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PAPER READ TO THE IASCP-CONFERENCE ON
INEQUALITY AND THE COMMONS,
WASHINGTON 17-20 SEPTEMBER 1992

Rights and Justice in Sea-Tenure - the Northern abundance trap.



Development of rights in aquatic environments is a complex but scientifically challenging matter. In its many forms it addresses the core of the question of how inequalities are generated and maintained through private use of public resources. Global experience with overexploitation of resources with a free and equal access has urged the worlds scientists and administrators to try to craft institutional arrangements that can safeguard a sustainable use of common property - maybe even public property - resources. Can this be done without reinventing the old concept of *privilege* - either as private privilege or as a group privilege?

Even in a nicely working "commons" institution some people are kept outside the common pool resource. Does therefore limited access and a transfer to privileged appropriators of responsibility for maintenance of a limited resource inevitably lead to inequalities? Or does the current search among a wider range of economic systems, among these also feudalism, offer new possibilities ? (Daly & Cobb 1989).

In aquatic environments there are two basic categories of institutional arrangements for rights and duties in relation to resources:

- Government designed regulatory systems for just, equal or efficient appropriation of wild and moving species - systems that usually has led to exhaustion of the resource.
- More organic sea tenure systems developed by resource users themselves

- probably most suitable for stable marine species, for enhancement and cultivation.

In the real world, technological and institutional development, together with increased ecological knowledge tend to bring these two categories continuously closer together. The fundamental hypothesis in this paper is that in such a process of convergence, sea tenure systems will over time dominate over and be more stable than regulatory systems, in spite of their tendency to produce inequalities.

Government designed fisheries regulatory systems are difficult to change. Once a regulatory instrument is introduced, it becomes sticky i.e. it attracts its own profiteers and defenders. Fishers adapt to such systems and invest in shorter or longer boats so as to make the most out of the system. The vested interests exercise political influence and contribute to a perpetuation of the regime until a major crisis demands the need for a general overhaul of the system. This works both for size-limits and for licences and quotas. The recurrent abundance in northern waters tend to reduce the need for such overhauls, existing regulatory systems are just mended on and made more complicated as a result of minor crises.

In a recent White Paper (St.meld. 58) the Norwegian Government has a thorough analysis of the shortcomings of the present Norwegian regulatory system and the systems of the other major fisheries nations of the world. The conclusion is that none of the government designed regulatory systems around the world are perfect and that government at the moment has to settle for something less than perfect. The white paper lists the following options for a new or modified regulatory system for Norwegian fisheries:

- Free adaptation within a Total Allowable Catch Quota (TAC) which can include eligibility lists with easy access, and break-down of the total quota on size-groups of fishing vessels and on certain periods of the year.
- Non-transferable annual individual quotas
- Transferable quotas of various shades , like individual quotas, boat quotas, co-operative quotas, enterprise quotas etc.

The White Paper analyses the various regulatory regimes around the world and offer a summary of the experiences with these - especially the experiences with various systems of transferable quotas in Iceland, New Zealand, Canada and Australia.

It also analyses the dual regulatory system of Japan which has separate regulatory mechanisms for coastal fisheries and for off-shore fisheries.

Here catching and cultivation of marine resources near the coast is based on property rights for local fisheries co-operatives to specific sea-areas.

Off-shore fishing and fishing in international waters, is governed by a strict system of licences and technical constraints that is aimed at adjusting the catching capacity to the available resources. The white paper concludes that the Japanese coastal system is most suitable for stationary marine species and species that do not fluctuate between scarcity and abundance and that it lacks the capacity for rapid and precise adaptation to changes in the resource base. It fears that systems that are based on real property rights or has the capacity to produce entrenched rights, will fail or even be counterproductive when the fish resource is at a low level.

In view of these international experiences and the sad Norwegian experience with government designed regulatory regimes (Sandberg 1991) , the Norwegian government proposes to the parliament that new Norwegian regulations should be based on :

