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# The Fisheries

## Co-management Experience

### Accomplishments, Challenges and Prospects

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## TOWARD SPECIFICITY IN COMPLEXITY: *Understanding co- management from a social science perspective*

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### 1. REVITALIZING AN OVERUSED TERM

The term 'fisheries co-management' has now been so broadly used in applied settings and in social science that it risks losing important aspects of its original thrust. In addition, as social science thinking about management in general has evolved over the last two decades, we have all refined and enriched the way we see this concept. For the concept to remain useful, I argue that it should become more specific and complex instead of more general and generic. In the discussion below I attempt to reevaluate, and reorganize a few key dimensions of this term into a form that is more theoretically useful for dealing with complexity. I use the evolution of my own research and thinking on fisheries co-management over the last 15 years as a means of attempting to hone and revitalize the term. Also, in dialogue with colleagues, I suggest key alternative perspectives about what meaning we should assign the phrase.

### 2. DEFINING PARAMETERS WITH A FULLY-DEVELOPED CASE

I draw particularly on my field experience spanning two decades with a case which in many ways has defined co-management for me. I have been struck by how many social scientists have an explicit or implicit definition of co-management based more on their field experience than the literature. Over-reliance on one's own field experience can be limiting, unless balanced by careful examination of other cases, because our sociological imagination is so deeply formed by the models we ourselves study in depth and over time. Not only do we know and trust their functioning best, but we often believe they define the limits of the possible. Comparing the above-mentioned field experience to the literature, however, leads me to believe that this particular well developed example can provide a valuable template against which to analyse other cases. Emphasizing a fully-developed case is useful if it helps prevent us from defining co-management in too limited a fashion. A limited definition would condemn us, and especially disempowerd fishing communities or organizations, to

manager aspirations which may not enable their survival. At the same time, we need to rigorously define the conditions under which 'complete' or even adequate co-management can develop and survive. This discussion is limited to only a few contentious aspects of this effort, since a review of propositions that I and others have been generating since 1988 about these conditions would be too lengthy here.

The case I have been fortunate to encounter first hand offers a highly-developed and continually evolving model (the Washington State treaty tribes) which I invite colleagues to consider for what it suggests about the scope, scale, nestedness, embeddedness, dynamism, and limits of various forms of co-management. The model is very advanced in that most of the vertical linkages between the fishing communities and local and senior levels of government have been institutionalized, so that the system is fully 'nested' at all levels of governance (Ostrom, 1990). That is, decisions made at one level interact with other levels so that there is both policy stability at higher levels of governance and also capacity to innovate at lower levels. The system is furthermore integrated horizontally into multiple multi-party processes at local, regional, state, and national levels. The system's development demonstrates how changes in governance in a central key relationship can radiate out to effect the democratic functioning of civil society itself, as discussed below. And it is a system whose key learnings have already been transferred to at least one other setting. I first studied it in collaboration with Canadian communities (Pinkerton, 1989b) who have now adopted, adapted, and further expanded the model into ecosystem management with the help of my Ph.D. student (see Chapter 9, Loucks *et al.*).

### 3. BACK TO THE ORIGIN OF THE TERM: A HIGHER-LEVEL COLLECTIVE CHOICE RIGHT

The term 'co-management' was first used in the late 1970s by US treaty tribes in western Washington State to describe the relationship they aspired to have with state managers. The tribes had won court recognition of their access and withdrawal rights to an allocation of fish over the decades preceding the landmark 1974 *US v. Washington* case, popularly known as 'the Boldt decision' (based on the court's interpretation of earlier treaties). However, tribes had been barely able to exercise these rights, because the harvest was managed by the state in such a way that little fish (in this case, mostly salmon) remained by the time this migratory species reached the marine and riverine territories in which the tribes could legally fish. The state managed the non-tribal commercial and sport fisheries so that all but some five per cent of the fish was harvested elsewhere. Therefore, Judge Boldt reasoned that only by recognizing the tribes' right to participate in planning and regulating the entire harvest (which he called 'concurrent management') would their allocation right ever be exercised. In other words, the treaty's promise that the tribes would share in access to the fish alongside the citizens of the territory was unrealizable without a second and higher-level right being granted: the right to participate in management decisions about how the harvest would be conducted. Institutionalists would say that it was necessary to grant a collective choice right (decision-making about harvest planning) to a group in order for it to exercise an operational right (taking an allocation of fish) in this particular context (Schlager and Ostrom, 1993).

This distinction is key, as there has been a tendency to apply the term co-management to mere operational rights, an inappropriate watering down of the term to a narrower, less powerful, right. (See Cohen, 1986, 1989 for an excellent treatment of the legal, ethnographic, and early historical context of this case). Co-management is misnamed unless

it involves at least the right to participate in making key decisions about how, when, where, how much, and by whom fishing will occur. We need to distinguish this level of power from the right to simply access a pre-defined catch. Furthermore, certain collective choice rights may be too small in scope and/or in scale to confer meaningful power in the long run. The right to plan the manner of harvest in a local bay would probably not address the issue of a sustainable harvest, for example. As is proposed elsewhere (Pinkerton and Weinstein, 1995; Pinkerton, 2002), it is useful to array small-scale operational or collective choice rights within a matrix of other potential co-management rights/activities of varying levels of importance, such as policy-making, defining membership and boundaries, habitat protection, enforcement, etc. In addition, the degree and type of power held by the non-governmental co-manager in a particular small-scale activity could be expressed as a rung (or even assigned a number) on the ladder of participation (Berkes, 1994). The level of power might vary in different management activities, so ideally we would 'score' any arrangement specifically, noting both the scope of the arrangement, and how power is distributed in each arena of decision making. This type of matrix array opens the way to an analysis of what critical bundle of rights is sufficient to allow a co-management system to be effective in achieving the long term objectives of one or both partners, as discussed below. So let us start with the assumption that the power to participate as a partner in planning the harvest is a necessary but often not a sufficient right for a co-manager.

