

Perspectives

Integrated Coastal Zone Management: four entrenched illusions

The considerable efforts undertaken on all continents to carry out field experiments and refine the concept of Integrated Coastal Zone Management (ICZM) have resulted in its adoption as the key paradigm for the sustainable development of coastal areas. Having reached a first phase of maturity, ICZM should now be challenged by critical assessments if it is to advance both theoretically and operationally. In this perspective, our paper highlights four deep-rooted illusions: the illusion that round table discussions can solve any problem, the coastal manager myth, the community illusion and the positivist illusion. It is argued that these illusions result from unproved conceptual oversimplifications and lead to a naive conception of action that often impedes ICZM implementation.

Keywords: Integrated coastal zone management, illusion, participation, coastal manager, local community, consultation, positivism, decision making

TABLE OF CONTENTS

1. Introduction
2. The illusion that round table discussions can solve any problem
 - 2.1. Computer cartography and Computer-Aided Drafting (C.A.D.) for within-site archaeological studies
 - 2.2. Geographic Information Systems (GIS) and Digital Elevation Models (D.E.M.) as important tools for management of geoarchaeological studies
 - 2.3. Georeferencing process of the cartographical database
 - 2.4. Derivation of the D.E.M.
 - 2.5. Digitalization of contour lines
 - 2.6. Bathymetric surveys
 - 2.7. 3D topography using D.G.P.S. surveys
 - 2.8. Environmental, palaeo-environmental and archaeological informations integration
3. Three case studies from Albania and Greece
 - 3.1. Holocene palaeogeographical reconstructions and predictive models of archaeological site location
 - 3.2. Second case study: geoarchaeological studies of high resolution altimetric map for a deltaic area
 - 3.3. Third case study: Potential location of an ancient harbour
4. Conclusion

1. INTRODUCTION

Born into the scientific community in the 1970s, the concept of Integrated Coastal Zone Management (ICZM)¹ shaped in the 1980s, was first defined properly at the Charleston Workshop in 1989 and entered the international political scene during the Rio Earth Summit in 1992. Since then, it has been elaborated at all geographical levels. Considerable efforts have been undertaken on all continents to carry out field experiments and refine the understanding of this complex concept. Hundreds of scientific articles and good practices guidelines, often based on case studies, have explored the significance of ICZM, how it should be implemented, by whom, by what means, etc.

Over the years, ICZM has probably reached a first phase of maturity. While much remains to be done to fully implement it, it has been adopted as the key paradigm for the sustainable development of coastal areas around the world. It is supported by an organised community of scientists and practitioners, and has substantial resources for both research and implementation. It is now a major public policy issue even in countries that were for a long time reticent—for example France which is currently trying hard to make up for the time lost during the 1990s.

Consequently, as any established bodies, ICZM can now be tested, questioned and even challenged theoretically and in practice. No doubt it must be to progress: Following Olivier de Sardan (1995), we consider that in such a field teeming with normative points of view, preconceived notions, good intentions, presupposed morals, ideological rhetoric and boisterous declarations, the understanding and analysis of the real mechanisms and social processes in play are just as needed as good advice and “new” ideas—if not more. We therefore openly adopt a more critical rather than propositional approach in this article. We base our analysis on our experience in designing, implementing and evaluating operational projects in developed and developing countries, as well as on an ensemble of fundamental research undertaken within or in partnership with ENGREF (École Nationale du Génie Rural, des Eaux et des Forêts, Paris, France). A collective project conducted from 1998 to 2003 on the Strategic Analysis of Environmental Management (Analyse Stratégique de la Gestion de l'Environnement (ASGE)) (see Mermet *et al.*, 2005) offered new perspectives on ICZM, mobilizing theoretical resources which seem to be underused.

The body of references of ICZM was wrought in an interdisciplinary context, melting social and natural sciences with the expertise of various NGOs, international organizations, etc. (Billé, 2007a). It is one of the reasons for the wealth and variety of this body of knowledge, but also explains some of its weaknesses and notably some over-simplifications leading to a series of recurring *illusions*². To stick to our objective to

challenge ICZM theoretically, we will concentrate on four of these tenacious illusions which though not all-pervasive, are no less structuring: the illusion that round table discussions can solve any problem, the coastal manager myth, the community illusion and the positivist illusion. It is argued that these illusions result from unproved conceptual over-simplifications and lead to a naive conception of action that often impedes ICZM implementation. If this work criticises certain “beliefs”, illustrated by examples, it does not target ICZM as a whole. Readers may judge the significance of one point or another—and thereby the relevance of our approach—as it relates to their own professional environment.

2. THE ILLUSION THAT ROUND TABLE DISCUSSIONS CAN SOLVE ANY PROBLEM

2.1. A WIDESPREAD BELIEF

“Managing environmental problems consists in bringing all the stakeholders to sit and discuss around the same table”. In our view, this motto frequently heard in a wide range of contexts, is emblematic of a simplistic belief widely spread in ICZM communities, and beyond, in all fields related to environmental management. It is based on three mental shortcuts that flow into an implicit reasoning: first, environmental management is a problem of *coordination*³ between stakeholders; Second, *consultation*⁴ is the solution to this lack of coordination; finally, consultation is inseparable from consensus. The purpose here is not to challenge the real benefits of concerted action, nor the ones of building consensus, but to show the major inconveniences that result from these mental shortcuts.

