a range of low-income markets in the semi-arid areas within 300-350 km of the lake, in the day season at least. The long-distance markets proved more stable, but probably only because they had been established from the beginning in areas where overall fish demand was relatively inelastic (Kivu, Tanga, Mtwara) or where incomes were relatively high (Dar es Salaam), or in some cases both.

The main development in the social structure of the supply element of the marketing chain prior to 1990 was the emergence of a category of relatively large scale vessel-owner/artisanal processors processing their own catch and those of other vessel owners in the same vicinity, based on the lake itself and trading direct on a long distance basis with various destinations. A secondary development was the emergence of a category of relatively large-scale traders both in processed and fresh fish at Kirumba and one or two other *mwalo*, some with their own "dedicated" supply systems. Most of the traders in artisanally processed fish at these *mwalo* were also involved in long-distance trade (as well as the medium-distance one) either by taking out or supplying incoming traders. These developments occurred against the background of a more general pattern of a mass of poorly capitalised vessel owners engaged in very short-distance trade with a mass of only slightly better capitalised buyer-processors and local fresh fish sellers.

The emergence of a large-scale factory-based market for fresh fish led to a reorganisation of this system. The category of large-scale vessel-owner/processors virtually disappeared as vessel-owners increasingly specialised in fish production alone. They sold fish to any one of a number of extensive, basically pyramidal long-distance supply systems - each one centred on a particular individual acting on behalf of a factory - which rapidly overtook and displaced the supply systems of *mwalo*-based traders in fresh fish. These supply systems had their own specialised personnel (salaried or commissioned agents), their own technology (large ice-carrying collector boats with big outboard engines) and relatively impersonal procedures for selecting and sponsoring certain vessel-owners to become concentrated sources of supply. They were eventually supplemented by the factories' development of their in-house fishing efforts.

As has been seen, a material basis for the "artisanal" trade was being reconstituted, just as its main actors were either withdrawing from it or suffering a process of structural marginalisation. Around this time the specialised Kirumba *mwalo*-based traders in "artisanal" products appeared to have tried (with a degree of success) to (re)constitute themselves as a local cartel. Those bringing processed fish to the *mwalo* were prevented from selling on their own account at the *mwalo*, and efforts of varying success were made to restrict the movement of incoming traders beyond the *mwalo* onto the lake itself.

Cartelisation was assisted on the supply side by the restructuring of "artisanal" processing itself. Smaller-scale operations now accounted for a much bigger share of the (reduced) total, and unless these processors started buying others on the lake, they generally could not generate consignments large enough to make it profitable for them to proceed beyond Kirumba. On the demand side the process was underwritten by the existence of very large-scale buyers from Zaire and Mtwara, who saved time by buying in bulk, and for whom the financial savings from going direct to the lake were relatively small. On the other hand, cartelisation promoted leap frogging, particularly by smaller-scale incoming traders not on the look-out for bulk deals. A steady stream of these traders leap-frogged Kirumba.

It is unclear why cartelisation was not therefore accompanied by a reform of the *mali kauri* system, which was the main deterrent to processors delivering supplies direct to Kirumba. Offering spot prices or even forward contracts to suppliers should have eliminated or minimised leap-frogging. It is even more unclear why the *mali kauri* system persisted at down-country markets such as Dar es Salaam, where the effect seems to have been to oblige this market to become largely self-supplying.

In the context of the maintenance of *mali kauri*, cartelisation in the "artisanally"-processed fish business was associated with a shrinkage of the relative amount of business accounted for by direct sales transactions and an increase in the relative amount accounted for by brokerage. Moreover, in the main broker-dominated markets could be found not only "real" brokers, but brokers of brokers - the Kirumba *magofi* being the outstanding example. The extent to which this could be characterised as a response to the redefinition of the place of "artisanally"-processed fish within the Nile Perch marketing chain is very doubtful, for on the one hand the same process could be observed with respect to other fish species in whose market the factories played no comparable role, and on the other there is evidence of its prevalence in fixed formal market locations in Tanzania generally. To this extent *mali kauri* could just as easily be associated with the general expansion of private trade in the wake of economic liberalisation, though the nature of the connection is not clear. In any event, the down-country supply chain by the mid-1990s had the somewhat medieval appearance of a series of rent-earning fortifications linked, in some cases systematically but in other cases unsystematically, by individuals who were quite literally "venture capitalists".

