institut du développement durable et des relations internationales – 6, rue du Général Clergerie – 75116 Paris – France – Tél. : 01 53 70 22 35 – iddri@iddri.org – www.iddri.org

idées
POUR LE DÉBAT

N° 04/2005 | GOUVERNANCE MONDIALE

(*ex*-Les séminaires de l'Iddri *n°13*)

The contribution of network governance to sustainable development

Tom Dedeurwaerdere (Université catholique de Louvain, Belgique)

Tom Dedeurwaerdere propose, dans cet article rédigé en février 2005, une analyse du concept de gouvernance en réseau et évalue son utilité dans la mise en œuvre des politiques de développement durable.
Ce texte n'engage que son auteur. En mettant ce document en ligne sur son site, l'Iddri a pour objectif de diffuser des travaux qu'il juge intéressants pour alimenter le débat.

institut du développement et des relations durable internationales

Chaire Développement durable
Ecole polytechnique - EDF

Les séminaires de l'Iddri, n° 13

The contribution of network governance to sustainable development

Tom Dedeurwaerdere

Université catholique de Louvain
Fonds national de la recherche scientifique, Belgique

Février 2005

Iddri
6, rue du Général Clergerie
75116 Paris
Tél. : 33 (0)1 53 70 22 35
Corinne Cohen (corinne.cohen@iddri.org)

Chaire DDX
Siège : Laboratoire d'économétrie
1, rue Descartes – 75005 Paris
Téléphone : 33 (0) 1 55 55 82 15
Chantal Poujouly (poujouly@poly.polytechnique.fr

Abstract

In this paper we present a critical analysis of the concept of network governance and evaluate its use in implementing policies of sustainable development. In particular, we analyze the network approach proposed in the European Commission's White Paper on governance and its role in environmental policy integration. Relying on research on the concept of self-organization in complex adaptive systems, we show the limits of a concept of network governance that is solely based on self-organization. On this basis, we argue to complete the current network approach to sustainable development with initiatives that foster social learning in the governance networks. As an example of such an initiative, we examine the case of the recent experiment of Sustainability Impact Assessments.

Keywords: network governance, self-regulation, epistemic communities, sustainability impact assessment

Résumé

Cet article propose une analyse critique du concept de gouvernance en réseau et évalue son utilité dans l'implémentation des politiques de développement durable. Le point de départ de cette analyse est l'approche de la gouvernance en réseau basée sur l'auto-organisation qui est développée dans le Livre blanc sur la gouvernance de la Commission européenne. Tout d'abord, les limites d'une telle approche sont montrées, à partir des développements contemporains dans l'analyse des systèmes complexes. Ensuite, un autre modèle est présenté, qui met davantage l'accent sur l'apprentissage social dans les réseaux. Nous montrons la fécondité de ce second modèle à partir d'une étude de cas sur l'expérience récente des évaluations d'impact en termes de développement durable.

Mots clefs : gouvernance en réseau, autorégulation, communautés épistémiques, évaluations d'impact

Introduction

Network governance has been extensively studied in the literature[1]. It can be characterized by an attempt to take into account the increasing importance of NGOs, the private sector, scientific networks and international institutions in the performance of various functions of governance. From a functional point of view, the aim of network governance is to create a synergy between different competences and sources of knowledge in order to deal with complex and interlinked problems. In this functional perspective, governance is accomplished through decentralized networks of private and public actors associated to international, national and regional institutions. As we can read in the study of Reinicke and Deng, "a typical network (if there is such a thing) combines the voluntary energy and legitimacy of the civil society sector with the financial muscle and interest of the business and the enforcement and the rule-making power and coordination and capacity-building skills of states and international organizations" (Reinicke and Deng, 2002).

From a theoretical point of view, the concept of network governance is characterized by a profound ambiguity. Indeed, according to the analysis by Schout and Jordan of the concept of network governance, one can distinguish between two models of network governance: one that focuses on networks as self-organizing systems and one involving active steering (Schout an Jordan, 2003, p. 9).

