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Conflict Management as a Means to the Sustainable Use of Natural Resources

1. Introduction

Democratic societies are based on individual basic rights and freedoms, such as freedom of conscience, freedom of speech and assembly, and personal freedoms, as well as the right to own property and the political rights to vote and to stand for public office. This emphasis on individuals' liberty to choose their own values and act accordingly inevitably opens up democratic societies to various kinds of political disputes. Disagreement rather than agreement therefore characterises the normal state of society.

During modern times it has also been increasingly accepted in Western democracies that individuals should have the right to participate in decision-making processes that concern important aspects of their lives. Indeed, several recent studies have indicated the importance of co-management or participatory decision-making practices – especially in the management of so-called common-pool or open-access resources (Webler et al. 1995, Morgan 1998, Beierle and Cayford 2002).

It seems evident that natural-resource management cannot be exclusively dealt with at the State (through official sanctions and incentives) or the local (through local necessities and cultural differences) level without support and acceptance from the other level (Hanna et al. 1996, Ostrom 1990, Saarela 2003). This makes it necessary for modern democratic decision-making institutions to increasingly include ordinary concerned citizens as equal partners in decision-making processes (Ruckelshaus 1998). This often proves to be very difficult in practice, however. The various ways in which natural resources are managed provide many illustrative examples of how different goals, including those related to the public interest, individual rights, equality, democratic decision-making practices and the sustainable utilisation of limited resources, are hard to combine in the same decision-making process.

The tendency of democratic societies to engage in internal policy disputes has given rise to numerous sociological, political and philosophical studies and theories. Basic questions of political philosophy have concerned co-ordination and the stability of social co-operation in a democratic society (e.g., Rawls 1972). According to theories of conflict regulation (e.g., Dahrendorf 1959, Deutsch 1973), conflicts *per se* should not be considered problems. Instead, social institutions should be developed so as to

react to these conflicts constructively, and to make gradual social change possible. Conflict management could thus be seen as an integral part of the functioning of democratic societies.

During the last fifty years economists and decision theorists, in turn, have developed different theoretical models to characterise individual behaviour, social choice, and strategic interaction (e.g., Olsson 1965, Elster 1979, 1989). One of the main topics within these formal characterisations has been *social dilemmas*. Social dilemmas are situations in which individuals, each of them following their individually rational strategies, end up with collectively irrational outcomes.

Failing to manage common natural resources is one of the most paradigmatic examples that social dilemmas can produce. How this kind of failure can gradually come into existence was theoretically explained in Garrett Hardin's well-cited article 'The Tragedy of the Commons' (Hardin 1968). Hardin's tragedy is a formal characterisation of a social dilemma, and as such necessarily an oversimplification. Formal characterisations nevertheless help us to understand the evolution of problematic situations that have arisen even though none of the individual participants initially preferred them. It must also be accepted, however, that there is more than one game-theoretic model behind the formal characterisation of such dilemmas. Different models, known as *assurance games*, *the prisoner's dilemma* and *deadlock games*, are introduced in Section 3 of this article.

We are suggesting here that successful dispute resolution and conflict management needs to step away from purely game-theoretical analysis of policy disputes. Nevertheless, if we allow that these game-theoretical models characterise the use of natural resources, it could help us to clarify why a situation involving a social dilemma is so vulnerable to further escalation into a policy dispute, and in the worst cases into an open conflict. In an assurance game, individuals prefer a co-operative solution, whereas in the prisoner's-dilemma and deadlock games they prefer non-co-operative conflict strategies. These different models are used in this article as heuristic devices in the analysis of different stages of policy disputes characterising the use of natural resources.

The evolution of real conflicts is then analysed by combining the above-mentioned categories and game-theoretical models in case studies on the use of different natural resources in Finland. These case studies vary from lake fisheries to reindeer herding (see Section 2 and Table 1), and also introduce the various types of institutional frameworks within which different types of policy disputes occur. Examples are drawn from common-pool resources, rather than open-access natural resources, thus they are all to some extent regulated, owned and used by specific social and institutional groupings.

