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Strategic Environmental Management Analysis: Addressing the Blind Spots of Collaborative Approaches

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HIGHLIGHTS

A POTENTIALLY MISLEADING COLLABORATIVE MODEL Over the last two decades, most approaches analysing or promoting environmentally motivated change have espoused a collaborative model of collective action. This model can become misleading if it reaches the point of downplaying the importance of challenging unsustainable activities through pressure and conflict.

AN APPROACH FOCUSED ON ENVIRONMENTAL ACTORS Strategic Environmental Management Analysis (SEMA) offers an approach that focuses analysis on the situation and activity of those actors who are acting in favour of specific environmental outcomes and on strategic factors and actions that may allow to obtain from other actors the changes that may deliver such outcomes.

FACING RESISTANCE TO CHANGE Strategic, organised resistance to environmentally motivated change is an important feature of most environmental issues. SEMA helps taking it clearly into account in the diagnostic of environmental management situations, of environmentally related organisational dynamics, in policy evaluation and in the assessment of environmental management sets of guidelines.

FAVOURING MORE PLURALISTIC DEBATES Since it focuses on the conditions for the satisfactory resolution, in given cases, of specific environmental issues, SEMA does not attempt to cover systematically all dimensions and concerns of sustainable development. But, as it works towards clear answers on the environmental dimension, it welcomes other approaches to clarify other dimensions and concerns on their own terms, eventually leading to better informed and more pluralistic dialogue, negotiation, or public confrontation.

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Summary

Essential environmental issues will not be resolved without major changes in resource exploitation patterns. For this, relying on more dialogue and coordination between stakeholders is unlikely to be sufficient. It also requires strategic action to obtain changes from some stakeholders. To capture this fundamental dimension of environmental action, the author and his research group have developed over the last twenty years an approach for strategic environmental management analysis (SEMA). In this paper, we present the framework at the basis of the SEMA work. In the diagnostic approach to environmental issues it guides analysis by (re)framing along five lines: (1) separating clearly the actual management of the ecosystem (even if it seems bad enough to constitute no management at all) from the intentional management (that is, those interventions that aim mainly at improving the ecosystem's condition); (2) devoting separate and distinct attention to those stakeholders acting in favour of solving the environmental problem at stake; (3) analysing other actors in clear view of the activity sectors they are involved in – sectors that structure in a multi-scale fashion the way natural resources are exploited and environmental impacts are generated; (4) paying explicit attention to the adversative dimension of environmental (and anti-environmental) strategies; and (5) founding strategic analysis on one (or a small set of) inevitably somewhat contingent, but clearly defined, environmental concern(s). Through examples of SEMA-based research, the paper then exemplifies four application types: the diagnosis of environmental field situations; the analysis of environmental strategies of organisations; policy evaluation; and the critical discussion of environmental and resource management doctrines. Overall, unlike integrative approaches that try to encapsulate pluralism within their own controlled procedures and analytical frameworks, SEMA promotes clearly constructed analysis of the environmental dimension of complex management situations, a partial but carefully constructed viewpoint to contribute to open pluralistic decision-making debates.

Introduction

Brown bears are usually elusive, but can become annoyingly intrusive. Their omnipresence in human imagination, from toys to tales and imagery, reflects both our attraction to them, and fear of them. Efforts to conserve bears reveal or create complex situations and generate intense conflicts. Those who express concern about local and regional extinctions of bear populations are often met with the response that bears are not particularly threatened: there are still plenty, somewhere else, in remoter regions of the world. Overall, bears do seem to deserve their status as one of the emblematic issues in biodiversity conservation and, more generally, environmental management. In his book *Ghost bears – exploring the biodiversity crisis*, Edward Grumbine (1992) uses the all but extinct grizzly population of Washington State's Cascade Mountains as a textbook case to present and analyse the complex and acute dilemmas involved in conserving biodiversity. One striking aspect of his account is the tension between extensive administrative and legal efforts for conservation on the one hand, and on the other hand the intense and urgent pressure of development projects (logging, road-building etc.), both private and (largely) public, which run directly and apparently irresistibly against a conservation situation that is already in a fragile balance.

In our own work (Mermet, 2001, 2002, 2007b; Mermet & Benhammou, 2005), we used attempts to conserve the dwindling native population of brown bears of the Western Pyrenees (in South-Western France) as a test case for the analysis and critique of approaches to biodiversity conservation and environmental management. Despite obvious differences in context, we found here the main dynamics of the issue to lie in a similar tension between conservation activity and policies that have been fairly intense since the mid-1970s, and the obdurate pressure of sheep-farming and forestry interests, backed by public policy and running against conservation efforts. A special interest of the case, however, is that since 1994, management of the brown bear population of the Western Pyrenees has been entrusted to a local resource management institution (*Institution patrimoniale du Haut-Béarn – IPHB*) presented by its promoters and leading stakeholders as the innovation, the breakthrough even, that would allow to transcend the divisiveness of bear conservation issues and provide foundations for a collaborative and constructive approach to resources, ecosystems and bear management. The claims and working methods of this institution, its analysis of the situation and the values it promotes, closely reflect a powerful trend in the contemporary international literature (and policy discourse) that puts the quest for coordination of stakeholders and for collaborative procedures at the core of environmental management. This perspective provides a common foundation for quite diversified approaches – integrated management, co-management, adaptive management, ecosystem stewardship, sustainability of social-ecological-systems etc. From

their emergence as pioneering innovations in the mid-1970s and their massive implementation since the 1990s, these approaches have gradually become widely shared and can now be said to have thoroughly pervaded the field of environmental management. They have brought essential innovations in the way we organise the treatment of environmental issues, at all spatial and organisational scales. However, as they insist on the need and on the potential for the collaborative treatment of environmental issues, they tend to underplay their divisive and adversative aspects.

How should we interpret the predicament of bears in the Cascades, or in the Pyrenees: as rapidly progressing experiments in the shared learning of collaborative resource management and conservation planning, or as the continuation of ecosystem alteration and loss of biodiversity under the unrelenting pressure of resource-exploitation based development? In the Cascades, scientists are still trying to find signs of grizzlies from a population estimated to be between 0 and 20. In the Western Pyrenees, the last native bear disappeared from censuses in 2010, after 16 years of institutionalised innovative collaborative management. Those bears that are now struggling for existence in the Pyrenees are the descendants of a small number of bears that were re-introduced from Slovenia into the Central Pyrenees in the late 1990s, by an environmental NGO backed by the Ministry of Environment, which found support from some local officials and managed to overcome fierce (and continuing) opposition.

Again, in this introduction, bears are used only as an emblem standing for our overall situation regarding biodiversity and many environmental issues. Shall we be able to curb powerful trends in loss of biodiversity and ecosystem functions, and in environmental degradation? And in order to accomplish this, should we invest in a quest for more collective learning and collaboration, or in intensified struggles against environmentally unsustainable forms of development? Certainly, as with many political issues, both options are equally necessary. However, both are also partially incompatible in action: for instance, except when acting from a strong position of power, the same operator can hardly propose to collaborate with a given actor, while simultaneously acting aggressively against his environmentally damaging development projects. Action by some to build up tension and put on pressure for change, and action by others to decrease tension and integrate pressures, are two faces of collective action that are both essential and irreducible to one another. Each founds a deeply different perspective in both theory and practice.

Our critique here of the collaborative perspective and our long-standing quest for an alternative founded on the perspective of strategic action for change does not mean we think collaborative approaches cannot be highly productive and useful. What it does mean is that the collaborative perspective is incomplete: negotiation or collaboration, or integrative procedures and the like deliver environmental change only when, and only to the extent that, enough pressure has been built in favour of such change; and that pressure more often than not involves divisive and strategic action by groups in society that press for environmentally motivated change. It is also a critique that we express at a stage when collaborative approaches have built up over the last twenty years to the point of becoming almost hegemonic today. Since they are both incomplete and hegemonic, they affect deeply the diagnosis of problems and debates on environmental management through insufficient analysis of the divisive forces in environmental situations. They also tend to limit proposals for action by ignoring, misrepresenting or de-legitimizing highly useful initiatives to build more pressure, to take on board also in practice the adversative component of environmental management action. Indeed, many recent and on-going cases that we have examined, or that have been researched in-depth (see in particular Billé, 2008; Leroy, 2006; Taravella, 2008) point to the fact that, even under a barrage of collaborative environmental management language and procedures, achieving a directional change towards more environmentally sustainable social-ecological systems cannot rely solely on better coordination between stakeholders. It fundamentally depends on deliberate, strategic action for change by a minority of awareness-raisers, activists and innovators, who must often confront other stakeholders that defend (passively or actively) a non-sustainable status quo or environmentally detrimental projects.

Over the last two decades, as a counterpart to the rise of collaborative approaches, we have developed a strategic environmental management analysis (SEMA) framework (Mermet, 1992; Mermet, Billé, Leroy, Narcy & Poux, 2005). It facilitates the inclusion of the strategic, and thus partly adversative, dimension into the analysis and practice of environmental management. Both case studies and practical experience have shown how essential it is, even in settings dominated by collaborative management procedures and discourse.

This paper gives an overview of the SEMA framework and opens discussion on how it can provide a necessary alternative to approaches based on the collaborative paradigm. We will first sketch out the fundamental collaborative underpinning model shared by most contemporary approaches of environmental management. A second part will identify the blind spots inherent in the framings and principles of the collaborative paradigm. The SEMA framework will then be introduced, focusing on the way in which it conceptualizes and reframes notions such as management, environmental actors, strategy and the organisational context of environmental management and goals. It will be shown how these reframings support a change of perspective, away from views centred on collaboration, and provide a stable foundation for grasping the more strategic side of environmental management. A fourth part illustrates how, through such reframing, SEMA can provide specific and relevant insights in applications like the diagnosis of environmental management situations, policy evaluation, the analysis of organisations involved in environmental management, and the critical discussion of environmental management approaches. The conclusion will focus on the difference and complementarity of collaborative approaches and strategic analysis.

1. A widely shared foundation of assumptions and principles, based on the construction of collaboration

Since the mid-seventies, environmental initiatives and policies have soared, while environmental challenges have become ever more acute. In the rapidly expanding literature, many different approaches to environmental management have been proposed, each advocating its own way of diagnosing problems (or the environmental crisis in general) and pointing towards favoured avenues for action. In our view, over the last decades the most influential works have converged towards a shared paradigm that puts at the core of environmental management the search for processes (mostly procedural avenues of action) that will allow initially divided societies to transform themselves into unified managers of ecosystems.

