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Property Rights, Regulatory Measures
and the Strategic Response of Fishermen

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0.0 Summary

0.1 The first European Social Science Fisheries Network (ESSFiN) workshop, held in Seville in September 1997, attracted 28 participants from 12 countries. Of these, the majority (21) came from 8 EU member states. A total of 19 papers were presented in 5 formal sessions, together with guest lectures by speakers from the USA and the Regional Development Institute in Seville; these are summarised in section 3.

0.2 *Proceedings*

(a) *Property rights* are of central concern not only to an understanding of the social ecology of fishing but also as a prerequisite for effective management. The papers under discussion considered both the institutional and legal constraints for the introduction of private and community based property rights, examples of ITQs in the Dutch flatfish industry, and the consequences of the privatisation of use rights (quota hopping, discards and the creation of powerful vested interests). In the broadest of senses, therefore, the concern of the social sciences in analysing the outcomes of different property regimes is for their distributional effects in economic, social and political spheres.

Discussion on (b) *regulatory systems for offshore waters* reflected upon the changing regimes for high seas fishing, the maximising of economic returns from EEZs and different attitudes towards the presence of EU distant water fleets in third country waters and the growing threats to fisheries management arising from the re-emergence of powerful alliances involving non-fishing interests.

(c) *Inshore waters* occupy a position of special political and socio-economic importance in the EU. Discussion referred to the issues concerning the renewal of the derogation which permits EU member states to retain independent control of fishing within the 12 mile limits and examined the different types of arrangement for inshore fisheries management in Spain, UK, Ireland and the Mediterranean islands of Corsica and Sardinia. The need for the retention of local fisheries management systems and their integration with marine environmental and/or coastal zone management were emphasised.

0.3 *Discussion*

The current debate on use rights has become distorted by the misuse of terminology, an overemphasis on ITQs despite the fragmentary evidence, and a de-contextualisation of use rights from the social ecology of fishing. Use rights should not be considered only in the narrow context of finding an efficient operational solution to a management problem. The embeddedness of use rights means that externally imposed regulation may act as an indirect form of social change, which explains the resistance of fishermen to the introduction of new policy measures. Attempts to develop appropriate use rights and regulatory systems must take account of the biological and socio-economic characteristics of the fisheries. A schema is put forward wherein ITQs and

centralised regulation are preferred for certain forms of offshore fishing; open access and/or group quotas with a combination of centralised and devolved regulation are applicable to other forms of fishing within the EEZs; and community use rights and local systems of self-regulation are adopted for inshore fisheries within the 12 mile limit.

- 0.4 Although the Seville workshop was successful, consideration is given to ways by which future workshops might prove more effective - as, for example, by increasing the number of invited speakers; introducing parallel sessions to increase the time available for detailed discussion; extending the working time devoted to the workshop; and the pre-circulation of papers or abstracts.

1.0 Introduction

- 1.1 The following report summarises the proceedings of the Workshop on *Property Rights, Regulatory Measures and the Strategic Response of Fishermen*, held in Seville, 5-7 September 1996, as part of the Concerted Action programme for the European Social Science Fisheries Network (FAIR CT95 0070). A series of workshops is intended to bring together social scientists from Europe and the North Atlantic region working on fisheries research in order to present and discuss their research findings and to explore the relevance of such findings for the development of fisheries policy and management strategies. This first workshop addresses a theme which is central to the understanding of the social structures and behavioural patterns of fishermen and the organisation of their user group interests. It is also one which has a direct bearing on the nature and success of fisheries management.
- 1.2 Preparation for the workshop began with an announcement and call for papers in the first issue of the Network's newsletter (FiNESSE) in February 1996, which brought the offer of 25 papers. Of these, 22 were eventually scheduled for presentation in Seville though, in the event, three of the papers were not presented. The selected papers provided a broad cross-section of circumstances in European and North Atlantic fisheries, with presentations from 8 EU member states and also from Brazil, Canada, the USA and Norway. A briefing paper prepared by the coordinator was circulated to participants in advance of the meeting in Seville.
- 1.3 The papers, presented in English, French and Spanish, with simultaneous translations, were divided into five sessions: two on property rights and three on regulatory systems and the strategic response of fishermen, including a separate session devoted to the Spanish situation. Extended discussions were held at the end of each of the two days. Two guest lecturers were added to the programme: Lawrence Hamilton from the University of New Hampshire in the USA, who reported on the preliminary findings from a 5 nation study of human adaptation to environmental change in North Atlantic fisheries, and Juan Carlos Cuerda from the Regional Development Institute in Seville, who outlined the problems and development strategy for Andalusian fisheries. We were also pleased to welcome representatives from the Andalusian Autonomous Community's administration as observers at the Workshop. On the third day of the meeting, participants took part in a field excursion to the Andalusian coast, including visits to the Donana National Park and the fishing port of Sanlucar de Barrameda, where discussions were held with officials of the local *cofradia*.
- 1.4 The ensuing report is organised in five further sections:
 - (i) an extract from the briefing paper on the theme of the workshop;
 - (ii) extended abstracts of the two guest lectures;

- (iii) summaries of the proceedings from the workshop sessions, involving a short introduction, extended abstracts of the papers and a précis of the issues discussed; some sessions have been combined and certain papers have been relocated from the original programme to achieve a more coherent structure to the report;
- (iv) an overall discussion of key issues arising from the workshop; and
- (v) a brief reflection on the organisation of the workshop.

Two appendices are attached to the report: the first outlines the original programme and the second lists the participants by country.

- 1.5 A selection of the papers presented at the Seville workshop is to be published in book form by the Fishing News Books division of Blackwell Science under the title *Property Rights and Regulatory Systems in Fisheries*. Publication is scheduled for the early autumn of 1997.
- 1.6 The coordinator of ESSFiN wishes to acknowledge the tremendous efforts of Juan-Luis Suarez de Vivero and Mayca Frieyro in organising the highly successful meeting in Seville; the generosity of the Consejería de Agricultura y Pesca of the Junta de Andalucía in making available their excellent conference facilities; all participants for creating a lively, interesting and informative workshop; and to those who subsequently provided written commentaries on the workshop proceedings - their comments have greatly aided the writing of this report.

David Symes
Hull, February 1997

2.0 Property rights, regulatory measures and the strategic response of fishermen: a briefing paper

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2.1 Introduction

Although the EU can now look forward to a period of stability insofar as the number of coastal state members is concerned, major political changes may be imminent. Not only will distant water fishing nations have to adjust to the newly established high seas management regime (or is this only a pipe dream?), but internally the existing Common Fisheries Policy (CFP) is due for termination in 2002 and a new and more relevant policy framework has to be put in place. To date, fisheries policy in the EU and elsewhere has been driven principally by biological science, moderated by concern for its economic impacts and manipulated by political expediency and a need to find consensus from among conflicting nation-state ambitions. At present confidence in the existing policy system is extremely low - and not only among the resource users themselves. There is a need for greater awareness of the strengths and weaknesses of the institutional systems, the social impacts of fishery policy and the behavioural responses of resource users and a further need to elucidate social objectives for fisheries policy in terms of distributional justice, which may help to gain legitimacy for sustainable fisheries management.

But the contexts within which fisheries policy will in future be promulgated are also changing. The objectives for fisheries management are increasingly being set within wider goals for marine environmental management. According to Gislason (1994), those objectives are now changing from the sustainable use of commercially viable resources to the conservation of marine environmental quality and may well imply the introduction of additional measures in areas like the North Sea leading to a proportional reduction in the direct ecological impacts of fishing. ICES fisheries management advice is currently based on the 'necessity to maintain viable fisheries in sustainable ecosystems' (Gislason, 1994). Moreover, critical interrogation of the basic science behind fisheries management is tending to undermine confidence in the robustness of the bio-economic paradigm. Whether one chooses the cataclysmic vocabulary of 'chaos theory' or the less alarmist, but no less deeply disturbing, concept of 'regime shifts' (Steele, 1996), what remains true is that the potential futures for fisheries are far less certain than a simple interpretation of bio-economic modelling would suggest. Uncertainty is surely the key parameter for fisheries management; it is certainly not confined to stock assessment but is also an endemic condition of the global economy. The behavioural responses of fishermen, both individually and collectively through their professional organisations, are largely conditioned by a combination of increasing uncertainty and marginalisation within the economic, social and political spheres of influence.

2.2 Who owns the resources: the issue of property rights

It has become almost axiomatic that a precondition for effective management of sustainable fisheries is the resolution of problems allegedly created by the common property nature of fisheries and the derived characteristics of open access (or equal access) and a common use rights system of exploitation (CURSE). The analysis of property rights systems is one area where social scientists have already distinguished themselves. Recently, however, the debate appears to have been prematurely narrowed to a choice between CURSE and the privatisation of use rights (PURSE) with an undue lack of consideration given to alternative solutions to the property rights issue. Opinion on the privatisation question has tended to divide along disciplinary and sectoral lines, with the system of individual transferable quotas (ITQs) clearly favoured by economists (and administrators) with the tacit support of biologists - as a logical extension of bio-economic theory, and by the capital intensive sector of the industry. Opposition has come mainly from social scientists and from family based, artisanal fishing interests, fearful of their long term survival under conditions of a market based allocation of property rights. Recent literature has been dominated by a rather sterile reiteration of the theoretical economic benefits of ITQs, countered by an equally arid restatement of criticisms of inequity and socially perverse distributional effects. The advocacy of ITQs has become rather intense and, at times, insufficiently objective; ITQs have, for example, been simplistically presented as essential and inevitable (Arnason, 1993) and also 'widely recognised as the most successful form of fisheries management to date' (Townsend, 1995). In truth, the jury is still out; despite the prominence given to the ITQ system in the literature, it has so far been adopted in very few countries and developed in circumstances which are certainly not replicated over large areas of the ocean commons, including the EU's 'common pond' (see Symes and Crean, 1995). The arguments in favour of ITQs have been vigorously refuted on conceptual grounds, as arising from a misinterpretation of the socio-political nature of common property resources, and on moral grounds for seeking to allocate free shares in a common (national) good to particular individuals - as well as challenged on the basis that benefits at least equal to those claimed for ITQs, can be identified for other systems developed according to the principles of territorial use rights (TURSE) and criticised for specific weaknesses relating to the equivocal evidence concerning ITQ's ability to resolve problems of discarding and enforcement. But social scientists have been surprisingly reluctant to develop alternative solutions applicable in the overcrowded, overexploited, industrialised, international fisheries found in the European context.

Perhaps a leading question for ITQs - and one which has still to be answered - is how far the system addresses the issue of sustainable resource development. As Hanneson (1996) points out, ITQs are 'primarily an instrument for promoting economic efficiency rather than conservation'. They serve to protect the value of capital which, in the past, has proved instrumental in creating overcapacity in the offshore sector and in promoting the tendency

towards unsustainable practices within the industry (Drummond and Symes, 1996). It is also worth noting that Grafton (1996) in his review of the theory and practice of ITQs fails to include resource management among the criteria for measuring the success of the system.

On the subject of ITQs, the views of economists and social scientists appear almost as irreconcilable as the Montagues and Capulets. Maybe the time has come to call down 'a plague on both your houses' (Shakespeare, c1597) and to restructure the debate by moving on from unequivocal advocacy and opposition to a more constructive and potentially rewarding consideration of how, where and in what precise form property rights might usefully be created within the crowded and overfished waters of the NE Atlantic in general and the EU's 'common pond' in particular. As a prerequisite we shall need to establish a series of 'acid tests' of relevance and success, including economic efficiency, distributional equity and, above all, resource sustainability. We need, therefore, to change the style of the debate to one which asks a number of pertinent questions viz.

- * under what conditions do ITQs (or alternative property rights systems) serve the goal of more effective and enduring resource management, without causing serious threats to the viability of artisanal fisheries and the communities they support?
- * what safeguards may be introduced into a system of privatised property rights which offer protection against the dispossession of the fishing community's means of livelihood, without enfeebling the economic incentives to exploit the resources in a rational manner under conditions of low discount rates?

As will be apparent from the introduction, it is important in any review of alternative property rights systems to take account of the growing uncertainties surrounding the processes of policy making and especially the challenges to the basic axioms of equilibrating tendencies implicit in bio-economic theory which come from 'chaos theory' or the concept of 'regime shifts'. Greater caution needs to be exercised in attempting to accommodate the risks from environmental perturbations and the longer term consequences of climatic change. The 'precautionary principle' needs to be vested within the decision making processes themselves. Thus, a third question needs to be formulated, viz.

