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TRADITIONAL FISHERY MANAGEMENT : SOME WEST AFRICAN LESSONS

by

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1. Introduction

It is now recognized that there is a renewed interest in traditional forms of small scale fisheries management, which may be defined as prudent self-regulation by fishermen or shore-dwellers based, to a greater or lesser extent, on traditional practices. They differ most noticeably from the (frequently resisted) methods of management by official regulations in that the latter are not drawn up by the fishermen themselves and in that their implementation in tropical artisanal fisheries is made very difficult by the diversity and scattered nature of fishing units and landing places. In contrast, the traditional methods of management have the advantage of being drawn up in relation to the specific constraints affecting the localities where they apply and of being implemented by those who designed them. Their decentralized character seems to suit the problems inherent in West African artisanal fisheries management, specially those of rivers, lakes, lagoons and estuaries, where the widely scattered fishing units, the variety of gear used and the complexity of the stocks exploited is even more marked than in the case of the artisanal marine fisheries. Field studies have revealed the current status and extent of traditional management practices in West Africa. These practices are much more developed in inland fisheries than in marine fisheries due to the fact that it is easier to establish property rights regarding lacustrine, estuarine or fluvial regions. Whereas the wide distribution of these practices alone would justify the preparation of case studies, the nature of the goals at stake make them essential study. These include providing sustained local employment to a large working population, assuring the shore-dwellers' direct access to sufficient protein, releasing a small but valuable surplus for sale on local, and, to a lesser extent, external markets and developing extensive or intensive aquaculture.

Nevertheless, this review and analysis of traditional management practices raises the question of whether, after earlier neglect, there is not now a tendency to overvalue them. A similar conclusion was reached by some authors in a review of traditional maritime institutions in the Western Pacific . The description of the management methods reveals a certain uniformity, although a distinction has to be made between the control of fishing effort (some parts of the Niger Inland Delta), the recent temporary or permanent

management of water systems (Lake Nokoue, Keta lagoon, the Togolese lagoon system), and, finally, those measures and practices intended to increase productivity directly, such as the development of brush park fisheries on Lake Nokoue and formerly on Lakes Aheme and Togo.

The traditional management schemes analysed here show common characteristics, such as their "ad hoc" nature, precariousness, their localized character and even their ambiguity which again leads one to wonder if, having long disregarded traditional management, we are not now over-estimating its value.

In contrast to this relative uniformity of management practices there is a great diversity of contexts. This diversity is a function of, among other things, the state of the resource, demographic pressures, settlement patterns and fishing techniques used, making it difficult to determine in general the performance of any given scheme. Placing each scheme in context does, nevertheless, allow us to identify the conditions which promote the transition of traditional management forms towards a modern type of management able to cope with the consequences of radical technical evolution (Aby Lagoon), as well as the conditions determining the capacity (Lake Nokoue) or an incapacity (Niger Inner Delta) to manage the internal contradiction of a fishery system.

Before describing and analysing the traditional and analysing the traditional methods of management, therefore, it is necessary to distinguish two broad categories of fishing. - Individual fishing, which involves fishing by individuals or small groups using the following techniques: gillnets, lines with multiple hooks, cast nets, fish traps and pots, shrimp nets, hand nets. - Collective fishing, which involves fishing by companies, or permanent or seasonal teams of fishermen using purse-seines, beach seines, syndicate ring nets, brush park fisheries with traps and all forms of acadja.

These two types of fishing are differentiated by fishing effort, the selectivity of gear used, the social organization of the work, the means of control and the accumulation of capital: as well as the duration of occupation of space. These different types of fishing impinge on one another at several levels (of the resource, markets, capital, labour, fishing area involved, etc.) and constitute a source of potential conflict which the traditional management is obliged to address. The recent introduction of more efficient fishing techniques and equipment is today upsetting the original context in which the traditional methods evolved and raises the question of to what extent these traditional methods can adapt.

2. First Example : The Grand Lahou lagoons (Ivory Coast)

A study of the forms, practice and effects of traditional fishery management should enable us to evaluate its role in controlling resource exploitation and appropriation by local communities. Conditions in the Grand-Lahou fishery are the opposite of those found in the Ebrie Lagoon, where free access, the abandonment of traditional fishing rights and resource appropriation by external interests have resulted in overexploitation.