The network governance approach adopted in the European Commission's White Paper on governance (CEC, 2001) relies on self-organization. This approach does in fact intend to reform our modes of governance by delegating a greater number of tasks to networks of self-regulated actors who negotiate their own collective coordination agreements. However, to some extent, this approach presupposes what it wants to achieve: the existence of a set of actors linked by sufficiently strong interdependences that allow for the emergence of decentralized solutions to

[1] For an overview cf. for example, Diani and McAdam, 2003; Haas P.M., 2004b; Ostrom, 2001; Reinicke and Deng, 2002.

coordination problems. Moreover, in the specific case of European governance, the institutional context is made up of heterogeneous actors and a complex hierarchy composed of different levels of interaction. The absence of any reflexivity on the institutional conditions for the emergence of collective action by self-organization has condemned the policy of environmental policy integration through network governance to go unheeded.

Nevertheless, as Schout and Jordan demonstrate (Schout and Jordan, 2003), another perspective is possible, which is not based on the assumption of an automatic institutionalization of self-regulated networks of activity, but which addresses explicitly the question of the appropriate institutional framework for network operation. Accordingly, in his analysis, Jordan proposes that networks should be supplemented with institutions that help to steer the network design, carry out audits, adopt a critical stance and formulate management alternatives (*Ibid.,* p. 12). Such institutions could also monitor the creation of coordination capacities between the different nodes in the network so as to permit the integration of common objectives into the network as a whole (*Ibid.,* pp. 18-19).

This ambiguity of the concept of network governance raises several questions: to what extent are networks self-organizing? Under what conditions the iterative process of institution building can lead to effective governance systems? And when and to which extent is there a need for institutional regulation of self-regulation? In order to study these questions, we will start from concrete examples where self-organized networks were mobilized to perform various functions of governance and analyze the conditions under which concrete examples of self-organized networks were able to function effectively. We argue that these conditions imply some specific limitations of forms of network governance that rely only on self-organization.

Accordingly, this paper is organized as follows. First, we argue for the incompleteness of forms of network governance that rely only on self-organization. For this we will focus on the extensive research on self-organization in the context of the management of common pool resources. Second, we analyze the possible contribution of organizational learning to a more complete approach of network governance. Finally, we will apply our analysis to the case of sustainability impact assessment.

The limits of network governance

In the current literature on theories of governance, there is a growing interest in self-regulatory solutions to the problem of collective management of our natural resources. Recourse to self-organized collective action is however not limited to community self-regulation, but occurs also in forms of market self-regulation such as labeling practices addressed to user communities or technical self-regulation through standardization agencies. The term self-regulation thus stands for a various set of arrangements, including forms of spontaneous self-regulation in particular communities as well as forms of self-regulation by delegation, which are based on a delegation of power by government to a self-regulatory agency (Gunningham and Grabosky, 1998). Accordingly, the prefix "self" in self-regulation should not be understood literally, but points to a certain degree of collective constraint, other than the one emanating directly from government, and allowing to realize objectives that can't be attained through individual market behavior alone. The current use of the term also implies that the collective constraint includes a series of well established rules, be it under the form of custom, or under the form of written rules, through which the activities are regulated (Ogus, 2000).

In order to analyze the limitation of the recourse to self-organizing collective action in governance networks, we will first study the question of the emergence of collective action in relation to the well documented case of self-regulatory solutions to the *in situ* conservation of biological diversity.

Self-regulation and polycentric governance

Current field research on self-regulation in the field of biodiversity governance highlights the emergence of collective action through the experimentation with local rules, allowing to take into account the carrying capacity of the ecosystem on which a community is relying. An example of such mechanisms is the collective management of *refugia* such as sacred ponds and groves as prevalent elements in indigenous resource-management systems (Gadgil, Berkes and