2.1.1. ENVIRONMENTAL MANAGEMENT AS AN ISSUE OF COORDINATION

The concept of (integrated) environmental management has been considered as a response to a lack of coordination between stakeholders and uses (Babin *et al.*, 1999), whether that be due to a simple lack of communication or because stakeholders follow diverging logics resting on real antagonisms. In this view, it is the lack of coordination that creates environmental problems, conflicts, and/or limits the efficiency of actions undertaken to favour environmental protection.

If the concept of coordination means “the regulation of diverse elements into an integrated and harmonious operation”—in our case environmental protection, this approach to environmental management is quite acceptable, even if it may be a bit twisted (isn't coordination a “black box”? Does presenting environmental management as a pure problem of coordination tacitly imply the existence of one general interest, with objectives common to society as a whole?). In any case we deliberately choose to accept it here, in order to better understand the shift leading to “the illusion of round table discussion”.

1 ICZM: “dynamic process in which a coordinated strategy is developed and implemented for the allocation of environmental, socio-cultural and institutional resources to achieve the conservation and sustainable multiple use of the coastal zone” definition from the Charleston Workshop (see Billé, 2004).

2 Illusion: a false appearance or deceptive impression of reality or a false or misleading idea or belief.

3 Coordination: the regulation of diverse elements into an integrated and harmonious operation—in our case environmental protection.

4 Consultation: used in a broad sense: “The deliberation and exchange of advice for the purpose of conflict management, decision making and the issue of concerted directives” It does not refer to a specific set of practices that could be opposed to public debate, negotiation or participation [Mermet, 2005].

2.1.2. CONSULTATION AS THE SOLUTION TO THE LACK OF COORDINATION

Consultation appears as a mean of choice to improve coordination. It has become the main reference for action in the integrated management of coastal areas. In this framework, concerted management and integrated management are used almost indifferently (see Pennanguer, 2005). Frequently, the issue is cast as being: “stakeholders are not coordinated, if a forum is set up they can become so”, or in other words: “stakeholders are not talking to each other—let’s bring them to the table”. In this case, it is believed that “the simple fact of talking will improve behaviour”, and assumed that discussions will free imaginations and pave the way to innovative solutions. If such assumptions are correct in some cases, other case studies notably from France (Billé, 2001) and Madagascar (Billé and Mermet, 2002a) have provided extremely variable results and preclude gross generalization.

It appears in particular that whenever the environmental issue is not trivial, the problems with the management system—considered to be the result of a lack of coordination—cannot be resolved merely through the creation of a discussion forum for the stakeholders. In some cases, neither can they be resolved with more sophisticated consultation processes. The relationship between coordination and consultation is not obvious. Like integration, coordination, if it is indeed a way to better manage the environment, cannot be decreed (Billé, 2004): it is not a process that one can decide to implement. It comes from the actual or informal organization of the stakeholders system, in the sense meant by March and Simon (1969), and not from its formal organization.

2.1.3. CONSENSUS BUILDING AS THE PARADIGM OF CONSULTATION

The shortcut that makes the illusion of round table discussions so successful thus rests firstly on the conception that environmental management is a problem of coordination, secondly on the predominance of consultation as the best means to improve coordination. The last simplification is that consensus is inseparable from consultation.

In the cases we have studied, the results of consensual concerted processes have generally remained unconvincing. Few innovative solutions actually emerged from supposedly freed imaginations. Why then are such approaches so widespread? In fact it seems that concerted processes tend to satisfy—in the short term—most stakeholders: For example, environmentalists who generally are in a “weak position” relative to others (Mermet, 1998), feel that they achieve their goals more effectively this way than through open conflict. On the contrary, actors whose poorly regulated activities tend to degrade the environment prefer a consensual approach because it is a kind of assurance that changes they are not ready to comply with (even after negotiations and readjustment of positions) will not be imposed.

In developed countries, these actors first experienced—just as environmentalists did—a time of conflicts (Dziedzicki, 2001). This ultimately resulted in litigations, extremely time-consuming and expensive trials, and to the damage of their public images. Therefore, any approach that establishes them as partners rather than adversaries is welcome. Finally, it is often in the interest of political leaders to avoid or minimize conflicts.

The consensual search for coordination via consultation underestimates the real antagonisms that exist between “uncoordinated” stakeholders and uses, the differences of interests and of representations. These antagonisms are evacuated rather than acknowledged and managed. The problem is two-fold: on the one hand, setting a problem in a collective framework is not sufficient to transform it into a collective concern (Mermet, 1992); on the other hand, consensual methods (i.e. to make a problem everyone’s concern) are not the only means available to set problems in a collective framework.