- * what kinds of property rights system(s) and regulatory regimes are best able to cope with the conditions of extreme uncertainty, which go beyond the estimation of resources to include the conditions of the markets, regulation of the food industry and patterns of enterprise capital investment, *inter alia*?

ITQs are not the only plausible variation on the theme of property rights but there has been very little advocacy for any alternative systems within more developed, industrialised fisheries. The marked lack of support for existing

policies and management strategies, among resource users and academic commentators alike, presumes a critical evaluation of CURSE. If we are to follow the economists arguments (Arnason, 1995), the failure of management systems has to be laid at the door of the incompatibility of CURSE, and its implications of open (and equal) access, the inevitable race to fish accentuated under conditions of a diminishing resource and the inadequacy of existing input and output controls, with the conditions of effective management. But it may well be that the principle of common property rights is being blamed for what is, in effect, faulty practice. Common property rights have been subject to a stream of abusive comment in recent years; but these common property rights have themselves been sorely abused. For those who would roundly condemn the concept of ITQs it is imperative that they should seek to identify alternative systems which can satisfy the criteria of economic efficiency, distributional justice and resource sustainability - or risk conceding the argument.

In truth, however, the scope for finding such alternatives are somewhat narrow. Coastal state management through the nationalisation of use rights (NURSE) by means of exclusive fishing zones has offered little advance over the former high seas regime. One of the more interesting alternatives, which appears to work well in the Pacific island states (Ruddle *et al*, 1992) and also in Japan (Kalland, 1996) is the concept of communalised or territorial use rights (TURSE), though its application in a pure form to the specific conditions of the North East Atlantic is highly problematic. The need is for a realistic evaluation of alternative property rights systems (including CURSE) which pays close attention to the empirical realities of the fishery. It is unlikely that we can find either a theoretical ideal model or an empirical example from other cultures which will translate easily into the complex biological, economic and political conditions of areas like the North Sea or the Mediterranean. Comparative analysis of different systems operating under conditions of centralised or devolved policy making and in the different geo-political contexts of territorial waters, the 'common pond' and the high seas may provide a way forward. But, for the time being, common property rights remain the dominant principle for the organisation of most of the world's fisheries, even though the past 25 years or so has witnessed a continuing stream of measures intended to constrain those rights either wholly or partially, so that nowhere in the developed world are commercial fishermen able to conduct their activities under the unfettered conditions assumed by the concept of *res communis*.

2.3 Turing the screw: regulatory measures

One area of weakness in the social science perspective on fisheries management has been in the comparative analysis of regulatory mechanisms which define the conditions of access to the resource. By comparison with the level of interest shown in the issue of property rights, systems of regulation of the fisheries have attracted relatively little attention from social scientists. Exceptions to the rule include studies of TURSE especially among Pacific

island states (see, for example, Ruddle *et al*, 1992) and, to a lesser extent, customary inshore management systems in Europe and North America.

Yet, whatever the property rights system - CURSE, PURSE or TURSE - the fisheries still require close and careful regulation. It was suggested above that the principle of common property rights might be blamed for what is, in effect, bad practice: that practice, good or bad, is largely defined by the choice of instruments for controlling fishing activity.

Rarely will the regulatory system rest upon the choice of a single instrument. Most management systems embrace a complex combination of several different measures. Indeed, one source of weakness of the management system may be in the confusing and, at times, contradictory complexity of the regulation package. A second source of weakness, which may again reflect the complexity of the regulations, may concern the question of enforcement, both in terms of the efficacy of monitoring, surveillance and control (MSC) procedures, the willingness to prosecute (especially within self-regulating organisations) and the appropriateness of the sanctions imposed.

It is important, therefore, that the social science research agenda addresses the issue of regulation as part of a wider concern for property rights through five key questions, viz.

* *Who undertakes responsibility for the framing of regulations?* Is the responsibility vested in central government, decentralised to a regional authority, devolved to a delegated non-governmental organisation or rooted in an endogenous local system - or does it involve a combination of two or more levels of jurisdiction? How are the relations between the regulators and the resource users constructed? And, where responsibility is divided -as between central and local organisations - how are the relations between the two levels in the administrative hierarchy structured? These questions concerning the institutional frameworks of fisheries management - and touching upon the familiar theme of co-management - have been quite extensively treated in the social science literature.

* *By what specific instruments is the fishery regulated and what are their distributional effects?* The menu of regulatory instruments is potentially quite extensive, especially when all possible permutations for inclusion in the overall management package are taken into account. These will include:

- *licensing*, as a prerequisite for controlling access to harvesting rights; licensing may simply refer to a means of registering the active fishing fleet or it may be used to impose further conditions on the resource user (restrictive licensing) or, less commonly, to regulate the numbers of fishermen with access rights;

- *output controls* (TACs and quotas), the most widely used mechanism for attempting to limit fishing effort, now widely discredited, but subject to variations in management practice (e.g. devolved management through 'sectoral quotas') and to elaboration in the form of multi-annual and/or multi-species TACs and quotas;
- *effort controls* through limiting access to the fishery by the number of days that a vessel may spend at sea fishing; this is not, as yet, widely used in developed fisheries but has been a fairly widespread practice in traditional fisheries;
- *technical measures*, principally in the form of gear regulations;
- *geographical controls*, involving ground closures either permanently, seasonally or temporarily and intended to protect stocks at vulnerable periods in the life cycles or to rest heavily exploited stocks;
- *market based controls* in the form of minimum landing sizes intended to reinforce gear regulations;
- *fiscal measures*, either as charges for access to the fishery or as taxes on landings, which serve as an indirect means of limiting fishing effort by imposing an additional cost on entry to the fishery or on the harvest yield; such measures are also quite rare in commercial fisheries but quite commonly used in recreational fisheries.

In assessing the distributional effects of either an individual instrument or the total regulatory package, a key question is whether the chosen system confers preferential rights, either intentionally or otherwise, on certain classes of fishermen as defined by reference to place of domicile, vessel size, fishing gear, commercial or recreational activity, full- or part-time engagement etc.

- * *Who is responsible for the enforcement of regulations through MSC procedures and through legal action in the courts and is the enforcement system adequate to the task?* One of the axioms of fisheries management is that the regulatory system is only as effective as the enforcement procedures allow. Thus blame for the failure of a management system is frequently attached to inadequate enforcement; but might not the situation be turned around by suggesting that some forms of regulation are incapable of enforcement.
- * *And, finally, how well do the methods of regulation and enforcement complement the chosen principle of property rights allocation?* Is the

overall system a coherent one or is it weakened through internal contradictions?

2.4 Coping with regulation: the strategic response of fishermen

Little is known about the critical evaluation of different regulatory measures by the resource users in terms of their behavioural response. How, for example, do fishermen prioritise the different instruments in terms of their willingness to respect them? In general, fishermen are intolerant of rules imposed from above but willing to acknowledge a need for certain forms of self-regulated discipline. They show a clear preference for regulatory systems which do not impinge upon their potential competence by placing artificial limits on their innate ability to land the best catches. Thus, they will tend to prefer technical regulations, tolerate access restrictions where they apply equally to all fishermen and even accept the need for the licensing of vessels as a means of qualification for access to the fishery. But they will normally strenuously oppose attempts to curb their opportunity to fish through quota limits or effort restrictions.

There is a very real sense in which many fishermen today are overburdened by regulation. Deprived of the freedom to exploit their individual knowledge and skills in the customary manner, marginalised in the management of their own industry as the role of decision making has been usurped by central authorities and by technocrats, and no longer able to exert a dominant influence on the value of their product in a global market, the values of the fishermen have been challenged and their traditional survival strategies, based on a flexibility of response, have been denied. A primary task for social science is the identification and analysis of the new strategic responses of fishermen to their changing economic, social and cultural conditions and to their increasingly restricted but uncertain futures. Such analyses should be conducted at several different levels - the individual enterprise, the household (or firm), the community and the fishermen's own political organisations to determine whether there is consistency or divergence in the strategic response. Within the small scale, artisanal sector, a leaf may perhaps be borrowed from the rural sociologist's analysis of the household strategies for family farms in the switch from productionist to post-productionist agricultural policy. One recent example applied within the fisheries field is Petterson's 1996 study of crisis management and household strategies in Lofoten following the sharp reduction in Norwegian cod quotas in the late 1980s.

2.5 Expectations from the workshop

What then may we look to achieve from the workshop? The aim is to progress toward an evaluation of systems of property rights and regulation which are appropriate for European waters by edging closer to definitive answers to the questions specified earlier in this briefing paper. But such an objective, let it be emphasised, is not meant to imply the search for a single, standardised response. The initial impression from the collection of papers is bound to be one of diversity and a potential divergence of opinion. Diversity of

circumstance and response is an important truth to be learned in fisheries management. It may well be that the sustainable development of fisheries can only be achieved through recognition of the need for flexibility and local adaptiveness in management regimes. However, does not this argument preclude a search for underlying principles of property rights and regulatory systems which can accommodate the expectations of biological sustainability, economic efficiency and social equity.

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3.0 Proceedings

3.1 Guest lectures

3.1.1 *Can participative planning change the economic structure of fishing activities in Southern Europe? Some lessons from Andalusia*

Jose-Carlos Cuerda (Institute for Regional Development, Seville, Spain)

Andalusian fisheries confront a difficult situation with declining levels of production from both local and distant water fishing grounds. Despite the decline in coastal fishing and the effects of globalisation of the market, fishing remains a major component of the regional economy both in employment and production. It generates over 20,000 jobs in a region which suffers 30% unemployment, and annual production is valued at over 50 billion pesetas. The Spanish fleet, however, is only able to satisfy 60% of total market demand; imports are high and, nationally, there is an annual trade deficit of 160m pesetas in the fish sector.

The Andalusian fishing industry stands in need of radical restructuring. At present, it is highly diversified in structure, organised in an individualistic manner, with poor levels of vertical and horizontal integration, an ageing fleet, low use of modern technology and a weak processing industry which is ill adapted to changing consumer demand. A major factor in the relative stagnation of the Andalusian fishing sector is the failure of those engaged at all levels in the industry to adapt professionally to the changing European and global conditions. A key task, therefore, will be the improvement in the education and training systems, with special attention paid to vocational training.

In 1994 the Andalusian administration announced the development of a 'Modernisation Plan for the Fishing Sector', compatible with the Common Fisheries Policy and which will require a redefinition of the role to be played by the fishing sector in the local, provincial and regional development of the Autonomous Community. The Modernisation Plan has set the following goals:

- * to manage the fishing resources so as to guarantee their balanced exploitation;
- * to establish a structural policy which will suit fishing capacity to existing resources and improve the sector's productivity and cost effectiveness;
- * to create a market organisation to guarantee a better valuation of fish and fish products and their processing;
- * to improve the training of human resources and undertake research to ensure the future of fishing;
- * to promote the interests of the distant water fleet through improved cooperation at national, EC and international levels;

- * to give the Andalusian fishing strategy a strong social objective alongside those of resource management, structural reform and market development.

For this plan to succeed it must confront a number of economic, social, cultural and institutional obstacles.

3.1.2 *Management, adaptation and large scale environmental change*

Lawrence Hamilton, Cynthia M. Duncan and Nicholas E. Flanders (University of New Hampshire, Durham, US and Institute for Arctic Studies, Hanover, US)

Efforts at fisheries management often fail because they overestimate stocks or underestimate fishing mortality. Social scientists have documented several such recent failures and noted how unintended social consequences can undermine management plans. Some problems, however, are not reducible to either fish population or human behaviour. They result from the fact that fish-human interactions take place within a complex and dynamic environment. Understanding and managing this system is made difficult by numerous feedbacks that can produce unexpected results, including both social and environmental outcomes.

While social scientists have rightly argued for the need to consider social variables they sometimes lose sight of fisheries bio-physical aspects. In contrast to traditional approaches which consider more tractable and isolated parts of the fishery system, a model is posed which attempts to provide a more holistic understanding. Four basic variables are linked causally: *fish catch* affecting *fish stock*, fish stocks influencing *stock estimates*, and estimates leading to *catch restriction*. Here the negative feedback loop is self-limiting where a decrease in stock will eventually lead to further restriction and stock increase. Each of these variables, however, is influenced by numerous exogenous factors and sub-systems which may complicate and defeat the simple loop. For example, *stock estimates* are affected by the accuracy of data, (which is complicated by ecological complexity and unpredictability), as well as a number of external pressures and assumptions. Wrong or ignored stock assessment can severely weaken the self-limiting feedback as demonstrated by the 1992 fisheries collapse in Newfoundland and New England.