Folke, 1993). These systems might have evolved through a process involving an implicit trade-off between the benefits of the use of the natural resource and the necessity to minimize the risk of its depletion or extinction (Joshi and Gadgil, 1991). In another important case study, the emergence of such self-regulatory mechanism results from the accumulation of knowledge about the important role that species play in generating ecological services and natural resources. In his long-term field research in the Amazon basin, D. A. Posey discovered the role of *apete* or forest islands producing a range of useful products while enhancing the biodiversity. During their life span, the management rules of the *apete* evolve from the maintenance of a diverse productive zone, during a couple of years, to its transformation to a savannah-like open clearing, managed for fruit and nut trees, and "game farms" that attract wildlife (Posey, 1985). This type of management is in sharp contrast with the slash-and-burn practices that merely results in temporary clearings within the forest landscape. The evolution of such self-regulatory mechanisms is not however limited to indigenous people or subsistence farmers' communities. For example, a case study on coastal fisheries in Sweden shows how different local communities have developed dynamic, self-regulating patterns in order to adapt to the naturally fluctuating fish resources. Examples of these patterns are the integration of land based and fishery activities and the possibility to switch between a diverse set of occupations, and the seasonal rotation of fishing areas between the different fishers in the coastal community, where the allocation is decided by lot (Hammer, Jansson and Jansson, 1993).

This first type of field research shows the importance of the experimentation with rules and the accumulation of local knowledge about effective rules that allow for cooperative solutions to emerge. However, this adaptive mechanism does not consider the enabling conditions for this type of cooperative processes, such as effective monitoring and the use of graduated sanctions to ensure rule compliance (Ostrom, 1998, p. 8).

A second group of field research aims at going beyond this insufficiency. This research has shown that sustainable self-organized management can only be successful in a context where efficient communication and social control is possible, allowing for clear mechanisms for monitoring rule conformance and graduated sanctions for enforcing compliance (Ostrom, 1998, p. 8). This can be the case as well in small scale communities where direct communication enhances the possibility of the emergence of norms of reciprocity, reputation and trust (Ostrom, 1998, pp. 13-14), as it can be the case in larger communities, such as certain user communities of the Internet, where the possibilities of coordination and control are enlarged by the means of modern technology (Ostrom E. *et alii*, 1999, p. 279)[2].

However, in spite of the presence of these means of social control, the self-regulatory institutions remain subject to takeover by opportunistic individuals and to potentially perverse dynamics. In particular, self-organized governance systems can be dominated by a local leader or a power elite who only accepts changes that are an advantage to them or some appropriators will not organize because of the presence of low-cost alternative sources of income not depending on the use of the resource (Ostrom, 1999, p. 527). For example, in an empirical study of co-management of salmon fish stocks in the Pacific Northwest, S. Singleton shows the evolution of the norms of cooperation as a result of incentives for self-adjustment of the actors strategies in the networks (Singleton, 2000). When the co-management system was established in 1974, the involved parties, local American Indian and non-Indian fishermen, showed little willingness to collaborate. In this case, the enforcement of rules of conflict resolution by an independent judiciary, such as a rule that prohibits unilateral behavior and a rule imposing common management of the allocation of fish resources, provided for sufficient incentives for a self-regulatory solution to emerge.

The problem of network opportunism can thus be addressed in "larger, general-purpose units that are responsible for protecting the rights of all citizens and for the oversight of appropriate exercises of authority within smaller units of government" (Ostrom, 1999, p. 528). Indeed, according to the research on self-organization in common pool resource management, a polycentric governance system involving higher levels of government as well as the local self-regulatory units is more likely to provide incentives leading to self-organized, self-corrective institutional change (Ostrom, 2000, p. 42).

---

[2] The opportunistic appropriation of some « common good » by certain users of the Internet can be sanctioned through management of the mailing lists and the means of access to the network (Brousseau E., 2001, p. 358).

Self-regulated systems as complex adaptive systems

In this second paragraph, we would like to show that the conditions for successful self-organization that are highlighted in the empirical research, also play an epistemological role, in that they point to certain specific limitations of the modeling practice of rational action. In order to do so we will first consider these limitations within the context of the formal approaches of complex adaptive systems. Then, we will apply these limitations to the problem of the study of cooperative processes in self-regulatory strategies of natural resource management.