2.2. INTEGRATION AND DISTRIBUTION

At the beginning of a conflict management process, one cannot predict or decide a priori to proceed only by consensus, because several stakeholders usually have to be driven to do what they do not willingly do. If we limit ourselves (1) to incite changes of behaviour by raising awareness, and (2) to obtain *Pareto improvements*⁵, we cannot hope to make significant changes to environmental management systems, except in simplistic cases hardly representative of the complexity of management situations stakeholders are most often faced with. It is therefore inevitable that some stakeholders, whose logic of action is opposed to the sustainable management of coastal areas, enter and leave integrated management processes, are consulted and then feel they have lost, were cheated, and proclaim their discontent.

Integrated management is not necessarily a zero-sum game. However, there is often a pie to share, and trade-offs must be found that go against certain interests while favouring others. Just as Walton and McKersie (1965) emphasize that any negotiation, has an integrative and a distributive dimension, it appears that integrated management is also, despite its name, a “distributive management”, consisting of distributing inconveniences amongst stakeholders. A purely consensual and cooperative approach is therefore conceivable if and only if, for some particular reason, there is no distributive dimension to a specific management case.

Overhauling the illusion that round table discussion is the solution to all problems, requires that conflict be reintroduced as being a fundamental phenomenon in environmental management situations: it is the split, created at some point by a conflict, between the way the environment is managed and the collective objectives in the matter, “that offer the space where a community can deal with these questions while representing both the disease and the doctor” (Mermet, 1992). Pushing this idea even further, it could be argued that it is necessary, for an

⁵ Pareto improvement: Given a set of alternative allocations (goods, income, etc.) for a set of individuals, a Pareto improvement is a movement from one allocation to another that can make at least one individual better off without making any other individual worse off. The term is named after Vilfredo Pareto, an Italian economist who used the concept in his studies of economic efficiency and income distribution.

environmental problem to be effectively handled, that the various parties involved reach a deadlock, following a period of conflict. One then becomes fully aware of the balance of power between stakeholders, and by extension of all power relationships. We recommend that stakeholders involved in integrated coastal zone management incorporate these three notions—conflicts, balance and relationships of powers—in their strategic vision.

2.3. FROM FORMAL INTEGRATION TO ACTUAL INTEGRATION

Finally, what environmental management needs is actual integration (meaning “everything occurs as if” the stakeholders were coordinated). Formal integration (institutional or procedural) is only one way to succeed. Coordination can be achieved via a wide variety of other means, ranging from informal and consensual discussions to formal negotiations and even centralised decision-making by a single decision-maker. In fact, the means towards more integrated management are of two kinds (Mermet, 1998): on the one hand, tools that can regulate human activities (taxes, laws, agreements, norms, decrees, etc.), and on the other hand processes through which these regulations can be designed (trade-offs, negotiations, dialogue, communication, awareness raising, etc.). The issue is to wisely marshal both kinds of means to reach an arrangement of stakeholders within the socio-ecosystem (the “diverse elements” according to the glossary definition) that allows the preservation and/or the restoration of desirable qualities of ecosystems (the “integrated and harmonious operation” of this same definition).

3. THE COASTAL MANAGER MYTH: IS A COAST ACTUALLY MANAGED BY A COASTAL MANAGER?

3.1. THE COASTAL MANAGER, AN EMBLEMATIC FIGURE IN THE LITERATURE

In 1995, the Coastal Resources Center of the University of Rhode Island and the USAID (United States Agency for International Development) organised a one-week international workshop called “Educating Coastal Managers” (Crawford *et al*, 1995). Olsen described on this occasion the “skills, knowledge and attitudes of the ideal coastal manager” (Olsen, 1995). Cicin-Sain and Knecht (1998), in their famous book, affirm that “the coastal manager must be realistic and avoid turning integrated coastal management into a kind of crusade”.

Who is this coastal manager described in the literature?

3.2. THE COASTAL MANAGER, INDIVIDUAL OR LEGAL ENTITY

The analysis of the literature reveals that in fact, behind the figure of an individual “coastal manager” lies the idea that the management of a given coastal area can be entrusted to a single agency—a structure that could then be incarnated by one or several “coastal managers.” Examples of authors who lament that such an agency is missing and who recommend its creation

are quite common. We provide two illustrations, one from a report done by experts and the other from a scientific publication:

- “To date, there is no institute that has complete responsibility and authority over the management of coastal and marine resources in Indonesia. The absence of such an institution means that the ocean is managed by sectoral institutions with varied interests. This frequently creates conflicts of interest in the utilisation of resources” (Dahuri, 1999).

And concerning the Mumbai Metropolitan Region in India:

“There are several institutions and agencies [...] [which] function separately and are responsible for various activities and enforcement of laws in the [...] coastal region. [...] A centralized establishment specializing in coastal and marine affairs whose function would be to oversee the ongoing coastal activities and to coordinate between these agencies, is necessary” (Murthy, *et al*, 2001).