### 4. WHAT OTHER RIGHTS AND ACTIVITIES HAVE TO BE INVOLVED?

How can communities participate in planning a sustainable harvest without access to or the ability to produce data, the capacity to analyse that data, and access to dispute resolution over varying interpretations of data and tolerance of risk? By the time I began studying this example in the early 1980s (Pinkerton, 1988), the struggle was in full swing between the tribes (who now had hired biologists and built capacity) and the Washington Department of Fisheries (WDF), which resisted the exercise of the tribes' collective choice right. The conflict revolved around tribal access to WDF's stock abundance data, everyone's harvest data, and the very definition of conservation. This last meant how much fish should not be harvested, but rather allowed to spawn in each stream. The WDF did not want to reveal the paucity of its stock abundance data and the level of uncertainty surrounding its analysis and decision-making about the harvest. Furthermore, it did not trust the tribes more than any other fishermen to report their catch accurately, especially since some tribes had asserted their treaty rights through illegal fishing for decades. The final negotiation of a co-management agreement which resolved these problems, among others, took 10 years and resulted in a complex power-sharing relationship in which the state and tribes agreed to work jointly on every aspect of data gathering, data analysis, and harvest planning and eventually played complementary and mutually supportive roles. The tribal-state relationship was less a delegation of powers than a complex division of powers and a collegial collaboration in problem-solving as putative co-equals. The two parties eventually developed a high level of trust and learned to make the best use of limited funding by sharing (and sometime agreeing to trade off specializations) in virtually every aspect of management and every stage of planning, from international negotiations to collecting data on indicator streams. The sharing and improvement of data gathering and data analysis through mutual accountability provided the foundation on which trust was built in harvest planning. (This sharing then provided such a mutual benefit that it drove the building of cooperation in other areas of management). What has been learned is that the exercise of

*the collective choice right depends on a series of other rights, some of which may be narrow-scope or purely operational. Nonetheless these narrow-scope rights may be critical to the effective exercise of other small-scope and larger-scope rights. The court had not envisaged all the complexities of co-management, so many of the other rights were recognized only through negotiations after intense political struggles, or continued use of the courts and its extensions. Through the repeated exercise of their harvest management right, the tribes gradually learned what other rights were necessary for making this core co-management function operable. As discussed below, these learnings continued to evolve over time. They were learning what set of rights enabled sustainable co-management in their particular case.*

##### 5. VERTICAL AND HORIZONTAL GOVERNANCE BROADENS THE CO-MANAGERS' ROLES

As soon as harvest co-management protocols were agreed to in 1984, the next set of issues around co-management emerged. These included habitat protection, regional planning, setting broader policies at a higher level, and international allocation (interception) agreements. The co-management system set the stage for a complex multi-stakeholder exercise in watershed analysis, and eventually for the most challenging exercise in complex collaboration ever attempted, involving federal agencies regulating endangered species protection and water quality under federal statutes. Thus *harvest planning and regulation emerged as only a small part of what would eventually be involved in co-management*. The success of the tribes in asserting a full complement of collective choice rights revealed the range of political, legal, and social factors that affected management and how power would be shared with the state in each aspect. In-depth discussions of the case are published elsewhere (eg Pinkerton and Keitish, 1990; Pinkerton, 1992; Singleton, 1998; Ebbin, 1998).

##### 6. KEY ASPECTS OF COMPLETE CO-MANAGEMENT

My purpose here is to use this bare sketch of what I call 'complete co-management' (Pinkerton, 1989a) as a context for discussing seven aspects that are key to such collective choice arrangements. They provide a useful template against which to measure various less complete forms of co-management, and the barriers which limit them. I select these seven as *neglected and controversial aspects of co-management*, not as a complete list of defining or permitting conditions. These key aspects of complete co-management are as follows:

- (1) Government as a co-manager plays a key and desirable role, and is ideally an engaged partner rather than a delegator.
- (2) Co-management, like management itself involves far more than the control of fishing effort.
- (3) Sustainable co-management arrangements involve some control by community partners over the terms and conditions of sale to fish buyers.
- (4) The successful exercise of rights on one level depends on the exercise of rights at higher and lower levels, including the right to participate in data collection/analysis and in setting policy agendas at the highest level.
- (5) Co-management, as it matures, will ideally involve multiple horizontal negotiations leading to cooperative activities with other players and potentially greater democratization of civil society.

- (6) The power to exclude from some defined territory is optimal.
- (7) Complete co-management is based more on the collective rights of a group than on individual rights.