Despite the differences between the natural resources and the institutions that manage them, the cases share many common features that could explain their successes or their difficulties in terms of conflict management. This is not necessarily surprising: in their comparative study of over 200 cases from vastly different contexts in the U.S., Beierle and Cayford (2002) noted that the issue at hand was far less significant in determining the success of participatory planning or conflict management than the *negotiation process*.

It is therefore vital to compare and synthesise the management of different natural resources in Finland, and to share the lessons learned in one context with people involved in other spheres of activity. This analysis concludes with a discussion and some preliminary advice on how various conflicts related to the sustainable use of natural resources could be managed.

2. Source projects and case studies: Data and methods

This article is based on research undertaken within various projects funded by the Academy of Finland in the SUNARE research programme. The projects, institutions and their contributions to this article are listed in Table 1. The data and methods used in these projects are then described in as far as they relate to the case studies presented.

Table 1. Source projects used in this article

AUTHORS, PROJECTS AND INSTITUTIONS INVOLVED	NATURAL-RESOURCE ISSUE STUDIED	MAIN RESEARCH INTERESTS AND AIMS	THEORETICAL MODELS AND CASE STUDIES REPORTED IN THIS ARTICLE
<p>Simo Kyllönen Sustainability in forest use University of Helsinki</p>	<p>Values affecting decision-making in forest management: a social-scientific and ethical analysis</p>	<p>Research into social dilemmas in environmental contexts, and into the role of deliberative/participatory modes of democracy in conflict management.</p>	<p>Theoretical models of social dilemmas, policy disputes, and conflict management</p>
<p>Alfred Colpaert Jouko Kumpula LUIAS University of Oulu</p>	<p>Multiple land use in reindeer-herding areas; the impact on pastures</p>	<p>Study of relations between competing forms of land use with respect to reindeer husbandry in northern Finland.</p>	<p>Conflict management in the context of reindeer herding and land use</p>
<p>Kari Muje Insure University of Jyväskylä</p>	<p>(Interlocked) management of separate fish stocks as a single resource</p>	<p>Socio-economic and biological conditions for the interlocked management of vendace fisheries.</p>	<p>Commercial Lake Fishery</p>
<p>Kaisa Raitio LINK-FOREST University of Joensuu</p>	<p>Decision-making and conflict management in State forestry planning</p>	<p>The content of the “black box” of decision-making: to examine the rationales behind various forest- management strategies, and to assess how they relate to stakeholder input and ecological goals.</p>	<p>Metsähallitus (formerly the Finnish Forest and Park Service)</p>
<p>Hannu Heikkinen Mikko Jokinen The effects of reindeer husbandry and nature conservation on the Malla Strict Nature Reserve Finnish Forest Research Institute (METLA)</p>	<p>The effects of reindeer herding and nature conservation on arctic upland ecosystems</p>	<p>Culturally shared meanings given to nature and arguments for nature conservation. Conflict management through communication and by making meanings explicit.</p>	<p>Malla Strict Nature Reserve</p>
<p>Mika Marttunen The sustainable regulation of large watercourses (PRIMEREG) Finnish Environment Institute (SYKE)</p>	<p>The multi-objective development of the regulation of a large watercourse</p>	<p>To study the applicability of the decision-analysis interview method in the analysis of the preferences of various stakeholders and to support the collaborative planning process.</p>	<p>Lake Päijänne</p>

[... ...]

7. Conclusions: elements of a successful conflict management process

We have used various game-theoretical models of social dilemmas to characterise different strategies of actors engaged in natural-resource management. We have argued that “the tragedy of the commons” is not a typical resource-use situation, and that models have to be modified to include more than just the one-shot prisoner’s dilemma it characterises. Moreover, problems involving complex and uncertain knowledge and differences in interpretation frames (of knowledge, the dispute situation itself, and the conflict-management strategy) complicate the situation more than a pure game-theoretical model can ever capture. Even the analysis of distributional disputes, and of how and why the trust that is essential for co-operation in resource management has emerged or disappeared, requires an understanding of the whole existing structure of the relevant social and institutional settings.

In this article, we have provided a framework for the synthesis of possible theoretical models characterising disputes and their management strategies, and have used case studies from Finland by way of illustration. Our discussion and conclusions are preliminary, since the framework should be more rigorously evaluated in each case study. Thus, it is not our intention to offer any conclusions or lessons to be learned that could be directly generalised. Below, we rather list five elements that appear to be important in conflict management processes according to our theoretical discussion and the case studies.