The concept of “coastal manager” used in these examples or elsewhere, comes from a specific view of environmental management: like a garden is managed by a gardener, “management is often taken in the sense of direct control where the manager leads a society and its environment to a desired state, like a motorist drives his car where he wishes” (Mermet, 1992). Although this conception may be relevant in certain specific cases of protected areas (especially private) or forests (managed by foresters), it is obvious that generally speaking an ecosystem with multiples uses is not, and cannot, be managed by an “ecosystemer” anymore than a coast can be managed by a coastal manager. There is truly a “coastal management” associated to any given coastal region (the way it is managed, its actual management), but there are numerous managers with none having, nor being able to exercise leadership over the others *a priori*. In other words, one can say that the management of coastal areas is a process without a pilot, a management without a manager.

3.3. REASONS FOR A WELL-ENTRENCHED ILLUSION

We propose three distinctions to enlighten the processes involved behind this simplified view of a coastal manager, and its consequences.

3.3.1. ICZM AND ICZM PROJECTS

First, there is a shift from ICZM to ICZM projects that we have described and analysed elsewhere (Billé, 2007b). This could be one of the reasons that explain the appearance and the robustness of the “coastal manager” figure. For example, as described in Burbridge (1997), ICZM is considered only through projects, each being led by a project manager: by approximation, the coastal manager (whether that be an individual or a legal body) is in fact the manager of the coastal management project.

This leads to an important paradox, the ignorance of which seems to be the basis of many works on ICZM: a coastal management project does not manage a coast! It is only one of the many interventions contributing to its actual (or concrete) management. Hence the coastal management project manager should not be called the coastal manager.

Nevertheless, this conceptual approximation offers practical advantages which may explain its success, at least in part:

First, it enables somehow the construction of the reality one claims to study: the unjustified primacy of the project approach legitimises to refer to the coastal manager and to the required qualities and skills he/she must possess.

Then, this over-simplification sidesteps having to ask some very important questions which could generate dissensions (Who, exactly, does what? With what mandate? On whose behalf? For what purpose?). By referring to a coastal manager who in reality does not exist, everyone can lay claim to successes, without having to worry over the failures.

Finally, the simplistic idea of a direct control of a natural system by a single manager is all the more widespread as it appeals to certain leaders who do not want to give the impression that a problem, whatever it may be, could be beyond their control.

The immense diversity of the ICZM literature offers other concepts that in our opinion are actually much more relevant, general and in touch with the real world: "ICZM practitioners" (Olsen, 1996), "ICZM professionals" (Crawford *et al*, 1995), or even "ICZM facilitators" (Hénocque, personal communication), the latter being probably the one that best describes the human and individual, or organizational dimensions of reality.

3.3.2. INSTITUTIONAL INTEGRATION: FORMAL OR INFORMAL ORGANIZATION?

In terms of organization, the distinction introduced earlier made by March and Simon (1969) between formal and informal (or "actual") organization is again particularly revealing here. Indeed, the illusion of a single management structure for coastal areas has its roots in the very foundations of ICZM. OECD (1993) conveys this idea by recommending "an integrated institutional arrangement" for the management of coastal areas. Although this institutional arrangement can in principle be understood in an informal sense of actual organization, it is usually understood in a more formal sense: that is, more integration (meaning better actual organization) can be achieved only through an ad hoc institution (i.e. formal organization).

Both examples cited above illustrate well the point of view favouring a single structure of management. Miossec (1998) provides even more unequivocal examples: he interprets the absence of a ministry of the sea in France as a refusal "to integrate the various administrations dealing with the sea", as

opposed to "South Korea (...) which has chosen (...) to integrate all administrations with jurisdiction over the sea and coast". The words "refusal" or "chosen" are telltale signs of the idea that integration has to be decreed. While on the contrary, we think that the real integration of a management system is a progressive process, implemented via incremental steps and never fully achieved (Hénocque and Billé, 2005). The kind of integration that can be described as formal (via the creation of an ad hoc organization), is at best one of several means available to achieve more integrated actual management. At its worst, this option has two major drawbacks:

When it comes to gathering "the administrations with jurisdiction over the sea and coast" under one single organizational entity, this option is illusory because such an entity could potentially gather all administrations (including some very important and in themselves integrating ministries such as the departments of Economy, Agriculture, or Equipment).

When this type of integration is "decreed" it could be counter-productive, since it does nothing to modify the balance of powers between sectors and interest groups. Rather, they are played out beneath the surface, instead of out in the open. This could interfere with what we consider to be one of the crucial elements for a more sustainable management of coastal zones: the readability of the management system, thereby making unclear the practices that underlie pluralistic debate.

3.3.3. A BIASED OUTLOOK OF COASTAL ZONE SPECIALISTS

Last, from a cultural point of view, wanting to formally integrate organizations with jurisdiction over coastal zones and the sea, and believing that it is possible and advisable, are views that come from the standpoint of coastal specialists. Considering a portion of a territory and its resources as a coast reflects, in itself, a specific outlook. For example, what may be defined as a coastal area is also part of a watershed for a water management specialist: as such, it requires another mechanism of institutional integration.