I now contrast these seven key aspects of 'complete co-management' with various ways the term has been applied in social science. The purpose here is to clearly identify the barriers to the full development of less developed forms of co-management.

###### 6.1. Government is a key player in complete co-management

A number of social scientists have seen co-management as a small step from self-managing character of the arrangement, but adds more legitimacy or logistical support to it. For example, institutionalists tend to view the state as parasitic on self-managing communities, and thus fail to see the key role it plays. In his superb analysis of self-governing groundwater management boards in southern California, Blomquist (1992) shows the key role played by the 'water master', who is first a government employee and later works for the board. Yet his analysis neglects the legitimizing, human capital, and social capital aspects of the role of this key state employee who turns to working for communities. Similarly, many maritime anthropologists and sociologists, extending a tradition of analysing the norms and self-regulating capacities of isolated fishing communities and the extent to which the state serves the interests of corporate capital, tend to see ideal co-management as a situation in which the state is involved in management as little as possible. While there are no lack of evidence the state has largely supported capital at the expense of communities (Marchak *et al.*, 1987; Durrenberger, 1992), the ultimate goal of sound co-management is ideally to balance power so that the state plays a mediating and levelling role among interest groups, as demonstrated in cases discussed below. In the case of industrialized states, fish are not the most significant commodity, and fisheries management agencies are not the most significant players in state governments. The larger political battles are likely to be over major industrial developments which affect fish habitat in watersheds and in the coastal zone (eg oil drilling, intensive net-cage aquaculture, industrial and major agricultural effluent, intensive logging, dams, etc.). In the battles over fish habitat, the state fisheries management agency has the potential to be an ally of co-managing communities or groups (as it is in the Washington case, Pinkerton, 1992).

But there are far more important reasons why government is a key player in complete co-management, which apply to developing countries as well. While it is true that some forms of co-management have developed by incorporating existing self-management regimes into a new regime, this very incorporation alters the self-managing aspect in fundamental ways. I agree with Holm *et al.* (2000) who point to the 'modernity' of the era in which the co-management contract is made and the fact that career paths and social controls have changed in at least some important ways. However, I would go further than these authors in emphasizing the importance of the role played by government. What is most helpful to co-managing communities is that government can be the provider of technical support, credit, marketing assistance, or protective legislation, such as has occurred in the Philippines (Chevalier and Buckles, 1999; Berkes and Pomeroy, 1997). It is worth noting, however, that external or non-fishing NGOs such as academics, international bodies, or advocacy groups may be the chief sources of legitimation for the co-management relationship, as in the Dominican Republic (Stouffle *et al.*, 1994; Chevalier

and Buckles, 1999), not necessarily government, even though government must eventually provide protection for co-management to work. Legitimation may be the least of the roles played by government. This has important implications for the power communities may be able to exercise, as discussed below.

Even more important is how co-management fundamentally alters self-management: the nature of the contract itself. The co-management relationship creates a series of dilemmas for self-managers in that, post co-management, they are constrained by the timeables and decision-making modus operandi of national and international governments and planning bodies. For example, they may no longer have the luxury of reaching consensus or the level of certainty they desire in their own time. They risk becoming bureaucratized and oligarchized in ways that run counter to the values and goals of the community they serve and must constantly trade off internal accountability and externally imposed timeables and efficiency (Pinkerton and Keitlah, 1990). They may have staff or board members who do not necessarily communicate with community members in a regular and democratic way (Kofinas, 1998). The co-management relationship thus *transforms the traditional community*, even as it attempts to express its values and concerns. The trade-off is positive for the community, but co-management does come at a cost.

Furthermore, government is unlikely to be a neutral disinterested party in its dealings with the community, and may even be thought of as a 'stakeholder', given that it has a relationship with many affected actors and is itself affected by the outcome (Jentoft and McCay, 1995; Mikalsen and Jentoft, 2001). In some multi-party arrangements, government may even formally play a dual role as stakeholder and sponsor of the arrangement, who sets the initial conditions or rules which give the parties incentives to come to the table together (Pinkerton, 1996). Whatever the hazards of confusing its sponsor role and its stakeholder role, governmental participation is key to the well-being of both simple and multi-party co-management contracts, as discussed below, because government is the only body with the authority to protect the interests of the co-managers against other parties (Pomeroy and Berkes, 1997; Tyler, 1999).

Even communities which struggle to assert more 'local control' will recognize at some point that they need government protection. Recognizing that there may be many areas/activities within an agreement which need not involve government, government is still a key player. In mature co-management such as the Washington tribes' case, government became a key ally with whom the tribes agreed to trade off certain management functions, depending on who is best placed to do the job. In other words, in complete and mature co-management, *the relationship with government is seen as a partnership delivering a net benefit*.