Three further exogenous factors are added which provide further elaboration of the fishery system. First, there is the link between fishery outcomes and *large scale environmental changes*. These have contributed to the collapse of some commercial species and to the rebound of others, but management approaches remain focused on the activities of fishermen. The effects of fishing pressure may differ under favourable or unfavourable environmental conditions and the causal link between catch and stocks is weakened with environmental change. The Newfoundland codfish collapse is a particular case, which coincided with a spread of the 0° C core of the Labrador current, both stressing and concentrating stocks. El Niño-Southern Oscillation events, ozone depletion

and the potential climatic changes arising from the atmospheric build up of greenhouse gases and other industrial effluents, are a few items in the spectrum of environmental changes which have potentially severe implications for fisheries and fisheries dependent regions. Secondly, with decreasing fishing income, there are the potential environmental and social feedbacks arising from *economic diversification strategies*. These include the exploitation of under-utilised species, as well as possibilities for aquaculture, tourism or industrial development. Furthermore, opportunities for economic diversification are intrinsically linked to both physical and social resources within fishing communities, notably the levels of social capital. Finally, a further sub-system involves the *social consequences of declining catch* such as decreasing income, increasing dependency and out-migration. These may influence fishing restrictions when political and economic pressures override stock advice, as seen in the New England groundfish fishery.

3.2 Property Rights

3.2.1 Introduction

Property rights are of central concern not only to an understanding of the social ecology of fishing but also as a prerequisite for effective management. A broad range of alternative property rights regimes are included in the following analyses including common, national, territorial, communal and private use rights systems of exploitation. To date, private resource regimes have received predominant attention, and primarily as a means of limiting the tendency to overcapitalisation of the fleet and restoring a greater measure of economic efficiency. Their social and institutional implications have been less thoroughly investigated. Communal or territorial related assessments, also with central relevance within the property rights debate, are considered later in the report under inshore fisheries management. All the analyses consider property rights as an embedded component of a management regime, dependent upon for success and influenced in form by specific socio-cultural contexts and behavioural patterns.

Crean considers the likelihood of the development of alternative property rights systems given institutional capabilities and the confines of a *status quo* approach within the EU. In contrast, more focused, ITQ perspectives are provided by both *Van Vliet* and *Davidse* who consider the development of individual transferable quotas in the context of the Dutch flatfish fishery and the 'Biesheuvel' co-management arrangements. A historical approach is taken by *Davidse* and emphasis is placed on the importance of the strategic responses of fishermen in terms of compliance, investment and cooperation. In contrast, *Van Vliet* focuses upon the problem whereby ITQs require the support of additional regulatory measures, which can have the effect of actually decreasing levels of flexibility among fishermen and the efficiency of the management system. For *Prat* the focus is upon the possibility for extending private property in the context of French fisheries, given the particular tradition of French law which has, to date, explicitly curbed such developments.

Attention is also given to some of the specific consequences of ITQs. *Hoefnagel* elaborates a potential outcome of transferable rights in the form of quota hopping in the context of the Dutch and UK fisheries and *Wium* considers whether ITQs actually increase or decrease levels of discards. *Holm, Rånes and Hersoug* approach the political attributes of rights based management systems in terms of institutional development and inertia. By way of contrast *Begossi* examines the territorial behaviours of artisanal fishers in riverine and marine environments in Brazil, where use rights may be expressed at different levels from the individual through the family and clan to the wider community and argues that local systems of territorial behaviour should be taken into account in the formulation of general management rules.

3.2.2 *The manipulation of property rights: creating the conditions for sustainable development in the EU*

Kevin Crean (Hull International Fisheries Institute, Hull, UK)

Despite a backdrop of recession within the Community's fishing industry, the development of an alternative property rights regime within EU fisheries appears unlikely, given a policy emphasis upon the *status quo*. Only a fine tuning of policy is anticipated, both within the confines of a TAC/quota regime and with adherence to the principles of equal access and relative stability. Equal access, while constrained by a number of derogations and developments, still affects a large number of competing user groups. Residual returns on fisheries resources assets are widely shared between individuals who do not have sufficient commitment to meet the cost of maintaining and increasing the assets' value.

As the European Commission is preparing for the re-negotiation of the CFP prior to the year 2002, the paper examines the influence that different property rights regimes might exert, if used as policy instruments, to drive the system away from the current *status quo*. It assesses the possible impact of the implementation of a communal use rights regime, based on the allocation of fishing rights to local institutions representing coastal communities. The application of private use rights systems is also considered.

While international cases demonstrate the success of communal regimes, such as the island states of the South Pacific, there is little encouragement that it is possible to wed local community with government level management measures. In a European context, the concept of a community held property right would also depend upon the existence of appropriate institutional structures to administer such a regime.

In the UK, a radical approach, embracing new property regimes within a more genuine social policy, might involve the devolution of management control to appropriate local or regional institutions and the manipulation of property rights through the distribution of ITQs within a regional management regime. Research in the UK shows, however, that existing fisheries institutions are

dogged by systematic weaknesses, particularly with respect to receiving enhanced responsibilities. Furthermore recent experiences in the North Atlantic cast doubt on the level of operational success that can be achieved in adopting an ITQ strategy given illegal fishing practices, a 'race to fish' mentality among fishermen and inequitable distributive outcomes.

Remedies require both attitudinal change and strengthened institutional frameworks. In the UK, in particular, Producers' Organisations have already been allocated devolved management responsibilities, and are well placed to be involved in the administration of an alternative property rights regime, provided they can overcome certain structural and operational constraints.

3.2.3 *French law faced with fisheries resources property: from existing texts rereading to current projects*

Jean-Luc Prat (Université de Bretagne Occidentale, France)

Prat identifies the different interpretations placed on the meaning of property by economists and lawyers. He explains the form of property in the marine biological resources in France and reflects upon the possibilities of extending property rights in the contexts of the legal systems of both France and the Community.

Historical developments shows that French law has a constraining influence upon the development of property rights in French fisheries. Freedom of access has remained a fixed keystone principle for the fisheries sector for several centuries.

During the 1970s and 1980s, with the introduction of both licensing and quota arrangements, and despite the introduction of the Common Fisheries Policy, the rejection of private property rights became more explicit. Licensing and production rights remain set within the control of the central administration (who can grant and withdraw licences) and the National Fisheries Committee, both of which subscribe to the long established principles of access.

There is however some confusion as to the definition of property rights in French law and more particularly as to how far licences and quotas can be seen to represent property rights. Indeed, licences and quotas are certainly legal property titles. They do involve, however, 'abstract' rather than 'real' goods. At the same time, licences and quotas, owned by fishermen on a basis of historic rights, are granted as non-marketable. Even with cases of collective neo property, the property rights are non-transferable. This is the case with the informal communal licensing system for scallops in Brittany, which involves exclusive non-transferable ancestral rights.

A new bill is being developed in France which will provide a renewed juridical, economic and social frame in fisheries. It will confirm that fishing rights are not susceptible to private property. This stance is reflected in the rhetoric of both Parliament and the National Fishing Committee.

As a whole, three general orientations in French law relating to resource access can be identified which underpin this overriding philosophy:

- * resources are considered as a 'collective heritage' (*'patrimoine collectif'*);
- * instruments relating to access to resources cannot become 'marketable goods' (*'biens marchands'*) and;
- * the state remains responsible for determining access to resources and allocation.

3.2.4 *Strategic responses of Dutch fishermen to limiting measures and property rights*

Wim Davidse (LEI-DLO, The Hague, Netherlands)

Engine capacity licences and individual flatfish quotas have resulted in valuable property rights for skipper owners in the Dutch near-water fishery. The paper considers the strategic response of skipper owners to such measures by analysing the evolving behaviour of fishermen during three key periods.

The first, from 1975 to 1988, involved a series of limiting measures which led to a number of specific strategic responses among fishermen. The measures included the introduction of individual quotas (IQs) for sole and plaice in 1976 (officially transferable in 1985) and for cod and whiting in 1981 (transferable 1994), a horsepower licensing scheme, days at sea regulations, increased controls and horsepower restrictions within the coastal zone. The period was however characterised by non-compliance, given severely reduced quotas and an inadequate system of sanctions. This was coupled with continued over-investment as a result of high investment premiums and the sense of need among fishermen to maintain their position within common fishery grounds and their status among other vessel owners.

Secondly, from 1988 to 1993 there followed a period of strict enforcement involving the systematic control of landings and horsepower restrictions. However, enhanced poaching and cheating within the sole and plaice ITQ fishery was the initial outcome, together with a deterioration in the relationship between industry and the Ministry. This was followed by some reconciliation through effective implementation of fines and, following a number of incentives and negotiations, the establishment of co-management groups connected to Producers' Organisations at the beginning of 1993. This period also initiated a matching of vessel capacities to fishing rights through further investment in flatfish ITQs and foreign fishing rights in the UK, Germany and Belgium. Investment has also occurred in smaller coastal vessels, given reduced quotas for beam trawlers and increasingly limited opportunities in the open access beam sector. Others decided to disinvest through decommissioning and the selling of flatfish ITQs.

Cooperation in quota management following the introduction of co-management groups in 1993 signified an important change in the external organisation of the Dutch near-water fishery. This has contributed to better conditions for compliance through the obligatory sale of landed fish via auctions, hire and rent of quota throughout the fishing year and internal disciplinary procedures. The system appears to have withstood a severe decrease in plaice quotas in 1996 given good compliance rates with rules laid down by the groups. Renting and leasing of quotas is now unrestrained among quota holders although this does lead to some vulnerability during scarce periods for those who are dependent upon leasing.

With the aid of weekly landing surveys and close monitoring, the development of the co-management groups has helped shift emphasis from hunting behaviour to the calculated management of quotas.

3.2.5 *ITQs and flexible cooperation between fishermen - fishing as a collective enterprise*

Martijn van Vliet (Erasmus University, Rotterdam, Netherlands)

This paper explores the paradox wherein ITQ systems are represented as the most efficient fisheries management system - because having defined output levels for each enterprise all other choices are left to the individual fishermen - yet they have to be supported by additional regulatory measures which decrease the level of flexibility that fishermen have and the efficiency of the management system. These arise from the particular strategic responses of fishermen which form some of the main problems of ITQs which include the initial sub-division of rights, high grading and discards, problems given the multi-species fisheries, difficulties of harvest and stock assessment and high enforcement costs.

The introduction of an ITQ system within the Dutch flatfish sector led to increased uncertainty among fishing enterprises rather than helping to solve fishery management problems. In part this arose because of the considerable discrepancy between fishing rights and capacity, which led to considerable quantities of 'black' and 'grey' fish landings. Also important was the Common Fisheries Policy which introduced further uncertainty whereby fishermen could not be sure if their fishery would remain open if national quotas were exceeded. Additional command and control approaches, including licensing and days at sea arrangements, were in turn successful in promoting greater compliance, high quota trading activity and a reduction in fleet capacity. In the early 1990s, however, it became clear that in order to reduce the fisheries directorate's now overburdened role in fisheries management and to engender a greater sense of control and flexibility among fishing enterprises, fishermen's organisations should take a more active role in management. The resultant 'Biesheuvel-system', a co-management arrangement, involves management groups which offer more flexible control arrangements for their members' ITQs. Individual fishermen pool their ITQ and days at sea

entitlements, while remaining the owners, but are free to buy, sell or lease in order to manage periods of shortage or surplus.

The case of the Dutch flatfish ITQ system shows that fishing remains a collective enterprise even when ITQs are introduced. In such circumstances the restoration of the market does not diminish but only shifts the need for government action. Market based strategies are less useful in repairing the regulatory problems in fisheries than is often supposed and solutions may be found in the adjustment of the sector's institutional setting.

Some new options for increasing the flexibility of response among individual fishermen within existing co-management arrangements can be considered. Of key importance is a quality strategy which would add value to fish and which would involve all participants within the flatfish chain. This would depend upon appropriate infrastructural developments and market structure. Also important is a reinforced regulatory context in terms of increased compliance, reduced fleet capacity and the development of the Biesheuvel system in terms of additional responsibilities.

3.2.6 *Individual quotas and discarding: do they always go hand in hand?*

Vilhjalmur Wium (University College Galway, Ireland)

With increased capacity of the world's fishing fleets and the decline of many important fish stocks, discarding has become a significant concern. In fact, it can be estimated that over 26% of world catches are thrown overboard and this lends further uncertainties to stock estimates world wide.