The general process of market restructuring described here closely resembled the upward swing of a classic boom-bust cycle. Although the fishery was already expanding rapidly prior to 1990-91, a new conjuncture was unveiled by the quantitative and qualitative transformation in capital flows after this date. Up to 1996 probably around USD 10 m had been invested by the factories in plant, supply and back-up systems. There had also been significant investment by many "artisanal" vessel-owners themselves, independently of the gear and engines supplied to them by the factories. Accompanying these sharply rising investment levels had been a steep increase in the number for full time equivalent fishermen and auxiliaries (except "artisanal" processors), a probable 50 per cent increase in the Nile Perch catch over the period 1992-96 (see Table 1), and a more than corresponding increase in total real income to the artisanal sector as a whole (much of which has been ploughed back into the industry). The grounds for considering this development as part of a boom-bust cycle relate to the conditions of its sustainability, both in terms of output, cost structure and demand.

On the output side, the absence of serious biomass studies makes conclusive pronouncements impossible, but the deployment of a larger and larger fishing fleet using intensified production methods and the practice of fishing on a 365-day year basis, together with consistent reports of falling unit productivity, suggests that generalised overfishing may soon occur if it has not already begun. Localised overfishing is already indisputable and the number of factories in Kenya is already falling. The major imponderables concern the nature of stocks outside the current range of the artisanal fleet and the nature of the additional investment needed to capture them. Large stocks may well exist, but given the artisanal fleet's basic restriction of working from land-based camps even investment in much larger outboard motors would not give dramatically greater access to them.

This raises the more general issue of the cost structure of the artisanal fishery. No detailed study of this question was undertaken, but those vessel owners who also had invested most heavily in engines were already complaining of lack of profitability, even before the factories began their first serious and sustained campaign to drop prices in April 1996. One *tajiri* I interviewed had acquired 13

engines (mostly small ones) to run a fleet of 26 fishing vessels. His expenses were identical to those listed in Case 2 in Table 9 above, except that his expenditure on fuel was roughly double. He was also receiving a low buying price for a *tajiri* his size (Tsh 330/kg) because the long-term contract with the factory supplying him with some of the engines was denominated at the producer price when the contract was entered into. Without making any calculations for depreciation, the vessel owner stated that his break-even catch was sales of 10 kg/vessel/day, "before I can make a profit and pay my fishermen". His actual sales, for reasons which were not very clear to me, were only 13 kg/vessel/day. He therefore reckoned he was making a profit of Tsh 18,385/day or a little over half a million shillings (USD 1000)/month (while paying his crew Tsh 91/day or Tsh 2730 (USD 5)/month (!)). The capital he had invested in vessels, engines and gear was worth over Tsh 50 m (over USD 90,000) and was depreciating at a rate of Tsh 44,000/day, actually implying a considerable net loss.

While this was a clearly non-optimal operation it in some ways indicates the consequences of the type of cost-structure which will emerge as the fishery is forced into deeper waters: more engines, greater fuel consumption, and catches which will continue to fall (although at a slower rate than if the fishery remained inshore). The only possible compensating factor for the vessel owners in this context would be rising prices, but these cannot be guaranteed.

Even if the local demand situation around Mwanza stimulates the latter through the opening of more and more plants, there is an absolute external limit on how much such prices may rise. This objective limit is set by the fact that there is not great room for improvement in Nile Perch's international price. Although the stocks of fishes for which Nile Perch is substituting are not likely to recover, and although northern hemisphere demand for white fish generally is likely to increase, Nile Perch remains only one of a number of possible alternatives to cod. Moreover, northern hemisphere importers' interest in species like Nile Perch is based solely on their ability to offset the tendency of the cod price to inexorably rise.