The model of behavior that emerges from empirical research on self-organization has received broad confirmation within the more general theoretical framework of complex adaptive systems. Such systems are characterized by a large number of active elements that produce emergent collective properties that are not present at the level of the elements, but only on the level of the combined effects of their interaction. A well-studied example of such emergent collective properties within a decentralized organization is the analysis by Hutchins of the navigation of a sailing-ship. It shows that successful navigation does not require a specified centralized scenario for all situations. Instead, when a member of the crew detects a failure in the organization, he communicates this to the closest competent person. This person executes a corrective task, which has a consequence in the further chain of interactions. In that manner, a collective behavior emerges through a history of local adaptations to a common environment (Hutchins, 1995)[3]. In this example, we find back the mechanisms that are also present in the research on self-regulation, i.e. the experimentation with a decentralized set of rules through a process of trial and error on the one hand and the accumulation of knowledge about effective rules on the other. Moreover, research on complex adaptive systems identifies some more specific mechanisms that also play a prominent role in the study of self-organization (Ostrom, 1999, pp. 521-523). These are firstly the role of tags in the categorization of the relevant properties of the environment ; second, internal models including scenarios adapted to particular situations and partial cognitive maps of the environment ; and finally, clusters of distributed rules allowing for a progressive adaptation to changing conditions in the environment through what has been called context transforming generalizations (Clark, 1993).

Modeling collective action in terms of complex adaptive systems has some important epistemological consequences (Dedeurwaerdere, 2001). First of all, the effect of the rules and mechanisms will vary according to the way the system itself constructs an interpretation of its operational context through tagging and internal modeling. Experimental evidence in cognitive science for example shows the role of different spatial reference systems in interpreting the information from the environment, such as reference systems linked to the body movement, the visual field or to the perceived object in the environment. In this context, the choice of the best fit rule or mechanism will depend on the way the environment is framed in a certain reference system. Second, we also have to reconsider the role of the environment in a different way. Indeed, the stabilization of the dynamics of self-organized systems depends on the asymmetrical evolution of the autonomous environment of the system. Even simple adaptationnist models have to acknowledge this fact. Indeed, the stabilization of the competition between species in an ecosystem depends on the sources of nutrition in the environment. If a perturbation modifies those sources, then the system will evolve to another equilibrium. The consequence of this interaction with the dynamics of the environment is that the collective behavior that results from a certain set of rules should not only be evaluated in terms of its short term consequences as a solution to a particular problem, but also in terms of its capacity to penetrate the self-organization of its environment. In that sense, a certain behavior also has an explorative function, in provoking and processing adequate feedback information from the environment. Combining these two limitations, one can say that a same behavior has a reversible and an asymmetrical effect: it is a produced effect adapted to a particular problem framed in a certain manner and it is information addressed to the environment (Maesschalck, 2001, p. 185). An example of this effect in cognitive ethology is the way fish explore the autonomous flow dynamics of the stream they navigate in, and, in particular, the way they provoke themselves whirlpools and use the autonomous feedback of these whirlpools to accelerate their swimming (Triantafyllou & Triantafyllou, 1995). This kind of

[3] This is also the principle of "loose coupled systems" as it is developed in the organizational literature (cf. Weick K.E. and Roberts K.H., 1993).

modeling was only made possible through a rethinking of the broader epistemological framework through which we approach dynamical systems in general.

Once we understand collective action from the point of view of the asymmetry of the evolution of its environment, we have to take into account some specific limitations on the modeling of self-regulation (Dedeurwaerdere, 2001). Indeed, because of the necessity to take into account the asymmetry of the evolution of the context, in order to account for the stabilization of a particular system, the models have to include a hypothesis on the long-term behavior of the environment.

As we saw before, empirical field research has shown that self-organized collective action can give rise to sustainable self-regulated management through experimentation with decentralized networks of rules and the accumulation of knowledge about effective rules adapted to particular situations. Now, if we want to take into account the epistemological limitations of this approach to collective action, we have to interrogate the specific assumptions on the asymmetrical evolution of the environment that are made when applying these models in specific contexts. For this, we have to consider the way in which the broader environment of the self-regulatory systems is taken into account in the adaptive process.