Fishing in the Grand-Lahou lagoon network is regulated by an effective application of traditional territorial use rights which limit access, thus permitting control of fishing effort and assuring resource appropriation by the villagers themselves. Three main types of management can be observed in the Tagba, Mackey, Tioko and Niouzomou lagoons which form the Grand-Lahou complex : control of access to the fishery, some regulation of fishing effort and techniques and the control of some aspects of production and marketing. - The local inhabitants control access to the fishery by all foreign fishermen, principally the Bozo of Mali and the Hausa of Nigeria but also Senegalese, Beninese, Togolese and Ghanians. Control consists of a quota set by village authorities and a user fee also collected by them. - Regulation of fishing effort is accomplished by limiting seine setting, prohibiting fishing one day per week and prohibit fishing in certain zones altogether (in the N'zida basin on the Bandama, for example.) The almost total prohibition of seines would seem, in light of the seine-related reduction of pelagic stocks in the Ebrie and Aby Lagoons, to guarantee a reasonable maintenance of catch levels. - The choice of organized production or marketing schemes, such as the traditional avikam fisheries or the cooperative organization of shrimp fishing indicates a preference for controlled resource exploitation and profit appropriation in all aspects of fisheries activity rather than an unstructured system in which fishermen and marketeers are independent, even if subject to payment of territorial user fees, while their activities remain uncontrolled. The traditional avikam fishery , financed by the head of a kinship group or sub-group, consists of family dependents or contractual groups whose work is organized and allocated by the head of the fishery by virtue of his dominance of both work force and catch distribution. It is the head of the fishery who chooses installation locations and determines the intensity of fishing effort and the remuneration of labor. Upstream from the Grand-Lahou Channel, members of the "capitaine avikam" cooperative are given access to shrimp fishing zones : whether they are fishermen themselves or have temporarily transferred their access rights, they determine fishing zones and techniques (size of nets, number of hooks), but they also fix the price of shrimps.

The basis of a traditional practice like the avikam fishery, characterized by a control of the forms of production and marketing, is the control exerted by the

head of the kinship group over the labor force. Historically the chief's ability to establish such a practice, his appropriation of a portion of the profits and/or redistribution of them reflected and confirmed his power. The break-up of these kinship groups and the loss of authority by the elders as dependents seek emancipation, have made it increasingly difficult to mobilize the labor force and explain the progressive disappearance of these fisheries and the development of individual fishery practices characterized by dispersal of producers. In the future, demands for territorial use rights will determine the rent. It is in fact these user rights which allow their holders to exclude certain techniques, restrict access and appropriate a portion of the rent obtained from non-local fishermen. Territorial control now becomes imperative.

Many kinship groups and sub-groups have assumed territorial user rights over lagoons: in some villages these rights are concentrated in the hands of a single family, while in others, several families make claim to them. The example of the Tagba Lagoon, which is shared by three main kinship groups, confirms the existence of territorial user rights. The Braffe group, whose territory is best suited to shrimp fishing and the installation of traditional fisheries, extends from the river mouth to Dakpe Island; the Djiplogbatas' territory covers the central area, favorable to traditional fisheries and that of the Gui-Guins is the zone reaching to the Mackey Lagoon, where most fishing is done with gillnets.

The traditional management techniques observed in the Grand-Lahou Lagoons are, a priori, intended to achieve the same ends as any management system a certain degree of control of access, techniques and fishing effort meant to preserve the resource and appropriate the rent for the fishermen themselves, and they appear to be more successful than methods observed in the Ebrie Lagoon. In practice, however, numerous conflicts reveal the precariousness of this management system and its ad hoc nature confirmed by its over-localization. Moreover, certain practices adopted by the management scheme have proved very doubtful. - It is in fact difficult to define and apply the territorial user rights which are used to justify control of exploitation conditions in lagoon waters. The recent history of the Grand-Lahou fishery is one of conflict over territorial boundaries and the enjoyment of rights conferred by territorial dominance. One example is the inter-kinship group conflict between the Braffes of the village of Braffedon and the Grand-Lahou cooperative, dominated by the Kpendas. Another is the conflict between local and outside interests (Haussas at Toukouzou, Bozos at N'zida) over observance of allocated fishing zones and payment of user fees. - The empirical nature of these management measures can be seen in the diversity of authorized quotas for foreign fishermen, which are set at low levels upstream from the mouth of the Bandama and at much higher levels in the Tadjovalekro encampment in the Tadio Lagoon, and which are apparently determined by considerations unrelated to the fishery itself, at the discretion of the village authorities