The 1980s "Southern Hake" boom in Chile is instructive in this connection. As prices to fishermen spiralled in response to the construction of 30 local processing plants, and against a background of rapidly depleting catches and a steadily rising cost structure, efforts by exporters to push up international prices led to the main northern hemisphere importers substituting Namibian for Chilean Hake. Within a few years, 25 of the plants closed (Schurman, 1996). Current high levels of demand for Nile Perch could just as easily collapse should this same "scissors crisis" be repeated.

Such a demand-side crisis could be postponed or averted to the extent that strong countervailing pressures are present to contain it. These might include a strong state regulatory regime or self-imposed regulation by the processing factories. In none of the different countries around the lake is there evidence of either. As already indicated, for example, trawlers and beach seines were banned from Lake Victoria from the beginning of 1996. The Tanzanian Fisheries Department had given up trying to enforce the beach seine ban within a few weeks. The trawler ban was easier to enforce and most factories were not directly opposed to it. It was correspondingly more effective, but selective waivers to it were already granted within two months of its implementation. Given the nature of the Tanzanian state apparatus, central and local, this situation is unlikely to change much. Nor is it likely that any ceiling on factory numbers or total processing capacity will be introduced. Finally, the short investment pay-back period of the factories (none probably larger than 3-4 years) means that their interest in self-regulation is likely to be very low.

In the neo-classical ideal type, "free" markets are perfectly competitive and market power, if acknowledged at all, is seen as a logical

consequence of enterprise competitiveness. The link between competitiveness and market power is broken only when externally-introduced "distortions" limit or undermine free entry and free competition. Typically such distortion is seen as arising through intervention by the state, and ultimately from political pressures placed upon the state by "interest groups". Critiques of this ideal type by, inter alia Hariss-White (1995) and Bernstein (1996) partly reverses the terms of this orthodoxy. No market is "free" of some form of regulation or attempted regulation by one or more sets of broader forces. In any particular market, rather than enterprises competitiveness determining market power, the latter's distribution will be largely determined by the specific forms which regulation takes and how this in turn affects real-world competition. The state is only one possible source of market regulation: others include development in inter-locking markets and the actions of various groups of private actors inside both the specific markets in question and these interlocking ones.

Hariss-White's work discusses market power in terms of various degrees of monopoly (purchase) and monopoly (sale), which are seen arising as a result of the structure of opportunities for acquiring assets conferring power in the markets concerned on the one hand and on the opportunities available for restricting competition within it on the other. Markets characterised by low entry barriers, coupled with situations with limited opportunities for expansion of holdings of power-conferring assets, will obviously tend to have a wider dispersal of market power and control than those with the opposite set of characteristics. Her analysis suggests four different types of assets which can be considered strategic or power-conferring in this connection: means of producing traded goods, trading capital in money form, the non-monetary inputs necessary to set trade in motion and access to particular groups of buyers of a traded good. Opportunities are unlikely to be present in equal measure for strategic asset expansion or restriction in relation to each asset, but their presence even in relation to one will tend to have strategic consequences for the distribution of market power generally. Her framework will be deployed below on an exploratory and provisional basis.

Unlike the case of Tanzanian prawn, where there are two major more or less distinct marketing chains, in Nile Perch there has always been a single more-or-less inclusive but sharply internationally differentiated chain. This chain stretches from vessel-owners and fishermen at one end to northern hemisphere and eastern African consumers at the other. As already indicated, decisive control over the chain was achieved by the processing factories during the 1990s on the basis of paying higher prices and by contracting supply from vessel owners. Historically and logically the former of these took preference in the achievement of factory control, while the latter related primarily to non-price based competition between the factories. On the other hand, deployment by the factories of superior magnitudes of trading capital in money form was linked to their prior possession of transport and freezing equipment, as well as to their prior access to northern hemisphere importers.