- Separate regulatory regimes for coastal fishing and for off-shore fishing (boats above 20-27,5 metres) that constrains competition between the two groups - a competition which coastal fishers are bound to lose. This means both a protection of coastal fishing through delineation of separate sea areas and physical boundaries for the use of fishing gear, and sharing of the total harvestable resource (TAC) between coastal fishers and off-shore fishers.
- For coastal fishing the new regulatory regime will be based on free adaptation within the total allowable catch (TAC) for the coastal fleet, but designed in such a way that the "coastal quota" is subdivided between the different boat-size groups in the fleet and between the main fishing periods of the year. An upper limit for what one boat can catch (a maximum quota) will also be introduced. This is meant to reap the fruits of competition and deregulation at the same time as it contains some safeguards against visible injustice and disrupting fluctuations in the volumes of fish landed through the year.
- For off-shore fishing the present licensing system will be continued with minor modifications. The licence is tied to a particular person/corporation for a particular boat and the imitated, but entrenched property rights connected to this will still have some market value. The new element is that licence holders will be allowed to combine quotas on different boats against reduction in their catching capacity, however, with a special committee as a watchdog against unfair accumulation of quotas on few hands or in certain regions. Transferable

quotas, quota hire and quota swapping is ruled out as feasible instruments, the fish resources are considered the property of the nation state and the national government wants to maintain full control over distribution of quotas. Still fishing companies and boat owners with heavy investments are promised stability and predictability in government's management of quotas and operating conditions.

The choice of regulatory systems is partly a result of a political process, where powerful groups of coastal fishers have fought to continue the traditional system based on alleged ancient rights to "free fishing" and powerful off-shore boat-owners have fought to be given more secure property rights over their quotas. These political processes are bound to continue, although heavily dependent on the fate of the wild fish stocks. The question of full membership status for Norway in the European Community, and the underlying questions of changes in the sovereign power of nation states, will also bring the question of management of these enormous marine resources back to the political realm in 1994 or 1995.

Thus the proposed new regulatory regime - with its clear separation between coastal fishers and off-shore fishers - is most probably only a temporary one; coastal fishers will increase the loudness of their claim to historic fishing rights regardless of the property rights of the nation-state - off-shore fishers will lobby to have their quotas as close as possible to financial securities and tradable objects before entry into a greater European Community. We must therefore look for more fundamental processes that affects the development of rights and inequalities in management of marine resources.

One such fundamental process is a gradual shift from single-species management to multi-species management. This tend to be an irreversible process stimulated by the growth of knowledge in the eco-sciences. By taking into consideration an increasingly greater part of the total marine ecosystem, the number of constraints on sustainable resource management multiplies rapidly:

- The optimal harvest - or the maximum sustainable yield of multi-species ecologies, which also includes birds and sea mammals, becomes a much more complicated measure than the MSY for a single species fish stock.
- A multi-species regulatory regime must also take into consideration the market value - not merely the physical volumes - of particular species in a certain area. In the present market situation this means that it pays to keep a "greater than optimal" stock of species in the lower part of the food chain in order to be able to harvest more of higher priced cod-fishes.

- Cod-fishes compete with fishers for species down the food chain, while birds and sea mammals compete with fishers for all kinds of species. A multi-specie regulatory regime must therefore take on a real stewardship ambition, with an aim to govern the whole and enormously complex marine ecosystem. The White Paper explicitly states that this kind of stewardship must be for the maximum benefits of humans: "We humans (fishers and government) have the choice of regulating sea mammals (whales and seals) directly through harvesting or indirectly by imposing on them hunger and diseases."

A transfer to multispecies management regimes will also make purely distributional aspects of government more visible and politically more sensitive. Keeping species at the lower end of the food chain at a high level in order to benefit cod fishers, without allowing greater catches for traditional herring fishers, is perceived as a transfer of income from the latter to the former. In political term this is coined injustice and the lobbying pressure against the very rationale of the multispecies regime will mount as the fish stock reaches a stage of abundance. At least at present, the ecological modelling of "multispecies" is probably not sufficiently robust to withstand the political pressure from groups of fishers who are not allowed to fish when fish is plenty.

A multispecies rationality is also difficult to combine with quota systems that base property rights on a computable future. A complete multispecies eco-model with thousands of variables and interconnections, will never be able to predict the future 100%. In fact, the higher the ambitions of the model to be comprehensive and accurate, the shorter the time horizon for its predictions. There will always be a need to enter current observations like this year's spawning success, this month's mean temperature etc. into the model and the predicted results will have to be frequently modified - almost like the meteorologist's weather forecast. Thus the property rights tied to quotas will be gradually eroded by the shortening of the planning horizon - this will mean political pressure to put an end to either the quota system or the multispecies management regime.

Another fundamental process is the increasingly closer link between fisheries aimed at wild species and the intensified cultivation of the seas in various manners. After 20-30 years of uneven growth such cultivation activities include the following, although some of them only at an embryonic stage:

- aquaculture ponds in fjords and channels
- sea-ranching from river outlets
- marine transhumance

- co-operative enclosures and enhancement of fjord basins
- domestication and slimming/fattening of wild fish
- enhancement of fishing banks by artificial reef construction

The links between these activities and traditional fisheries multiply rapidly as sea cultivation becomes diverse and multiplies. The White Paper quite correctly points at these links, however, without stating the full implications of these:

The scattered settlement pattern related to traditional coastal fishing is the prime precondition for continued development of sea-cultivation activities. The economic basis related to family ties and local community, together with local ecological knowledge, has produced a network of robust enterprises that has shown ability to survive dramatic fluctuations in markets and marketing organisations.