Although the concept of coastal area has shown to be valuable for heuristic and operational reasons, one must be aware that it is not necessarily the only relevant concept, even for the interface between land and sea. Other fields of study use other "integration variables" besides the coastal environment (which is *de facto* the *raison d'être* of ICZM). Therefore, formal integration should not be sought systematically, even though it may be an option on a case-by-case basis.

3.4. ACCEPTING A MULTI-LAYERED POLITICAL ADMINISTRATIVE SYSTEM, TYPICAL OF A COMPLEX ALLOCATION OF ROLES

In our opinion, the coastal manager concept conveniently veils a reality by blurring power struggles and conflicts. Its most commonly held belief—that it is possible and advisable to entrust

the management of a given coastal area to a single body—often proves to be counter-productive. Indeed, it tends to result in the creation of “monstrous” hybrid entities that more often than not become sectoral and/or autonomous (Billé and Mermet, 2002b).

Of course, some simplifications in coastal zone management systems are advisable when conceived on a case-by-case basis and strategically justified. They can, however, concern objects other than institutions, like laws that need to be harmonised or bundled together. In fact, merging two entities or sub-entities into a single agency simplifies the organization chart, but not the way the management system operates (or the “operational chart”). With regards to integrating management, it does nothing to resolve the conflicts due to diverging logics that may have placed both entities in opposing camps before their merging. Typically, merging the departments of agriculture and environment cannot be considered in itself as a step towards a more sustainable agriculture or as a mean of levelling off conflicts between the two sectors.

Environmental management, and especially coastal management, is an irreparably complex phenomenon. Instead of trying to simplify and control it, it is preferable to endeavour to influence the management systems as they are and progressively instil changes conducive to reaching the stated objectives. In other words, the “multi-layered political administrative system” notoriously criticised in the ICZM literature—and to which single management agencies (coastal managers) are often opposed—can only be marginally simplified. It is neither a temporary flaw in the system nor a short-term administrative aberration: it is structurally inevitable. Stakeholders in the management of coastal zones, as well as researchers, have no choice but to accept that the allocation of roles is complex. They need to develop action and research strategies accordingly.

4. THE COMMUNITY ILLUSION

Less specific than the coastal manager myth, the illusion related to coastal management by “local communities” is rooted in beliefs which thoroughly span both the fields of environmental management and that of development assistance—and are especially tenacious at the crossing of the two. Our objective in this section is not to deny opportunities provided by decentralised environmental management down to the local/village level—a level that is just as important as the regional, national, and international ones. Nevertheless, we will attempt to highlight and explain the different dimensions of this “community illusion”, the practical consequences of which are significant and sometimes disastrous. We will first elaborate our points by referring to the developing world, where cases of community-related oversimplifications are most significant, before widening the demonstration to developed countries. We will rely especially on anthropological literature, which has for decades ceaselessly denounced the community illusion—while being largely responsible for its inception.

4.1. THE COMMUNITY ILLUSION AND ENVIRONMENTAL MANAGEMENT IN DEVELOPING COUNTRIES

In the fields of environmental and coastal management, the phrase “local community” is so predominant that it would probably be challenging to find a single international publication that did not make reference to it these past fifteen years. Various dimensions of the illusion associated to “community-based environmental management”, “management by local communities” etc. have been described by Michon (2002):

The first dimension of this illusion concerns the field of development cooperation as a whole: it is the postulated belief that there are coherent, egalitarian, and consensual village communities. Olivier de Sardan (1995) describes “this tenacious and widespread myth of ‘traditional collectivism’ which still persists and upon which development plans would be supposed to rest. [...] Rural Africa would be the continent of the collective, the kingdom of consensus”. Moreover, customary rights and traditions would be egalitarian.

The corollary of this illusion of homogeneity and consensus is the popular hypothesis that “village communities” have legitimate leaders (traditional chefs) who are respected by all, and are a priori less corrupt than the civil servants and elected officials belonging to the various levels of government. It would therefore be possible and advisable to rely on them for most interventions.

A third dimension of the community illusion relates more specifically to the field of environmental management: “local communities” would have a sound knowledge (even if not Cartesian) of their surroundings, they would have inherited an eco-friendly ancestral tradition (consciously or not), and they would have an objective interest in the sustainable management of the natural resources upon which rests their subsistence. Combined, these three elements would represent a guarantee that natural resources entrusted to “local communities” are managed more wisely and sustainably.

Finally, each “local community” would have a clearly identified and defined territory.

Although one of these hypotheses can be matched from time to time and in specific cases, their general fallacy has been demonstrated extensively by Olivier de Sardan and Bierschenk (Olivier de Sardan, 1995; Bierschenk and Olivier de Sardan, 1998), Michon (2002), or Smith (2001) on the supposedly conservatism of “indigenous peoples”.

4.2. ORIGINS OF THE COMMUNITY ILLUSION

4.2.1. OVER-ASSIMILATION BETWEEN COMMUNITY AND LOCAL LEVEL

An important basis giving credence to the above illusion is the confusion between the concept of “community” and the local

level. Many researchers and practitioners do not hesitate to use the term “community level” when referring to the local level. Literature on ICZM provides striking examples: for example, Burbridge (1997) uses the phrase “at the local/community level”, Olsen (1993) speaks seemingly indifferently of “small-scale community level” or simply “community level”. The local level would thus be a community by definition, and conversely a community would be intrinsically local.