The superior magnitudes of trading capital, the access to industrial processing and transport of Nile Perch and the access to northern hemisphere importers concerned had in no case been generated within the Tanzanian fisheries sector itself. Rather they came mainly from the concentrations of trading and industrial capital and the international business connections and expertise found amongst Asian and European minorities of East Africa. Only one group already involved in the Nile Perch fishery had access to any of these assets in even remotely comparable magnitudes, namely those trading in fresh/frozen fish by air to Dar es Salaam. In this case, however, their privileged access to air cargo space had very local boundaries and was not linked to access to industrial processing capacity of intercontinental export quality, or to the connections necessary to unlock this and the end markets it might serve.

Prior to 1995-96 there were no direct entry barriers encountered or set up by the factories, except the classical market-based ones of

possession of capital in its various forms. Immediately prior to their entry, the price per whole fish outside of Mwanza town had just reached around Tsh 100-120/average sized fish (then c 6.5 kg), as a result of the advent of large-scale Zairean *kayabo* purchases. [In Mwanza town fish was already being sold by weight in a few places, at unit prices around 50 per cent higher than this.] By July 1992, when buying by Kenyan factory agents had become systematic, it had reached Tsh 60/kg. After adjusting for inflation, this corresponded to a real unit price increase of a little over 100 per cent. [Compound inflation January 1990 - July 1992 was around 62.4 per cent]

On the lake this initial price development immediately excluded from the trade all existing and potential purchases of fresh fish, except the few already selling wholefish in the Dar es Salaam market, individuals working for or selling to the factories and new entrants with the resources to themselves set up an export factory. Demand on the part of those selling in the Dar es Salaam fresh/frozen market was in any event quite limited, since the factors allowing them entry to the trade (privileged access to cargo space on the daily local flights to the capital) imposed a strict ceiling on what could be purchased.

After mid-1992, the entry of several factories into production in Tanzania itself was associated with a continuation of price increases on the lake, but not quite at the rate of 1990-92. By February 1996 the average buying price on the lake had reached Tsh 350/kg, a real increase of 121 per cent over the July 1992 price. [Compound inflation July 1992 - February 1996 was around 152 per cent.]

Price competition between the factories tended to occur in fits and starts, triggered by the new entry of a particular plant or a plant's temporary shortage of throughput. The resulting price development was characterised by a series of sharp rises followed by plateaus of various durations. These plateaus were probably associated with new entrants establishing a base of tied fishermen (and/or the development of in-house factory fleets). To this extent, competition over price tended to become partly displaced by competition to transfer working capital to groups of vessel-owners as means of production; in the process, individual factories gained an element of direct control over the production process itself.

This general trend corresponded to a steady growth in the market power of the factories as a group. By 1996 only a few *matajiri* were in a position to set their own terms with the factories and, despite the high velocity of capital in the business, none at all could expect to ever become an exporter. Entry to the fishery, except as a direct producer, an agency basis for a factory, or into some element of the increasingly subordinate "artisanal" processing chain, had become very difficult financially.

On the other hand, since until April 1996 the factories had had great difficulty in acting collectively in a sustained way, especially in relation to holding a common price, their monopoly was not an oligopolistic one. In the wake of the government efforts to make them pay higher royalties, a common price reduction of around 40 per cent in two stages was finally agreed in the above month. Surprisingly, this was still holding almost a year later (Business Times, 14 March 1997), but the long-term possibilities of holding it seem slight. Some owners thought it a good idea to restrict the opening of more factories, but a greater number thought that "there were still enough fish for everyone". As for the efforts to sideline one or two competitors, it is probable that only one of the seven plants was directly involved. The overall pattern of market power in the trade was therefore one of structural concentration amongst an internally (although not particularly intensely) competing elite of industrial processors, who established their individual market positions initially at least on the basis of reserves of working capital imported from outside the (Tanzanian) fishery.