(possibilities of lodging, etc.). Another example of this expedience is the varying tolerance of the presence of three purse seines, whose operations are tolerated in the Tagba and Mackey Lagoons but opposed in the Tadio and Miouzoumou Lagoons. Furthermore, certain measures, such as the prohibition of fishing in some zones, may be explained by the zones' importance in fetish practices rather than any effort to safeguard fishery resources, such as the protection of spawning areas. It can be said that the precariousness, ad hoc nature and absence of other measures such as the regulation of gear selectivity, limit the effectiveness of traditional management. - Practices such as the collection of user fees based on a claim to territorial rights can prove ineffective in achieving the intended objective of controlling access the fishery : fee collection may in fact result in an increase of fishing effort on the part of authorized fishing units which must recover the fee before realizing any profit for themselves.

The real objective of traditional management in the Grand-Lahou Lagoons appears to be an accumulation as rapidly as possible of the means of production, under the control of local residents, rather than a rational resource management programme. Three facts confirm this interpretation and demonstrate the fragility of traditional management : first, some data on the state of stock exploitation indicate a serious drop of catch per unit of effort; second, vague plans to create a purse seine fishing cooperative and, finally, the refusal of the existing seine and shrimp net fishermen to conform to national regulations. In conclusion it should nevertheless be acknowledged that traditional management has prevented exhaustion of the resource and impoverishment of the fishermen by prohibiting large-mesh nets.

3. Second Example : The Lacustrine System of Benin

The Lake Aheme and Nokoue fisheries have been in operation for a very long time and local residents are therefore extremely sensitive to efforts intended to control fishing effort or even to measures meant to increase productivity through the development of the acadja, a type of aquaculture native to Benin . Traditional authorities have created an arsenal of regulations and sanctions covering Benin's entire lagoon network, prohibiting certain techniques and gear, identifying prohibited zones and obligatory rest days, and in some areas, appropriating lagoon or lake plots for the installation of trap fisheries, fish holes (huedos), or brush park fisheries (acadjas). In some places (Lake Nokoue and the coastal lagoons), the permanent nature of traditional structures has been able to contain the conflicts inherent to resource exploitation. In others, where traditional authority is failing, modern structures are ineffective, demographic pressure heavy, and conflict is bitter (Lake Aheme).

3.1 Traditional Regulation

While traditional regulation on Lake Nokoue and Lower Oueme is primarily concerned with the long-standing practice of techniques such as the acadja and huedo fishing, on Lake Aheme and the coastal lagoons they apply principally to capture fishing. - Bourgoignie (1972) attempts to synthesize traditional codification of fishery exploitation on Lake Nokoue. Among measures affecting capture fishing activities he cites the prohibition of small-mesh nets and the existence of prohibited fishing zones, which he lists (Zahunhueme, Danhodji, Lanwanme, Hungbogat, Daleji, Gbadome, Doyikpeme, Ongongonkme, Drinzume near the village of Gbessou and Vodunviji near the village of Dekanme) and whose existence is often due to the importance of those locations to the practice of voodoo rather than to an effort at resource preservation. Regulation of acadja and huedo fishing practice is described in greater detail. Zones on Lake Togo and Lake Oueme are exploited as the result of government decree on 20 April 1966, which conceded fishing rights to individuals and local communities. These concessions may be either sold or rented. Although brush park fisheries can be erected on any water location in principle, in practice, the individual or kinship group which has appropriated that plot must agree. The principal rules for exploitation are maintenance of a certain distance between one settlement and another, so that canoes may pass unhindered, and the prohibition of fishing by third parties within the acadja or just outside it after causing fish inside to exit. Huedos, found in Lower Oueme in particular, may only be set in areas which belong to no kinship group. The user must not impede the flow of the waters of the delta or of his plot, must not drain water from any contiguous plot and must cede passage and drawing rights. - Pliya (1981) lists many prohibitions and regulations relative to fisheries on Lakes Aheme and Toilo and the lagoon region. Prohibited fishing techniques are djetowle (debarking from a canoe while in water), douboudoubou, which consists of surrounding a school of fish with several canoes, and amedjrotin, which may be described as a construction of palm branches, originally a small version of the acadja. Prohibited gear are the djohoun (a multi-hook longline), the assabou (a cast net forbidden on Lake Toho, and general prohibition of the gletto (a small purse-seine used in the deepest waters). Measures which affect fishing effort are the prohibition of fishing two days per week on Lake Aheme and the suspension of all fishing activity for one week, every two or three years during ceremonies in honor of the fetish Adihpo of Honedjro. Also for religious reasons, which indirectly contribute to resource preservation, prohibited zones have been created on Lake Aheme (the Island of Mitoghodji southwest of the lake) and on the Ouidah Lagoon (the "yehoueto" an arm of water almost one kilometer long, separated by two dams).