The decision to discard fish is an economic one. It is taken after fish is brought on board and draws upon knowledge about fish prices and the cost of discarding. To date, however, the economics of discarding has been largely ignored. Studies have tended to analyse the incentives involved in discarding but without considering whether discards actually increase or decrease in different circumstances. The paper presents a model designed to illustrate how changing management systems may alter the incentives of fishers to discard.

Even without quotas, within an *open access* fishery, there may be situations in which fishermen will discard low value fish, particularly when the possible revenues from selling fish is less than the costs of landing and processing. Individual fishermen will maximise the difference between revenues and costs, where costs include the cost of discarding (the time and effort required to actually discard), effort and landing. Here, the only discarding constraint involves the maximum harvest of the discarded stock itself. The actual level of discards will reflect choices based on prices and the various costs.

Under *individual quotas* (IQs), fishers may have a greater incentive to high grade and discard, but the model shows that this does not necessarily imply that the amount of discards will increase. When the introduction of a quota requires a reduction in harvest, fishermen may react to this additional

constraint (the quota limit) in various ways in terms of discards, under different circumstances and depending on the initial situation. For example, if a fisherman is discarding all low value fish when IQs are introduced, it may be that total discards will, in fact, fall. On the other hand, if a fisherman is discarding some but not all of the discard stock, when an IQ system is introduced, this may, in fact, engender a higher discard rate given an altered profit maximisation point.

While the proposed model simplifies many aspects of the management system, it shows that in general there is not a definite relation between individual quotas and discarding - total discards may increase or decrease when individual quotas are introduced and this will depend on the initial situation in terms of discount rates and also prices and levels of costs involved.

Further consideration is required as to when quotas are likely to induce excessive discarding and when not. A greater understanding in this area may help to evaluate whether a fishery is a suitable candidate for an IQ system.

3.2.7 *Legal but controversial strategies: quota hopping, the Common Fisheries Policy and the Treaty - some normative explorations*

Ellen Hoefnagel (LEI-DLO, The Hague, Netherlands)

The granting of TACs to member states, on the basis of their historic catch records, acts as a derogation of the central principle of non-discrimination agreed on social and economic grounds. Despite protest, this exemption has been circumvented by many Dutch and Spanish fishermen, who have gained access to the fishing opportunities of other member states through the practice of re-flagging (or quota hopping). In the Dutch case this has been stimulated primarily by a combination of low quotas and steep internal prices for licences and in Spain as an attempt to renew access to waters from which they had been previously excluded.

Quota hopping represents a collision between key elements within the CFP, primarily relative stability, and the overriding freedoms guaranteed by the Treaty of Rome. It constitutes a clear alteration in the distribution of fishing opportunities and the stream of benefits arising from them. There are socio-economic implications. Clearly it benefits home states in terms of proceeds and landings, employment opportunities (most flag vessels are crewed by individuals from the flag state) and fleet structure (allowing for some reduction in capacity), while there are decreasing opportunities for flag states; this is only partially negated by capital gained from the initial entitlement transfer. There are less clear implications of quota hopping upon resource conservation objectives as these depend on other factors such as correct TAC levels and solutions to bycatch and discard problems. Some argue that where negotiable entitlements are involved there should at least be greater economic efficiency and if entitlements are secure and defined then also longer term exploitation strategies.

Self-interest plays a major part in reactions against quota hopping. There are also normative reasons for protest; fishermen are concerned that rules are implemented on a fair basis and, in the case of the UK government, there is the sense of interference in areas of national sovereignty. Less blame is placed with those who sell licences in the first instance, who may or may not invest their capitalised fishing entitlement in their own community, and the ideology of the free market is not rejected.

While quota hoppers, as 'pioneers in the internationalisation of fishing rights', attempt to secure their businesses, families and employees' livelihoods through expanding opportunities, in the UK emphasis within communities and government is placed on safeguarding entitlements. This safeguarding strategy is supported by social and moral constraints within the CFP, but suffers from a significant loss of legitimacy through its inability to effectively implement the principle of relative stability and to protect the interests of coastal communities. If the UK government is not successful in adding a protocol to the original Treaty of the European Community (or in making sellers more 'own community minded') in order to restrict the practice, this might predicate further non-compliance at fishing community and government institution level. However, with the review of the CFP in 2002, it is difficult to envisage altering the position given the overriding power of the Treaty and this in part leads some to question the continuation of the principle of relative stability in the first instance.

3.2.8 *Political attributes of rights based management systems: the case of individual vessel quotas in the Norwegian coastal cod fishery*

Petter Holm, Stein-Arnes Rånes and Bjørn Hersoug (University of Tromsø, Tromsø, Norway)

Following Hardin's 'Tragedy of the Commons', relationships between individual and collective interests have been an important theme for social scientists working on resource management issues. All resource management regimes define and allocate political as well as property rights. Empirical material from the Norwegian coastal cod fishery, where individual vessel quotas (IVQs) were introduced in 1990, helps to outline an institutional perspective on the political attributes of property rights regimes. A 'nested systems' model is used to demonstrate differences and interactions between economic and political aspects of institutional innovation based on the precept that economic action is guided by established institutions while political action is aimed at maintaining or changing these institutions. Hence institutional change is a feature of the political structure at hand.

The Norwegian coastal cod fishery provides a case which refutes the proposition that endogenous institutional change is difficult under conditions of co-management. Here a resource crisis opened a path from one institutional regime (open access) to another (IVQ) - one with notable redistributive implications - and with the eventual consent of the Fishermen's Association. This highly contested institutional innovation involved a path-dependent

process that passed through several more acceptable stages of development. Overall, in the case of fisheries, where crises tend to be more frequent, opportunities for institutional innovations may be more numerous than might be expected. If one also considers issues of uncertainty, ideology, false perception, representational bias and information management, the potential for endogenous institutional change increases.

In the Norwegian case, IVQs created their own political community of vested interests which were dependent on the new regime and which would therefore strive for its maintenance. This contributed to the transformation of what at first was intended by all parties as a temporary measure to a relatively permanent approach. IVQs came to be judged as an established part of the fishery against which any change had to be explicitly justified. Rights' holders set out to protect their newly gained vessel quotas which certainly represented important assets within which they had invested much. It was also crucial that the main areas of support for maintaining IVQs had significant access to the policy making arenas within the Fishermen's Association. Hence while the ratio of quota-holders to non-quota holders is about 2:5 in the population of cod fishers, it is about 12:1 in the organisational elite.

The paper argues, therefore, that there is no reason to believe that co-management is in any way particularly associated with institutional inertia. However, this cannot be said for individual rights-based regimes, particularly if such rights are in any way transferable. Through the development of a vested community of quota owners it appears that the process which leads to the an ITQ system is one way. ITQ systems appear to be reproduced on a basis of their political rather than economic superiority and this suggests that they will endure even under conditions when they are not appropriate nor efficient.

3.2.9 *Property rights at different scales: applications for conservation in Brazil*

Alpina Begossi (Universidade Estadual de Campinas, Brazil)

Just as scale and a hierarchical approach have been shown to be appropriate to environmental research, so too in human ecology it is important to develop an understanding of the relations between human populations and their environments at different levels. Humans act on different levels - individual, family, clan, village and society - and an understanding of these different levels of behaviour, particularly in the control and defence of resource rich territories, should be integrated into management planning.

The paper analyses the territorial behaviour of riverine and marine fishermen in Brazil. It demonstrates how sea tenure and use rights occur at different scales, are developed mainly where it is necessary to control resources either through the exclusion of outsiders or in the allocation of resources within a local fishery, and where the benefits of control exceed the costs in terms of time, money and social involvement.

For small scale fishermen, two approaches may be significant for local management: *scale*, where some communities exert rights over fishing sites based on individual or family ties and others only at community level; and the *evolution of territories*. The development of rights over particular sites or territories depends on four main variables: the density of local fishers (internal competition); the density of outsiders and/or recreational fishers (external competition), the diversity and availability of fishing sites; and the mobility of fishing gear. In areas with a high density of sites and mobile gears, territorialisation was absent, compared with areas with low density of sites and fixed gears.

The complexity of the situation makes it difficult to formulate general management rules which respect and complement local rules. Fishing regulations are general prohibitions, which do not differentiate among local, recreational and industrial fishers. Top:down decision making has characterised environmental policy making in Brazil which has largely ignored local knowledge, attitudes and behaviours.

3.2.10 Discussion

Central to the private use rights enquiry is the issue of *distributional outcomes*. *Hamilton et al* signal both winners and losers within an ITQ approach - the former being those individuals and communities that have well developed linkages, institutional mechanisms and experiences in managing organisations. Such politics of resource management also emerge at the forefront of *Holm, Rânes and Hersoug's* analysis of the Norwegian coastal cod fishery. Here, the experience of individual vessel quotas clearly benefited the large scale, capital intensive sectors and the organisational elite. Their paper concludes with a stark warning that institutional innovation in terms of ITQs may be non-reversible given the political and distributional issues associated within the approach.

In a complementary vein, *Crean* considers institutional capacities for the ascription or administration of property rights. Indeed, it is clear from several of the analyses that institutional setting, state action and property rights are closely entwined. In the Dutch case, *Van Vliet* and to a certain extent *Davidse*, demonstrate how the Biesheuvel co-management system allows for a more flexible control of members' ITQs; this is one of several ways in which fishing is reinforced as a collective enterprise even when private property systems are in place.

Legality is also an important component to an analysis of property rights and in particular ITQs. *Prat's* analysis introduces the point of definition. Even in France, where private approaches to property are curbed through long established principles within French law, there is the likelihood of unofficial or informal property systems. Indeed, basic elements within regulatory approaches can introduce pseudo-property to differing extents: where there are restrictions on access, for example, then there are certain limits placed upon the resource benefit stream which will benefit some more than others. In these

circumstances the tendencies of a market are activated whether recognised or not.

Hoefnagel's analysis of quota hopping, involving transferable rights in terms of quota entitlements, also touches on the legal side to property. In the same way that the EU has released surplus fleet capacity in third country distant water arenas, quota hopping represents an important strategic and entrepreneurial response of individual fishermen to 'overcrowding' effects in their home state, in relation to access or quota entitlements. This can be condoned on a legal basis through fundamental principles within the EC Treaty, despite the obvious contradiction with other pivotal precepts within the Common Fisheries Policy. *Wium's* discard model could also be extended to incorporate a legal dimension through consideration of illegal landings.

As a whole, for fisheries, the property rights issue is related to the problematic link between the short and the long term perspectives of fishing activity, i.e., the individual self-interest and the common good. Several of the analyses considered in this section of the report have considered the avenue of private property, as a means of unifying these perspectives. The problems associated with applying simple instrumental measures as theoretical solutions to property right dilemmas are clearly evident. Empirical analysis reveals many forms of disturbing forces that complicate matters of property rights: resistance to obvious practical solutions, strategic responses that generate spirals of measures, countermeasures and complications, ingovernability etc.

While some difficulties do arise from these practical dimensions of fisheries management many disturbances can be attributed to the presence of different social and moral systems in Europe. Non-modern moral and value systems can be found at all levels; within local user groups; in European political culture, in national political cultures, in legal and civil service traditions, in social segments within or across localities. This means that fisheries management is not just faced with bio-economic and socio-economic problems, but also with socio-political and socio-cultural problems.

3.3 Regulatory systems (1) offshore waters

3.3.1 Introduction

Regulation of offshore waters involves a combination of international law (UNCLOS), regional commissions (e.g. NEAFC) and coastal state jurisdiction. In the case of EU member states, the formulation of regulatory policy is undertaken principally by the Commission, while implementation is left largely to the member states.

Patterns of high seas fishing activity have been profoundly altered by the declaration of 20 mile EEZs in the 1970s and the consequent reduction in the geographical extent of the high seas. The initial displacement of distant water fishing capacity, combined with attempts by coastal states to control fishing effort within the 200 mile limits, has intensified pressure on the limited

opportunities for high seas fishing. This pressure led to unilateral action to extend the jurisdiction of the coastal state beyond the 200 mile limits and to international waters, through the UN Conference on Straddling Stocks and Highly Migratory Species and the subsequent UN Agreement, to support the introduction of more effective management regimes for the high seas. Fishing nations with a shortage of fishing opportunities within their own 200 mile EEZs have sought to gain access agreements to third country waters. A major part of the EU's fishing budget, for example, is dedicated to 'purchasing' such agreements for its distant water fleets. But the attitudes of some 'third countries' are changing, as many developing countries re-evaluate the opportunity to develop their own fishery resources as a means of strengthening their national economies.