By contrast with the part of the Nile Perch chain directly controlled by the factories, relatively little centralised market power was evident in the "artisanal" chain. Theoretically, there were plenty of resources which could have been mobilised to establish and defend overall market control, but in general these were little employed. On the other hand, concentrations of capital and levels of income seemed to be consistently greater at Kirumba mwaloni than at any other link of the artisanal chain. On the supply side the *mwalo* was persistently by-passed by the larger lake-based processors going direct to Dar es Salaam. But small processors and large lake-based collectors were working in consignment sizes either too small to be worth travelling long distances with, or too large to risk arriving at a distant market unannounced and in a general context of *mali kauri*. On the demand side, traders from Zaire and Mtwara and most larger ones from Dar es Salaam and Tanga were uninterested in incurring the additional expenditure of time which going direct to a mass of small and medium-scale processor on the lake would have incurred. In any case, those from Zaire were warned off by the fate of some of their *dagaa*-trading compatriots, who had ventured to Ukwere in 1994 (Gibbon 1997b). In this way Kirumba could rely on a mixture of wholesaling and brokering - sometimes a predominance of brokering - to retain its leading position.

Ultimately, a degree of overall regulation was exercised by the international fish supply situation, which determined the price Nile Perch commanded on the international market and thereby the extent to which it made sense for individual factory owners to increase or decrease their investments. This in turn had a direct bearing on the organisational structure of fishing, on the overall size of the catch and the proportions of it destined for "artisanal" and non-"artisanal" consumption. The latter turned on not only the fillet price, but also the price of certain by-products including general animal feeds. Already severely subordinated, it was quite conceivable that certain of the markets for "artisanally"-processed Nile Perch might disappear altogether for want of through-put if the factories were to install their own milling capacity.

Besides the subordination of so many elements of local Nile Perch market development and structure to international market structures and trends, in Tanzania it is less personally and institutionally-based forms of regulation which seem of importance than processes of class formation. The local market for fresh fish is dominated by industrial capitalists operating predominantly independently and according to impersonal rules and principles. The artisanal market by contrast is dominated by a class of basically plebeian general traders, some with relatively large potential concentrations of capital, but only a handful of whom seem prepared to concentrate capital on a continuous basis in the fish trade. The special institutional features of the Tanzanian trade in artisanal fish seem to almost directly reflect this constellation of interests.

9.3 Forms of Enterprise Development and Capital Accumulation

Recent years have seen the development of two loosely-related areas of debate about private economic activity in Africa. One concerns paths of enterprise development, the other processes of capital accumulation on a national scale. Most of the literature on the former topic can be construed as a critique of indigenous African enterprise forms, on the grounds of their supposed aversions to partnership, reluctance/inability to delegate authority, and their tendency to disperse assets via a process of continuous diversification (Marris and Somerset, 1971; Schatz, 1977). These deficiencies are held to stall accumulation and their prevalence is usually blamed on business inexperience, lack of suitable candidates for partnership or succession and a strong attachment to risk aversion. In these respects, indigenous African enterprise is often compared with African Asian enterprise. The latter is said to be organised in the form of interlocking "federations" of enterprises, bounded and financed through extended families whose elders act as a holding company. Such "federations" are said to also be diverse, but supposedly each component is specialised and large enough for capital to be

accumulated and circulated in credit form to new enterprises within the bloc. Two important qualifications to this picture, normally stated in the literature, are that some African businesses have shown a propensity to break out of these limitations through entering partnerships with multinational capital, or diversifying into sectors (e.g., commerce) where the velocity of capital is very high; or by adopting bureaucratic management forms (Cowen and MacWilliam, 1996; Forrest, 1994).

The debate more specifically on accumulation has tended to be dominated by two discourses which, while quite unrelated, converge in certain respects. The first of these is the neo-classically inspired one, developed around the distinction between essentially private "entrepreneurialism" and essentially state-based "rent-seeking", with the latter held to be directly destructive of enterprise and linked to parasitical forms of accumulation. The second, derived from a specific Marxist tradition, distinguishes accumulation "from above" and "below" (Mamdani, 1987). "Accumulation from below" comprises capitalist development on the basis of competitive internal differentiation, without illicit links to state resources, while "accumulation from above" involves the plunder of state resources and the use of public power to procure unfree exchanges of labour power, and is associated with an unproductive and dissipatory pattern of investment. A point of convergence in these literatures is a tendency for all forms of accumulation related to the state to be homogenised. In reality, there have been a variety of types of accumulation linked to the African state, some state-directed and protected on the import-substitution industrialisation model and others purely parasitical. I have argued elsewhere that structural adjustment has tended to lead to a removal of the economic and political conditions for the first type of link, while encouraging certain forms of the latter (Gibbon, 1996).