3.2 Current Practice of Traditional Management

With the exception of the prohibition of seine fishing, the exercise of territorial use rights is the only form of fishing effort regulation now applied. Although their effect on fishing effort is difficult to ascertain, they do control access to the resource in the case of acadja implantation on Lake Nokoue, and of huedos in the Oueme Delta, and regulate fishery construction throughout the lagoon network. Other methods of fishing effort regulation, such as prohibition of certain zones or of certain practices or gear, have generally disappeared with the increase of effort linked to demographic pressure, particularly heavy in the southwest. Given the relatively peaceful coexistence of individual and acadja fishermen despite some isolated conflicts, it would seem that Lake Nokoue residents are better able to manage resource exploitation than those of Lake Aheme, who, like the inhabitants of the Lake Togo area, are unable to manage the acadja fishery or the effects of heavy demographic pressure.

Although it is an ancient practice which regroups many types of installations, (godokpono, amedjrotin, adokpo, ava, hanou, hanoumecadja), the acadja, whose productivity has been analysed by Welcomme (1972) continues to develop side by side with the individual fisheries on Lake Nokoue. Conflicts have arisen which reveal the difficulty but not the impossibility of such coexistence. An example is the conflict between the fishermen of Ganvie and those of Zogbo over the appropriation for acadja construction of the first lagoon plots abandoned by shrimp fishermen following the gradual closure of the lagoon. The possibility of coexistence has led to the development of private and cooperative acadja fisheries. One project has been responsible, since 1978, for an acadja fishery covering 80 hectares, and involving 17 cooperatives composed of about 300 fishermen.

In 1970 and 1971, a serious conflict between individual and acadja fishermen on Lake Aheme resulted in the dismantling by the military of all the acadjas on the lake. This conflict had been developing since acadjas were popularized in 1957, and its eruption demonstrates the inability of social measures to manage a technique so productive as to be able, if properly exploited, to yield 5 t per hectare and repopulate the entire lake. Pliya places responsibility for the crisis situation upon the breakdown of traditional structures, especially the loss of authority of the Zennos of Guezin (southern part of lake) and the ineffectiveness of new structures, which are almost absent here. The anarchy which characterized acadja implantation and exploitation can be seen in their multiplication. Individual fishermen, especially those on the southern and western banks, protested that the acadja monopolized space and impoverished traditional fishing zones (due to frequency of exploitation, the acadjas were functioning as traps rather than as places for repopulation). Despite the

undeniable drawbacks associated with acadja fishing, deforestation and increased sedimentation, previous yields as high as a five ton average for acadjas on Lake Aheme compared to current yields of 150 kg per hectare for individual fishing on Lake Togo, indicate that the present exploitation scheme on Lake Aheme is not efficient.