In the context of the research on common pool resources, it is the notion of polycentric political systems that accounts for the role of the broader environment. This notion has been introduced by Vincent Ostrom in the context of his study of metropolitan governance and connotes a system of "many centers of decision making which are formally independent of each other" (Ostrom, Tiebout & Warren, 1961, p. 831). This environment composed of interacting units can be said to function as a whole "to the extent that they take each other into account in competitive relationships, enter into various contractual and cooperative undertakings or have recourse to central mechanisms to resolve conflicts" (*Ibid.*). According to the analysis of Elinor Ostrom, this research demonstrates that "the study of the performance of a local public economy should be addressed at an interorganizational level of analysis rather than at the level of a single unit" (Ostrom, 2000, p. 35). It is this "modified form of competition" that can be viewed as a "method for reducing opportunistic behavior". Examples include the creation of larger consumption units in order to reduce the strategic behavior of the wealthy or to bear the costs of urban goods and services that do have large-scale effects (*Ibid.*).

However the evolution of this polycentric system depends on broader background beliefs such as a certain conception of democracy. In particular, the research of Vincent Ostrom points to the important role of civic education, which enables the intrinsic motivations of those motivated to solve problems on a conditional cooperative base. It thus seems that the contextual gain in cooperative behavior through the multiplication of interactions between local experimentations of self-regulation in a polycentric system depends in the long run on a broader theory of moral development. In that respect, one could ask if it is still possible to consider, as it is in the case of Habermas's work on communicative rationality, a symmetrical relationship between the evolution of the collective normativity and the evolution of the individual competences in the networks (cf. Lenoble & Maesschalck, 2003). Even if several authors today consider that the emergence of the moral skills necessary to solve social dilemmas in polycentrical systems is the fact of societies characterized by systems of liberal democracy, one cannot do without a clarification of the conditions of formation of these moral skills. In particular, the experimental work on moral development by Kohlberg has shown, through numerous comparative studies on a longitudinal basis, that one cannot juxtapose the moral evolution of individual persons and the evolution of a group as a practical space of experimentation of normativity (Kohlberg, 1981). According to Lenoble and Maesschalck, an asymmetrical relationship between two processes of moral development can be shown. The group constitutes a kind of intermediary culture, with its own references, its own codes. It allows to experiment with different behaviors without having to reassess them in function of the already acquired attitudes or the cultural codes in force. It is this incentive reflexive role of the group that explains its enabling effect on the evolution of the individual competences (Lenoble and Maesschalck, 2003, pp. 155-161).

The contribution of organizational learning to network governance

The first model of network governance is based on the emergence of collective action through self-organization. However, it does not automatically imply the improved integration of a perspective of sustainable development targets in the network institutions in question. The network approach creates a self-adjustment process for the strategies used by the actors in different self-regulated sectors of activity, but it does not develop initiatives against the larger background of legitimization that determines the overall normative orientation of the interaction between the different nodes in the network. In the specific case of sustainable development, this background is far from being stabilized. As shown by Godard's analysis, the sustainable development criterion is open to a great many interpretations and stabilization is, in turn, dependent on a series of legitimacy "tests" that take a variety of forms according to the different orders of legitimization (Godard, 2003, p. 8). Stabilization will therefore depend on a learning process enabling the different actors that make up this context to modify their background of normative beliefs so as to take into account the viewpoints of the largest possible community.

An example is the ambivalence of the environmental self-regulation policies of the European Commission's Fifth Environmental Action Program (1993-2000). The aim was to organize environmental self-regulation through a set of incentive mechanisms such as eco-labels, voluntary agreements and environmental management systems. But as it turned out, this incentive mechanism did not lead to the institutionalization of ecology in the social practices of production and consumption, but instead led to a technocratic management by the main actors. In order to put forward an interpretation in the policy networks in terms of a democratic, ecological approach, there is a need for practical guarantees that environmental groups will be included in the evaluation and the adaptation of the goals of the self-regulatory arrangements (Neale, 1997).

Another example, from the field of biodiversity governance, concerns the emerging regime of Access and Benefit Sharing in genetic resources. Indeed, in this field, we can observe, in response to the lack of effectiveness of classical modes of regulation, the creation of collective norms of management by self-regulation (Ten Kate and Laird, 2002, pp. 300-389). For example, associations of biological resource users, such as botanical gardens or private corporations, set up ethical codes of conduct or voluntary mechanisms of benefit sharing. This evolution has been especially important in sectors of greater homogeneity, as in the case of the international code of conduct MOSAIC[4] for the *ex situ* collections of microbial cultures or the declaration of common principles on access and benefit-sharing of the network of botanical gardens around the *Royal Kew Garden* in London[5]. In addition to these common initiatives, some companies have also created ethical codes on an individual basis, in the belief that this will improve their reputation as reliable supplier of genetic material (*Ibid*., p. 302).