The Nile Perch chain in Tanzania discloses patterns of enterprise development and accumulation which relate to some of the models involved in the above arguments, but which also point to ways in which they need modification. In the first place, a clear bifurcation exists among indigenous enterprises in the fishery, between ones exhibiting "dispersive" and concentrated types of enterprise development. To some extent this corresponds to the general distinction between fishing and trading operations, with the former embodying more concentrated forms. But the same distinctions are also evident within both sub-sectors.

The least dispersive "indigenous" patterns seemed to be found amongst the fishing operations of vessel-owners whose involvement in the fishery pre-dated the Nile Perch boom and who during the latter became full-time owner-supervisors of fishing camp-based operations. Those vessel owners who entered the fishery later from a background of business operations outside it never specialised to the same degree, either in their own personal involvement, or in their overall pattern of business interests. As far as I could tell it was the former group who also had the most successful fishing-enterprises in terms of business strategy and profitability. It was they who tended to favour increasing vessel numbers and especially nets rather than accumulating engines, and had evolved fishing systems based on highly mobile sealed camps.

With regard to more general enterprise characteristics, all large fishing operations involved a degree of bureaucratisation. The form this bureaucratisation took varied significantly between the two types of enterprises described though. The specialist vessel-owners seemed to prefer a role of hands-on management in their own camps. In most cases this was associated with the development of a distinct, sometimes shore-based, essentially administrative function which would be undertaken by a major domo figure of some kind - in one or two instances experienced administrators plucked from the public sector. The "diversifiers", by contrast, tended to concentrate on this administrative role themselves, delegating day to day operations in the camps to a specialist supervisor or supervisors. Otherwise operations within the camps seemed to be run fairly similarly, with more or less standardised divisions of

labour, specialisations and hierarchies and reward systems and with a strong emphasis on rule (often written rule) promulgation and enforcement.

There was probably a link between the direct overall supervision of a fishing operation by its owner and operational success, but precisely what kind of link is difficult to say. The more successful business strategy/fishing system combination just described could also just as well have been organised from shore. But the owners' personal presence may have enhanced overall coordination and control within a camp by lending a degree of patriarchal-type authority to the supervision function (delegated camp supervisors were invariably younger men than owners - and also much younger men than those camp-based owners chose as their shore-based representatives). This was important to the degree that, in poorly or loosely managed camps, theft of gear and diversion of resources to patrolling were major problems.

Evolving a managerial pattern combining patriarchation with bureaucracy was of course not the only basis on which the risk normally said to be the main barrier to concentrated accumulation patterns was minimised. One of the others has already been directly referred to: the presence within fishing of a remuneration system which allowed wages to always be calculated on a post-cost basis; extraordinary costs and changing cost-income balances could be directly and legitimately offset in declining wage shares. Such opportunities were also of course open to and exploited by both vessel-owners and traders not following enterprise development paths involving concentrated accumulation, but this does not detract from their status as probable necessary conditions of the latter.

A further perhaps subjective basis on which risk was thought to be minimised was embodied in the factory's system for distributing vessel owners' main investment goods. While as already indicated this actually involved vessel owners entering into highly unequal contracts, these contracts at the same time allowed owners to acquire investment goods with apparently less risk than if they had bought them outright on their own account. If they failed to produce their own investment costs, they would simply be surrendered and the part of the cost not generated would fall on their lender. The fact that in these circumstances it was the borrower who really lost could easily be overlooked, not least because, until April 1996, the steadily rising barometers of price and demand made such circumstances difficult to imagine.

The contrast between the boom-like conditions in the fresh fish trade and those prevailing in the trade in "artisanally"-processed products perhaps contributes to the explanation of the persistence of risk-adverse behaviour in the latter, particularly at the cartelised Kirumba mwaloni market. The trade was gradually subsiding both because overall supply had contracted dramatically, and because of the continuous internal restructuring of what supply remained, by product type and availability. Since there was little which could be done to stimulate supply, and since demand was not a problem, Kirumba traders with substantial capitals were probably better advised to enter the supply of fresh fish by setting up fishing operations. This indeed corresponded to the plans of a number of them, as well as to those of the larger and better established trader cooperative at Kirumba.