1. There has to be a credible alternative option for co-operation that affects the actors’ payoff assessments.

In game-theoretical terms, there was in the Lake Päijänne case a credible “retaliatory” option that would “hurt” the non-co-operators sufficiently in the future (i.e. that would outweigh the immediate benefits of non-co-operation). This suggests that the amendments made to Finland’s Water Act in 1994 with regard to the revision of old regulations supported co-operation between stakeholders. This is a very significant improvement and a dramatic change compared with former practices, because the Water Court process was earlier seen as the only option to resolve conflicts caused by water regulation and construction work. These legal proceedings were time-consuming and expensive, and often exacerbated existing conflicts, while the outcomes of the judicial processes often came as a surprise to all participants.

The full significance of this element becomes obvious if water regulation is compared with forestry planning. Metsähallitus, for instance, has been a pioneer in developing a proactive conflict-management strategy through participatory planning. In this case, too, the initiative was voluntary, and the processes have exceeded the requirements of the legislation with respect to public involvement. However, the fundamental difference lies in the situation in which co-operative, participatory processes were initiated. In the case of water regulation, alternative co-operative approaches were developed to avoid lengthy and unsatisfactory court processes, which resembles the idea of the so-called Alternative Dispute Resolution (ADR) framework applied particularly in the United States (see Carpenter & Kennedy 1988, Lewicki et al. 1992, Walker & Daniels 1997). In contrast, there was no such a feedback mechanism in the

Metsähallitus case, as forestry planning decisions are not open to appeal. This difference is highly relevant, since knowing that failed negotiations will lead to court proceedings pushes the parties, including those with the most power, to succeed in negotiating an agreement. In other words, the parties' best alternative to a negotiated agreement (BATNA) in the case of water regulation is unattractive enough to encourage them to seek agreement, while it is asymmetric for parties in the forestry-planning case: should Metsähallitus choose not to seek consensus for some reason, the dissatisfied parties are left with fewer alternatives than if there is an appeal process.

2. The management process has to include sub-processes in which mutual trust between the actors (including a public manager or a third party) can emerge.

As argued earlier, actors are conditional co-operators in the assurance game. In other words, to co-operate they must be sufficiently assured that others will co-operate as well. Thus, in the context of the assurance problem, in which the sustainability of co-operation is a marginal matter, the presence or absence of this assurance or trust will affect the extent to which co-operation succeeds (Seabright 1993).

In order to generate the necessary assurance in the Lake Päijänne case, special emphasis was placed on public involvement and the openness of the planning process. As also noted in the Malla case, one crucial aspect of this planning process was the face-to-face relations. Warren (1999) argues that the reason for this is, "Because mutual respect and tact are more likely in face-to-face relations, narratives are more likely to focus upon self-characterization and to do so in ways that function as assurances, focusing not simply on differences, but also on shared commonalities and predicaments."

Thus, face-to-face deliberation in planning processes may challenge the narratives (or characterisation frames) that demonise opponents by producing alternatives that provide assurance. Furthermore, Warren (1999) argues that the public character of planning processes enables them to provide a sort of "display of public reasons or reasoning" that may help to "break vicious cycles of trust, betrayal, and cynicism in favour of a more benign and progressive principled opposition of arguments." Warren also notes that people are more likely to tolerate principled disagreements than betrayals of trust. Thus deliberation based on public argumentation could develop reasoning that would "justify compromised interests and identities."

According to Laird, deliberative participation also "makes people more aware of the linkages between public and private interests, helps them develop a sense of justice, and is a critical part of the process of developing a sense of community," (Laird 1993, in Beierle and Cayford 2002). It is suggested in the literature on collective dilemmas that establishing a sense of community is an essential mechanism for solving the problem of the supply of a new management institution (see Section 6.1 above, i.e. to avoid the second-order collective dilemma in terms of supplying the new institution in order to resolve the first-order dilemma) (Bates 1988, Ostrom 1990).