However, the level of compliance of the different initiatives of self-regulation with the requirements embodied in the different international regimes (FAO, UNEP and WTO) depends actually only on reputation within a network of institutions or professionals of a certain sector. These mechanisms effectively increase the contract reliance for member organizations, but it remains difficult to compare efficacy with regard to the goals of equitable access and fair benefit sharing or to evaluate the capacity of such institutional arrangements to guarantee a level of compliance in more heterogeneous sectors.

Thus, if one wants to take into account the importance of the normative orientation of the governance networks from the point of view of the asymmetry of its contextual interpretation in the broader environment, a new question emerges, which relates to the experimentation of particular communities with normative background beliefs.

---

[4] Microorganism Sustainable Use and Access Regulation.

[5] Common Policy Guidelines for Participating Gardens on Access to Genetic Resources and Benefit-Sharing (www.rbg.ca/cbcn/cpg_index.html).

Social learning in epistemic communities

This is why a second model of network governance focuses on the role of institutional framing in enabling learning processes on the background of normative beliefs. We can analyze this second model in greater depth on the basis of the research conducted by Ernst and Peter Haas on the conditions for organizational learning in international organizations. In their work, they reveal the important role that can be played by communities with a specific knowledge, known as epistemic communities, which are geared towards the development of organizational concepts and common intersubjective meanings with respect to a certain problem (Haas and Haas, 2002*)*. In historical terms, these communities fulfilled an important role in the field of environmental governance. Well studied examples are, for example, the role of the scientists involved in the Villach Group in the field of climate change (Haas and McCabe, 2001) and the ecological community monitoring pollution in the Mediterranean (Haas P.M., 1990). However, as their research clearly shows, the role of these communities with regard to the development of common intersubjective meanings can also be observed in other fields. One can think for example of the United Nations' *Global Compact* initiative, "which is also an effort to develop and apply within an institutional setting consensual knowledge about best corporate practices by trying to encourage participation from corporate actors, civil society and experts" (Haas and Haas, 2002, p. 597).

With a view to clarifying the contribution of epistemic communities to international governance, Ernst Haas stresses the importance of two distinct learning processes. The first of these, learning as adaptation in its biological-cybernetic meaning, identifies learning as a form of "error correction", whether through a process of "trial and error", similar to natural selection, or a "feedback" process from the environment. It is this form of learning that characterizes the self-regulated complex adaptive systems that we considered in the first section. The central idea of this first form is to enable an organization to maintain its principal functions within established limits, in order to guarantee survival under variable environmental conditions. In the context of learning theories, this first form comes up against the need to bring about a transformation process that makes it possible for an organization to meet the challenges posed by new demands without having to reassess the organizations' program in its entirety and the justification that underlies its own legitimacy (Haas E., 1990, p. 34). However, organizations do not merely have a capacity for biological adaptation, but are also capable of reassessing their own fundamental principles. These self-programming abilities are the bases of a second learning process allowing an organization to redefine its own organizational mission when confronted again and again with the unexpected or ineffective results of its own actions (Haas E., pp. 35-37). The important point about this second process is that it incorporates evaluation and monitoring processes that are not geared towards maintaining the stability of the organization, but rather towards changing the basic beliefs of institutions and encouraging the emergence of new forms of life that are necessary to promote an ethics of sustainable development.

According to Ernst and Peter Haas (1995), unlike the incremental adjustment process that is typical of the interactionist visions of organizational learning, the learning process that is possible thanks to epistemic communities leads to changes in the work program of organizations by confronting them with a shared vision of cause and effect relationships between complex phenomena. Indeed, as they state in their research on organizational learning, "it is only a structured interpretation process, leading to the emergence of core beliefs around some operational models, that allows for the knowledge production to be related to new policy program proposals and to be integrated in the organizations mission statement and activities" (Haas and Haas, p. 266). It is the change in the work program of organizations as a result of a learning process that they designate by the term "organizational learning".