This concept of partnership is rather different from the way many analysts have seen co-management, as primarily a matter of delegating powers to users (Jentoft, 1989), 'in which communal property and [community based resource management] are always embedded in state property systems and derive their strength from them' (Pomeroy and Berkes, 1997), as further discussed below. However, what may have been finally blessed as 'delegation' may not have so originated nor be understood as such at the community level. In Japan, for example, where local fishing cooperatives hold a form of sea tenure to local fishing space, a large number of decisions are made locally. The system developed first at the local level and was later integrated into regional and national governance, and protected in national legislation (Yamanoto and Short, 1992; Pinkerton and Weinstein, 1995). However, periodic efforts by the state to establish formal ownership of resources or to abolish local marine tenure boundaries were always abandoned (Matsuda and Kaneda,

1984). It might be more accurate to characterize many co-management situations as a stand-off in which parties agree to disagree, and partnership is forged out of the need to work together. Enabling legislation can lay the groundwork for such a partnership, but it is in the implementation of the legislation that one finds the 'proof of the pudding'. In Alaska, for example, the regional aquaculture associations created under enabling legislation in 1976 took on increasing power as their managers and staff gained seniority and stature and they were able to take increasing leadership and initiative in addressing broader management questions. Their de facto power came to outstrip their de jure power.

#### 6.2. Complete co-management is about more than effort control for conservation

A large number of analysts of self-regulation and co-management have defined co-management narrowly as being based on forms of self-regulation such as allocation of fishing space, size limits, seasonal limits, time limits, or even access to mooring space which have the effect, intended or not, of controlling fishing effort. However, as many have also noted, these regulations often also affect the distribution of access and the efficiency of operations. I differ from Holm *et al.* (2000) in that I do not see this as a reason to dismiss these regulations as forms of management, albeit narrow-scope. Even conventional fisheries managers usually recognize that management involves far more than direct effort control and state that 'we have to manage fish by managing people' (Larkin, 1988). If we see management (and 'complete co-management') as including allocation (which may be either a side-effect of another regulation or a formal plan) as well as harvest planning, and if we assume harvest planning is often influenced by considerations of efficiency as well as conservation, then management in practice has seldom been uniquely focussed on effort control. Government managers often consciously use efficiency and allocative regulations to achieve conservation indirectly, but recognize that because they are managing people, they may more effectively achieve a conservation goal through a strategic use of indirect tools.

I argue therefore that it is more useful to conceptualize management itself broadly, because in fact the problems encountered by managers and communities inevitably require solutions beyond the straightforward restricting of fishing effort. This is because, as Schlager and Ostrom (1993) conclude in a literature review of 30 cases of self-regulating rules devised by fishermen's groups/communities, even small-scale and pre-industrial fisheries typically need to deal with three common pool resource dilemmas which they may think of in terms of efficiency as much as conservation: appropriation externalities (too much fishing effort, increasing everyone's costs per unit harvested), technological externalities (crowding and gear conflicts, decreasing efficiency of operations), and assignment problems (allocation conflicts over access to the most productive locations). Although Schlager and Ostrom did not exhaust the available literature on self-regulation (and I believe we do have cases of self-regulation for conservation), it is notable that none of the examples they encountered required an explanation for self-regulation related directly to conservation. So pre-industrial and small-scale fisheries also use multiple and indirect tools which have the effect of restricting fishing effort perhaps as much as modern managers do. My point is that managers and co-managers are stuck with this situation. As a result, modern managers wishing to bring in new conservation measures often try to find a constituency which supports its conservation measures for allocative reasons. So let us consider the utility of *conceptualizing management and co-management systems broadly, even if we consider the sole legitimate objective of management to be conservation*. This would be consistent with the finding that resource users accept conservation regulations

more readily if they believe the allocative effects of them are equitable, and that equity has a direct impact on efficiency (Oakerston, 1992). I continue to argue (Pinkerton, 1989a; Pinkerton and Weinstein, 1995) that it is useful to consider all the management activities in which we know communities to be involved as 'real' aspects of management and co-management which have attached rights or duties. Our challenge should be to *analyse how these management activities, rights and duties interact and contribute (or not) to sustainable management.*

*6.3. Sustainable complete co-management arrangements involve some control by community partners over the terms and conditions of sale to fish buyers*

Importantly, I believe that Holm *et al.* (2000) implicitly acknowledge that management should be defined broadly when they argue later on that returning optimum value to small-scale coastal fishermen through the Mandated Sales Organization (MSO) system is fundamental to the fisheries management system in Norway. Norway has long been an outstanding example of a modern jurisdiction which did not permit vertical integration of buyers and fishermen-sellers, and thus prevented the domination of the industry by corporate capital... even if this was partially in support of the national goal of promoting coastal settlement (eg Jentoft, 1993; Brox, 1993; Wadel, 1972). As has been argued elsewhere (Pinkerton and Weinstein, 1995), it is useful to conceptualize returning optimum value to fishermen as a fundamental aspect of management, because its impact on the way a management system operates is as fundamental as allocation. In Japan, harvest planning and in Washington State, this is the one area in which co-management is incomplete. The Washington co-management situation survives because of federal support to implement treaties, which pays for management costs. The Washington treaty tribes have no control over terms of sale, no supportive legislation or other overarching policies supporting them in this regard. During recent years of low fish abundance and/or prices, many tribal fishermen cannot sustain themselves. Sustainable co-management, then, requires a situation in which fishing communities can capture a large enough share of the benefits to support at least some management costs. Captured benefits should be conceptualized as an essential aspect of complete co-management, alongside adequate control of fishing effort.