This does not rule out the fact that some internal differentiation and thereby "accumulation from below" was occurring in the trading sector: as has been seen, there were both major rewards for certain groups of traders, and opportunities on this basis for traders with medium-sized capitals to become rich. But since 1992 differentiation seemed to have mainly taken the form of better-off traders diversifying themselves, while less well established traders dropped out of the market for smoked fish and *kayabo*, and while a new asset-poor generation of entrants appeared in the punk market. A more obvious location for "accumulation from below" than trade was

in fishing operations. Yet here of course there was a general (although not exhaustive) interlocking between accumulation resting on employment of wage labour in combination with personally acquired resources and skills, and that resting wage labour's combination with resources supplied on asponsorship basis by the factories. The differentiation process in the fishery was not initiated by the factories but it was systematically intensified and accelerated by them.

In Mamdani's (1987) original formulation of the distinction between accumulation from "below" and "above" as well as in Chachage's (1995) application of it to Tanzanian mining, the former was seen as autonomously developing on specific sites which were then subject to invasion by "accumulators from above". The latter were outsiders, sometimes with other well-established sources of accumulation elsewhere, who manipulated mainly political connections to oblige "accumulators from below" to give up the major share of their surplus. If it is hard to find a clearly distinct general accumulation path from "below" in the Nile Perch fishery, as opposed to one or two highly successful former small-scale producers who advanced predominantly independently, it is equally hard to identify the currently dominant class in the fishery with an accumulation pattern of the "arbovist" category. The factory owners were a group who did their best to minimize both their relations to the state, and - outside of the direct production process - even their local connectedness. There were a good number of people who had done well out of the trade as a result of their relation to state, but since 1992 their importance had for the most part declined.

The main "accumulations from above" fell into two main groups: the 15 individuals who had held export licenses to supply the Kenyan factories with Nile Perch prior to the ban on the export of whole fish; and various individuals in senior positions in government fishery organisations locally. The latter group was still very much around. They comprised Fishery Department staff dealing with the collection of various kinds of taxes and fees and senior staff of training and research institutions who received preference in the renting out of government trawlers. Instead of performing research or carrying out training, the latter simply fished for Nile Perch and sold their catches to the factories. Both sets of openings were basically licenses to print money, in the second case big money. This seemed to be invested mainly in the construction of fine houses rather than the fishery itself. The losers in this process were the state and the general population rather than any other category within the fishery, however. Nobody paid more in bribes than they would have done in regular taxes or fees and proper research and training would have involved consistent trawling anyway.

Only four of the export license holders seemed to be still involved in the fishery and only one had conclusively "made it". This man, who was the best politically-connected of the export license holders in the first place (being the personal physician of the "Father of the Nation") had been given both managerial responsibilities and a share of the ownership of the plant set up in Musoma by the Kenyans whom he formerly supplied.

The other three, one former leading officer in the regional administration, one a former customs officer and another who was a long-term employee of a parastatal which I was unable to identify, had been dropped by their Kenyan counterparts. The first of these three, who was also involved in several other branches of the trade and had received loans from government institutions for this purpose, simultaneously lost control of his other assets and by 1996 occupied only a marginal role in the trade. The third and the fourth became involved in seemingly fruitless searches for foreign partners. One who was tied up with an Australian in 1996 in a plan to open a plant in Bukoba is referred to in van der Hoeven and Budeba (1993) as having been about to open a plant there with another individual in 1992. The other was currently negotiating with a European expatriate and an American importer, after having just been dropped by an Israeli he thought he had established a partnership with.