In a recent article, Peter Haas develops the different aspects of this concept of organizational learning in more detail. Indeed, as such, organizational learning includes both a substantial aspect – on the level of the learning of common knowledge and common norms – and a procedural aspect – on the level of the process of transmission of the results of the learning process to the relevant organizations (Haas, 2004a, 573). Current research on social learning in epistemic communities shows that one of the most important dimensions, on the procedural level, is the insulation of the learning process from the political process. Indeed, as

has been shown through several empirical studies, the independent character of the epistemic community enhances the influence of the ideas and so their transmission to the policy process. On the substantial level, the research shows the importance of a mechanism to include the widest possible community of interests in the production of the new ideas and to mobilize the widest possible knowledge base. Indeed, according to the concept developed by P. Haas, the aim of the social learning is to produce "usable" knowledge", which can be integrated in the working program of the political institutions in the end. Such knowledge should be accurate and of use to politicians and policy-makers (*Ibid*¸ p. 574) and can be characterized through the criteria of credibility, legitimacy and saliency (Siebenhüner, 2003, 2002). In this light, organizational learning depends on precise, accessible knowledge that contributes to the achievement of collective aims.

On the basis of this research, empirical studies have tried to determine conditions for improving our governance institutions in such a way as to satisfy both the need for social learning and the development of appropriate procedures for linking the new ideas to the policy process. One of the most studied examples in the literature on organizational learning is the role of the Intergovernmental Panel on Climate Change (IPCC) in the issue of global warming. According to Peter Haas and David McCabe, the key characteristics that made organizational learning possible in the field of climate science were : first, the presence of a learning process in a group of independent experts that gathered in the Villach meetings from 1985 to 1988 (Haas and McCabe, 2001) and, second, the establishing, within UNEP, of an open policy process, by its first executive director Maurice Strong, through which states were exposed to the consensual science produced by the Villach group, on the other hand (Haas, 2004a, p. 577). This group was able to propose new regulatory mechanisms in the field of climate change– introducing the concept of emission quotas – that were incorporated into the organizational activities of the United Nations Environment Program. However, the political control over climate science has increased in the years following the creation of IPCC – which replaced the work of the Villach group – and at present the IPCC reports suffer from a lack of legitimacy (*Ibid*, pp. 582-583).

The learning process in the climate change community has served as a model for the organization of similar assessment processes in other fields. For example, in the field of biodiversity governance, UNEP organized in 1994 the Global Biodiversity Assessment, which aimed to gather the relevant knowledge on biodiversity and to structure this information for the policy makers. However, this assessment was not as successful as the climate change assessment and the outcome was fare less influential. In 2000, a second round of assessments in the biodiversity field has been launched, through the Millenium Ecosystem Assessment. This second round presents major innovations, in that it aims at including contextual knowledge through local assessments and starts from a broader conception of knowledge, allowing to include traditional communities' perspective on biodiversity.

Application to the case of Sustainability Impact Assessment (SIA)

Impact assessment methods play an important role in improving European governance. They were originally conceived of as a major step towards more transparent modes of governance, increasingly based on scientific evidence. Thus, according to Colin Kirkpatrick, who led the research into the SIA methodology for the European Commission, impact assessment may be defined as "a methodology for identifying the potential or actual impact of a development program" (Kirkpatrick, 2003). As such, it may be regarded as an instrument for achieving "better governance", making it possible to improve "evidence-based decision-making and, by correlation, the quality of the decision-making process" (*Ibid.*).

In more general terms, impact assessment methods are an instance of integrated models, which aim at describing cause and effect relationships and interdependencies between the different elements in the earth's system, wherever possible in a quantitative manner (Janssen and de Vries, 1998, p. 49). Representative examples of integrated models include not only the EU's trade liberalization SIA, but also the environmental impact assessment tools used within the North Atlantic Free Trade Organization (NAFTA), the impact assessment models for climate change used by the Intergovernmental Panel on Climate Change (IPCC), or, previously, the models of limits to growth used by the Club of Rome. The belief underlying the construction of these integrated models is that, by integrating the human and natural dimensions of the

change in systems into the same modeling procedure, these models will be able to help to create a hierarchy of priorities for public policies and research activities and to reveal uncertainties and gaps in our knowledge.