Management options for offshore fisheries within a coastal state's 200 mile EEZ are also under review. Not only is the privatisation of access to resources through ITQs gaining ground, especially among fisheries economists (see previous section), but important questions are being raised concerning the use of specific types of fishing gear to capture some of the more migratory species. Driftnet fishing for tuna and Atlantic salmon, for example, is coming under increasingly tight control as a result of a combination of the UN's proposals for a moratorium, the work of international commissions and coastal state policies.

Two papers directly address the question of high seas fishing and adjustments to distant water fishing fleets. In the first, *Bailey* argues that, as a result of recent international action, the divisions between coastal state sovereignty and international high seas regimes are beginning to dissolve. As a result, the oceans are politically best considered as a series of overlapping, nested and, at times, incongruent property regimes and the resulting tensions are likely to bring about new conflicts. In a case study of the Falklands squid fishery, *des Clers* examines the development of the government's licensing system for foreign fishing vessels, in an attempt to develop the island's fisheries potential, and analyses the resulting structural changes in the distant water fleets in these southern fishing waters, now dominated by EU vessels. The declaration of the exclusive fishing zones and the processes of 'national construction' in the Mahgreb states are examined by *Suarez and Frieyro*, using Morocco as the main example. The new regulatory measures to curb fishing effort are aimed primarily at reducing the involvement of foreign fleets and the 'nationalisation' of fishing effort within the EZ. By contrast, *Otterstad's* paper focuses upon actions by the coastal state to dispossess Norway's offshore fishing sector of access to the harvest of migratory salmon within the 200 mile zone. The ban on offshore driftnet fishing was engineered by a powerful alliance of sporting interests, riparian owners and environmentalists, while expressions of social science research, which found in favour of the offshore sector, were refuted on grounds of its 'political' nature.

3.3.2 *Inside/outside EEZs: the high seas, EEZs and property regimes reconsidered*

Jennifer Bailey (University of Trondheim, Trondheim, Norway)

Fisheries management is increasingly involved in drawing boundaries around, and establishing the ownership of, fishing stocks in order to define and limit those user groups with rights to exploit the stocks. Questions of sovereignty, property rights and the right to determine such issues have come to the forefront of the Law of the Sea. Borrowing a paradigm from political geography, which claims that socially constructed territorial boundaries are beginning to weaken so that domestic and international politics and policies collapse into each other, Bailey argues that the formal division of the seas into territorial waters, EEZs and high seas is an increasingly meaningless distinction. But, while the old lines of demarcation are dissolving, no commonly recognised new ones are taking their place.

State sovereignty is a key feature of the organisation of fisheries management. Recent shifts in the pattern of sovereignty has fundamental implications for the way in which high seas fisheries are governed. The division between coastal state sovereignty and high seas regimes, reinforced through the creation of EEZs, are now beginning to dissolve. As a result of unilateral moves, by Chile and Canada *inter alia*, to challenge the boundary of the EEZ as a limit to coastal state authority and the effect of the recent UN Agreement in strengthening the rights of coastal states over the management of straddling stocks, the global commons can no longer be viewed as comprising clearly demarcated geographical areas. At present, very few coastal states can claim to be fully in control of the fisheries on which their industries depend. Both coastal states, in extending their influence over transboundary stocks, and international regional organisations, in strengthening their management capabilities in the high seas, are putting increasing and potentially intolerable strain on the conventional EEZ/high seas boundary.

The increasing 'fluidity' of maritime boundaries poses questions of what new forms of institutional framework are needed and on what organising principles they should be based. Wherever and however maritime boundaries are drawn, they are unlikely to provide discrete practical solutions to issues of responsibility for fisheries management. Oceans are thus best considered as a series of overlapping, nested and conflicting property regimes. Conflicts will occur at the juncture of property regimes or where they are in transition or when nested regimes are no longer compatible. The tensions between the emerging regime and the persisting formal structures of the international system will thus lead to new conflicts.

3.3.3 *Structural adjustments to the distant water fleet of European factory trawlers fishing for Loligo squid in Falkland Island waters*

Sophie des Clers (Imperial College, London, UK)

One of the impacts of extended coastal state jurisdiction, coupled with attempts to reduce fishing effort within the EU's 'common pond', has been the search to open up new fishing opportunities for Europe's distant water fleets through bilateral agreements negotiated by the European Commission. An increased share of the CFP budget has been devoted to securing access to foreign waters for member states' fleets, with the development of package deals offering onshore sectoral investment and trade in return for access agreements.

One such example is the development of the Patagonian squid (*Loligo gahi*) fishery around the Falkland Islands by a diverse fleet of mainly European, but also Asian, factory trawlers. Access to fisheries within the Falkland Islands' Conservation Zone was first regulated in 1987 with the introduction of a licensing system to limit fishing effort and generate valuable revenue for the Islands. Licences were granted to foreign operators according to a system which favoured European flagged vessels wanting to fish for full seasons in the area. The system encouraged long term involvement in the Islands' fisheries sector. Increasing operating costs were incurred through requirements to report catch, effort and position on a daily basis and, particularly, by the banning of transshipment at sea. The result has been a reduction in the number of foreign vessels in the area, a gradual Europeanisation of the fleet and an increase in the number of vessels flying the Falkland's flag.

Against this background, changes to the European and Falkland's segments of the Loligo fleet are analysed. The introduction of licence fees in 1987 caused a sharp reduction in the number of operators (especially from the USSR and Eastern Europe, who looked to barter their catches for mackerel or herring from the North Atlantic). Although the total allowable fishing effort (TAFE) was stabilised, the numbers of vessels progressively decreased, especially following the collapse of prices on the European markets in the 1990s. But despite reductions in the number of vessels and the aggregate size of the foreign fleet (GRT/engine capacity), catches continued to reach the TAFE levels set.

Currently, the fleet is dominated by EU vessels, with the Spanish particularly prominent; catches by the European fleet have continued to expand despite reduction in fishing capacity. With a large domestic squid market, the Spanish vessels survived the downturn in Loligo prices on the European market best. Meanwhile the current reflagging policy has brought an upsurge in Falklands based fishing activity and, incidentally, transferred risks of permanent overcapacity to the 'domestic' sector.

3.3.4 *Fishing and the processes of national construction in North African countries*

Juan-Luis Suarez de Vivero and Mayca Frieyro de Lara (Universidad de Sevilla, Sevilla, Spain)

Although the 'nationalisation' of marine biological resources, through the declaration of exclusive fishing areas, has been a near universal event, its effects have been quite different in developing countries, where the assertion of exclusive fishing rights has become part of a wider process of national construction, following decolonisation in the 1960s. In these instances, fisheries management is correlated with the requirements of national identity and development and state control continues to characterise strategies for the expansion of the fisheries sector. Developments in the Law of the Sea have helped to reinforce and extend the state's territorial base and enabled coastal states to manage the resources of the exclusive fishing zone for their own benefit. For most Third World countries, the declaration of sovereignty over marine resources stands not only as a symbol of their independence but also provides an instrument of economic development, either directly through the expansion of the domestic fishing industry or indirectly through the recouping of revenues from bi-lateral access agreements.

The coastal waters off Morocco, the Western Sahara and Mauritania - among some of the most productive in the Atlantic - have been customarily shared with a large, habitual presence of foreign fishing fleets from Asia and Europe. But the assertion of the principles of national construction has seen the development of the fisheries as a key sector for national economic development, with the aim of maximising resources through a strong emphasis on fishing for export and a focus on high value species and a transition from coastal to deep sea, offshore fishing activity supported by the development of shore based infrastructures. In Morocco, the fisheries account for 10% of exports, while in Mauritania fishing supplies 60% of national resources in terms of foreign currency earnings and accounts for 20% of GDP.

Fisheries are viewed as inalienable public assets, with a concomitant reluctance to assign individual fishing rights. With the increasing evidence of overexploitation of the resource base, the Mahgreb states have introduced new regulatory measures (biological stoppages, fleet reductions, gear restrictions and quotas), aimed primarily at the reduction of foreign fishing effort and the eventual nationalisation of fishing activity within the EEZ.

3.3.5 *The exclusion of professional fishermen from Norwegian salmon fishing: distributional aspects of fisheries management and the role of the social sciences*

Oddmund Otterstad (Centre of Social Studies Research, Trondheim, Norway)

For highly migratory species, such as the Atlantic salmon, the competing claims for 'property rights' between states, in whose rivers the salmon breed, and the states within whose waters the salmon 'graze' have long proved a

contentious issue. Only very recently has the North Atlantic Salmon Conservation Organisation succeeded in halting exploitation of the stock on the high seas. Somewhat earlier, in 1989, the Norwegian government banned offshore fishing for salmon with drift nets, thus eliminating one of the major user groups which had customarily taken part in the fishery - indeed, the only form of commercial exploitation by professional fishermen - while allowing the erstwhile competitors to continue fishing the stock without undue restrictions.

Regulation of the salmon fishery was one of the most controversial management issues in Norwegian fisheries. Its migratory life cycle exposes the salmon to exploitation by several different user groups, ranging from professional fishermen to local landowners and sportsfishing interests, and in a variety of contexts from international high seas to territorial waters and inland rivers. A key management issue is the allocation of harvesting rights among the several competing groups.

The ban on offshore driftnet fishing brought to an end a long drawn out conflict over access rights. In Norwegian law, the salmon are the 'property' of the riparian and shoreline owners, while remaining 'common property' during their migration at sea. This distinction dates from well before the development of nylon driftnets made offshore exploitation technically feasible. Although attempts to regulate the offshore fishery date from the 1960s, effective control linked to detailed reporting of catches was introduced in 1979. By 1984, proposals to ban driftnet fishing was supported by a powerful alliance of sporting interests, riparian owners and environmental lobbyists. Five years later, the ban deprived some 1500 professional fishermen of a lucrative seasonal fishery without compensation.

In Norway, social scientists - along with economists and biologists - had contributed to the deliberations leading up to the government's decision, through research and expert opinion. Significantly, the Norwegian government had ruled the social scientists' contributions on the distributional effects of a ban to be inadmissible, on the grounds that it was 'political' rather than scientific in nature.

3.3.6 *Discussion*

High seas fisheries management remains a controversial area of debate, in terms of international law, political science and the concept of responsible fisheries. Recent developments have focused on the best way to protect the legitimate interests of coastal states in securing the effective management of straddling stocks. To a degree, the UN Agreement enhances the status of the coastal states without, in fact, extending their legal jurisdiction. As *Bailey's* paper infers, new regimes for international management, endorsed by the UN Agreement, may go some way towards creating a greater sense of order and discipline in high seas fishing but it will not prevent future conflicts over quota allocations etc nor renewed claims for the extension of coastal state jurisdiction where straddling stock management remains an issue.

Clearly, too, the legitimacy of the coastal states' discretion over the granting of access rights to foreign fishing vessels with historic track records within the 200 mile limits is still being debated. The changing attitudes among some Third World countries is causing increasing difficulties for the EU in their attempts to renegotiate access agreements with third countries (e.g. Namibia, Morocco). The papers by *des Clers* and *Suarez and Frieyro* reflect upon contrasting situations. In the Falklands, there is a continuing willingness to attract foreign fishing vessels, operating under strict conditions and with obligations for long term commitments to fishing the Islands' waters, as a means of developing the local fisheries and maximising their revenue potential. However, the system of reflagging, encouraged by the Islands' administration, may have serious long term implications for the development of the domestic fishing industry: once established on the national register, it will not be easy to remove the reflagged vessels.

How best to maximise the long term revenues from their EEZs is a question confronting many developing countries. The licensing of foreign vessels is increasingly considered to be a weak option with no more than 10% of the value of the catches reclaimed through licence fees. Chartering and joint ventures are two alternatives which imply a closer integration with the interests of the 'host' country and greater control over the fishing industry. But the development of the domestic industry must be, for most countries, the ultimate goal. In parts of the Mahgreb, where there is limited scope for alternative forms of economic development based on natural resources, the 'nationalisation' of the fishery resources within the EEZ would seem a logical step. Morocco, for example, has embarked upon a policy to curtail foreign participation in fishing within the EEZ and to maximise economic potential (employment, export earnings etc) through the rapid build up of infrastructure and domestic fishing capacity - to the detriment of Spanish fishing interests.