4. Some Lessons from West African Inland Fisheries

The traditional regulations show both a recognition of the need to preserve the resource, as proven by the prohibition of purse seines in most lagoons or the reaction of Aby or Ebrie Lagoon fishermen to the destruction caused by seines, and also the expression of a desire to profit as quickly as possible within a system of direct or indirect control by local residents of the means of production, which usually results in overexploitation of the resource and financial hardship to fishermen. The objective of traditional management rarely appears to be a rational resource management throughout the fluvial, lacustrine, estuarine or lagoon network. On the contrary, by their localized character, ad hoc nature, precariousness and inconsistency, traditional regulations often demonstrate that their objective is the defense of the frequently contradictory interests of local residents. Two examples of the limitations of traditional management are first its inability to manage migratory stocks, since there is usually no cohesive regulation for any given fishery system, and second the ineffectiveness which characterizes the collection of user fees which is often presented as a form of management because it is meant to limit access, and permit the extraction of rent. However, the the perceived level of user fees is often insufficient to limit new entrants to the fishery and can, in addition, bring about an increase of fishing effort deployed by each fishing unit. In order for the perceived level of user fees to be really effective, it would be necessary for them to have as their objective the control of fishing effort with the aim of improving or maintaining the social and economic rent of the fishery.

Traditional regulation has known both success and failure. In some cases, it has been unable to limit access (Niger Inner Delta, Lake Togo), control the consequences of technological innovations (Aby and Ebrie Lagoons) or promote the coexistence of different types of fishing activity and fishermen's communities (Lake Aheme, Ebrie Lagoon). In other cases, however, traditional management has succeeded in promoting this coexistence (Lake Nokoue) and been able to absorb new techniques (Aby Lagoon). Traditional management is most successful where there are both strong traditional authority and long practised fishery techniques, where demographic pressure is low or where there are few conflicts due to the introduction of new technologies.

Traditional kinship groups or village authorities attempt to manage the fisheries : official administrative services are often absent or handicapped by the absence of legislation and are unable to supplant them, although these services may still claim free access in the name of state ownership of the waterways (Mali, Ivory Coast, Benin).

Low demographic pressure (Grand-Lahou Lagoons), unless it is compensated by an unregulated development of high-yield, low-selectivity techniques (Aby Lagoon), favor control of fishing effort. However, even using low-yield gear, a large population can exert excessive fishing effort resulting in overexploitation (Niger Inner Delta, Lake Togo). Population pressures which affect the lagoon shares are linked to employment opportunities in sectors other than fisheries. Thus one might think that, in the absence of employment possibilities at the regional level, the local pressures would increase (as in the case of Lake Togo) and vice versa. But the mobility of the labour force and the ease of movement across fisheries tends to equalize these pressures as is confirmed by the large number of migrant fishermen in Ivory Coast who apparently benefit from greater employment opportunities than their neighbours.

Unless controlled by specific regulations, new technologies can lead to stock reduction and a crisis situation often marked by violent conflict, as a result of which the new technology is either simply rejected (Ebrie Lagoon) or becomes the object of new regulations based on the old which are difficult to enforce (Aby Lagoon). Traditional regulations are valuable in that they exert some control (however imperfect) over fishing activities, which the state is unable to provide. Their decentralization is a point in their favor inasmuch as they adapt themselves to the specific constraints of each fishery system. They might serve as models for regulation at the national level, in which case the diverse nature of each system should be taken into account. Modern regulation should correct the faults of traditional regulation, taking modern techniques into account as well as proposing others. It would of course require the knowledge of biological and socio-economic conditions now sadly lacking.

Relating to the lagoon systems, the acadja technique, of much interest to management planners, appears to be the most promising form of traditional management. Successful acadja fishing requires good management : a sufficient density of branches and not too frequent fishing. Its disadvantages are deforestation and initial competition with other fishing activities. The growth of the acadja fishery on Lake Nokoue proves that conflicts can be mediated ; its prohibition and disappearance from Lake Aheme and the Togolese lagoon system prove the difficulty of such mediation. In view of the constraints involved in intensive aquaculture (high operating costs, prerequisite knowledge

of the breeding cycles of certain species) which is still in the experimental stage in Benin and the Ivory Coast, the extensive Beninese aquaculture is of great interest. Given past failures, however, it should be carefully studied prior to popularization and the methods of social and economic organization best suited to those of traditional fisheries should be chosen.

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