*6.4. The successful exercise of rights on one level depends on the exercise of rights at higher and lower levels*

As discussed above, an operational right can be a weak and narrow right unless buttressed by a higher-level right to decide under what conditions the operational right can be exercised. Similarly, co-managers are not in a position to make good decisions if they don't have access to data and the capacity to analyse it. Access to data might be considered a narrow-scope operational right, even narrower than access to an allocation of fish. Very weak forms of what is sometimes mis-named co-management often involve fishing communities collecting data for government, but having no power to make decisions or even have access rights to fish based on the data, even if they can analyse it. Nevertheless, *possession of these narrow-scope operational rights (data collection and analysis) is crucial to the exercise of the higher-level collective choice right, since it is a necessary precursor to harvest planning.* This is a crucial point that has been missed by institutionalists focusing solely on the hierarchy of rights of access/withdrawal, management, and exclusion (Schlager and Ostrom, 1993).

Similarly, the narrow-scope collective choice right to plan the harvest will become meaningless if large-scope policy decisions are made at a higher level by the state that another nation will be allowed to intercept the fish, or that the state has sole rights to define conservation, or that the private property rights of landowners whose activities impact fish habitat will take precedence over the rights of fish harvesters to good fish habitat. Judge Boldt in the second phase of *US v. Washington* in 1980 reasoned that both the access/withdrawal right and the management right were meaningless unless the tribes also had the right to protect fish habitat. In practice, this meant that the tribes became part of the multi-agency council of the governor of the state of Washington, negotiating with line agencies which regulated land use practices affecting fish abundance. Exercising rights at this level involves participating in setting the agenda for how issues are defined and acted upon, as well as the timing of when certain issues will be given priority attention. Agenda setting also occurs at the Regional Council level, ie the Pacific Fisheries Management Council (see McCay and Creed, 1999; Loucks *et al.* Chapter 9), as discussed below. More than having the right to protect fish habitat specifically, having the right to participate in setting policy agendas means that the tribes have an opportunity to influence the relative importance of fishing and fish habitat issues, including what level of resources are proposed in specific legislative packages. They also eventually got a tribal seat on the Forest Practices Board, since forest practices (logging and silviculture) have a key effect on fish habitat. The exercise of rights at this higher level means that co-management activities at a lower level have a greater chance of having their intended outcome. Therefore we can generate the proposition that to be effective, *power-sharing in co-management needs to be scaled up and down to the level capable of affecting its operation.*

*6.5. Complete co-management involves multiple horizontal negotiations leading to cooperative activities with other players*

Not only does complete co-management involve the scaling up and down of activities of various scopes and their attached rights, it also ideally involves co-operative planning, research, education, and monitoring with other fishing and water-using parties and jurisdictions. Such parties might be thought of as being in 'horizontal' relationships with fishing communities, since they do not normally have jurisdiction or rights over harvest management, but rather have potentially competing rights to fish or water.

In some cases the state plays a direct role in bringing these parties into joint harvest planning with co-managing communities. For example, on a statewide basis the Washington State treaty tribes participate in joint pre-season cooperative data analysis and harvest planning with the WDF, sport fishing groups, commercial fishing groups, and the federal National Marine Fisheries Service, which has jurisdiction outside three miles from shore, in the Pacific Fisheries Management Council (PFMC). These parties first negotiate what level of conservation is appropriate for various salmon runs, then what overall fishing strategies should be used to allocate various stocks to various parties without compromising conservation. The PFMC is not a co-management body in itself, but for its role in setting the parameters for the more detailed planning, it is an essential piece of vertical (federal and state) and horizontal (commercial and sport fishermen) negotiation for the tribes.

On a regional level, three types of multi-party watershed planning activities are particularly noteworthy horizontal negotiations: those affecting water quality, water quantity, and forest practices, respectively. Because of their co-management rights to protect fish habitat, the tribes are always represented in these processes, and sometimes are the lead agency. Each type of process affords opportunities to jointly create rules for more

flexible and creative fish habitat protection. Each also constructs good will, trust, and social capital among parties who would not normally associate with one another. In the best circumstances, this social capital continues to contribute to evolving improvements in joint problem solving in the watershed, which is likely to be the place where 'social learning' occurs and is maintained because the processes are embedded in communities of place. Social learning refers to processes which transform social relations and generate less conflictual ways of addressing difficult joint problems. I briefly outline the essentials of each process to illustrate the role and importance of different types of horizontal negotiated agreements for the co-management process. (More in-depth discussions are in Pinkerton, 1991, 1992, 1994; Pinkerton and Baril, 2001).