Otterstad's paper highlights the threats to fisheries management strategies from the emergence of powerful alliances involving non-professional fishing interests. Although the ban on driftnet fishing for salmon within Norwegian waters was in line with decisions taken elsewhere in the North Atlantic, the circumstances of the case may outline a possible trajectory for future regulation policy as issues of marine environmental conservation increase in political weight. The case study also raises the uncomfortable question of the status of social science research in policy formulation - especially when the research is undertaken on behalf of a particular sectional interest. Such research lends itself to accusations of political bias, not necessarily in the presentation of the facts but in their interpretation. While the same may be equally true of biological and economic analyses, the social sciences may face an uphill struggle to rid itself of a largely unjust reputation for political value judgement.

3.4 Regulatory systems (2) inshore waters

3.4.1 Introduction

For almost all fishing nations, inshore waters hold a position of special significance, while in the European Community they are the last remaining area of autonomous control by the coastal state. These waters contain a great diversity of fisheries - finfish, shellfish and seaweeds - in both natural and cultivated conditions. Their importance reflects not only the presence of adult stocks but also as the locations for breeding and nursery grounds for many commercial species. Inshore fisheries are prosecuted mainly, but not exclusively, by the numerous artisanal small boat sector, on which many small coastal communities depend; they involve the participation of full time, part time and seasonal fishermen, together with the added complication of recreational fishing. Traditional systems of inshore management have sought to reserve access to specific fisheries for locally based fishermen, while attempting to guarantee the sustainability of the resource for future generations.

The management of inshore fisheries is further complicated by the fact that the coastal zone is an area where fisheries intermingle with other activities competing for the use of marine space, including dredging for sands and gravels, commercial navigation and a variety of water borne leisure pursuits. It is also an area where burgeoning concerns for marine environmental quality and marine nature conservation may be in direct competition with fishing interests and where pollution from both marine and land based sources may seriously effect the viability of commercial fisheries.

Collet's paper addresses the future of the 12 mile territorial limits in the EU, arguing that the principle of territorialisation, as a means of limiting access to resources, should be adopted in respect of Europe's coastal waters, especially in the Mediterranean region where local systems of regulation have proved their viability in the conservation of resources. *Alegret*, in fact, demonstrates the nature of local systems of inshore fisheries management in Catalonia where the *confreries* have succeeded in establishing informal systems of territorial regulation, principally through schedules which control the entry and departure of fishing vessels from the fishing grounds. Working in partnership with the central and regional administrations, the system achieves its legitimation only through the participation of local fishermen in defence of group interests. In their paper on Sea Fisheries Committees in England and Wales, *Symes and Phillipson* examine the efficacy of local inshore management systems in providing a basis for sustainable development and in securing resources for the benefit of local fishermen. *Steins'* paper, by contrast, outlines a case of spontaneous community action in NW Connemara (Ireland) in the face of government policies to assist aquaculture development which override local opinion and the interests of the local fishing community. The example underlines the need for collaborative participation between government, local community and the fishing industry in developing a strategy for inshore fisheries management in Ireland. In examining the concepts

between traditional use rights and the emergence of management systems for marine protected areas in the waters surrounding Corsica and Sardinia, *Mondardini* points to differences in negotiation and conflict resolution between those areas which have well developed and respected local management institutions (prud'homies in Corsica) and areas where a formal structured organisation of fishing interests is absent. A switch from an economic to an environmental prerogative in fisheries management is advocated by *Pintos*, if we are to avert an imminent economic, social and environmental crisis. Using evidence from northern Spain, she argues that, through both their words and actions, inshore fishermen have sought to protect the marine environment and its fishery resources for more than one hundred years. Finally, in a historical analysis of the Texel eelgrass industry, *van Ginkel* reflects upon the variation in management regimes, different configurations of property rights and the tenacious attempts by the eelgrass harvesters to modify the systems to their own advantage, despite suffering the disadvantage of a weak, exploited socio-economic status.

3.4.2 *Communitaurisation of common ownership of coastal resources: the future for coastal states in 2002?*

Serge Collet (Germany)

The concept of Blue Europe was born in January 1977 through the extension of national jurisdiction of coastal states, the nationalisation of marine resources and a strategic territorialisation of marine space, achieved by the declaration of EEZs in line with developments across much of the world's oceans and confirmed by international convention in 1982. By substituting free access by a principle of limitation and control of access, the opportunity was created for a more equitable sharing of the world's fish resources. There are, however, a number of ominous developments. The consumption of fish in Europe continues to rise at a time when catches by domestic fleets in European waters are falling; the EU spends 37% of its budget to secure access rights for its distant water fleets in third country waters - an action of doubtful sustainability.

Against a background of discussion of the privatisation of ocean resources, the conservation of stocks and the restoration of incomes from fishing, the paper challenges the proposition that the derogation against the principle of free access in respect of the 12 mile territorial seas be lifted in 2002. It argues that the more powerful sections of the European fishing industry are looking to enlarge their sphere of operation and unwilling to brook any further attempts to restrict their access. The implications are the destruction of traditional informal use rights systems which have been instrumental in regulating patterns of work organisation and thus contributed to the co-viability of coastal societies and marine ecosystems. Coastal fishing, which accounts for the great majority of full time fishermen, will be further eroded. New social tensions are likely, especially in areas like southern Italy, where there is gross unevenness in regional development and mass unemployment.

Rather than attempt to complete the 'communitaurisation' of rights for coastal fishermen in Europe, it would be better if the EU were to develop solutions based on utilising existing experience and technical know-how in the creation of new territorial use rights in fisheries (TURFs). Traditional management systems, especially in the Mediterranean, whose purpose had been 'not so much to empty the sea as the make a good living and leave something for one's children' (Tempier, 1986:44¹), had laid the foundations for a precautionary approach to fisheries management. The need is to reconnect the principles of territoriality and the precautionary principle by inaugurating new TURFs, in line with the European Parliament's recommendations for 'regulated self management'. It would be perverse logic to abandon the 12 mile limits which, through their common objectives of restricting access for *all* member countries, are essentially non-discriminatory.

3.4.3 *Property rights, regulating measures and strategic responses among the fishermen in Catalonia*

Juan-Luis Alegret (University of Girona, Spain)

Research into property rights and management systems, hitherto dominated by neo-functionalist perspectives, have had the effect of sidelining certain aspects of socio-cultural and historical reality which are essential to an understanding of the fishermen's response. Contrary to the assumptions of individualistic and selfish behaviour, recent research has demonstrated that fishermen, in fact, develop forms of organisation for regulating fishing effort, preventing overexploitation and ensuring collective access to resources which offer the possibility of survival for all members of the group.

The analysis of fishing throughout the Catalanian littoral demonstrates the importance of historical, socio-cultural perspectives. In the view of most fishermen, 'the sea belongs to everybody' - a view which implies that rights of access cannot be considered individual but collective and that access to those rights is secured through membership of the relevant collectivity. Legally, the rights are held by the state and exercised through public rather than private law. In Spain, the control over access to the territorial seas (12 miles) is divided between the Autonomous Communities (ACs), which have jurisdiction over the 'interior waters' lying between the coastline and the straight base lines from which the 12 mile limits are measured, and the central state with jurisdiction over 'exterior waters' out to the 12 mile limit. Regulation of the inshore waters is thus shared between the central state, ACs and the *confrerie* (or *cofradia*). The latter is recognised by the state as representing the interests of all members of the sector and granted the legal status of a public law corporation with recognised territorial jurisdiction. The Catalan coastline is divided into 31 territorial divisions, each with its own *confrerie*; in law their territorial jurisdiction refers only to the land area and not to marine space. In reality, however, for demersal species a process of

¹ Tempier, E. (1986) Prud'homie et régulation de l'effort de pêche, *Economie Méridionale*, 133/134, 41-50

'nuclear territorialisation' of the waters out to the edge of the narrow continental shelf occurs. It is based on proximity to the home port, ownership of appropriate technology and cognitive maps of the seabed held in the experience of individual fishermen. Such territories are never perceived as 'exclusive', in the sense of excluding members of neighbouring *confreries*.

Regulation of inshore waters involves an uneven distribution of competence between the central state and the AC and the participation of *confreries*. It is based legally on regulation of fishing effort through schedules for vessels leaving and returning to the port, imposed by the *confrerie*. In effect, the *confrerie* have become key institutions in local management: 'what the confrerie proposes, the AC disposes'.

Responses of fishermen to the regulation system reflects their perceptions of legitimacy. Thus, for example, fishermen have devised 'early warning systems' to apprise other fishing vessels of the presence of surveillance and inspection forces in the area. Several *confreries* have developed their own additional systems of effort or catch controls for specific species. But the impact of the *confreries* on inshore management has been reduced by the unwillingness of the regional federations to give greater weight to the general interests of the sector.

3.4.4 *Fishing within limits: inshore fisheries management and the concept of local preference*

David Symes and Jeremy Phillipson (University of Hull, Hull, UK)

Within the EC, inshore fisheries management is closely associated with the last surviving remnant of autonomous coastal state control of territorial waters, under the renewed derogation from the principle of equal access. The paper attempts to assess the extent to which local management systems are able to secure a significant degree of protection for the local industry. Within the UK, two quite distinct management regimes occur: for Scotland and Northern Ireland, inshore fisheries are centrally regulated through the relevant fishery departments, whereas in England and Wales management responsibility has been devolved to Sea Fisheries Committees (SFCs) operating in each of 12 coastal districts. An SFC is best described as a local 'quango', with membership shared between local authority councillors and representations chosen by the central administration for their knowledge and understanding of the local fishing industry. This second group must also include a representative from the Environment Agency and, in future, from marine conservation interests.

Unlike traditional local institutions (*cofradia*, *prud'homie*), concerned primarily with the self-regulation of the harvesting sector *per se*, SFCs are involved with management of the *fishery*, including stock conservation and habitat management, through legally binding rules (byelaws), enforceable through the courts. The main focus for SFCs is the shellfisheries, where Several and Regulating Orders, enacted under the Sea Fisheries (Shellfish) Act

1967, provide for both the management of the shellfishery and the granting of individual rights for 'depositing, dredging, propagating and taking of shellfish'.

Assessment of the local management system is based on a case study of the Wash, Britain's largest estuarial system covering 70,000 ha of shallow seas with fringing saltmarsh, mudflats and sandbanks, of which 40% is intertidal. The Wash is historically important for cockles and mussels and the semi-migratory brown shrimp. Currently all three fisheries are in poor condition due to a combination of earlier management failure and unfavourable natural conditions (abnormal weather, pollution and aggregate dredging). But the greatest future challenge will come from increasing pressure to ensure sustainability of environmental quality of inshore marine waters and, in particular, the designation of a Special Area of Conservation under the EC Habitat's Directive, 1992. Management failure has included a reluctance to impose regressive licensing systems to reduce fishing effort in line with resource availability, susceptibility to local pressure to extend the fishing season in anticipation of the expected recovery of stocks and the 'success' of fishermen in exploiting loopholes in regulations in order to expand individual fishing capacity.

So far the system has failed to arrest the decline in the resource base; it has been arguably more successful in securing resources for the exclusive benefit of local fishermen. Clearly, management has profited from a combination of scientific and circumstantial knowledge generated by the SFCs own technical staff and local representatives of the fishing industry. The need is for a more rapid response to changing situations, with the opportunity for emergency action and recourse to the precautionary principle.

3.4.5 *'We must keep foreigners out of our bay': top-down regulation and the response of Irish fishermen*

Nathalie Steins (University of Portsmouth, Portsmouth, UK)

In most developed countries a top-down approach to resource management implies that only those user groups in close touch with the legislative process have any real chance of influencing the formulation of policy. The need for user group participation is most keenly felt in inshore fisheries, where management decisions may have significant impacts upon local communities.

In Ireland, the government has sought to stimulate the growth of aquaculture as a means of bringing urgently needed economic development to peripheral areas along the Atlantic coast. Aquaculture is seen to use existing resources, provide employment, generate export earnings and supplement a depleted inshore fishing industry. In the hopes of accelerating the granting of licences for fish farms, the government introduced a scheme for designating areas suitable for aquaculture under the 1980 Fisheries Act. Once established, the granting of licences would be virtually automatic. However, mounting opposition from local fishing and community interests, expressed through

public inquiries, delayed the process and the government reverted to the earlier but unrepealed 1959 Act which allowed the granting of individual licences without recourse to a public inquiry. Thus, public participation became subservient to institutional consultation through local authorities and other relevant bodies.