The first of these two propositions has been amply refuted by anthropologists. In short, in response to the hypothesis that the smaller the scale, the more consensual the human groups, Douglas (1999) states that “it is not a question of scale”. She further argues that there is no reason to have different interpretation principles for small groups and for large ones. Conversely, the concept of community is used almost exclusively to describe the local level: Douglas (1999) highlights that according to Taylor (1982) “the community is by definition small”. Indeed, communities are associated to consensus and consensus is said to be reached more easily in small groups.

Nevertheless, it is helpful to discuss the community issue in relation to two concepts that are consubstantial with it (Narcy, 2000): the commons (or common property) and subsidiarity.

4.2.2. A COMMUNITY IS DEFINED BY THE OBJECT OF COLLECTIVE ACTION

Any community is actually defined as a community of use or management, and not a priori by geographical or social characteristics. As clearly illustrated by the example of rural communities that came into being in France during the Middle Age (Bourgoin, 1991) to manage the “commons” (common-property or common-use fields), local communities exist because of the “commons” they manage intentionally and collectively. As Narcy (2000) explains: “The grouping of individuals (...) enables the development of a kind of ‘collective consciousness’ making it possible for them to think beyond their private interests. However, the development of a ‘collective consciousness’ in a community is not, as in Durkheim, the realisation of a general will in accordance with the general interest of citizens: it is merely the realisation of a common will as it pertains to uses of a specific common”. Contrary to a widely held view, a community is not defined by the consensus but by the object of collective action around which individuals decide to rally.

4.2.3. FROM SUBSIDIARITY TO LOCAL MANAGEMENT

The confusion surrounding the principle of subsidiarity—a principle that has widely been vindicated in theory—also plays a major role in the community illusion. This principle is often misunderstood as simply delegating management to the local level—especially in the field of environment. This is a revealing over-simplification deeply anchored in developmental cooperation research and projects. It demonstrates the tropism towards the local level largely due to the field’s conceptual

understanding of “local communities”. Yet, far from meaning delegating (environmental management among other things) to local levels, “subsidiarity is granting autonomy for as long as the individual can adequately take charge. When the individual cannot, the responsibility moves to the level above, the family. The family in turn is embedded in a corporative level/higher cooperative, and in this way one progressively moves up, and if need be, up to the State” (Barraqué, 1997). Subsidiarity therefore does not mean delegating to the local level, but to the lowest competent authority for a given problem -the difference is crucial.

4.2.4. SOME BACKGROUND

Among all the concepts related to “participation”, the one of “community-based management” is probably the most structuring, and constitutes a central paradigm in the fields of research and action at the interface between environment and development.

Anthropologists and sociologists played a deciding role in its burst onto the global scene, at a time when technocratic views of development and environment were dominant. The rationality of “community-based management” was built upon four pillars: (i) in or surrounding ecosystems that needed protection, there lived inhabitants; (ii) these inhabitants depended mostly upon the exploitation of natural resources for their subsistence; (iii) however, these inhabitants were forcibly denied their use rights due to the designation of nature reserves or protected species; finally (iv) in some cases inhabitants had knowledge and experience that could be efficient assets contributing to a more sustainable management of natural resources. It is nonetheless striking that anthropologists, without disavowing this four-fold elementary diagnosis, are among those who most virulently attack the community illusion (Olivier de Sardan, 1995; Douglas, 1999; Bako-Arifari and Le Meur, 2001) and its environmental variations (Smith, 2001; Michon, 2002).

Concepts cautiously used by anthropologists have thus been appropriated, deformed, exaggerated and even diverted. This has been done as much by the institutions that were targeted in the original criticism, as by the numerous counter-powers (notably NGOs and research centres). Why could this happen? How did concepts like “community level” be taken up by such a variety of institutions and stakeholders?

4.2.5. THE COMMUNITY ILLUSION, AN IDEOLOGICAL CROSSROADS

Pelletier has documented how the community utopia builds bridges between social Catholics and Christian democrats, Marxists, Vichy regime ideologists (notably through the corporatist illusion), Third World supporters and -from the 1950s- developmental discourse of the main international organisations. The history of the association Economie et Humanisme centred on the community utopia (and its founder Dominican priest Louis-Joseph) shows successive and concurrent interactions, without

any major change or denial, with all those currents of thought, in the space of only 25 years (1941-1966) (Pelletier, 1996). What can anarchists, neo-liberals, ideologists of the Vichy regime, Third-World supporters, hippies and catholic activists have in common? An unwavering faith in local communities and their capacity to manage more public affairs than they do. While this is in no way an attempt to lump together these various currents of thought, this works simply shows the astonishing universality of "the community utopia" and accounts for the consensus that surrounds it and explains the difficulty to challenge it.