The purpose of this paper is to present a perspective and analytical framework that clearly stand outside that collaborative paradigm. But the latter has become so prevalent and pervasive that it has become difficult to expound and discuss our strategic approach without situating it from the outset relative to the collaborative paradigm. To that effect, we start here with a discussion of this paradigm. Since our aim is just to give a general view of it as a background for our main topic, we are not proposing a detailed state of the art of the literature. Rather, we have based ourselves on a limited number of texts (see citations below) which themselves present already highly elaborated syntheses based on the vast literature promoting environmental approaches that we consider to be essentially collaborative.

By treating the whole set of collaborative approaches as a whole here, we certainly do not discount the very real diversity of approaches, the vivid controversies among them, nor the fact that dissenting voices exist within the consensus-seeking trend (for a recent skeptical view, see for instance Koontz & Thomas, 2006; for an early dissenting whistle-blower, see McCloskey, 1996). The most influential contemporary approaches indeed have different notions of coordination and collaboration. They recognize and address dissensus and conflict to different degrees and in different ways. But despite such diversity, they do so in a much more passive way than approaches that ascribe a central role to dissensus and conflict not only in observing the dynamics of environmental problems, but also in the search for solutions and in avenues for action. This contrast is immediately apparent when the bulk of the environmental management literature is put into perspective with radical critical approaches to the environmental crisis,

that tend to disqualify environmental management in favour of deep political change (see for instance Kovel, 2002). But, as the remainder of this paper will show through discussion and examples, it also becomes clear that an approach such as strategic environmental management analysis, while remaining within the scope of environmental management, gives a central role to its underpinning contradictions and thus to its confrontational dimensions.

Opening a debate between our strategic action perspective and collaborative approaches taken as a whole is also made easier and timely by the fact that in recent years there has been a striking convergence amongst the latter, claimed or promoted by the influential authors or groups in the field, on whose writings the subsequent discussion will be based (Armitage et al., 2009; Chapin et al., 2010; W. C. Clark, Crutzen, & Schellnhuber, 2005; Ostrom, 2007). The emerging picture of a "new paradigm" (Imperial, 1999), or "emerging consensus" (Armitage et al., 2009) is all the more significant as it seems able to combine approaches that are important each in its own right and that have each evolved from a very different background. Adaptive management (Holling, 1978) and ecosystem-based management (Grumbine, 1994) started from the intention to make management processes capable of taking into account the inherent complexity, variability and uncertainty of ecosystem functioning. Alternative dispute resolution (Bingham, 1986; Susskind, 2009) arose from the conflicts generated by environmental issues and their resolution through procedures such as mediation and joint-problem solving, leading to various forms of co-management (Carlsson & Berkes, 2005). Largely beginning from the study of local situations, specialists in the management of common-pool resources (Ostrom, 1990) focused on understanding how resource users can create institutions to solve the dilemmas linked with competitive appropriation of resources from ecosystems, gradually expanding to a general approach of social-ecological systems (Ostrom, 2007). From an opposite end in terms of scale, scientists studying global change, as they constructed the research agenda for their field, factored in the human dimensions of global change from an early stage and joined the search for an approach to manage social-ecological systems (W.C. Clark, 1986; W. C. Clark et al., 2005). The gradual convergence between such different movements is in part an effect of active discussion and exchanges within the environmental field, as illustrated by combined approaches such as "adaptive co-management" (Armitage et al., 2009) or ecosystem stewardship (Chapin et al., 2010), the latter combining global change and ecosystem management perspectives. It is also connected with wider transformations well beyond the environmental field in the concepts and practice of policy and collective action, for instance with the rise of public and stakeholder participation, the emergence of science-technology-society relations as a major field of academic enquiry and social experimentation, the development of conflict resolution and increasingly sophisticated procedural mechanisms to seek quality in private production and public services.

What are, then, the major elements of the prevailing consensus? The diagnostic approach shared by the authors rapidly reviewed above, based on the writings of many others, can be summarized in four points. (1) What we have to manage are very complex, dynamic and changing systems, both ecological and social, the two dimensions being intertwined. (2) Multiple managers and stakeholders are involved, with a tendency towards fragmented, divisive and competitive – and thus counterproductive – social dynamics. (3) The knowledge base for management is riddled with uncertainty and surprise, which deeply challenges the use of scientific knowledge in policy making. (4) Embedded geographical and organisational scales, from the global to the local and back again, are central elements to enable differentiating between, and linking together, the bewildering array of problems and action situations associated with social-ecological problems.

Based on such analyses, six assumptions and principles for action are repeatedly underlined in the texts we cite above, reflecting the most influential streams of current environmental management literature. (1) It is essential to involve all stakeholders, to seek improved relations and communication and to build collaboration. (2) Scientists, managers and stakeholders must invent new ways of working productively together, avoiding traditional ivory towers. (3) Management is to be conceived in terms of

a process (of learning, trust building, experimenting, etc.) rather than in terms of substantive choices. (4) The manager's most essential and innovative role is as a designer and facilitator of such a process. (5) Solutions rely essentially on institution-building and rule-making, or planning, because these are seen as providing ways to move beyond the negative collective consequences of poorly coordinated individual actions. (6) In terms of scale, the attention is essentially focused on the quest for local social-ecological sustainability, and on global regimes.

From our own strategic management perspective, the most fundamental feature of this prevailing consensus is that it gives a central place to the search for conceptual and operational unity of agency to address environmental challenges. It recommends simultaneously seeking a consensus on reflection ("we" should sit around the proverbial table and think the situation through together), on accountability ("we" are all responsible for environmental problems) and on agency ("we" should act together). Not all authors go to the extent of seeing "humanity" as a "global subject" managing the "earth system" (Shellnhuber, 1999), but all seek increased coordination at all levels, through the concepts they use and the methodologies they promote. When seeking "a collective vision for the future" (Chapin et al., 2010) or "a certain sense of common purpose" (Armitage et al., 2009), when focusing on trust building, institutional development and social learning, the prospects for future sound management of ecosystems and resources are put into the hands of communities in the making. It is to allow the emergence of such communities, which are to become able to manage in a unified manner a given ecosystem or resource, that procedural solutions are given such salience in the literature and in practice. Examples range from innumerable participative action plans, or round-table arrangements for the management of local resources and environmental issues. Prominence is given to initiatives such as the "Grenelle de l'environnement" that has structured French environmental policy making since 2007, the latter being based on a "five partners" negotiation pattern involving national government, industry, unions, environmental NGOs and local governments. In this context of aiming for unified deliberation, accountability and action, the role of the researcher is essentially seen as joining the mutual effort to "contribute knowledge for the general process of policy-making and problem-solving" (Carlsson & Berkes, 2005; ComMod, 2005).

2. Blind spots of the coordination paradigm

Authors and approaches that focus on the quest for unitary agency in management, with the intention of contributing to collaborative processes, tend to downplay some highly divisive issues, even though such issues are crucial for environmental management. Four blind spots in particular should be underlined.

First and foremost is the question of agency: who is going to take action to change a social-ecological system? For instance, if ecosystem stewardship is "a strategy to respond to and shape social-ecological systems under conditions of uncertainty and change to sustain the supply and opportunities for use of ecosystem services to support human well-being" (Chapin et al., 2010), then who exactly is the strategist? Is he himself part of the system, in which case his management effort is one of changing a social system from within, and belongs at least as much to politics as to "planned social-ecological experiments"? Or is he external to the social-ecological system, for instance, a distant policy-maker, or a "diagnostician [able] to match governance arrangements to specific problems embedded in social-ecological contexts" (Ostrom, 2007), or someone in a position to "get the incentives right" so that people can "be induced to make production and consumption choices that are relatively less stressful to the environment" (W. C. Clark et al., 2005)? Answers to this question tend to remain vague and rely ambiguously both on present policy-makers and managers as they are, and on a hopefully emerging unified and well-intended management collective. This is an important blind spot: when it comes to a management strategy, who exactly is going to define and apply it is a crucial issue.

A second blind spot of collaboration-based approaches lies in their irenic view of strategy. Such approaches tend to disown environmental conflict by presenting it, for instance, as belonging to a former era when an inadequate

"traditional competitive framing" staged "a contest between environmental protection and human development" (W. C. Clark et al., 2005) or when "conventional resource management [was] pitting stakeholder groups against one another" (Armitage et al., 2009). Of course, all the authors we have cited are aware that change creates winners and losers, and that sustainability requires difficult tradeoffs. So negotiations are evidently necessary, but again, most approaches insist systematically on the integrative dimension of negotiations, whereas negotiation theory is very clear about the fact that the distributive and adversative dimensions of negotiation are equally important to consider (Fay, 2007; Walton & McKersie, 1991 [1965]). In a similar way, organisational dynamics such as interagency conflict, competition and bureaucratic "turf defence" are seen as a part of the problem that is bound to be ironed out with the emergence of unitary, cooperative management arrangements. However, such structural organisational conflicts, based on the distribution of partly contradictory mandates, are inherent to any organisational structure and dynamics, so that transformation towards sustainability requires changes in, and through, organisational conflicts, rather than their disappearance. Finally, there also seems to be a consensus in assuming that more information and transparent debate is essential to the emergence of unified management. This is often relevant, but goes with a strong temptation to downplay the highly strategic and political – and thus, partly adversarial - character of data, information and the construction of scientific knowledge and technical innovations (Mermet & Benhammou, 2005). As Crozier and Friedberg (1977) state in their theory of organised action: "uncertainty in general, or specific uncertainties [...] are the fundamental resource for any negotiation [...]. What appears as uncertainty from the point of view of the problem at stake constitutes power from the point of view of actors." Strategic naivety is not more relevant in the field of public participation or technical democracy than in the other dimensions of environmental issues. Approaches based on deliberation theory are the equivalent in this field of collaborative approaches, and share the same limitations (Mermet, 2007a).