In areas like NW Connemara, where inshore fishing provides an important seasonal supplement to upland sheep farming and tourism, the expansion of fish farms was seen to imply a threat to the survival of traditional inshore fisheries based on exploitation of natural shellfish beds. Concern was expressed over water pollution, access to established fishing grounds, fears of a negative impact on the visual environment and tourism, and the leakage of revenues from the local region. Opposition to fish farms involved both direct action (cutting the nets of the salmon cages) and strategic action with the setting up, in 1991, of a local shellfish cooperative. Ostensibly, the aim was to revive the local shellfish industry but a hidden agenda was to prevent expansion of the three fish farms in the area through the granting of licences giving access to the native oyster beds only to members of the cooperative, in return for a small entry fee and an annual commitment to give 18 days work to the cooperative. Subsequently, the cooperative ran into difficulties, mainly through the failure of the work obligation. The cooperative had already achieved its goal in thwarting expansion of the fish farms and there was unwillingness within the small community to levy sanctions on defaulting members. A government funded Social Employment Scheme was created to fulfil the work requirements of the cooperative.

The case study highlights some of the problems associated with multiple use of inshore waters, including the need to strike a balance between traditional forms of exploitation of inshore waters and new forms of development; the need for a new system of licensing which takes note of local public participation; and a more general need for collaborative participation between government, local community and commercial interests in creating a strategy for inshore fisheries management.

3.4.6 *Traditional use rights in small scale fisheries and the development of marine protected areas in Sardinia and Corsica*

Gabrielle Mondardini (University of Sassari, Sassari, Italy)

Conflicts arise between traditional systems of appropriation of marine territory for fishing and systems of control introduced in marine nature reserves and other protected areas. Material, social and symbolic models, organised around traditional fishing practice and use rights, play a significant role in the interactions between fishermen and organisations responsible for the planning, development and protection of marine space. The acquisition and exercise of traditional fishing rights are, for the most part, informal and have largely been ignored in the management strategies for protected areas. Both fishermen and the management organisations recognise the need for controls to combat overexploitation and environmental degradation, but at the level of operational

intervention - as opposed to dialogue - a polarisation of interests creates tension and conflict.

The paper compares experiences in Sardinia and Corsica, in an area where inshore fisheries have been partially disrupted by the designation of three marine protected areas, by examining the traditional systems of appropriation of use rights and the attitudes of fishermen to the establishment of marine protected areas. Although experience and practical knowledge of the fishing grounds and techniques have formed the basis for acquisition and maintenance of use rights in both areas, the institutional systems have evolved differently. In Corsica, the *prud'homie*, with its plurality of roles (a cooperative of boat owners, a mutual aid society and a trade union) and self-regulating mechanisms, is still important in the management of local fisheries, regulating access to the grounds, mesh sizes etc.. The *prud'homie* is recognised both as a contractual force and a unifying element. In Sardinia there is no such equivalent institution: fisheries are controlled by the state and regional authorities.

In the case of the designation of the Reserve Naturelle des Iles Lavezzi, an area of 5140 ha of Corsican inshore waters in 1982, the Reserve authorities have sought a closer control over seasonal fishing effort in which negotiations with the *prud'homie* have proved indispensable. In Sardinia, in the absence of a unifying institutional force, fishermen are less likely to work together towards a common objective; the management authorities, unable to deal with a single, structured organisation, have displayed a lack of interest in the rights of the fishing industry. Fishing has proved much more individualistic, secretive and competitive, with access to the fishery grounds controlled by practical knowledge and 'getting there first'. State intervention has imposed a 45 day annual suspension of fishing activity to relieve pressure on the stocks. Relationships between the authorities responsible for the Parc de Tavolara, an area of 4410 ha, and the fishing industry are minimal. The Park authority has sought to exercise control over fishing through zonation in which fishing activity is either prohibited or closely regulated. Ancient use rights have, in effect, been expunged. Local fishermen are unaware of the plans for the protected areas, except through the media, and negative attitudes towards the Park prevail. The Park authorities think of fishermen only to control them, make them conform to new rules of behaviour and alter their mentality. Fishermen are otherwise unrecognised and not involved as partners in the management plan.

Problems may be further exacerbated with the opening of the proposed international marine reserve, leading possibly to an escalation of conflicts between fishermen from the two islands; in particular, Corsican fishermen will be unhappy if the Sardinian fishermen are granted access to resources which have been safeguarded through well established local management regimes developed by the *prud'homie*.

3.4.7 *Responsible behaviour of inshore fishermen from the North of Spain*

Begoña Marugán Pintos (Socióloga del Instituto Social de la Marina, Spain)

Overfishing, the capture of immature fish and the use of destructive gears are leading to an imminent economic, social and environmental disaster. The economic logic that governs fisheries management today must be overturned in favour of an approach which integrates the three dimensions that define the productive process: economic, social and environmental. The problem should be studied from a global perspective and consider the three major problems which are joined in the fisheries issue - population, poverty and pollution - in order to generate new theoretical developments.

Sociologically, the emphasis should be placed on the fishermen themselves, but here we confront an uncomfortable dilemma. Fishermen need to fish to stay alive, but without changes to fishing behaviour there will not be sufficient fish in the sea. When something is both essential and impossible, it is necessary to change the rules of the game - to reverse the economic logic and instead aim at protecting the environment. For over a century, inshore fishermen in the north of Spain have sought to protect the marine environment, as is manifest not only in what they say but also in their actions. Evidence is presented in terms of (i) the territorial strategies of fishermen from the Cantabrian coast, (ii) the dialogues within Galician *cofradía* and (iii) the violent demonstrations of Basque fishermen over driftnet fishing for bonito.

The task for social researchers should be to assist fishermen in their quest for greater environmental awareness and to assist the most capable in participating more fully in the decision making processes concerning resource management.

3.4.8 *Zostera Marina in dispute: management regimes in the Dutch eelgrass industry*

Rob van Ginkel (Universiteit van Amsterdam, Amsterdam, Netherlands)

Resource management regimes frequently emerge as the result of a process of political manoeuvring and bargaining in which various competing interests are involved. This analysis of the development of management regimes in the Texel eelgrass² industry during the nineteenth and early twentieth centuries is based on Libecap's³ assertion of the need to examine forms of political contracting - the actors, their power bases and bargaining strategies - involved in the initial assignment of and subsequent modifications to property rights.

Unlike the local oyster fishery, which had been treated essentially as a common pool resource, the harvesting of eelgrass was subject to regulation and the introduction of private property rights from an early stage. The state

² Eelgrass was variously used in the building and maintenance of the dykes, as roofing material, as packing and insulating material and also as fertiliser.

³ Libecap, G.D. 1989, *Contracting for Property Rights*, Cambridge : Cambridge University Press.

exercised jurisdiction over the allocation of access rights which could be leased privately or publicly to individuals or to municipalities. Thus, while the gathering of eelgrass washed up on the shore or floating in the sea remained a benefit freely available to all, a wide variety of property rights and management regimes - ranging from open access, private or communal property to state property - could apply to the harvesting of the standing crop of eelgrass. Regulation of production was aimed not so much at ensuring the sustainability of the resource - indeed, the area of eelgrass production more than doubled in the fifty years between 1870 and 1920 - but to prevent unbridled competition which would flood the market and significantly reduce the returns to the eelgrass harvesters.

Each type of management regime brought a different configuration of property rights, specific forms of labour organisation and different problems for the eelgrass harvesters, who resisted moves to redistribute rights of exploitation to private persons or corporate organisations. They continually strove to modify the system to their own advantage, employing varying coalitions of interests in the attempt to influence the decision making system. The apparent opportunism and ambivalence of the eelgrass harvesters and their culture of resistance must be judged in the context of their dependence on eelgrass as a vital source of supplementary income in times of hardship and their continually changing but generally deteriorating socio-economic conditions. They lacked sufficient capital to diversify or change their pattern of activity; they saw themselves as a proletariat, estranged from the essential factors of production and exploited by the losses and traders. The eelgrass industry was brought to an end in the early 1930s, either as a result of disease, as suggested by biologists, or as a consequence of changes to the patterns of currents and salinity following enclosure of the Zuyder Sea, as the fishermen themselves maintained.

3.4.9 *Discussion*

Fisheries management within inshore waters is attracting increasing attention from the social sciences partly because of the interplay between centralised and local systems of control and also on account of the growing concern for marine environmental quality and the impacts of fishing on marine habitats and ecology. Both aspects were addressed by the papers and in the discussion on regulatory systems in inshore waters.

The role and status of local management systems and the legitimacy accorded to the resulting regulatory regimes by both central administrations and local user groups provided a dominant theme. Although regulation of coastal fisheries has greatly increased over the past 25 years or so, it is important to recognise that property rights have been a keenly contested issue - particularly in relation to the resources within the intertidal zone - for a very much longer period of time, and some local management systems are rooted in the organisation of medieval guilds (*cofradia*, *prud'homie*), while other were relatively early products of the bureaucratic tradition (eg Sea Fisheries Committees, established in the 1880s).

Two broad types of local inshore fisheries management are discernible in Europe. Most local systems, based on self-regulation, are concerned with the organisation of fishing activity through control of access to the fishery, by means of local licensing arrangements and/or the implementation of schedules for fishing boats entering and leaving the fishing grounds. The *cofradia* in Spain and *prud'homie* in Mediterranean France provide the framework for 'managing the fishermen', in order to ensure an equitable distribution of fishing opportunities among their members. They do not engage directly in stock (or resource) management. Indeed, most local institutions lack the resources and expertise to undertake the scientific tasks associated with stock assessment. Thus, it may be argued, such traditional systems can only work effectively while fishing effort - in terms of numbers of participants and the levels of technology - remain low. By contrast, Sea Fisheries Committees in England and Wales, financed through local taxation and with their own scientific staff and seagoing vessels, have the capacity for independent stock assessment, mainly relating to sessile shellfish species, and for independent surveillance of fishing activity. They therefore come closer to replicating the range of management functions undertaken by the state in respect of national fisheries.

Albeit successful in their own terms and under conditions of relatively low levels of fishing effort, traditional institutions struggle to retain their roles and responsibilities against the encroachment by centralised bureaucratic systems at national and EC level and in face of the new imperatives of environmental quality and wildlife conservation. But as most papers make clear, where such institutions are lacking (as in Sardinia and Ireland) there is an urgent need to develop appropriate systems of management which can integrate the interests of the state, the local community and the resource user groups. There is also a need to test further the efficacy of existing local management systems in terms of their abilities to secure resource sustainability and local preference and to mediate in the negotiations over broader environmental issues.

There was widespread concern that the renegotiation of a common fisheries policy may fail to re-secure the derogation against the principle of equal access within the 12 mile limits, which currently gives responsibility for the management of the territorial seas to the coastal state. Whatever the defects of existing inshore fisheries management systems, the coastal state was acknowledged as the natural and most appropriate custodians for coastal waters, both with regard to fisheries and marine environmental management.

The discussion also drew attention to the location of inshore fisheries management within the still wider context of coastal zone management, which introduces a range of new actors, new areas of interest and new aims and objectives to the decision making matrix of management. A key question for the social sciences, therefore, is how far can existing management institutions be adapted - or new ones created - either to assume wider roles, responsibilities and powers or to negotiate on behalf of the fishing industry in the enlarged marine policy arena.

4.0 Discussion

- 4.1 The question of property rights has quite recently occupied a position of central importance in the social science of fisheries management. But why? In part, it is a logical extension of the structuralist tradition in social anthropology and is seen to provide an essential key to the understanding of the social structures, behaviour patterns and value systems of fishing communities. The problem of common property rights is also perceived as a principal stumbling block to the realisation of effective systems of fisheries management. And, more recently, the issue has been highlighted by the strength and persistence of the advocacy of the privatisation of property rights by fisheries economists and the evidence of its 'success' from the small number of coastal states which have embraced the concept of individual transferable quotas (ITQs) and a market based approach to the solution of the property rights dilemma.
- 4.2 The current debate on property rights and their solution through ITQs has become dangerously distorted. In the first place, the term 'property rights' is incorrectly used: what is under discussion is not a concept of property, with its attendant development rights, but *usufruct* ("the right to use and derive profit from a piece of property belonging to another, provided the property itself remains undiminished and uninjured in any way", Collins English Dictionary). What, therefore, is being allocated is a right - whether limited in time or granted in perpetuity - to harvest part of the annual yield of the fishery; the stocks themselves are not subject to appropriation. Secondly, the limited range of coastal states where ITQs have been introduced do not constitute a representative sample of the socio-economic and political conditions under which fisheries are prosecuted. Thirdly, the concept of use rights have become decontextualised: the introduction of ITQs could claim to solve only two parts of the management equation - resource depletion and economic efficiency - while leaving aside the linkages between use rights and the social ecology of fishing.
- 4.3 Rare examples of the relatively uncontested introduction of ITQs - as in New Zealand and the original 'enterprise allocations' in Atlantic Canada, for example - were predicated on the assumption that the enterprises concerned acted solely from commercial motives. By contrast, attempts to introduce ITQs - and other regulatory measures - in Europe are more likely to meet resistance or to be confronted by strategic responses which derive not from commercial considerations alone but from the embeddedness of fisheries in different social systems. Such resistance is likely to come from the 'artisanal fisheries' - a sector which in Europe is both numerous and highly diversified in structure and one which has proved difficult to incorporate within centralised management systems. The management objectives for artisanal fisheries may well differ from those attached to 'industrialised fisheries'. Their economic and social value lies not simply in the contribution to sustainable fisheries and the quality of the catch taken by the inshore fleet, but also in the provision of employment opportunities in the local and often peripheral coastal economy and in the sustainability of distinctive lifestyles and cultures of coastal communities. Discussion on use rights, therefore, should not be formulated in

the narrow context of finding an efficient operational solution to a management problem; the issues involved should reflect the broader register of formal and informal categories of social appropriation and exclusion.