Mixed processes incorporating strong economic interests and distributional problems, may severely hinder the emergence of a co-operative process and the role of a third party could be vital in enabling co-operative (integrative) discussion to emerge regardless of conflicting distributional interests. In this it is essential to allow the

actors necessary assurance about the current character of the process. As in the case of Lake Päijänne, one possibility is to use working groups or subcommittees in which information can be exchanged and that promote open and confidential discussion.

If working groups are used, however, it is crucial to address issues of power relationships. Powerful actors may interfere with the working of the groups or in the process of reaching co-operative and fair solutions regardless of the availability of the alternative “retaliatory” option. As Tidwell (1998) notes, even with the best intentions, mediation may be used as a method for maintaining control by the powerful over the weak in that conflicts may be hidden and procedural fairness denied. Thus, a strong third party, particularly when it is a public manager or a state authority, must carefully analyse the dispute at hand. As the case studies show, an inaccurate policy frame and the resulting conflict-management frame in a public manager may indeed lead to the escalation of a dispute and not to resolution: successful conflict management depends not only on accuracy in terms of frames, but also on a credible institutional framework that would (re-)establish the necessary trust in the dispute-resolution process. What is essential here is to establish explicit and reliable roles for the third party and management authority.

3. Questions concerning the third party and the managing authority need to be addressed in terms of giving them explicit roles and a clear division of commitment and entitlement.

It is critical in successful conflict management that any third party is considered trustworthy by the disputing parties. In the conflict involving State forestry and reindeer herding in Inari, for example, reindeer herders consider Metsähallitus one of the disputing parties and thus not a reliable third party. From their perspective, the resolution process is unacceptable as long as one of the disputing parties is making decisions unilaterally.

Furthermore, as our cases show, in a multiple-use situation, not all users necessarily possess the authority to act on the basis of the knowledge they have. The use of reindeer pastures by other land users, for example, is regulated by Metsähallitus, as well as by municipal or regional zoning – all processes in which the herders have no formal voice. Thus, even if all of those concerned could agree that a pasture was being overused, and that something should be done, they would have limited means to act. So far, reindeer herders have been virtually excluded from other than internal options – such as beginning winter-feeding, reducing the numbers of reindeer and herders, building fences, replacing workers with machines, beginning capital intensive-farming, and getting a second job.

Unclear and shifting roles of a third party and a managing authority noticeably undermine the credibility of efforts to establish an institutional framework for conflict management and sustainable resource use. It is thus vital that the roles and the corresponding commitments and entitlements required by the managing system – be it based on the managing authority of a public manager or a community of users – are explicitly defined during the conflict-management process accepted by all parties. This does not necessarily mean that the public manager has to give up his or her formal decision-making power – a point often raised by administrators. The dispute-resolution process may be informal, and bind the public manager or the administrator

only morally. Thus it is possible to achieve the goal of maintaining legal authority at the same time as reaching a commonly acceptable solution (Susskind & Cruickshank 1987, Carpenter & Kennedy 1988).

Moreover, all the different levels of administration and decision-making that affect the process and substance show to be present in the solution-seeking process. This should not be seen as an either-or issue in terms of the level of hierarchy on which the decision should be made, but should be perceived as a both-and matter. For example, regardless of the degree of trust and co-operation, local stakeholders are incapable of resolving disputes that are caused by regulation on the higher levels of the hierarchy. Similarly, top-down decisions may be ineffective if their implementation is blocked by protests on the local level. Co-management thus requires the involvement of all relevant levels of the hierarchy in the process and in the decision-making. Herein lies its greatest promise, based as it is on multiple layers of nested enterprises, but also its toughest challenge, as the case of lake fisheries has shown.

4. The management process has to take account of the frame differences between the actors (including the public manager) and inside their organisations. The process designer (or a third party) has to address these frame problems so as to enable a learning process to emerge. Comprehensive analysis of resource use (i.e. addressing knowledge problems) and actor preferences could have a crucial role in decreasing the negative impact of frame differences in the management of multiple resources.

According to Schön and Rein (1994) one way of overcoming frame differences in policy controversies is to introduce a “situated, frame reflective policy practice” in the course of which conversation parties “must be able to put themselves in the shoes of other actors in the environment, and they must have complementary ability to consider how their own action frames may contribute to the problematic situations in which they find themselves.” At best, such reflection could mean a learning process (Leskinen 1994, Webler et al. 1995) through which parties reframe their identity and characterisation frames, and which makes cooperation possible even when there might remain unresolved controversies in underlying values.