A third limitation lies in the treatment of intertwined social and ecological systems and action networks that are almost impossible to demarcate. A local community neatly managing the resource it lives on, or an international regime focusing on a problem like climate change, are extreme cases where the ecological system, the social system and a given sustainability concern seem – at least for a time - naturally aligned. But in general, managing a given environmental concern consists in trying to align heterogeneous webs of relations (ecological, hydrological, social, political, legal, economic etc.) that cut across scales, organisations and fields of expertise (Carlsson & Berkes, 2005). As they focus on local and global views, authors propose to treat this issue in terms of resource management regimes, or ecosystem management arrangements, being embedded in wider contexts in ways that could be mapped systematically (Ostrom, 2007). If one considers, however, the myriad of problems, environmental or otherwise, that humans are trying to deal with at all scales, the concept of intertwined hierarchies (Godard, 1996) seems more promising than a concept of embededness which hierarchizes the multiple dimensions at play in a way that is too limiting. Expanding on Godard's view, a particular hierarchy (i.e. a particular embeddedness) of concerns, actors, solutions can be associated to each one of a number of problems. Each problem participates in setting the contexts for other problems, in intertwined webs of conditions and agency. A generally accepted shared mapping is then beyond reach and any mapping can only be relative to a given problem, or a limited set of problems. However, whereas such a perspective fully acknowledges the complexity of social-ecological systems, it also sets clear limits on efforts that focus exclusively or mainly on building cooperation and unity of action around a widely shared mapping of sustainability issues.

To sum up, the current focus on collaboration and on the construction of unitary action for sustainability comes with relative blind spots in terms of strategic agency and of the treatment of the adversative dimension of action for sustainability; it limits the capacity to handle the complexity of sustainability issues. As their writings clearly show, however, the authors we have cited here can neither be accused of misperception of the agency issue, nor of naivety on resource or

environmental conflicts, nor of underestimating the complexity of social-ecological systems. The relative blind spots we highlight here are inherent not to their field experience or personal awareness, but to the collaborative framing that underpins the approaches they develop.

The construction of collaboration is only one side of environmental management. We concur with Carlsson and Berkes (2005), when they write that collaboration, rather than a starting point, or pre-condition of management, could be seen as a result, at a given point in time and in geographic and social space, of a wider set of strategic processes. And we would add: including especially adversative strategies. While collaborative approaches have developed over the last decades, reaching their current high level of influence in environmental management literature and policy discourse, they have, in our view, generated a growing need for an analysis of the more adversative, distributive, strategic side of environmental management. What is needed, however, is not so much research to show that there is power and politics at stake, as amply documented by political ecology (Robbins, 2004). Again, researchers and practitioners involved in the management of social-ecological systems are well aware of that. The need is for research that helps to encompass an explicit, coherent and constructive treatment of dimensions of power, conflict and strategy in analyses with an environmental management orientation i.e. aiming clearly at helping those actors for whom action for change in favour of the environment is a priority to design and implement successful strategies.

3. The strategic environmental management analysis framework

To obtain a clear view of the strategic action problems in ecosystem management and sustainability, it is necessary to operate within a conceptual framework that helps focus on the essential elements of such strategic action. The strategic environmental management analysis (SEMA) framework does so based on concepts which operate a reframing away from the cooperative paradigm's perspective, either by de-grouping notions that are usually fused together, or by revisiting concepts that have become blunt from an excess of consensus seeking. Let us review the five most important ones.

3.1. Unbundling management and providing a lexicon to describe environmental management situations in strategic terms

In very general terms, management can be conceived as deliberate intervention on a complex action system in order to maintain or improve its performance relative to expectations that have previously been made explicit. Management involves a set of performance expectations, accountability regarding performance, and strategic action for change – that is, to effect some changes (those that contribute to the expected performance) and prevent others (those that counteract that performance). How does that apply to managing social-ecological systems? The cooperative paradigm would have us assume (or design processes such) that all stakeholders operate jointly, agree on performance expectations, accept joint accountability, and act together for change. But most environmental management action occurs quite far from this ideal state of sharing and alignment of expectations, accountability and strategic action. To account for it, we propose a dual, dialectic concept of management, which defines and treats separately two dimensions of management.

- Actual, or de facto management of an ecosystem is the whole set of anthropic actions that, whether the actors realise it or not, whether it was their intent or not, have a decisive influence on the ecological condition of the system (more precisely, of those aspects of that condition that constitute the expected environmental performance). Its analysis includes identification of mechanisms by which these influences are exercised and of the places where the actions with the most significant impacts are decided.
- Intentional management, which could also be called interventional management, is the set of managerial actions (i.e. of interventions to bring about changes in actual management) that have as their main and explicit aim to reach expected environmental performance.

Consider for instance the management of

river water quality. If one starts from the principle that joint accountability exists for water quality in a river, then a factory discharging pollution, a dam intercepting part of the low ebb river flow, a sewage purification system, a farming policy subsidizing irrigation systems that pump water from the river and a series of demonstrations against on-going water polluting activities, are all examples of management actions that are decisive for a river's condition. Thus they should all be held accountable and considered part of actual management. In the above list, only the construction of sewage purification systems and the demonstration against pollution could be considered as intentional management, that is, as interventions to change the actual management of the river, so as to reach an expected performance in terms of water quality.

These definitions may be puzzling to those who see ecosystem management as the set of institutions and policies that have been agreed upon to attempt to tackle the environmental issues faced by a particular ecosystem: international environmental regimes, integrated management institutions (for a watershed, coastal area etc.) and the like. But much that is decisive for the ecosystem – and thus for management accountability - occurs outside of such instituted management systems, through cross-scale linkages that may be ecological, social, political, economical etc. (Armitage et al., 2009). In addition, many aspects of action to change the course of ecosystem degradation are excluded from such a management view, e.g. the actions of environmental activists, which many case studies show are instrumental in the inception of a collective capacity to steer away from unsustainable courses. SEMA proposes to set a wider framework, encompassing the entire dialectic between actual management and intentional management through which the future of an ecosystem is played out over time. In a given case, current institutionalized management arrangements, as they have evolved over time from that very dialectic, form a part of that picture; a part that varies in importance and may be incomplete or sometimes deceptive, depending on how close the field situation is to a hypothetical unity of expectations, accountability and action. At any rate, centring analysis on the current set of institutionalized management arrangements provides no guarantee of a sound diagnostic investigation into the management of an ecosystem or environmental problem.

We may illustrate these concepts by elaborating on the provocative assertion of Clark, Crutzen et al. (2005) that "humanity has emerged as a major - and uniquely self-reflexive – geological force". In this context, we would consider humanity as a geological force to be the actual management of the global ecosystem. We would take reflexivity to consist in some of us being able to hold all of us accountable for that force – that management - and its consequences. Finally, intentional management of the biosphere would consist in the strategic efforts of those who act on others to change the ways in which humanity exercises its geological force, so as to steer the earth system away from ecologically unwanted courses.

One major rationale for this reframing is the necessity to break away from perspectives that see the main challenge of environmental management as overcoming a lack of organisation, as exercising more organisational activity to limit "a deluge of entangled but uncoordinated actions" (W. C. Clark et al., 2005). Indeed the forces leading to massive biodiversity loss, or radical transformations and degradation of hydrosystems for instance, are not unorganised: au contraire, they consist of highly organised policies, industrial sectors, technical research institutes etc. The challenge is not so much one of building organisation where there isn't any, but of changing the unsustainable ways in which many activities are – often very strongly – organised. Actual management situations that we consider to be detrimental to ecosystems and sustainability may be organised in largely tacit or dysfunctional ways, or by means that elude environmental accountability, but they should not be considered unorganised. By considering environmental management as a set of activities that essentially aim to change highly organised unsustainable systems of resource or land management, we shine a spotlight on its strategic dimension.

3.2. Focusing on the actor supporting the environmental concern

In terms of management action, an environmental problem translates as a need for action to change current, actual management,

through a strategic management intervention. But who is going to carry out such intervention? In answer to this question, cooperative approaches tend towards the conclusion that all stakeholders acting jointly should take action. Even if one accepts this view and supposes that stakeholders all share a common interest, it entails the problem that one stakeholder has to take initiative, take a risk and bear the costs of providing the necessary coordination and organizing the capacity for such joint action (Ostrom, 1990). In most real life cases, the challenge is made more intense and complex by the fact that the environmental concern at the basis of a given environmental management situation is not really shared by all stakeholders (witness bear conservation, but also climate change, tropical forests, etc.). Often, some very powerful stakeholders implicitly or explicitly act against the resolution of the environmental problem. Therefore action to resolve a problem – intentional management – has to be borne out not so much by all actors involved, than by some that take the matter in hand (the etymological origin of "manage"). To understand the strategic issues in an environmental management situation, it is essential to focus attention on identifying the environmental strategic actor in that particular situation.

This aspect of the SEMA framework is justified first on an empirical basis. Whenever one studies the way in which a given environmental problem has been identified, put on the agenda, actively tackled and perhaps solved or improved, one finds that the action taken was borne in crucial ways by specific actors, such as concerned scientists, environmental activists, farmer groups actively promoting non-polluting production systems, environmental agency personnel etc. Such action is often taken in opposition to other stakeholders that may show indifference, reticence or violent resistance. It is important to note that the contexts of environmental action have become increasingly complex over recent decades. Cases in which a lone activist group faces a bluntly resistant "rest of the world" are becoming less frequent. Instead, one is more likely to find a situation where an often complex network of environmental actors confronts an equally complex group of stakeholders that express reticence and resistance to environmentally motivated change through ambiguous means and indirect strategic action. In this context, a sharp focus of analysis and fieldwork onto "who bears the action in favour of solving the environmental problem" may be less straightforward, but all the more essential.

Conceptually, the environmental strategic actor can be understood from different perspectives. (1) From a functional perspective, joint management of a social-ecological system – just like the management of a company – involves the treatment of a number of different concerns, of which a given environmental problem is only one. To obtain management that is in fact integrated, and where the associated tradeoffs have been made, one has to effect a management process that entails complex negotiation and decision-making. In our view, each concern in such processes, or at least each essential function that the system has to achieve (for instance, a certain level of agricultural production, water provision or recreational amenities) must be promoted by a distinct actor to ensure that effective negotiations can take place. This way, painful tradeoffs rest on a sustained defence of each of the perspectives, interests and functions involved, and potential synergies are the product of in-depth contradictory exploration and elaboration. (2) From a differential perspective, any action for any change in an action system induces a differentiation between those who promote it and those who do not. This differentiation causes numerous effects on the relations and interaction between actors. It has structuring effects that inter alia redefine the actors themselves – as exemplified for instance in the dynamics of party politics – and amplifying effects, evident for instance in the "spiral of conflict" described by conflict resolution manuals. Very often, the undesirable consequences of such amplifying effects lead some parties or analysts to negate the legitimacy of the differentiation of positions that lies at their root. This may help to defuse conflict, but undermines the potential for change that relies in the differentiation of positions. (3) From an organisational perspective, any significant promotion of a given concern in a decision-making process requires organised means of action. Consequently the promotion of a given environmental concern within a political social-ecological system requires the acquisition of dedicated, differentiated knowledge and expertise, personnel

to participate in discussions or to take action, training etc. Analyzing the organisational basis of the environmental strategic actor is an important part of any strategic analysis of environmental management.