Nobody in this group was politically powerful in their own right, either nationally or in the Lake Victoria area. Historically, and especially since 1985, the Lake Victoria region had been politically marginal in Tanzania anyway. There was only one nationally important political family in Mwanza, and while one member of it was trying to get a factory off the ground, the family was divided and he was getting nowhere. The plants which did get established may have had politicians as sleeping partners, but given the shambolic plot of the royalty bribes saga (see above), this seems unlikely. None of this implies the demise of "accumulation from above" on the national plane, or that economic liberalisation has allowed the emergence of an independent capitalist class generally. Rather, it indicates the shifting locus of activities which "accumulation from above" now feeds off, and the fact that such shifts open up possibilities for other types of larger-scale investment which, at least for a time, can remain independent of it.

9.4 Food, Regulation and the International Division of Labour

It will be recalled that in his contribution to the current discussion on food, regulation and the international division of labour, Watts (1994) claims that there are renewed systematic tendencies toward the international regulation of food production and trade, centred around high value-added fruits and vegetables from tropical and semi-tropical countries. These tendencies rest on technical advances in food handling and transport and embody a generalisation of importer "pick and choose" strategies. The result is "flexible accumulation in the fields". This analysis implicitly draws on the wider literature on the supposed tendency for the international division of labour to be reorganised according to the principles of economic globalisation and flexible specialisation. However, a series of recent contributions to this literature in their own ways suggest more nuanced and careful delineations of changes in the international division of labour. Attention here will be focussed on the contribution of Gereffi (1994), while assuming the contributions of Ruigrok and van Tulder (1995) and Hirst and Thompson (1996) already discussed.

Gereffi discusses the extent and form of reorganisation of international commodity chains in relation to two pairs of distinctions: one between "producer-driven" and "buyer-driven" chains, and the other between different types of buyer-driven chain. Producer-driven chains are Fordist-type, vertically-integrated systems organised around the manufacture standardised products. They involve some sub-contracting of component manufacture, but in the context of direct control over direct extraction of raw materials at one end and of distribution at the other. Such chains are organised wholly within (groups of) developed countries.

By contrast, buyer-driven chains are led by retailing, merchandising or trading companies in developed countries, but are "co-ordinated" rather than vertically integrated and generally involve little direct foreign investment. The current period has witnessed the increased importance of one specific type of such chains. This is driven by developed country brand-based merchandisers, whose profitability derives from direct control over product development and brand-based distribution and marketing, as well as from shifting competitive pressures to the periphery through direct buyers, who contract large numbers of actual and potential suppliers (to whom some "proprietary" elements are diffused). It is these chains which most clearly combine globalisation with what Watts calls "flexible accumulation". Other buyer-driven chains are much less coordinated upstream, particularly those in which the most important players are importing trading companies having no close links to merchandising or retailing.

In a study of the fresh fruit and vegetable trade in Central America, one of Gereffi's colleagues, Reynolds (1994), demonstrates on the one hand that most fruit production and trade for the North American market is still producer-driven, while vegetable production -

including the element which involves contract farming - is part of buyer-driven chains. In these, North American importers have no strong links with merchandising and retailing and are involved only in marginal forms of support to exporters. An obvious conclusion (although not one drawn by Raynolds herself) is that the extent to which these international chains are really "driven" by any particular group may be questioned.

Much the same observation could be made about the inter-continental chain for Nile Perch. On the other hand, the crisis of sustainability of the international fish industry tends to spontaneously introduce a series of effects which resemble aspects of what Watts describes. In order to make up deficits of cod within the international table fish market, an uncoordinated group of independent northern-hemisphere importers have become interested in promoting the serial exploitation of a number of Third World substitutes. For reasons that can be deduced from a reading of Ruigrok and van Tulder (1995) and Hirst and Thompson (1996), this leads to local investment interventions not by transnationals, but mainly by regionally-based "bi-nationals". Partly aware of the pattern of international market development, and having no influence over conditions in the consuming countries, the latter's involvement tends to have a speculative character. This in turn tends to accelerate a local boom-bust cycle, which in turn contributes to the crisis of sustainability of the international fish industry. The "flexibility" of the resulting accumulation is guided only by the invisible hand of the market, whose unregulated character at the same time limits the accumulation's extent.

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