Water quality watershed planning, especially to protect shellfish-rich estuaries or valuable salmon runs, began in the late 1980s under a state superagency which empowered key counties to convene water quality planning processes. The most successful processes used a trained facilitator/mediator who chose qualified local representatives (including tribal and non-tribal fishermen, environmental groups, farmers, marina operators, real estate developers, and county commissioners) to meet regularly over a year and produce a plan for achieving the state water quality standard. The plan set target community standards and methods and timetables for achieving them. The process involved in-depth education about water quality problems and their causes, volunteer clean-up projects, and volunteered strategies by the polluters and others to contribute to solutions. The planning and implementation process was effective not only because consensus was achieved, but also because the county had a mandate to require the other agencies to comply with the plan, once it had been approved by the Department of Ecology, and funding existed to produce the plan through the superagency. What we need to draw from this example is not that such processes would necessarily be absent without legal backing: in this case a social movement in response to pollution in Puget Sound was in fact the driving force. But this movement was aided by the pre-existence of fisheries co-management. More importantly for this discussion, its existence buttressed the tribes' co-management rights, because it created or extended the capacity of communities or regions to implement habitat protection. Like the PPMC example discussed above, it is not an example of complete co-management itself. It involves the rights to data and data analysis, but not the right to extract benefits from the result of work done, other than the benefit of a healthier environment. Perhaps the overriding importance of this type of process is that it focuses ordinary citizens on their *duty to protect public resources* rather than their right to extract benefits. This concept of duty is key because it highlights what is often not understood as a key aspect of complete co-management: that co-managing communities and their horizontal partners do the work not just because of the benefits they extract in this generation, but because of their *duty to future generations*, and the *survival of their communities*. It is one of the reasons communities of place are so crucial, as discussed below. It is in such places that citizens are able to link environmental benefits to the health of their families and communities and act out of a sense of duty. Otherwise put, the community is able to capture the benefits of its own stewardship when it occurs on a watershed scale. So the *pre-existence of co-management aids in the building of or reinforces horizontal institutions of stewardship at the community/watershed level*.

A second type of watershed planning exercise occurred in the early 1990s under the statewide Chelan agreement to pilot water quantity planning, in particular how irrigators, hydroelectric companies, and tribes would share scarce water. In this agreement the tribes had further asserted their rights to be considered *full partners in governance*. Not only were

they the convener of this process, as the county had been of the water quality process, but they had more power. The Chelan agreement produced a decision rule in which all three local 'governments' - the county, the tribe, and the state agencies led by the Department of Ecology - had to agree to any rule, in addition to the majority of the other non-governmental stakeholders in the planning process. In the Dungeness-Oulicene watershed pilot, the stakeholders decided they wanted to operate on consensus, but the decision rules would clearly have been a fallback position had they been unable to achieve consensus. This arrangement highlights the fact that a full co-manager has more authority and legitimacy than other 'user groups' and acts more like a government than a user. So this process exemplifies both a horizontal supportive agreement and an extension of tribal authority to veto power in water quantity planning. This agreement also created the incentives necessary for parties to craft new strategies to reward water conservation efforts. For example, rather than blame irrigators for dewatering streams, a major collaborative effort has created a new legal construct - the State's first 'trust water right' - which rewards and encourages water conservation by all sectors in the watershed during critical salmon spawning months. Irrigation districts signed an agreement with the State and tribes to cut back on water diversions by 40% during August and September when chinook salmon return to the Dungeness River (Seiter *et al.*, 2000; Pinkerton and Baril, 2001).

The third type of watershed planning, called watershed analysis, began in the mid-1990s and was to regulate the cumulative impacts of forest practices (chiefly logging) on mid-size basins so that salmon habitat would receive adequate protection. Evolving from the statewide Timber, Fish, Wildlife agreement of 1986 between tribes, timber companies, state agencies, and environmental groups, watershed analysis involved applying a set of analytical 'modules' to predict the cumulative effects of logging in a particular watershed. Analysis focussed particularly on the effects of mass wasting (landslides from slope instability), road building, and riparian forest buffer width on in-stream habitat conditions. The producers of the modules (and of the watershed analysis manual indicating how to integrate them) were scientists working for tribes, the timber industry, and state agencies. Representatives from these three groups also participated in generating prescriptions for how logging could be safely conducted in a particular watershed. In this process, the tribes held rights of access to data and data analysis and the key right to jointly set the parameters within which logging would occur in the watershed. This was the most ambitious horizontal process of all, since it constitutes the *right to co-regulate major industrial activity affecting fish habitat*. It is also perhaps the process which produced the most significant social learning. Social learning has occurred in some tribal areas where the process went smoothly and increased not only the understanding of watershed processes and the quality of forest practices, but in general increased the cooperation between tribes, state regulators, and timber companies. In other areas, conflicts were not resolved at the watershed level, and scientific discourse was shuttled to the Cooperative Monitoring, Evaluation, and Research arm of the Timber, Fish, Wildlife Agreement in which all the parties participate. This process, recently reformed, is intended to jointly monitor the results of new forest practices and conduct research which would answer the difficult unresolved questions. The parties agree to implement research findings. This *right to monitor research and implement research findings* is, as in the fisheries example of lower-level rights, likewise key to effective co-regulation of major industrial activities. The research element makes this right even broader, however.

These three examples of watershed planning/analysis taken together illustrate not only mixtures of horizontal and vertical processes, but also the *potential of co-management to*

*stimulate broader reforms toward more participatory democracy in civil society.* Although early analysis, including the author, have often lumped co-management with larger reforms of democratic process leading to more direct democracy, the Washington case demonstrates the utility of distinguishing co-management processes which are limited to specific stakeholders holding collective choice rights at multiple levels from processes which engage a broad spectrum of citizens with weaker rights and interests in protection of common pool resources as public goods. In other words, complete co-management involves a complex set of rights which may not directly reform civil society. However, the less direct horizontal negotiations which emerge from the core of complete co-management pull in a broad spectrum of citizens and involve a broad democratizing of civil society, at least in the area of common pool resource management. Mikalsen and Jentoft (2001) have noted the (largely horizontal) spectrum of 'stakeholders' potentially involved in fisheries planning and management. The foregoing discussion was consistent with their findings and also noted the piggy-backing of many forms of stakeholder involvement on the core co-management relationship.