To sum up, just as it unbundles the concept of management, SEMA differentiates the alleged collective "manager" of social-ecological systems. When focusing on the strategic environmental actor, it adopts in parallel functional, differential and organisational perspectives. These are obviously quite different and they often do not coincide. An NGO that labels itself as environmental may prove to be acting against the environmental cause it claims to promote (Rowell, 1996). A farmer group in conflict with the mainstream actors in the agricultural industry can be the main strategic operator for a change towards a more environmentally-friendly production system (for a prominent example, see Pochon, 2001). To be precise, in the strategic contexts of real life, the difficulty involved in concretely assembling the functional, differential and organisational bases for environmental action and managing the intense tensions that usually exist between them, is at the heart of building the capacity of strategic action in favour of a given environmental concern, which is the driving force of environmental management.

3.3. Focusing on activity sectors

As for other actors in an environmental management situation, SEMA directs attention in particular to the sector-based dimension of resource, land and more generally, environmental management. Environmental management is about changing (or preventing) specific environmentally harmful behaviour, for instance, farming practices that generate water pollution or biodiversity loss. Practical experience and field studies soon show, however, that the practices of a farmer, as well as his production system at the farm level, are very difficult to change on an individual basis: his choices are part of a wider context that includes the industry's technical support chain, trading organisation and market conditions, the training and culture of farming organisations and unions, all of which are set within the framework of rules and incentives enforced by the agricultural administration. The farming sector thus functions as a large, functionally highly coordinated organisation of collective action, in which technical, economic, educational, legal and administrative components share essential concerns and actively coordinate (partly formally, partly informally) their actions and strategies. This type of organisation extends from the level of the farm to that of the village, region, to national and then supra-national (e.g. European Union Common agricultural policy), and in very tangible ways reaches global levels (Food and Agriculture Organisation, World Trade Organisation).

The importance of sector-based organisation is similar in most fields that are at the heart of environmental issues: forestry, energy, transportation, building etc. When acting to solve an environmental problem – and thus to obtain changes in behaviour or projects – the environmental strategic actor effectively undertakes to effect organisational change in one or several sectors. This is indeed the case whether the actor operates from outside the sector (for instance, a ministry for the environment that tries to realize changes in forestry regulations that are governed by a forestry ministry), or when acting from within (for instance, when the environment service of a national farmers union acts to promote changes in the union's positions regarding a given environmental issue). This focus of SEMA on activity sectors is based both on the examination of multiple field cases of environmental management, and on the importance that environmental action strategies have to give to the organisational dimension of collective action. The organisational and strategic links within each activity sector are a major structuring factor in the strategic force field of environmental problems. It is essential to analyse these links carefully, in addition to the now traditional consideration of local community dynamics, of national policy making or of global regime negotiations. For instance, in examining the limits of co-management, focusing only on the state level and on local communities of resource users, Carlsson and Berkes (2005) insist that both the local community and the state are in fact heterogeneous and that in environmental cases, "we can expect to find rich webs of relations and agreements linking different parts of the public sector to a similarly heterogeneous set of private actors". In many environmental issues, activity sectors are the most decisive of

these "rich webs of relations and agreements". They represent major strategic forces facing the environmental strategic actor in his efforts to solve an environmental problem. They are also essentially multi-scale systems of organised action. Understanding these activity sectors is a crucial contribution to the analysis of the multi-scale organisation of resource management and of action (or inaction) for sustainability, which is widely recognized as a priority in contemporary environmental management.

Since the sector basis is viewed as an essential attribute, SEMA considers as "sector-based actors" those actors (industrial companies, forestry officers etc.) that display behaviour or conduct projects that create environmental problems – and thus may resolve them by changing. Facing pressure from strategic environmental actors for such change, sector-based actors have three fundamental strategic options: they can resist change by acting against environmental demands; they can integrate environmental concerns, for instance by changing certain technologies used; or they can promote a redefinition of environmental concerns and strive to reorient environmental action (for instance by trying to influence public perception) towards goals that do not call for changes they do not want to make. These options can be combined into the increasingly complex and ambiguous strategies sector-based actors have developed over the last two decades in response to growing environmental demands.

It is in the interactions between such strategies, and those of the strategic environmental actor, that environmental outcomes are played out: understanding these interactions is at the heart of strategic environmental management analysis. If strategic struggle is so essential, what then is the place of rule-making? In actual environmental field cases, the struggles between actors addressing a given environmental problem and the relevant sector-based actors are mediated, facilitated, arbitrated and regulated by other actors that are invested with either political, judicial or administrative authority (governor, judge or an administrator such as the French *préfet*), or by an operator with a mediation mandate. Of course, we do realize that, for those who put coordination at the centre of the picture, mediation, rule-making, political ruling, etc. are fundamentally different dimensions and processes. But seen from the perspective of action for change (for instance from the perspective of an activist group), they are simply different modalities of fundamentally the same process whereby their expectations and demands are kneaded with those of others in some sort of compromise.

Overall, the SEMA framework looks at the casting of actors in environmental issues as a triangular strategic game involving (1) a strategic environmental action that challenges (2) sector-based actions, forcing a struggle or negotiation and possibly calling into play (3) a rule-based or rule-making mediation or authority decision processes. This can be conceptualized as a triangle with a strategic environmental actor, a sector-based actor and a regulating actor. Again, an actor here stands for what is usually a complex strategic network of mobilization and action, only occasionally embodied by the stereotypical environmental activist, the producer or manufacturer opposing environmental measures and an arbitrating politician or judge.

While distinct from approaches that place rule-making and institutions at the centre of environmental management, SEMA neither ignores rule-making nor is it insensitive to its strategic importance. In fact, SEMA-based work is usually very sensitive to it. The difference lies in the relation assumed between regulation and institutional activity on the one hand, and action for change on the other. In our strategic perspective, rule-making cannot displace the balance of power between stakeholders by more than a marginal amount. What it can do is institutionalize a new balance of power, provided there is one. As a consequence, decisive action for change relies not so much on mediators and rule-makers as on those actors who strategically act to displace the balance of power, so as to make changes in institutions or negotiated agreements not only possible, but inevitable.

3.4. Restoring the full dimension to strategy

Mintzberg (in Mintzberg, Quinn, & Ghoshal, 1995) defines strategy as "the pattern or plan that integrates an organisation's major goals, policies and action sequences into a cohesive whole. A well formulated strategy helps to marshal and allocate an organisation's resources into a unique and viable posture based on its relative internal competencies and

shortcomings, anticipated changes in the environment and contingent moves by intelligent opponents." He insists on the multi-faceted nature of strategy as a concept and an activity (see also Mintzberg, Lampel, & Ahlstrand, 2005), which he summarizes through the formula "strategy as plan, ploy, pattern, position and perspective".

In the field of environmental management, over the last three decades, the concept has been used extensively. IUCN's 1980 "World Conservation Strategy – living resource conservation for sustainable development" is a milestone in the definition of current strategies. It clearly defined a perspective – sustainable development – and a position as it "reframed the modern sustainability debate by arguing explicitly that goals for protecting the Earth's lands and wildlife could not be realized except through strategies that also addressed the improvement of human well-being in conservation areas" (W. C. Clark et al., 2005). This perspective and position clearly pervade the current practice and literature in the field of biodiversity and resource management. Over time they have become patterns, models of proper action that almost automatically shape projects and discourse in the field. They are translated into action plans through national, regional, local or corporate biodiversity strategies.

The adversative dimension of strategy, however, tends to be attenuated in such documents, often to the point where it all but vanishes. Reading the 1980 IUCN "strategy", one finds no mention of "intelligent opponents", that is, of organised actors and actions that deliberately develop resource exploitation strategies that damage ecosystems and biodiversity. The "strategy" seems to be opposing only anonymous human shortages: lack of awareness, ignorance, insufficient coordination etc. Inasmuch as it privileges collaborative perspectives, much of the academic literature also currently tends, as we noted above, to underplay that dimension. When promoting integrative perspectives, it tends to posit the manager and researcher as facilitators, and often sees sustainable development as a collective participatory planning problem, or a "strategic planning exercise" (Shellnhuber, 1999) – that is, not the strategic problem of some actors confronting others, but of all actors jointly confronting a shared problem. Again, this does not mean that the adversative dimensions have not been perceived by the authors of such documents: the 1980 IUCN report expresses a turn in the strategy of the conservation sector, a choice motivated in part by the adversative force field experienced by conservationists at the time. But that dimension remains in large part implicit, as it does in much of the current literature on environmental management.

Having to deal with "intelligent opponents", however, is not an optional, but a fundamental dimension of strategy. Business or political strategies – not to mention the military – while they rely on perspective, position, patterns and plans, would be pointless if these did not deal adequately with competition and opposition. The reading of game theory, or playing a strategic board game such as chess, immediately teaches one the vast difference that exists between a mere plan and a plan that may work in the context of interaction with intelligent opponents. Practitioners of environmental management – that is, of interacting with intelligent sector-based actors to obtain changes in their behaviour and projects –experience intensely that intelligent resistance to environmentally motivated changes is an integral part of the field. It adds to practice a whole new dimension, on top of (or at the heart of) the complexities of collaborative environmental planning. The SEMA framework is intended to support explicit, systematic treatment of that dimension of strategic action for environmentally motivated change. Its dual concept of management and its differentiation between actors, are designed to set the stage for such analysis. Its main point is that environmental management is strategic not only in requiring a perspective, a vision and a plan, but also in having to achieve this, and to promote environmentally motivated change, in the face of active and intelligent reluctance and various forms of opposition.