Sea-cultivation activities recruit mainly from coastal trades, among these traditional fisheries accounts for about 25%. The traditional knowledge in these trades is highly relevant for development of new sea-cultivation activities.

With the introduction of a greater variety of species (in addition to salmon) in sea-cultivation, the links with traditional fisheries in marketing and export becomes more visible. Farmed white fish of various kinds will be able to catch good prices when the stocks of wild fish is low, and will have great problems breaking even when wild fish is in abundance (Sandberg 1991).

In the field of production increased links are seen with cod, where small wild coastal cod is caught and kept in enclosures for feeding and slaughtering at the right size and time. In times of abundance, adult seif and other species are also kept for a short time in enclosures in order to achieve a better match with the capacity of processing industries and the consumer market for fresh fish. Development of feeding technology for small cod is now transferred to adult cod, the fish can now be kept for considerable periods, and can be fed or starved in order to achieve the best quality for the various market segments.

Thus the White paper concludes that the last 30 years of aquaculture development has shown that traditional fisheries and aquaculture can benefit from each other and enhance the development potential of the coastal regions - and that the institutional framework for the future therefore must take this into account.

This might be interpreted as a feeble political hope that the future will be bright and without conflicts. In reality the very growth of sea-cultivation activities initiates micro-processes that will surface as political conflicts only after some time. These

"organic" processes, although embryonic in many respects - are powerful agents in changing the very rules of resource management in coastal areas - regardless of the fisheries management regimes imposed by government.

For the rest of this paper, we will explore the nature of a few such processes, here termed **sea-tenure developments** and attempt to draw up some implications of such developments for the existing structures of **rights** in coastal areas and for the general attitude towards **justice** among the coastal population.

A few cases from Northern Norway will aid the understanding of such embryonic sea-tenure developments during a turbulent period of these northern coasts.

Sea - ranching property rights

The most dramatic link between fishing on wild species and cultivation is sea-ranching - where cultivated fish with property rights attached are allowed to mingle with free fish in the high seas. The viability of sea ranching enterprises will depend heavily on restrictions both on traditional fishers in sea-areas where the ranched fish feed and migrate and on leisure fishers in fjords and streams. The construction of traps to catch the homing fish (the case with salmon and arctic char) also demands private property rights in formerly open access coastal areas like river mouths.

There is a coalition of biologists, government development agencies and municipalities pushing for more sea-ranching. There are several reasons for this: One is the need to search for ecologically more sustainable ways to cultivate the seas than the traditional disease-prone net-pond. This could then be an alternative occupation for aquaculturalists living on favourable sites and a new source of income for peripheral municipalities. Another is the idea that large scale sea-ranching can be used to offset the large fluctuations following failures in the natural spawning - especially of cod-fishes. Thus the level of activity in major fisheries could be maintained at a more or less constant level and high price markets could be secured for a constant flow of fish.

The development work conducted so far has been initiated and supported by government. Pilot tests at several sites along the coast, among these on the island of "Vega", shows that the technical and biological aspects are fairly easy to solve, while the institutional and economic viability of sea-ranching enterprises will be

critically depending on the nature of property rights that it is possible to establish during the infant stages of this kind of activity.

The questions of rights and justice connected to sea-ranching is so difficult that the Ministry of Fisheries wants to develop the legal framework itself - before too much has happened "on the ground". Still there are a few lessons to be learned from the embryonic sea-ranching activities in Northern Norway:

In the case of sea-ranching as substitute for poor natural spawning of ordinary white fish, the sentiment among fishers seems to have developed to the point where such - non-homing fish is seen to belong to the "bona-fide" fishers of the nation. This means that it can be freely caught by a coastal fisher or by an off-shore fisher as part of his quota. Within this line of thinking, the initial investment in hatching and releasing the fish fry into the sea would have to be organised by the national government, either as public environmental projects financed by taxpayers money or as special fisheries enhancement projects financed by transfers from a new resource fee on every fish caught.

The economic viability of sea-ranching projects along these lines will probably be highly questionable at the present stage of multi-species fisheries management, but that is not the question discussed here. More important here is the establishment of the right of fishers as fishers, through their "agent", the fisheries authorities, to enhance the whole sea and to catch cultivated fish the same way as they catch wild fish. Such massive and stabilising enhancement will in addition be popular outside the group of professional fishers, leisure fishers will benefit from more plentiful fish stocks and a growing tourism industry will be able to attract more holiday fishers.