*6.6. The power to exclude from some defined territory is optimal for creating complete co-management*

Much of the literature on self-management as well as co-management concerns place-based groups with clearly defined membership which exclude outsiders either from membership and/or from access to and decisions about some clearly-defined local territory or local stocks. They have incentives to improve the resource because their investments do not have to be widely shared, as has been broadly discussed by institutionalists and by maritime anthropologists and sociologists.

It is worth developing this point more, because of recent suggestions that organizations of holders of ITQs can act as co-managers. Bonnie McCay (NRC, 1999) has made a valuable distinction between communities of place and communities of interest, the latter being a term which could characterize at least some ITQ holders. Can communities of interest (groups which are not place-based) be co-managers? Can a group co-manage a fish stock that is not territorially based?

The answer to these questions depends on the incentives driving the community of interest. It is certainly theoretically possible that a community of interest could have incentives to steward fish and fish habitat in a local territory, as occurs, for example, with the Alaska regional fishermen's associations practising salmon enhancement and harvest planning, which include a number of non-local fishermen who have rights to fish local areas only (Pinkerton and Weinstein, 1995). But this incentive is likely to be less than the incentives of local residents, simply because non-locals have more options, and locals are more highly dependent on local resources. A co-management board which included non-locals, but in which locals had the major voice might (such as occurs in the Alaska case) still have a good chance of making decisions in response to the strong stewardship incentives discussed above. The watershed-based examples discussed above suggest that the local specificity of problem-solving provides a key incentive for parties to work together, and that the frequency of contact in addition to place identification increases opportunities to build trust which in turn enhance social learning and problem-solving ability. Rules and norms have a good chance of becoming embedded in local and regional social life (Apostle *et al.*, 1998). A community of interest managing a territorially-based stock will always have far fewer incentives and less capacity to steward than does a community of place or a mixed community of place and interest. In the case of a

transferable access right (such as in an ITQ fishery), there are even more incentives to free-ride, since the real impacts of overfishing (especially on complex ecosystem relationships) may not be evident for some time.

There are also fewer incentives for a community of interest to sustainably co-manage a non-territorially-based stock. Such a group has neither territorial exclusion nor community of place membership in its favour, which creates more opportunity for free-riding and non-compliance. This may be part of the explanation for the resource stress in many ITQ fisheries, which have been forced to adopt strict state dockside monitoring and marketing regulations to diminish these problems. The individual (vs collective) action which is possible in such communities of interest, when/if it coincides with a fishery that is not place-based, may be lethal to sustainability. Whereas it is theoretically possible for communities of interest to exercise collective choice rights as collectives of ITQ fishermen, the incentives to do this in practice are weak relative to the incentives to maximize individual short-term interests.

*6.7. Complete co-management is based more on the collective rights of a group than on individual rights*

As discussed earlier, there is a tendency to talk about co-management as being an arrangement between the state and users or user groups. Users are sometimes conceptualized as individuals who may or may not be organized into fishing associations, and are sometimes spoken of as synonymous with civil society. Co-management is thus often seen in its broadest sense as a reform promoting greater participatory democracy, vs indirect electoral democracy. It is simply making things work more as they are ideally intended to work.

As we saw in section 6.4 above, the horizontal processes catalysed by complete co-management which engage other actors do indeed reform civil society, and may even promote stewardship, social capital, and the identification of shared values. However, when it comes to collective choice rights to make decisions about harvesting and higher order policy issues, I question whether it is useful to conceptualize these rights as individual rights. Rights of this order are essentially collective because by their very nature they imply the ability to decide as a group on issues involving value judgments about risk, priorities about research, and the distribution of benefits. They are based fundamentally on the ability of the group with the rights to act in its collective interest. This means that the group exercising collective choice rights must have at least one institution (eg a tribal council or a board) which is empowered to act in the collective interest. Individuals are empowered *because* they can act in the collective interest, and the implication is that this institution has some life of its own beyond the life of the individuals who populate it or the individuals affected by its decisions. My point is that if we think of co-management as being about collective rights and collective action, we are in a very different world than the world of individual users, or even 'user groups'. Co-managers, whether they are tribes with constitutionally-protected rights or not, take on some aspects of government when they make collective choice decisions. As such they express group values and act for the good of the group. They go beyond the rights and activities of highly participatory citizens.