3.5. Founding the analysis on a clearly defined environmental concern

The fundamental concepts of the SEMA framework – like actual and intentional management or the strategic environmental actor – can be defined only in reference to a given environmental concern. This may seem to contradict much of the recent literature in environmental

management, which tends to underline that environmental concerns often contradict one another, that what is seen as a problem by one actor is often seen as a solution by another, and prescribes approaches where concerns and environmental management goals have to be defined jointly by the stakeholders. Yet, one of the essential framing measures of the SEMA framework requires the analyst of an environmental management problem to start from a clear definition of the reference environmental concern that will serve as the foundation for analysis. What rationale motivates and justifies this position?

First, it answers one of the central challenges in the management of social-ecological systems: their extreme complexity, as underlined by most authors on the subject (and experienced by practitioners too!). To grasp it, everyone seems to agree that a systems approach is appropriate. The crux of the theoretical and methodological choice then lies in how this systems approach is conceived. One option is to consider that socio-ecological systems are given, they are concrete – the way we tend to see a horse, a car, a forest or a company as concrete systems – and that we have to study them in a way that cumulatively allows us to master their complexity, as science has allowed us to master other systems (Ostrom, 2007). The other option is to take the social-ecological system as notional, i.e., as a construct of the observer (Crozier & Friedberg, 1977) who chooses and organises elements of the complex situation at hand into a systems model. In the second option, it is the analysis that is systemic, that adopts a given systemic perspective and framework to produce readings of complex realities, rather than reality that would be made up of social-environmental systems to be uncovered, described, modelled and ordered by an all-objective analyst. SEMA rests on the option that we analyse systematically complex situations. Like soft-systems analysis (Checkland, 1989), it sees the construction of the system by the analyst as dependant on a previous definition of a concern and of an intention to act on it. It takes the social-environmental system – specified as the actual management system, intentional management and the associated system of actors etc – as a construct of the analyst, grounded in his definition of the reference environmental concern.

There are important benefits to this fundamental choice. Firstly, it helps to move beyond the difficulties – and often, the impasses – involved in trying to define and bound concrete social-ecological systems at scales intermediary between stereotypical local communities and their local resource-base, and the all encompassing unity of humanity and the biosphere. These difficulties appear as a chronic challenge in the social-ecological systems literature. Secondly, this choice aids the analyst since only the elements specifically relevant to a given concern need to be retained. This allows him to be more selective about the social and natural elements he posits together (the etymological meaning of system) in his system. He can then follow longer chains of causality and organisation across spatial and organisational scales – a crucial aspect of the contemporary environmental management challenge. A further benefit of this fundamental choice is that it cuts out much of the difficulty or impossibility associated with obtaining agreement between actors (including researchers) on a clear and precise definition of environmental problems and on the levels of ambition that should be pursued. By not getting bogged down in an indefinitely prolonged period of chasing the supposedly preliminary condition of agreeing on aims and criteria, the analyst can move on to examine why a given ecological problem exists, who causes it, and what the strategic management situation would look like for someone determined to deploy a strategy to solve it. In this way, citizens or groups who consider the specific reference issue that founds the analysis to be a problem indeed, and sufficiently important, can then participate in the democratic and managerial debate in an informed way.

These advantages come at what will be perceived by many as a cost: there is little or no chance that everyone will agree with the analysis, not because of facts, but because of its framing – the facts and issues it has chosen to include or exclude, based explicitly on the specific concern it set out to equip analytically for in-depth defence in pluralistic debate. The SEMA framework rests on a fundamental choice of where the locus of pluralism is expected to lie. In collaborative approaches, the aim is for both the environmental management process and the analyst to encompass

the diversity of stakeholders and their views and interests. The analyst and the manager are expected to take a position that is sufficiently external to the system, or posited so centrally and flexibly within the system (as facilitators) that their reading of it will be acceptable and useful to all. SEMA takes the opposite position, acknowledging that it is simply impossible for the analyst or the manager to extract themselves from the social-ecological system, and that it is impossible to fundamentally guarantee that they are inclusive and balanced in encompassing the plurality of actors, views and interests. As Clark, Crutzen and al. (2005) wrote: "Understanding sustainability is understanding a complex, dynamic system of nature–society interactions — a system made all the more unpredictable by both our interest in what goes on in particular places and by our active, reflective engagement in the system whose behaviour we are trying to predict". In other words, environmental management practice and research are actions and interactions within the system they are striving to manage. The strategic environmental management analyst renounces the notion of encompassing a system within an analysis that would internalize the whole pluralistic arena. He rather accepts the position of being one specific, clearly identified voice articulating precisely what is relevant for one specific concern, within the wider, un-enclosed, pluralistic discussion of problems and solutions of social-ecological issues. He accepts that there are other analyses, other frameworks, indexed on other reference concerns. He follows Deleuze's (1969) assertion that theory is but the thorough development of a given initial question. In pragmatic terms, and on more normative ground, the analyst feels assured (or worried...) that many resource exploitation concerns (for instance, extraction of wood resources from forests, or intensive agricultural production for the food industry) are already quite effectively being elaborated and advocated in their own right by dedicated analysts, often backed by sectors of the economy or of technology development, or by influential social movements. He thus considers that given environmental concerns ought also to be backed by specific in-depth analysis of the relevant action systems. For the strategic environmental management analyst, the potential consensus on the strong links between research and practical interests in the field of sustainability (W. C. Clark et al., 2005) translates into a framework that not only underlines differentiation between actors in social-ecological systems, but also between different research framings of sustainability issues. Each of these is based on its own specific reference concern, and is always partial (in both senses of the word) in the limited set of concerns it serves.

4. Bringing the framework to bear

Through the concepts reviewed above, SEMA operates a specific framing – or reframing – of environmental management issues, offering bearing points which guide analysis towards aspects of the management situation that are most important to those wanting to act strategically towards obtaining changes to solve a particular environmental problem. This can be useful for various kinds of applications. As we present the four main ones, we will underline how the SEMA framework effectively leads to specific perspectives and sheds light on areas that are left as blind spots by many other, particularly collaborative, approaches.

4.1. Diagnostic approach to conservation issues

The most immediate application of the framework is to guide the diagnosis of complex conservation problems; two examples of this application are given here.

The first is brown bear conservation in the Western Pyrenees, which has already been mentioned in the introduction. This situation has emerged as a real textbook example of what can go wrong when sector-based interests opposed to conservation strategically employ collaborative approaches. In the western part of the mountain range, a system of joint management has been put in place, which is presented by its promoters and by local farming interests as an example to follow for local, participatory management of conservation issues (Ollagnon, 2003). A field study, focusing on actor strategies and power relations and their effects on bear management, first showed that the management plan established in 1994 rested on an incomplete diagnosis, which avoided issues that were essential for bear conservation, but problematic for the sheep industry. The study

also found that stakeholder round-table discussions and the decision-making process were designed in such a way that sheep farming and forestry interests had complete control of actual decisions and of the financial support received. In other words, they used their decision power to decide which actions they saw fit for farming or forestry interests, and used in that way funds that had been allocated on the basis of what was presented as an innovation in environmental management (Mermet, 2001, 2005; Poux, Dubien, & Servheen, 1996). In addition, the enquiry provided a detailed description of the strategies developed against bear conservation by the sheep-farming interests and their political allies under the banner of alleged local roots (Benhammou & Mermet, 2003), and showed how their discourse systematically, strategically (and inaccurately) reframed the confrontation between the sheep and forest industries on the one hand, and bear conservation and tourism on the other, as a confrontation between community-based, local concerns and needs, and extraneous pressures (Mermet, 2002). The research also analysed the way in which marginal uncertainties in the ecological data – uncertainties that had no arguable relevance for conservation actions - were blown out of proportion by the management institution which used strategically the theme of uncertainty and of the critique of expert-society relations as one of the tactics that allowed it to delay conservation action by ten years (Mermet & Benhammou, 2005). Under this system, which resulted in a lack of adequate conservation initiatives for fifteen years, the bear population in the western range is now technically extinct, and almost all of the conservation funding allocation has been used for the modernisation of sheep farming and forestry. By contrast, in the central range of the Pyrenees, a large project for bear population reinforcement, led by a coalition of NGOs, the Ministry of Environment and municipalities motivated by bear conservation, has allowed the restoration of a bear population, still fragile, albeit at the cost of open conflicts with the faction of farming interests most opposed to bear-conservation (Mermet, 2007b).

On a different scale, Taravella's in-depth study of deforestation in the Terra do Meio (Para, Brazil) enabled a profound understanding of the processes involved and of strategies that may halt the environmental damage (Taravella, 2008, 2011). By analysing the strategies of the actors involved in deforestation, he first showed that the progression of the deforestation front results not only from the aggregation of uncoordinated individual initiatives, but that it depends on a collective action system where poor and rich farmers, the beef industry, and the agricultural branches of the Brazilian government cooperate to expand the territory covered by beef ranching at the expense of public forest. By a careful analysis of the technical and economic basis of the ranching activity that effects deforestation, he then demonstrated that the profitability of deforestation was dependant on the ability to make a substantial real-estate added value by converting illegally deforested public land into legally saleable ranches. In this context, he showed protected areas to be efficient against deforestation, even with less than keen enforcement, because they excessively compromise the possibility of legalizing the appropriation and conversion of public land. Finally, his work described how the gradual (and still fragile) success in curbing deforestation in the Terra do Meio (through new protected areas and somewhat more assertive enforcement) was the result of intense strategic mobilization of a socio-environmental coalition, extending from the local to the national level. Although on the local scale, the coalition was forced to operate from a different town since the legal action of the coalition advocating forest conservation was confronted with such violence from the actors of the deforestation system, making coexistence, let alone collaboration, impossible. Comparing his diagnostic analysis with other French studies of deforestation in the Amazon, Taravella showed the difficulty (or the reticence) of the latter to clearly focus on issues of environmental effectiveness (i.e. in stopping deforestation). The author also pointed out the prevalence of a discourse that deceptively reframes confrontation between the sectors involved in deforestation and the concerns defended by the socio-environmental coalition, presenting the situation as a confrontation between allegedly authentically Brazilian (in effect, farming) interests and foreign (in effect, environmental) pressures (Arnaud de Sartre & Taravella, 2009).