However, the group of aquaculturalists is likely to see this as injustice, as a transfer of income from themselves to fishers. The reason lies in the stated aims of Norwegian aquaculture: to bring new species of fish into commercial aquaculture. Substantial government funds are being channelled into this kind of research. With a number of new species virtually ready for fish farming, we can already see the development of business strategies for individual aquaculturalists that aims at farming these species when they are in low supply from wild stocks. If prices are allowed to vary more freely according to abundance or scarcity, the price mechanism will also induce aquaculturalists to step up production of scarce species (Sandberg 1991). However, if a coalition between traditional fishers and fish managers obtain public finance for enhancement of the wild stocks of scarce, but farmable species, this will erode the comparative advantage of the aquaculturalist

and transfer income from him or her to the traditional fisher, the leisure fisher and the holiday fisher.

The case with homing fish species, like salmon or the short migrating arctic char, is quite different. Here the basic rights-structure is different; drift nets at sea is prohibited to protect the wild, migrating salmon, while river shore owners have defined rights to catch salmon along their stretch of river. Salmon rights owners also co-operate in associations that aim at enhancing the wild salmon stocks by releasing quantities of salmon and trout fry. In terms of rights, the large scale ranching of salmon is but one step further in development from the enhancing already done. River owners can pool their resources within the framework of the existing associations and invest in the release of large quantities of salmon fry. The migrating salmon is already protected from traditional fishers, leisure rod and trolley fishers are regulated by licences and traps of various kinds can under existing rules be erected on private properties. With slight changes in the rules, river owners can construct traps with a much higher trapping efficiency and make this kind of sea-ranching economic viable enterprises. When 10-12% of the released salmon fry is caught as adult salmon, sea ranching is considered profitable, at a price which is competitive with the farmed salmon.

Still very little sea ranching takes place as a result of private initiative - the government has grabbed the initiative and kept it. Fears of charges of favouritism in relation to property holders and fears of unhealthy injustice in coastal areas are the important elements in these mainly political considerations. Aquaculturalists fear the competition from low-cost extensive forms of cultivating the seas and are not supporting the programmes - a success of sea-ranching is seen by them as an unjust transfer of income from hard working fish-farmers to privileged river owners. The "veterinary argument" is used by government to keep the situation "cool": Runaway salmon from fish farms - many of which are carrying diseases - are today mingling with wild salmon, thus threatening both their health and their genetic adaptation to distinct river environments. In order that the thousands of years of evolution of Norwegian salmon "tribes" shall not be wasted, all contact between genetically manipulated salmon and wild salmon must therefore cease - and commercial sea-ranching has to wait until the situation is rectified.

The natural development from river-owners' enhancement to sea-ranching based on local salmon tribes would most probably have few ecological effects - and a natural mortality of 80-90 % would take care of most diseases. It is therefore ironical that it is the ecological externalities of aquaculture - most of them produced by ill-designed government size limit regulations - that is hampering the development of

commercial sea-ranching. In the eyes of the holders of old property rights, this is perceived as injustice.

Property rights in protection, enhancement and rehabilitation

Different from the push and brake processes connecting government to the development of sea-ranching, is the micro processes taking place at the community level regarding protection, rehabilitation and enhancement of the marine environment. This is also closely linked with property rights, with responsibility for investments and with user rights in the protected or improved environments.

In the fjord basin of "Sørfjorden" in the municipality of Rødøy, a spontaneous protest was launched against establishing fish farms. This developed into a larger scale action also against bringing in fish farms from other parts of the municipality to this fjord basin - not even temporarily. The coalition partners were multiple - as they usually are in popular actions: from some shore owners wishing to have the fjord for themselves in case **they** should obtain an aquaculture license, from traditional fishers fearing that aquaculture might hamper their traditional fjord fishing - to leisure fishers fearing the pollution and contamination risks from fish farms. The need to protect the wild salmon in some streams around the fjord basin was also entered as an argument. In sum, it was argued to maintain the fjord as one of the cleanest and healthiest in Norway - environmental health was seen as a common property resource worth fighting for.