What are some of the implications of this for co-management research? A fruitful area might be the collective ownership of licences as a solution to various collective action problems. For example, the Canadian Department of Fisheries and Oceans has been experimenting for at least 20 years on the Canadian west coast with the collective ownership of 'N' and 'F' licences. In the first case, salmon gillnet 'A' licences owned by



the major processing company in the province of British Columbia. B. C. Packers, were sold to Northern Native Fishing Corporation, made up of three Tribal Councils. 'A' licences, once freely transferable on the market, were converted to 'N' licences, non-transferable out of the corporation and leased to individual tribal members who met certain criteria such as responsible boat maintenance and fishing behaviour. Although individual tribal members leasing 'N' licences have access rights to fish, they do not have the right to transfer these rights, a collective choice right held only by the corporation, run by a board of the three tribal councils. The board allocates licences and provides training in boat maintenance and access to capital for its members to acquire vessels. What is key in this arrangement is that the goal of the board is to maximize the access rights of local members who can perform in a reasonably consistent manner and to spread access as equitably as possible among the tribal councils and within each tribal council. The board thus exercises collective choice rights of allocation and exclusion. Individual members who lease licences from the corporation exercise access and withdrawal right not as individuals, but only by dint of their membership in the corporation and their performance according to standards set by the corporation. A similar configuration is found in 'F' licences held by an individual tribe or band, and leased to individuals or groups within the tribe. An Experimental licence is held by a group practising an innovative fishing method such as a live-capture selective fishery. Importantly, the innovation allows for collective fishing and collective decisions about sharing work and benefits. These innovative forms of access rights demonstrate some of the ways in which co-managers could hold both access and harvest management rights collectively. They can and are being used to experiment with more conservation-oriented technologies, and also with group ownership of ITQs (Schwimmer *et al.*, 2000). Future co-management research could explore questions about whether the exercise of collective rights in this manner improves or impedes the achievement of the goals of the collective body. Such arrangements may offer considerable potential for co-managing communities to play a role in innovation, especially if they are linked to preferential access. Communities are well-placed to play this role because of their potential to realize equitable allocation of opportunity among members, and to link opportunity to performance.

## 7. CONCLUSION

It has been argued that complete co-management offers opportunities to respond in an appropriately flexible, adaptable, and precautionary manner to aquatic ecosystem variations (deYong *et al.*, 1999) and as such offers fisheries managers tools not available under other institutional arrangements. I have argued here that it is analytically useful to distinguish the core aspects of co-management arrangements which create these opportunities, and to array rights and duties within an analytical framework which permits us to distinguish different levels of power and necessary bundles of rights permitting a co-management system to be effective. A case of 'complete co-management' was used to illustrate levels of power potentially held by fishing communities as expressed in specific rights, as a template for comparison with other co-management situations. The capacity of different arrangements to generate agreement and stewardship was discussed. The discussion of rights and power builds on an earlier framework for classifying the scope and scale of co-management activities in any particular system (Pinkerton and Weinstein, 1995).

A case of complete co-management was also used to deepen discussion of some contentious issues in the definition of co-management, and generated seven propositions, some with corollaries.

- (1) In complete and mature co-management, the relationship with government is seen by fishing communities and groups more as a partnership delivering a net benefit than as a delegation of powers. If fish are less important than competing uses of aquatic habitat, governmental fish regulators can potentially ally themselves with co-managers once initial power struggles are settled.
- (2) Complete co-management will involve rights and activities that go beyond sustainable harvest management, and are likely to include activities such as allocation, habitat protection, and policy making.
- (3) An analysis of co-management must consider a broad array of harvest and non-harvest co-management activities, rights and duties, and how they interact, eg how the absence of some rights affects the exercise of other rights.
  - (3a) Some degree of collective choice (vs operational) decision-making is essential to complete co-management.
  - (3b) The successful exercise of rights on one level depends on the exercise of rights at higher and lower levels.
  - (3c) To be effective, power-sharing in co-management needs to be scaled up to the level capable of affecting its operation.
  - (3d) The right to protect fish habitat ideally includes the right to co-regulate major industrial activity affecting fish habitat.
  - (3e) The right to monitor, research and implement research findings is key to effective co-regulation of major industrial activities.
- (4) Complete co-management arrangements have the capacity to stimulate broader reforms toward more participatory democracy in civil society around fish management issues.
  - (4a) The pre-existence of co-management aids in the building of or reinforces horizontal institutions of stewardship at the community/watershed level.
  - (4b) Horizontal agreements between co-managers and linked community-based processes are ideally based on the duty of both these parties to protect public resources rather than their right to extract benefits, ie their duty to future generations, and the survival of their communities.
- (5) Complete co-management is based more on the collective rights of a group than on individual rights.
- (6) Sustainable co-management arrangements involve some control by community partners over the terms and conditions of sale to fish buyers.
- (7) The fishing community is able to capture the benefits of its own stewardship when it occurs on a watershed scale.

These propositions do not pretend to be a complete or linked set of findings, but are rather what has emerged in a discussion of a particular case of complete co-management and what it illustrates about contentious issues in the definition of co-management.

It may well be the case that complete co-management is 'difficult to find and sustain' (McCay, 2000), and that social scientists will be tempted to dismiss the case presented here as too unusual to be useful. I have presented it, however, not to diminish the importance or potential of less developed cases, but to draw attention to the question of what outcomes can rationally be predicted from what degrees of power-sharing in which arenas of decision making. When a paradigm such as co-management becomes better known, it risks being 'captured', co-opted, and misapplied to situations where there is in fact little power-sharing.

Co-management as a strategic approach to problem-solving in fisheries management will be judged to perform very poorly if social scientists predict good results from small-scale or small-scale arrangements in which fishing communities enjoy only minor degrees of power or an inadequate linking of power over different arenas of decision making. If we are to develop a more powerful predictive model which deals with the complexity of different arrangements, we must develop a more comprehensive framework for comparing very different situations and for distinguishing what different arrangements can actually deliver.

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