The experience gained through these and other diagnostics based on the SEMA framework confirms that it does indeed help lighting

up crucial aspects of environmental action that are often left in the shade. The framework, however, is no magic diagnostic tool *per se*: bringing it to bear requires further qualifications relevant to the specifics of each case... and hard work: (1) Positing clearly the environmental concern that will provide the benchmark for environmental effectiveness is a difficult research task *per se* (Leroy, 2006). It requires *inter alia* bridging between, on the one side, the scientific, expertise and the ecological controversies of the case, and on the other side, the politics of defining environmental problems. The positioning of the reference concern is the responsibility of the analyst. Analytically, it is the founding axiom of his work. In terms of relevance, it assumes that it will have value for some actors to know what the strategic context is, if they want to act in favour of that concern. That choice combines issues of feasibility (sufficient understanding and data must be available) and relevance (it is in the analyst's interest to choose a reference that may be relevant to actor strategies, such as using legal environmental commitments for leverage (Leroy, 2006)). (2) Field enquiry is seldom trivial in environmental management issues. In a SEMA perspective, they may become very challenging indeed. The intention of clarifying the conditions for environmentally effective action for change is often not welcome in field situations where power is held by a system of actors involved in an (environmentally) dysfunctional actual management system that would thus come under critique. Also, there are intense processes of countertransference through which the researcher may tend to become emotionally involved in the (environmentally dysfunctional) actors' system which he is there to analyse and critique (Taravella, 2008). It should be underlined here that its conceptual framework – which this paper covers – is only one aspect of strategic environmental management analysis (SEMA). As an activity and research strategy, strategic analysis is also an analytic intervention that has to be borne out in the field by the analyst engaging with, and under the pressure of, often very intense situations. Such aspects are, however, beyond the scope of this paper. (3) A framework is... a framework. It posits and structures a matrix of guiding questions, but it cannot by itself provide the theoretical or methodological resources to elaborate the answers to those questions in real, diverse and complex field situations. The SEMA framework cannot replace the multifaceted knowledge that is necessary to understand the functioning of the social-ecological systems under investigation. For instance, without Xavier Poux's expertise on farming systems and Christopher Servheen's expertise on bear biology, accurate and compelling diagnosis of bear management in the Western Pyrenees would have been impossible. The framework serves as a guide for an analysis: it organises questions, it helps to focus on a coherent and limited set of issues and assists with the choice of analytical tools and investigation methods, but it provides no substitute for the specific and demanding set of knowledge, tools and methods that are necessary to understand a given social-ecological system.

It must be realised also that the usefulness of a framework is evident only *ex ante* and *in itinere*. *Ex post*, once the diagnostic is clear, the facts seem to speak for themselves and it is easy to forget the guiding questions that have made their discovery possible. Here are a few examples from the two cases (bears in the Pyrenees and deforestation in Para) we just summarised. (1) In the bears' case, the strategies used to oppose conservation could have easily escaped attention – as they have escaped the attention of other analysts. By focusing attention on action for conservation and resistance to it, the SEMA framework helped to break through the elaborate façade of token collaboration in the Pyrenees. (2) In Para's case, without the framework calling attention on the importance of sector-based organised action, the organised character of deforestation and of the struggle against forest conservation would have probably been missed by the diagnostic, as it is missed by most of the literature on deforestation fronts that insists on tensions within the farming sector (e.g. between large and small ranchers); whereas Taravella shows that beyond these tensions, synergies (through employment, through politics, etc.) exist that play a crucial role. (3) In both cases, the actual importance of sector-based strategies in power dynamics can hardly be overestimated. In both cases, the farming sector exercises highly organised power behind a discourse of local community confronting pressure from the outside.

Many analysts miss the fact that it is the entire farming sector, from Olloron to Paris in the Pyrenees, from Para to Brasilia in the Amazon that acts strategically to confront demands for environmentally motivated change. (4) In a similar way, in both cases, success of environmental action for change is conditional on that action being able to mobilise resources at several scales, from local to national and international. By putting a clear focus on strategic action and organisation of those who act in favour of conservation, the SEMA framework has helped to move beyond analyses which tend to focus attention on local interaction and thus to play into the hand of those actors (and activity sectors) which currently exercise hegemony locally.

4.2. Analysis of organisations involved in environmentally motivated change

Organisation can refer either to the process of organising or to the resulting organisation; and this in turn can refer either to a system of organised action or to one organisation, instituted as such and having some form of explicit unified management (a company, an NGO, a club, etc.). Up to this point, the focus of the paper has been on the first two meanings – e.g. the structuring, organising strategic games of strategic environmental actors and their sector-based and rule-making counterparts, or the organised character of strategies such as those involved in deforestation for ranching in the Terra do Meio. The SEMA framework is also useful for studying how action for environmentally motivated change works within organisations such as a company, NGO, public agency or government department.

Leménager (2010) examined how issues regarding degradation and the management of aquatic ecosystems were treated by the hydraulic energy branch of EDF, the French electric utility. Through careful field studies in the company's central and regional offices, and on the ground at the large River Dordogne basin, she found evidence of the partly adversative negotiations described above - external strategic environmental actors were putting pressure on EDF to make changes to mitigate the impacts of dams, while the company reacted with a mix of resistance, integration and problem redefinition. She also demonstrated in detail the way in which a similar structuring differentiation of actors' roles constantly takes place within the firm, with persons or sections in charge of environmental issues acting strategically both internally, to force other sections to change detrimental behaviour towards ecosystems, and externally, to negotiate defensively the company's case against environmental pressure groups and regulators, and thus limit or reorient environmentally motivated pressure on the firm. This focus brought by the SEMA framework is particularly useful for the study of strategy in/for corporate and administrative organisations, which tend to downplay systematically internal tensions, whereas these are the very driving force of environmentally motivated change. Another useful contribution of the framework in this context is the obdurate focus on environmental effectiveness of environmental action, which does not automatically align with the main criteria of organisational performance, and so deserves a specific, environmental concerns centred analysis.

Strategic environmental management analysis focusing on specific organisations can also be useful for work on the strategy of environmental NGOs. Indeed, in a SEMA perspective, these can on the one hand be seen as an embodiment of the "strategic environmental actor" – i.e. a notional functional role in the inter-organisational game of environmental management. On the other hand, they are organisations which, like any other, have to care for their organisational and financial viability, to struggle for their development and their position within the growing industry of environmental advocacy (Gaudefroy de Mombyne [Leménager] & Mermet, 2003). In their analysis of the strategy of the Tour du Valat – an NGO playing an important role especially with regard to Mediterranean wetlands – Guillet and Leroy (2010) indeed found that a central issue in the NGO's governance is the clear articulation of whether the organisational strategy of the NGO (activity plan, human resources, funding strategy etc.) effectively leads to efficient strategic action in the complex struggle for the sustainability of Mediterranean wetlands. Management has to account to the governing body both for the general management of the NGO and for the effectiveness of its strategic action in favour of Mediterranean wetlands. Indeed, there is a close link between

organisational choices and the strategies these choices allow to be implemented in the public arena of environmental advocacy. But the analysis of these links, and thus, the accountability of the NGO for its efficiency as a strategic environmental actor are difficult to assess, considering the complexity of contemporary environmental strategic situations in which the NGO has to intervene, combined with the complexities involved with the running of any organisation. Just as in the company example, the guiding questions of the SEMA framework help to follow the complex chains of strategic action, both within the organisation and externally, that may lead to effective intervention in favour of the reference environmental concern (in this instance, wetland conservation in the Mediterranean). In the study of environmental NGOs' strategies, the tensions we underlined in the second section of the paper between a functional reading of the environmental actor (who acts for a particular environmental cause), of the differential reading (what differences and tensions are thus induced) and structural (how do environmental actors operate as organisations) become central in the analysis.

There is less experience so far in using the SEMA framework for this type of organisational analysis than there is for the study of strategic action in public decision-making processes. But the existing research suggests it has a high potential for the study of companies, NGOs or administrative organisations (agencies, government departments). At this stage, two points should be noted. (1) The SEMA framework leads to perspectives that are clearly different from the currently predominant approaches to environmental management in organisations, which tend to see it in collaborative terms, by underlining proactive "win-win" initiatives, social and environmental responsibility, or joint learning and innovation processes. Whereas collective learning may be a result of managerial processes, focusing on the dynamic tensions and dissensus that underlie action for change brings the analyst much closer to the actual experience of those acting within the organisation for environmentally motivated change. Indeed, a SEMA approach to environmental management by companies is not just a reiteration of the view that they integrate environmental issues mainly under the influence of external pressures: SEMA does give an important role – confirmed by field data – to such pressures, but shows that both reactive and proactive environmental behaviour of the company are part of wider, highly dynamic and complex, partly adversative and partly collaborative, strategic and organisational processes. (2) Again, SEMA essentially provides a framework. Detailed analysis and field research to answer the framework's guiding questions have to rely on resources from strategic management, organisation theory, organisation sociology, and on various methods for social science intervention in organisations. It is important to note that the relevant theoretical and methodological resources for the study of organisations are significantly different from those to be mobilized in the study of the wider, largely public arena of ecosystem management. SEMA work complements and overlaps with the field of management that deals with the strategy of organisations.

4.3. Policy evaluation

Policy evaluation is a third domain where SEMA reframings can provide useful leverage. As will be discussed below, they help to put the focus of evaluation onto the environmental effectiveness of policy, rather than e.g. on stakeholders' consensus or on technicalities of implementation efficiency. The first use of SEMA for policy evaluation was for the evaluation of wetland policies in France (CIME, 1994) and provides a good example. In 1993 at the onset of that evaluation, massive but anecdotal evidence had been accumulating for about 15 years regarding the rapid degradation of French wetlands, and efforts to conserve wetlands had become an important part of nature conservation policy. The Ministry of Environment used a newly instituted inter-ministerial policy evaluation procedure to launch an evaluation of wetland policy. In the lively methodological debate that accompanied the start of the evaluation, the evaluation team used the main SEMA concepts to guide the problematic and methodology of the evaluation. It first insisted that a priority was to consolidate the existing evidence on changes in the condition of wetlands at a national scale, in a way that was both feasible in terms of the available expertise and data, and that would hold firm in the face of strategic attempts to cast doubt on the reality of wetland degradation. This

was achieved by establishing a list of the main French wetlands. For each of the 76 wetlands in the list, a questionnaire was sent to two experts who were asked to describe changes in the wetlands condition on the basis of the best available data. The second focus advocated by the evaluation team was on which policies were to be considered for evaluation. Based on the actual/intentional dual concept of management, the evaluation team proposed to consider the whole set of policies that had an impact (positive or negative) on wetlands condition – i.e. the "actual policy". The two experts working on each wetland were first asked to identify all public policies that had an impact on the wetland, then qualify (and when possible, quantify) that impact and only later to focus more on policies aimed at improving wetland conditions.