As in the Päijänne case, many related subprojects produced plenty of new information on the social, ecological and economic effects of regulation. The decision-analysis approach was applied in order to manage the whole complex problem, and to gauge the preferences of the various stakeholders. These elements together improved communication and trust between the stakeholders and advanced their abilities to put themselves in other stakeholders’ shoes. The interviews were a crucial element in this learning process in that they improved both the overall understanding of this complex problem and the communication, and also facilitated the articulation and analysis of respective values. Moreover, the decision analysis clarified the differences between the stakeholders’ values and their importance in the comparison of alternatives.

Comprehensive assessment of the regulation also enabled us to find a regulation practice that would reduce the harmful effects on the water ecosystem and recreational use and still serve the original objectives of the regulation. In this sense it facilitated the reframing of the policy situation from that of a zero-sum game to an integrative process through which a complementary and common solution could be found.

5. The conflict-management process should be taken as an essential aspect of ongoing co-management practices, not as a distinct phase of conflict resolution.

We have analysed interconnections between two distinct management practices. On the one hand we considered the problems characterised by “the tragedy of the commons” in managing resource use on a sustainable level, and on the other we focused on policy disputes and conflicts concerning the sustainable management of natural resources.

Management problems connected with the resource use may be pure coordination problems caused by limited knowledge about the resource itself or about the behaviour of other users. What our case studies show, however, is that in most cases these coordination problems are deeply interconnected with conflicting frames, i.e. underlying structures of beliefs, perception and appreciation held by the multiple users of the resource. Thus, most of them are not resolvable purely by organising better inter-user coordination: the starting point should be a conflict resolution process of some kind.

At the same time, it seems to be established from the cases of the multiple use of natural resources that a distinct conflict-resolution process that does not address the problems of supplying a credible resource-management institution (with reliable monitoring guaranteeing sufficient commitment) will most probably not provide an enduring solution. It would rather seem evident that fair institutional resource-management practices that cope with disagreements and policy controversies between users (and also possibly the public manager), are most likely to ensure sustainable management of both the resource and the conflicts concerning its use. As we have argued, essential to such an institutional setting are symmetric alternative options to the negotiated agreement (BATNA, e.g., a chance to appeal), and sub-processes in which knowledge gaps and frame differences can be deliberatively negotiated. Finally, it must be emphasised that public managers should be openly aware of their challenged role, particularly when they are at risk of being considered a disputing party by the other parties. In our cases, the roles of the third party and the public manager were mostly the same, which caused some problems due the mistrust the resource users had of public administration. Most of our case analyses would suggest dividing these roles, or at least educating public managers in facilitating conflict-management processes. As Finland lacks specialised training related to conflict management in natural-resource issues, this is a clear developmental need.

Above we have identified five elements that appear from our analysis to be vital in the management of conflict as a means to securing the sustainable use of natural resources. Although we emphasised the need for fair institutional settings that allow co-operation between the parties to emerge, it is also worth reminding the reader that the absence of disagreement and conflict could also be a problem from the democratic perspective. As we argued, it is disagreement on some level rather than agreement that characterises the normal state of a democratic society. Thus the aim of conflict-management processes should not be to eliminate disputes or conflicts.

Similarly, there is wide agreement among scientists and practitioners that public participation should not focus too much on dispute resolution and consensus finding (e.g. Coglianesi 1999, McDaniels et al. 1999). As was evident in our case studies, one reason for this may be that many policy conflicts are so complex and permanent that there is no final solution. Furthermore, there may be institutional and structural dynamics (e.g., institutional agreements, interorganisational relations) that make it difficult to solve the problems (Waage 2003). In these situations, productive dispute might be the most preferred option: the parties could use non-co-operative strategies but without incurring the destructive derivatives of escalated conflict (see also Lewicki et al. 1992). At best, research into conflict management could offer productive strategies by analysing the conditions of these situations. We have done our best to provide some theoretical tools and practical case studies in order to facilitate further research and discussion.

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