- 4.4 More than most sectors of the global economy, fishing is a universal system - in marked contrast to the localised approach of much social science research. The continuous and indivisible nature of the oceans underlines its universality. The global crises of fisheries management and use rights issues are addressed at several different levels - international, national and local. On the high seas, where use rights are constrained by a residual concept of *res nullius*, or an insubstantially defined notion of *res communis*, regulatory systems are inevitably weak and beyond the normal means of enforcement. International organisations may act to develop codes of conduct for global fisheries or to recommend improved frameworks for regionalised high seas management regimes, but the regulatory systems remain uncertain and open to abuse. One possibility may lie in the closure of membership of major regional commissions (e.g. NEAFC, NAFO), which would serve to delimit the countries with access rights to high seas resources within their jurisdictions and compel compliance with the regulatory regime on pain of expulsion.
- 4.5 At the level of the individual coastal state, the 'nationalisation' of fishery resources through the declaration of EEZs, converted the status of those resources from *res nullius* to *res publica* and thus facilitated the implementation of different approaches to the definition of use rights. The delimitation of membership of user groups was achieved through the introduction of licensing systems, which may or may not include the principle of transferability; a more radical project was the privatisation of use rights through the introduction of ITQs.
- 4.6 Local management systems require the adaptation of the national system, refined to suit the particularities of the local conditions and, in many instances, to reflect historic traditions. The principle of *res communis*, with use rights subject to informal rules of appropriation and regulation governing distinct local territories, was defined in the cognitive maps of local fishermen but only rarely described by real boundaries. Regulatory systems are designed to ensure social justice, through control of the distributional effects of access to the fishing grounds, and local preference through restrictive licensing and private use rights.
- 4.7 The appropriation of marine resources under systems of national jurisdiction (EEZs), implying that fisheries became *res publica*, made them a public policy issue. But this did not automatically dispose of forms of organisation, strategies for action or perceptions and values linked to the former status of the seas as *res nullius* or *res communis*. User groups still resent the intervention of bureaucratic management and are unwilling to surrender their various forms of social appropriation which reflect the earlier regimes. Moreover, this embeddedness implies that regulatory measures imposed by fisheries administrators are an indirect form of forced social change, affecting not only employment and income but also the very social systems themselves.

Not surprisingly, therefore, fishermen and their local institutions, which interpret policy measures in a different social context to that of the policy makers, will act to defend their social worlds - not least when the rationale of the policy decisions is obscured by a lack of transparency in the decision making process.

- 4.8 The corollary of the foregoing analysis is that no one, universal management regime can be successfully applied in the complex fisheries like those of the European Union. The need, therefore, is to work towards the development of systems of use rights and regulation which best suit the biological and socio-economic characteristics of particular fisheries. At the same time, one must guard against the creation of an unworkable proliferation of individual systems. In attempting to develop some fairly simple guidelines as to how the current dilemmas over use rights and regulation might be resolved within the CFP, it is first necessary to identify the relevant biological and socio-economic differentials, together with the range of use rights categories and regulatory systems. These are summarised below in Table 1.

A. Biological and socio-economic differentials	
(i)	sessile; migratory; highly migratory species
(ii)	inshore; offshore; high seas / non-EC waters
(iii)	artisanal; industrial forms of organisation.
B. Use rights categories	
(i) <i>licence based:</i>	transferable / non-transferable with limitations on the aggregation of licences;
(ii) <i>quota based:</i>	(a) common use rights systems, with open access;
	(b) communal i.e. group or community based quotas, with limitations on trading of quotas outside the group or community;
	(c) individual transferable quotas.
C. Regulatory systems	
(i) <i>centralised</i>	in which the central administration retains responsibility for all aspects of fisheries regulation (viz. licensing, quotas, gear restrictions, ground closures, markets etc.) in consultation with responsible user group organisations;
(ii) <i>devolved</i>	via producer groups, where the remit for regulation is restricted to quota administration and market planning (e.g. the Biesheuvel system in the Netherlands; sectoral quota management in the UK);
(iii) <i>local</i>	where a statutory or non-statutory self-regulating organisation oversees a full range of management functions within quasi-territorial limits.

Table 1

5.0 The organisation of ESSFiN Workshops

Although the Seville workshop was undoubtedly successful in fulfilling the aims of the Concerted Action programme and providing a valuable exploration of the linkages between property rights, regulatory systems and the behaviour of fishermen, a number of questions can be raised about whether the procedures allow for the most effective way of realising the Concerted Action objectives.

In the first place, papers are submitted in response to an open invitation issued through the newsletter, FiNESSE. This allows very little scope on the part of the organisers to ensure a full and balanced coverage and a properly structured approach to the theme. One possibility might be to include more targeted (i.e. invited) speakers, including *inter alia* representatives from the 'professional' side of the fishing industry (i.e. government scientists, administrators and fishermen's organisations). This would have the added advantage of bringing 'academics' and 'professionals' closer together in discussion. But this should not be to the exclusion of Network members: the workshops exist primarily to serve their interests and to bring forward the views of active researchers on themes relevant to policy makers.

Secondly, the relatively large number of papers scheduled for presentation over two working days does not allow very much time for formal discussion of their content or the general issues raised. One suggestion would be for certain sessions to be held in parallel and for a summary of these sessions to be presented at a plenary session of the workshop. But this would tend to destroy the unity of the workshop in which *all* participants, from different backgrounds and with different research interests and perspectives, together address the same themes and issues in a search for common ground and a common message to deliver to the policy makers. Alternative suggestions might be to extend the workshops by adding an extra day or lengthening the working day; but would such suggestions be popular, cost effective and ensure the commitment of participants to attend the whole workshop?

Finally, discussions might be more productive if we could largely eliminate the presentation of the papers and proceed directly to discussion. To do this would require a guaranteed pre-circulation of all the papers well in advance of the workshop, which experience suggests would be very difficult to achieve. One other possibility would be to circulate all abstracts in advance so that participants are more fully informed of the content of the workshop.

Appendix A: Programme

European Social Science Fisheries Network: FAIR CT95 0070

Property Rights, Regulatory Measures and the Strategic Response of Fishermen

Sevilla, 5-7 September, 1996, Consejería de Agricultura y Pesca - Junta de Andalucía

Coordinator: David Symes

Manager: Jeremy Phillipson

Local Workshop organisation by Juan-Luis Suarez de Vivero

Thursday 5th September

Session 1: Opening

Chair: David Symes (UK)

0830 - 0900 Introductions

David Symes (Network Coordinator)

D. Francisco Gómez Aracil (Director General de Pesca)

0900 - 1000 Guest Lectures

José Carlos Cuerda, Regional Development Institute (Spain) Est-ce que un processus de planification participative peut-il inciter des changes profondes dans la structure économique de l'activité de la pêche au sud d'Europe? Leçons des l'Andalousie

Lawrence C.Hamilton, Cynthia M.Duncan and Nicholas E.Flanders (US)
Management, adaptation and large-scale environmental change

1000 - 1030 Coffee

Session 2: Property Rights 1

Chair: Bjørn Hersoug (Norway)

1030 - 1230

Kevin Crean (UK): Property rights as policy instruments for delivering sustainable fishing

Jean-Luc Prat (France): Le droit des pêches maritimes en France face à la propriété des ressources marines. Quels particularités, quels problèmes juridique? Quelles influences du droit communautaire?

Serge Collet (Germany): Euro-communitarisation of coastal resources or communalisation of fisheries resources in the European space.

Ellen Hoefnagel (Netherlands): Quota hopping, the Common Fisheries Policy and the moral dimension

Alpina Begossi (Brazil): Property rights at different scales: applications for conservation in Brazil

1230 - 1330 Lunch

Session 3: Property Rights 2: ITQs

Chair: Kevin Crean (UK)

1330 - 1500

Martijn van Vliet (Netherlands): ITQs and cooperation between fishermen : fishing as collective enterprise

Wim Davidse (Netherlands): Property rights and changes of behaviour of Dutch Fishermen

Petter Holm, Stein-Arnes Rånes and Bjørn Hersoug (Norway): Political attributes of rights based management systems: the case of individual vessel quotas in the Norwegian coastal cod fishery

Vilhjalmur Wium (Canada): Individual quotas and discarding: do they always go hand in hand?

1500 - 1530 Coffee

Session 4: Discussion on Property Rights

1530 - 1615

Discussion led by Oddmund Otterstad (Norway) and Torben Vestergaard (Denmark)

1615 Close

Evening Reception

Friday 6th September

Session 5: Regulatory Systems 1 : Offshore Waters

Chair: Peter Friis (Denmark)

0830 - 1000

Jennifer Bailey (Norway): Inside/outside EEZs: the high seas, EEZs and property regimes reconsidered

Sophie des Clers (UK): Structural adjustments of the distant water fleet of European factory trawlers

Oddmund Otterstad (Norway): The exclusion of Norwegian professional fishermen from salmon-fishing: processes within a particular field of competition

1000 - 1030 Coffee

Session 6: Regulatory Systems 2 : Spain

Chair: Katia Frangoudes

1030 - 1230

Juan-Luis Alegret (Spain): Property rights, regulatory measures and the strategic response of Catalan fishermen

Begoña Marugan Pintos (Spain): The behavioural response of fishermen in the North of Spain

Juan-Luis Suarez de Vivero and Mayca Frieyro (Spain): Fishing and the process of national construction in North Africa

1230 - 1330 Lunch

Session 7: Regulatory Systems 3: Inshore Waters

Chair: Babis Kasimis (Greece)

1330 - 1500

Gabriella Mondardini (Italy): Traditional use rights among small scale fishermen and marine parks in Corsica and Sardinia

Nathalie Steins (UK): 'We have to keep foreigners out of our bay': top-down regulation and the strategic response of Irish fishermen

David Symes and Jeremy Phillipson (UK): Fishing within limits: inshore fisheries management and the concept of local preference

Rob van Ginkel (Netherlands): *Zostera marina* in dispute: management regimes in the Dutch eelgrass industry

1500 - 1530 Coffee

Session 8: Discussion on Workshop Theme

Chair: David Symes (UK)

1530 - 1615

Discussants: Bjørn Hersoug
Kevin Crean
Torben Vestergaard
Oddmund Otterstad

Peter Friis
Katia Frangoudes
Babis Kasimis

1615

Close

Appendix 2: Participants by country

<i>Brazil</i>	Alpina Begossi
<i>Canada</i>	Vilhalmur Wium
<i>Denmark</i>	Peter Friis, Torben Vestergaard
<i>France</i>	Katia Frangoudes, Jean-Luc Prat
<i>Greece</i>	Babis Kasimis
<i>Germany</i>	Serge Collet
<i>Italy</i>	Gabriella Mondardini
<i>Netherlands</i>	Wim Davidse, Ellen Hoefnagel, Rob van Ginkel, Martijn van Vliet
<i>Norway</i>	Jennifer Bailey, Bjørn Hersoug, Petter Holm, Oddmund Otterstad, Stein-Arnes Rånes
<i>Spain</i>	Juan-Luis Alegret, José Carlos Cuerda, Mayca Frieyro, Begoña Marugan Pintos, Juan-Luis Suarez de Vivero
<i>UK</i>	Kevin Crean, Sophie des Clers, Jeremy Phillipson, Nathalie Steins, David Symes
<i>USA</i>	Lawrence Hamilton