This clear focus on the link between policy and ecological impact, and on the interaction between environmental policy and the environmental impact of other, sector-based, policies led to unambiguous results. Of the 76 wetlands considered, over the 30 years covered by the evaluation, 12 had suffered major damage, 53 significant damage, 8 had remained more or less stable and the environmental condition of 3 had improved. Sector-based public policies– such as support for drainage, filling for development and infrastructure, permitting of quarries, subsidies for the plantation of conifers on peat bogs etc - were clearly identified as the main causes of such transformations of wetlands. 65 wetlands had been affected by policies of the ministry of agriculture; 39 by policies of the ministry of public works or local and regional authorities; and 20 by policies (including permitting procedures) of the ministry of industry. Policies aimed at conserving wetlands were shown to absorb approximately one half of conservation funding and administrative effort in France. The main ones (various programmes to establish conservation areas by buying land or through regulations) covered approximately 7% of the total area of the wetlands in the evaluation's list. The evaluation also examined planned policy changes and showed that whereas it was possible that the rate of degradation may slow down, there was no tangible possibility of stabilizing the ecological condition of wetlands in the next ten years. The publication of the report in the spring of 1994 triggered some debate on methodology (see for instance Lascoumes & Setbon, 1996), but also led the government to launch a "national wetland action plan" in May 1995. Amongst other measures, the plan included features such as a review of existing laws so as to suppress rules inherited from past conditions that pushed strongly for the destruction of wetlands (for instance articles in the rural code that made it compulsory for landowners to use it for agricultural production or to lease it, or heavier taxation rates on meadows than on intensive agriculture on arable land).

Since that first case, the SEMA framework has been used in other studies that have combined policy evaluation and field diagnostic analysis, most notably Leroy's (2006) evaluation of environmental programmes associated with hydropower development at the Manantali dam on the Senegal River in West Africa. This milestone research not only carried through a SEMA diagnosis on an environmental problem of very large proportion (the degradation of wetlands and ecosystems in the Senegal valley). It also supports detailed elaboration and discussion of several important theoretical and methodological points in SEMA. One if its outcomes was to show the necessity, the difficulty and the possibility of clearly placing the evaluation of a given environmental programme within the (often incomparably wider) context of the actual management of the ecosystem and environmental issues that should serve as a touchstone for the programme's evaluation.

Three points should be underlined here regarding the SEMA perspective in evaluation.

(1) The way it frames evaluation is in clear contrast with the two most prevalent approaches to evaluation. The first common approach involves the evaluation of a given programme, trying to establish whether or not it has reached the targeted outcome(s). With regard to environmental matters, this is usually doubly self-defeating. (a) From a methodological standpoint, a single environmental programme is often only a small part of all the public action that impacts an ecosystem, so it is methodologically very difficult to identify effects without simultaneously evaluating other policies and programmes (that often have a larger ecological impact). (b) Confronting directly, out of strategic context,

a given environmental program to desired outcomes is also defeating in terms of its political consequences: such an evaluation may attribute a lack of positive ecological results to the very programmes that attenuate negative impacts, rather than to the sector-based programmes that cause them. The evaluation can thus weaken further the public effort for better ecosystem management. The second predominant approach to evaluation is based on stakeholder discussion of the policy, in line with the collaboration-building approaches we have discussed above. Here the difficulty is that often a majority of (e.g. wetland) stakeholders, in terms of influence, are the very sector-based actors who are involved in organised action in projects and programmes that are accountable for (e.g. wetland) environmental degradation. Focusing evaluation on a facilitated discussion of policies between these stakeholders makes the clarification of responsibilities, which requires a focus on clearly defined ecological concerns, highly vulnerable to covert but effective defence of the status quo.

(2) By clearly differentiating "actual policy" and "intentional policy" regarding a given environmental concern, and by linking the two in a systematic way, the SEMA framework helps to bridge the gap between environmental evaluation of policies (usually of sectoral policies, for instance through "strategic assessment") (see for instance Fischer, 2007) and the evaluation of environmental policies (see for instance Crabbé & Leroy, 2008). The disjunction between the two is a long-standing issue in the development of evaluation in the field of environmental policies and SEMA brings a sound theoretical basis and methodological indications to tackle that issue systematically.

(3) The third point regarding SEMA evaluation is that the fundamental choice to focus on one reference concern seems to be increasingly relevant in a context where the accumulation of contradictory policies, and the ambiguous formulation of policy aims (*inter alia* through largely procedural, rather than substantive policies) are ever more a feature of politics and policy-making. This is especially – but not only – true in the field of environment and sustainable development (Mermet, Billé, & Leroy, 2010). This context of varying degrees of overtly contradictory policy-making also brings us back to the heart of the contemporary ecological crisis as we sketched it in the paper's introduction: a parallel (though asymmetric in terms of power) acceleration of ecosystem-degrading development policies and conservation efforts. Here, evaluation with a clear focus on precisely defined environmental concerns is essential if we are to move past the contradictions, or at least clearly confront them.

4.4. Strategic assessment of environmental management approaches and doctrines

In environmental management many contributions, both practical and academic, as well as much debate, revolve around the promotion and refinement of prescriptive management approaches. Adaptive environmental assessment and management, mediation, integrated coastal management, ecosystem management, integrated water resource management are but a few examples. Such approaches rely: (a) on a diagnostic analysis of one or a number of aspects of environmental problems that the promoters of the approach generally consider to be inadequately perceived or addressed; (b) on the prescription of an approach for how to manage environmental issues based on careful treatment of these aspects; and (c) on practical instructions and methods, usually including a set of guiding principles, new management procedures and a tool-box for some of the management tasks involved. Promoters of such approaches are often so enthusiastic that they seem to think that all (or most of) the previous ones are rendered obsolete, and that their approaches are applicable, or should at least be tested, for a very wide range of environmental management situations. Furthermore, it is striking to note how often one approach gains such a wide audience and support over a period of several years that it becomes "the only game in town", as Jeffrey and Geary (2006) observe of "integrated water resources management". In some cases, such an approach may be institutionalized and thus become a doctrine, officially guiding management. A few years later, however, and such approaches and doctrines frequently disappoint, not having emerged as the hoped for cure-all and are eventually replaced by others. Looked at more soberly, each approach is an adequate response to certain management situations on the ground, and also provides successful answers to a number of questions or gaps that become important, at

a given period, for the environmental management field in general – thus the striking "fad" effect behind their rapid spread. What then is required is a way to review approaches so as to assess which one is appropriate to manage a given situation on the ground. In her criticism of "panaceas", Ostrom (2007) notes that such a review requires a framework to systematically organise questions that would allow characterisation of a given context in order to assess which of several approaches would be relevant. A framework also helps to identify which aspects of management situations a given approach is able to cover, and what other aspects it cannot address.

Billé used the SEMA framework in this manner for an in-depth review of integrated coastal zone management (ICZM), the currently hegemonic doctrine for managing sustainability issues in coastal areas. Based on the organising questions and concepts of SEMA, he analysed in detail the numerous volumes of guidelines that describe and promote the approach. He followed the critical debate about SEMA and its blind spots, and studied implementation problems in the field through case studies. He exposed certain "illusions" of the approach (Billé, 2008), for instance the "coastal manager" who is often referred to in ICZM literature as the operator of integrated coastal management, although there is no clear concept of who could be in a position to integrate management in such complex situations. He also identified specific implementation problems that have their source in the blind spots of the approach (Billé & Mermet, 2002). For instance, when an actor implements a project on the ground that is supposed to integrate conflicting environmental and development perspectives, in situations where there is no strategic environmental actor strong enough to advocate significantly for the environmental concerns, the ICZM project operator is caught in a dilemma. He can either fill the gap and play that role himself – thus joining the environmental sector and undermining his role as mediator and integrator. Or he can stay in his mediation role, thus actually only supporting the development sector involved since there is no advocacy on the environmental side. In other cases, it appears that when an ICZM project leader arrives on the ground, he has to find some leeway for his project in areas where many other projects are already underway. Since it is unlikely (in the context of real-world administrative and political power processes) that already established projects will easily hand over to him the role of coordinator and overseer, he may have to find a niche of unresolved problems that will justify the effort and expense of the project. He thus becomes one more project leader, alongside the already existing sector-based or environmental ones. Billé's assessment also shed light on an issue identified as problematic by the ICZM community: evaluation. He showed that in ICZM the focus almost always drifts from integration of coastal management as an objective towards integrated management projects: i.e. one of the possible means (an ICZM project) becomes the aim. When this drift occurs, instead of bearing on the actual process and level of integration of coastal management, evaluation confines itself to ICZM projects and their implementation. As a result, whether management of the coastal areas actually becomes more integrated remains out of reach for the evaluation, frustrating the ICZM evaluator (Olsen, Tobey, & Kerr, 1997) and gradually undermining the credibility of the approach. Based on this diagnosis, Billé (2007) proposed an alternative evaluation approach, along the lines presented earlier in the paper: to assess separately to what extent the actual management of the coastal area under evaluation meets the expectations of integrated management, and what is the contribution of evaluated ICZM projects.

In its applications for the assessment of environmental management approaches and doctrines, the contribution of SEMA is twofold. On the one hand, it helps to identify in general which features intrinsic in the design of the approach under scrutiny entail limitations or blind spots in the ability of the approach to deal with the strategic dimensions of environmental management. On the other hand, in dealing with specific cases, it provides an alternative to, or a way to complement approaches that are weak in their ability to deal with the strategic dimension. For instance in our field experience, this has repeatedly helped to tell apart cases of effective and of token environmental participation (see the diagnostic section above). Overall, by providing a way to examine both the strategic limitations intrinsic in the design of a given environmental management

approach and the specific of its implementation in a given strategic situation, the SEMA framework allows to avoid the all too current case where failures due to an intrinsic design defect in an approach is attributed repeatedly to anecdotal difficulties in implementation.