From another angle, making "community-based management" the paradigm of "civil society" participation can simultaneously be a justification for the withdrawal of the State, an argument for confining civil society to the role of social and environmental saviour and thereby leaving solvent sectors to the private sector (Lévy, 2000). It can result in either a consolidation of the existing social order or inversely in its radical reversal. The community illusion hence makes possible the most improbable alliances between multinational companies and Third World supporters, orthodox economists and "ungrowth" advocates. In short: the most ardent environmentalists see in community-based management a way to sidestep forces generally perceived as being counterproductive or inefficient; while their opponents see an opportunity to portray local inhabitants as victims of either state regulation, urban concerns or Western "ecological interference" (Rossi, 2000).

The "community" as the paradigm of public participation turns out to be a formidable machine deflating political considerations in fields such as development and environmental management, which are essentially political. Its appeal to a wide variety of stakeholders is a basic reason for its semantic success, including within ICZM.

4.3. THE "LOCAL COMMUNITY" IN ENVIRONMENTAL MANAGEMENT IN THE NORTH

As stated, we have first focused on the context of developing countries. In developed countries, the utilisation of different dimensions of the community illusion is more heterogeneous. We distinguish three typical positions:

In North America, the concept of community is widely used in socio-politics. In many cases, there are simultaneously the illusions of group coherence, of homogeneity, of consensus, and the assimilation between community and local level. While communities and neighbourhoods appear to be quite similar entities, communities probably sprang from shared religion (a common place of worship), common history (especially when going back to the Pioneer Era), and ethnological characteristics (native populations).

Within international organizations, the concept of local community quickly made its way into the rhetoric of environmental management, and not only in the context of developing countries:

e.g. it can be found several times in Agenda 21 (United Nations, 1992), including in Chapter 17 on the protection of oceans and coastal zones. However, it is remarkable to notice that strictly "northern" organizations seem to ignore it: "local communities" appear neither in OECD guidelines (1993), nor in most European publications (Humphrey and Burbridge, 1999; King, 1999; European Commission, 2001), where we encounter instead phrases like citizens, actors, stakeholders, local populations, people, or in coastal areas fishermen, farmers, etc. To refer to local territories, the terms used are villages, rural communes, townships...

Finally, in France and Japan, like in other countries that do not have Anglo-Saxon political culture, the concept of "local community" is uncommon, never spoken of by political leaders and rarely by researchers.

It is therefore interesting to note that when the matter concerns developing countries, especially Africa, European researchers and policy makers unhesitatingly resort to "local communities" as a structuring concept in their discourse and action. This proves that the community illusion influences the particular views held on these countries; whereas to a great extent "analysis of Africa [and the rest of the developing world] must be rid of all illusions of community, like everywhere else" (Olivier de Sardan, 1995).

5. THE POSITIVIST ILLUSION

5.1. SCIENTIFIC KNOWLEDGE, A NECESSARY AND SUFFICIENT CONDITION TO WELL-MANAGED COASTAL ZONES?

The hypothesis that "more knowledge brings better management" (Miossec, 1998) is well known. Literally, it implies that knowledge is a sufficient condition to ensure better management. This proposition can be refuted by providing a cohort of counter examples such as the French marshland called "Marais Poitevin" (Billé, 2004), or the case of the bluefin tuna in the Mediterranean. At best, one can assert that more knowledge is susceptible to encourage better management.

Conversely, it is often stated that "a problem can be seriously addressed only with a complete command of all data" (Miossec, 1993). Is thorough knowledge really an absolute prerequisite to deal seriously and efficiently with problems? This is a more complicated question and requires that the place taken by scientific and technical approaches in environmental management be fully appreciated. We will discuss only certain salient points to highlight the issues resulting from this double positivist illusion.

5.2. SCIENTIFIC KNOWLEDGE IS INEVITABLY INCOMPLETE AND CONTROVERSIAL

Obviously, knowing everything about everything is impossible. The level of scientific knowledge necessary to make completely informed decisions to manage ecosystems sustainably—especially coastal—will never be at hand. Nature varies too much

in time and space. As demonstrated theoretically by Johannes (1998), the inception of rational management of Indonesian coral reefs alone would require at least 400 person-years to collect data only. And then this data would have to be continuously updated. Generally speaking, a certain degree of scientific uncertainty is a characteristic of environmental management. Furthermore, there is no reason to a priori assume the data collected will be accurate, nor consensual among the scientific community and stakeholders. Disagreement and debate are just as intrinsic—and beneficial—to science as uncertainty is an integral part of management.

5.3. THE LACK OF KNOWLEDGE JUSTIFIES INACTION

What kind of scientific knowledge is necessary to take a completely informed decision is probably not the most pertinent question—in any case it is not the only one. The gaps and contradictions in scientific knowledge are often used on the one hand as excuses to delay difficult trade-off decisions, and on the other hand to advance or justify decisions or non-decisions unfavourable to the environment. From the international level down to the local one, strategies typically used in anti-environmental rhetoric are based on refuting scientific reports, discrediting the experts who produced them, and putting forth research favourable to other concerns (Rowell, 1996). To fully comprehend the relationship between science and action, one has to keep in mind that every environmental problem can be reformulated in such a way that the available scientific knowledge becomes insufficient to justify action. Overfishing in Europe, or until recently the issue of climate change in the United States, are good illustrations.