The action was partly successful as one side of the fjord basin is still declared free from fish farms. Whatever sea-tenure rights the various groups were able to claim, they had to be confirmed by popular action. Legal measures were never in question although such might have been feasible in view of a High Court ruling giving fjord fishing rights to the sami population of a particular fjord. However, the organisational foundation created by the protest action was never utilised for any developmental activities, like enhancing the local salmon stocks. The reason for this is most probably the complexity of the coalition. Enhancement with public funds and with salmon fishing rights for everybody, would have been a popular measure, but if this was initiated by the holders of property rights in salmon rivers - to benefit themselves, the coalition with traditional fishers and with leisure fishers would certainly break up. As the responsibility for sea-fish and salmon-fishes is divided - also on the municipal level, there is also a lack of "facilitator-capacity" in public administration.

In another, and much larger fjord-basin ("Skjærstad-fjord"), the surrounding 4 municipalities have agreed to work out a development plan based on the resources of the fjord. Municipalities and property right holders along the fjord and along the joining rivers are working out plans for protection, enhancement of coast and river environments and rehabilitation of spawning habitats for various commercial species. There seems to be a possibility to accommodate the various public interests and those of right holders like river owners, fjord fishers, aquaculturalists, leisure fishers, farmers, sewage plants etc. Through various kinds of negotiation mechanisms it would seem possible to develop some kind of sea tenure system that can secure ecologically sustainable development in this fjord basin.

However, the traditional fishers' right to move freely and to fish wherever the fish goes is in direct contradiction to this kind of thinking. With protection from the "Salt Water Act", large fishing vessels from other parts of the coast can enter the fjord and exhaust the local fish stocks in a couple of weeks. Especially the trawling for scrimps tend to kill large amounts of fish fry in the fjord, but the regional fisheries authorities are not willing to restrain it - although it has the powers to do so. This is the "Northern Abundance Trap" the legal right for outsiders to harvest of the abundance wherever it appears - even if it is a result of local enhancement activities. This means that due to the open access properties of the fjord basin, the embryonic sea tenure developments crash against the freedom of the fishers and that even the question of "who is the fjord-owner" becomes a tricky one for the planning team (Nilsen & Emelin 1992). It is self-evident that with this kind of uncertainty for private and municipal investments in rehabilitation and enhancement, they appear futile.

In many ways this fjord-basin development project is therefore a test of strength between an infant sea tenure development with basis in local communities, and government fishing authorities who are fighting for the 19th century right of free movement of fishers. We shall see below why the entry of municipalities into resource management strengthens the sea-tenure processes.

Another case of illustration is "Fish-Houses" or experiments with artificial reef construction now carried out in the Lofoten Islands, ideally as a fish enhancement measure, but in reality often as a fish concentration measure. This demands zones that are free from trawling or purse seine, the enhancement will thus give certain groups of fishers (i.e. hand line and gill net fishers) exclusive rights which other fishers do not have. If the fisheries marketing board is involved in financing the "fish houses", by extracting a fee from the sale of fish, this will mean a transfer of income from groups of off-shore fishers to groups of coastal fishers. If the

municipalities are involved in the financing of such enhancements, through tax-payers money, a precondition would be to restrict the fishing rights to "their own fishers" and exclude fishers from other municipalities.

Municipal resource management and environmental action.

As part of the follow-up of the World Commission on Environment and in keeping with the idea of "Think globally, act locally", Norwegian municipalities have recently assumed responsibility for environmental matters within their areas. This is termed the "MIK-reform" and gives local authorities some powers to act also on coastal waters used for sea farming, sewage disposal, recreation etc. Especially after the recent collapse in Norwegian aquaculture and in the current restructuring of this, there is a crucial role to play for municipal environmental officers. The local concern for a healthy sea ecology, from traditional fishers, from leisure fishers and from recreational interest, place heavy pressure on local environment authorities to reshape aquaculture.

The inherent logic in all environmental work is that both local opinion and responsible authorities quickly want to move away from cleaning up the mess after others to more preventive and pre-emptive work. Municipalities are also in an advantageous position as they are used to deal with property right holders in matters of physical planning and public services. They can therefore offer to do these tasks cheaper and more efficient than central or regional authorities.

So far it is correct to assume that the MIK-reform to a large extent has been a penetration into local government of national and international standards of environment and resource management (Jansen 1991). But as more and more municipalities now have their own environment and resource officers and these interact to strengthen their professional confidence, local processes take their own turn and there is increased pressure on central authorities to give municipalities authority to work more preventively. This kind of work does already clash with the national and regional administration of important sectors like fisheries, energy, oil, forestry and agriculture, and conflicts are likely to increase further as environmental committees are formed as part of the local political set-up.

The basic question here is whether an environmental branch in the local administration will bring in new ways of dealing with problems and new ways of solving conflicts. Experience so far points in the direction of negotiation and compromise rather than the setting of rigid standards for environmental quality. This implies that individual property right holders, as well as local communities