Of course, in this use as a framework and approach to assess other frameworks and approaches, SEMA can only claim to express, in a coherent and relevant way, one of the possible perspectives. How does it compare, for instance, with the framework Ostrom (2007) proposed to assess cure-all approaches to environmental management. The framework is derived from the Institutional Analysis and Development framework, from her work on governance of the commons (Ostrom, 1990) and the from the massive research they have underpinned over the last two decades. It proposes to review "panaceas" based on a systematic review of factors affecting the effectiveness of various institutional arrangements and governance approaches, depending on the diversity of field situations of resource management. The SEMA framework focuses the diagnosis of the fit between environmental approaches and management situations onto a different set of issues such as strategic agency in implementing the approach, the conflict-generating differentiation of actors' roles as it unfolds in environment-development dialectics, or the capacity (or lack of it) of minority strategic actors to create tangible accountability for ecological outcomes of management. Of the two frameworks, the first may ask the second: "How do your struggles between environmental and other actors stabilize into viable institutional arrangements that will be sustainable over time?" And the second to the first: "Once you have identified what would be an appropriate institutional arrangement for a given resource management problem, who is going to put it into force on the ground, exercising what power, using what strategy, and confronting what opposition?" Each can illuminate a problem from a specific perspective. Just as there are no panaceas, there is no panoptic framework that would unify systematic assessment of environmental management approaches. The best one can expect from management approaches is to help in some situations and contribute to the environmental management field in general at a certain juncture of its evolution; the best one can expect from theory and frameworks is that each provides a partial but clear perspective that can ground a partial, methodologically explicit, in depth investigation, so as to contribute in a systematic way to the discussion of management situations and approaches.

Conclusion: Explicit and systematic (rather than covert and ambiguous) partiality

Social-ecological systems are very complex. Any analysis can only be partial, both in the sense that it can cover only some of their elements and connections, and that in order to do so it has to choose one perspective which, deliberately or not, makes the analysis more favourable or more useful to some actors than to others. In our experience with SEMA-based interventions and research, the aspect of the framework that raises most objections is that, by choosing the nature and level of the ecological concerns that will found the strategic analysis, it accepts to be based on a clear, systematic choice of partiality. In an attempt to elude partiality, many current approaches would like to be regarded as directly in the service of all actors, trying to act jointly so as to conserve or restore healthy ecosystems and to build a sustainable future.

But when we state that "we" should conserve biodiversity and manage ecosystems so as to preserve their functional potential and use resources in a sustainable way, the "we" that should manage is just a figure of speech, a normative horizon, a notional subject. Any real actor that concretely acts in favour of conservation and sustainable management is just one actor in the social-ecological system, trying to (inter)act with/on other elements (human or natural) from within the system, in such a way that a sustainable management emerges from the sum of human actions on the ecosystem. Even when the "we-that-manages" is worked into an acting assembly, either conceptually (like Latour's (2004) "cosmopolitical collective") or in a more tangible managerial and policy manner (the innumerable joint-management arrangements putting all stakeholders "around the table"), assembly decisions in favour of a given ecological element are still the result of a motion by one member, one part or one

Table 1. Contrasting the perspectives of collaborative approaches and of strategic environmental management analysis

Principles of collaborative approaches	Principles of strategic environmental management analysis
Involving all stakeholders is essential	Strategic action of a stakeholder effectively promoting the environmental concern at stake is essential
Scientists and social actors must invent new ways to work together	Environmental science should link up with strategic social science approaches in favour of environmentally motivated action for change
Management is to be conceived in terms of process and collective learning, rather than on the basis of a given substantial goal	Central to environmental management is a strategic intervention in the decision-making process by promoters of given, substantial, environmental goals
The manager is essentially a facilitator pursuing integration and balance of various concerns	The most important contributor to environmental management is the one who intervenes to change balances in favour of given environmental concerns
Solutions rely essentially on coordination, institution-building and rule-making or planning	Solutions rely essentially on strategic action to displace existing (environmentally) dysfunctional coordination, institutions and rules
It is essential to focus on local scale and place, as well as on global issues	It is essential to focus on sectors of activity that organise actual management of ecological systems across scales, from local to global

party of the assembly. Hence it is not possible for any analysis of a social-ecological system to serve directly the assembly: the best it can aim for is to serve the assembly – to serve us all – indirectly, through a member, a part or a party of the assembly. Here lie both the theoretical foundation and the practical justification of strategic environmental management analysis, as well as its necessity in parallel with collaboration-based approaches.

Approaches based explicitly or implicitly on a collaborative concept of environmental management are in the service of that member, part or party of the assembly which attempts to accommodate as far as possible all members' expectations: the chair, a government, a facilitator, a convener of deliberations, a rule-maker, etc. This can be a highly useful contribution, but it has intrinsic limits. First, it is difficult – or impossible – to simultaneously advise the chair of an assembly and each of the parties individually to help them to be as efficient as possible in displacing the assembly's politics in favour of the specific concern they are advocating. Thus specific approaches will be needed for specific advocacy needs. Second, social-ecological assemblies are political, and political assemblies are chaired by one party, or a coalition, so that the common good perspective is always constructed in a way that privileges the interests supported by that particular party or coalition. In many (if not a vast majority of) environmental issues, power is not exercised by actors or coalitions whose clear priority is to satisfy environmental concerns. Consequently, in complement to approaches helping the leadership (or the mediator) to implement through collaboration his own combination of common interests and sector-based development agenda, an approach is needed to help promoters of environmental concerns. Here, strategic analysis of the social-ecological system based on explicit environmental concern can provide a contribution both to critique and to field intervention in support of action.

Its contribution to critique is to help promoters of an environmental concern to analyse collective actions and assess whether and to what extent they do or do not, in a given situation, effectively meet that concern. With the rise of collaborative approaches almost to a point of hegemony, there is now a great need for such critical analysis in many different field situations, in various domains of policy, at all scales of environmental management. The SEMA framework can help to conduct that critique in an organised, systematic, theoretically explicit way. In this paper we have provided examples in policy evaluation and in the discussion of environmental management approaches and doctrines.

The contribution of SEMA to action-oriented field research and intervention is to help the same actors to understand what elements and connections in the system are decisive and should be taken into account to organise strategic action for a change to the system. A crucial aspect of acting to change a (social-ecological) system from within is that such action is intrinsically divisive. It cannot occur without a structuration that differentiates, in a given situation,

the actors who push in favour of a given concern and those who don't, or push against it. Management that really addresses a given environmental concern has to be based on creating a productive tension between that concern and the overall dynamics of the social-ecological system as they affect outcomes related to it. The key concepts of the SEMA framework - the strategic environmental actor / sector-based actors; actual management / intentional management; the ecological concern which serves as the reference both of the action and of the analysis – guide the analysis of the social-ecological situation. It does so in a way that gives salience to those elements and connections which are most important in terms of the environmental bottom-line, of the strategic environmental actor's aims and of his strategic actions and interactions with other actors.

The contrasts and dialectics between SEMA and collaborative approaches, as argued in this paper, can be summarized in table form (Table 1).

This overview suggests that the two perspectives are not incompatible: both are instrumental in managing environmental issues. Each leads to the other: powerful action for change and advocacy leads to the need and possibility of renegotiating more environmentally-oriented rules; the intention to negotiate environmental rules triggers both a need for environmental advocacy and strategy, and a resistance to it. But the dialectic complementarities between the two perspectives can function only if they remain clearly distinct, as are advocacy and policy integration, or the roles of the negotiator and of the mediator. Eclectic or synthetic approaches that would attempt to encompass both perspectives in a single one are either subordinating one to the other or sitting between two seats, in a place that has no real leverage for action. Change, or transition to effectively take into account environmental issues, rely on the dynamic dialectic between two distinct efforts: the one to build up pressure and tension in favour of the environment, and the one to integrate that pressure and tension with other concerns (economic, social, etc.). It is essential to acknowledge how fundamentally action for change differs from the mediation between that action for change and other concerns and actions in society. Both are needed, as distinct moments of the dialectic of change. The ever present temptation to confuse both moments in an effort that would at the same time act for change and mediate is not helping. On the contrary, it is undermining the dynamics of environmentally motivated change. Furthermore, in a literature and a practice that tend to favour the second sort of effort (collaboration, mediation), it is essential that action for environmentally motivated change receive the same level of attention.

There is a wide consensus that understanding and managing social-ecological systems is an interdisciplinary effort. The purpose of the SEMA framework is to provide a systematic set of concepts to mobilise and organise resources from various disciplines in a way that satisfies the specific needs of actors who advocate a given environmental concern. It guides analysis not in the sense that it would provide all the concepts and tools needed. To understand the complex chains of causality and accountability associated with a given environmental problem, the analyst has to mobilize knowledge, concepts, interpretations, methodological tools from many other types of research, from disciplines ranging from ecology to law, from economics to agronomy, from anthropology to geographic information systems. Moreover, each environmental problem brings out specific challenges, so that no standard toolbox can be appropriate. The framework's contribution is to help the analysis to keep focused as it mobilises heterogeneous bodies of knowledge and links them together. It helps to ascertain what needs to be accounted for in order to build a useful account of why a given environmental concern is not met, and provides a useful perspective on who could act and in what strategic context, so that it may be met in the future.

Again, we are not advocating that strategic environmental analysis would be a "new" perspective that should make collaborative approaches obsolete. The repeated claim by supporters of "new paradigms" that they will make others approaches "old", useless or even shameful, is to us only a sign of the roughness with which they participate in the politics of ideas. It explains the faddish succession of management doctrines that is so amusingly and pointedly portrayed by Shapiro (1996) in the field of business. State regulations and

instruments, environmental activism and many other approaches may have gone out of fashion for a while, but they have not disappeared as important dimensions of contemporary environmental management. In fact, any dimension of management, old or new, in or out of fashion, can be decisive in some cases, under some circumstances. Each one deserves to be supported by adequate analytical resources. Strategic, environmentally motivated action for change certainly is decisive in many situations of the current crisis threatening biodiversity, ecosystems and the resources they provide. Strategic environmental management analysis proposes analytical resources for it, in support of those actors who carry it out – a support even those who rely on collaborative approaches as a strategy for change may well find useful in reaching their environmental purpose. ■

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Strategic Environmental Management Analysis: Addressing the Blind Spots of Collaborative Approaches

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