5.4. KNOWLEDGE, A STRATEGIC ISSUE AND A LEVER FOR ACTION

It seems obvious—and this is certainly not a new finding in action sciences—that scientific knowledge is not only a possible lever for action. It is also, perhaps above all, a strategic object used regularly by stakeholders to achieve their respective objectives. As highlighted by Crozier and Friedberg (1992), “uncertainty in general or specific uncertainties (...) are the main resources in any negotiation. (...) What is deemed uncertainty from the point of view of the problem, is power from the point of view of stakeholders”. Knowledge is a strategic issue and therefore also an issue of power. One of the defining traits of power is precisely the capacity “to speak instead of listening, to be able to afford not to learn” (Deutsch, 1963). It is tempting to add that power is also the ability to make controversial decisions where scientific preoccupations are but one consideration among many. To a certain extent, gathering information and making decisions are two disconnected activities. They share neither the same logic, nor the same timeframe.

5.5. ADAPTIVE MANAGEMENT AND “DATA-LESS MANAGEMENT”

Coastal zone management is built as much upon power struggles, negotiations, as on scientific knowledge that is essentially incomplete and controversial. It is therefore necessary

to acknowledge that coastal zone management is seldom fully consistent with available information: most often, coastal zones are managed worst than what scientific knowledge would allow for; yet, sometimes they are better managed than the available scientific knowledge could have predicted. What these two aspects demonstrate is that, regardless of knowledge, there is room to improve coastal management systems.

Though the application of the precautionary principle can provide much to think about, it is not a general environmental management framework. Adaptive management (Walters, 1986), or management by trial and error, has underused potential. In the same vein, “data-less” or “data-poor management” (Johannes, 1998) is defined as a management approach implemented in the absence of the data necessary to define the parameters and verify the models which predict the effects of different management actions (down to statistical margins of error). Finally, “once we free ourselves from the illusion that science or technology (if lavishly funded) can provide a solution to resource or conservation problems, appropriate action becomes possible” (Ludwig *et al.*, 1993). Consequently, the key question from the standpoint of action (Johannes, 1998) is no longer what data is needed to make the right decision, but rather what are the best decisions that can be made given the (incomplete and controversial) knowledge on hand. This does not mean that scientific studies, particularly quantitative, are not useful or advisable in many cases: they must be well developed and often represent a necessary stage, but do not decide which actions are taken at a given moment.

6. CONCLUSION

The four illusions that we have discussed have a varying impact on ICZM depending on contexts, countries, etc.: as stated in the introduction, this article is aimed only at certain works and examples—that we deem important—and deliberately avoid others that do not illustrate the targeted illusions. These illusions are due to implicit mental shortcuts and are generally not acknowledged. Strictly speaking, they do not constitute theories or even opinions: most of us are relatively aware of their flaws, yet concede to the peril of one or another of these illusions by reflex, with readiness, or out of confusion. It is nonetheless important to enunciate these processes clearly so as to identify their flaws and raise awareness. This makes them harder to use, and contributes to clarifying discussion of related topics (participation, science-management integration, etc.). Moreover, we have not only tried to shed light on these illusions but also suggested concepts and tools that we hope may help to better counter them.

Thus, we have demonstrated that round table discussions rest on three successive assimilations, likening environmental management to coordination, coordination to consultation, consultation to consensus. In practice, these shifts are partly responsible for the inability of numerous participatory processes to adequately take charge of the environmental problems that justified their inception. We have recommended (i) not to underestimate the distributive dimension of any integration

process, (ii) to differentiate between formal integration (institutional or procedural) and actual integration, where we distinguish the instruments that permit the regulation of human activities from those that lead to putting in place such regulations.

We then discussed the coastal manager myth and the associated idea that it is possible and even advisable to entrust the management of a given coastal zone to a single management entity. Again, the distinction between formal and actual organization allowed us to suggest integration approaches based on processes rather than procedures, which leads to accepting the fundamentally complex allocation of coastal zone management competence, and to adapt accordingly.

Third, we have highlighted the community illusion, described numerous times in development literature. By distinguishing the "North" and "South" dimensions and by tracing their origins, we reframed community-based management as the management of a common, according to a clarified subsidiarity principle. We have also called not to project on developing countries' societies analytical and prescriptive principles (such as the community concept) which are fundamentally different from those used in developed countries.

Finally, we have demonstrated that the positivist illusion, very present in coastal zone management, is to be challenged firstly because the abundance of scientific knowledge does not guarantee better management, and conversely, because the incomplete and controversial nature of scientific knowledge is seldom the real limiting factor to action. Underlining the strategic use of uncertainty and knowledge, we directed the reader towards resources such as adaptive management or data-less/data-poor management.

The work of critically questioning the foundations of ICZM and its possible shifts is just beginning. We hope this article will contribute to this endeavour, and that it will be intensely debated.