Naturally, the principle of sustainable development, which serves as an optimization principle in these models, does not enable them to be stabilized unequivocally. In fact, the criterion of "sustainable development", used in impact assessment, allows for a great many interpretations. Godard, for example, identifies at least three interpretations of sustainability (Godard, 2003, p. 8): (1) a biocentric interpretation that maintains that all living beings have an intrinsic value and must therefore be protected, whilst taking into consideration complex interdependences between all living beings in the biosphere; (2) an anthropocentric interpretation that emphasizes the importance of preserving the earth's ecosystems in order to maintain human development potential; and (3) an economic interpretation of sustainable development that balances the long-term costs of the destruction of ecosystems in relation to the short-term benefits. As a result, the social legitimacy of the models will depend on the practical acceptance of the principle of sustainable development from the viewpoint of these different interpretations. The legitimacy of the models will therefore depend not only on scientific data, but also on the collective preferences of the populations affected by the project evaluated in the impact assessments. In the context of SIA, for instance, one example of conflicts with regard to collective preferences centered on the priority to be given in the models to protecting the environment on the one hand and promoting economic development in developing countries on the other (Borregaard and Bradley, 1999). Anther major line of tension concerned the different concepts of trade liberalization to be considered in the assessments, ranging from liberalization without mitigation measures to the integration of scenarios of limits to growth (WWF, 2002).

Such lack of consensus has severally limited the actual use of the SIA models. However, several signs of gradual change show an attempt to address these issues. From the outset SIA has been conceived as a multi-stakeholder process and several inclusive stakeholder consultation processes have been implemented, such as the dialogues between the contractors for the assessments and stakeholders with interests in individual sectors, or the meetings with civil society organized by the European Commission to discuss project reports (DG Trade, 2002). Further, the European Commission has already begun to address criticisms that have been addressed by stakeholders and civil society (Zerbe and Dedeurwaerdere, 2003). For instance, it has committed itself to improving the timing of SIA by commencing the process earlier in trade discussions, allowing for a better impact of the SIA on the trade negotiations. It has promoted greater coordination between researchers and negotiators and has trained negotiators about the potential value and use of assessment reports. And it has expanded opportunities for stakeholder input in the SIA process by hosting workshops within the EU and requiring stakeholder consultations in third countries when they are the focus of examination[6].

Nevertheless, no methodology is complete and several important gaps remain in the institutional design of the implementation of the SIA tool. In particular, as we mentioned above, the approach suffers from a lack of tools that specifically address the social learning process between the different stakeholders, allowing to integrate information coming from different type of actors and to combine a heterogeneous set of social values. First of all, on the level of the information gathering, there is a major difficulty in the actual design to integrate contextual information in the assessment process. For example, in one major assessment concerning the ACP countries, several tools have been developed to address stakeholder participation, but in practice the major data used in the reports resulted from a compilation of existing World Bank data, due to the difficulty to obtain direct information from the field in such a short time period (Thirion, 2003). Another example, also mentioned by one of the main contractors, concerns the restricted access of developing countries to electronic communication, which is one of the main

[6] The SIA of the ACP countries currently underway, for example, provides four workshops to be held in Brussels and two in West Africa and the Caribbean. Further, it calls for the use of electronic communications and expert networks to provide additional opportunities for stakeholder and expert consultations throughout the assessment process. See Price Waterhouse Coopers, 2003, *Sustainability Impact Assessment of the Trade Negotiations of the EU-ACP Economic Partnership Agreements: Final Revised Inception Report*, 31 January 2003, available online: www.sia-acp.org.

tools used in current SIA for enhancing transparency and broad public involvement (Krikpatrick, 2003). Second, on the level of the social values, there is a real difficulty to develop contextual models in home countries that better integrate local values because of lack of an institutional framework for producing local assessments. So there is no explicit construction of alternative ways of framing the problem of trade in sustainable development that is directly linked with *data* gathering and elaboration of models. Some NGO's have attempted to address this issue, such as in the long-term study of APRODEF on the impact of trade liberalization on the social status of women in Mozambique (Ulmer, 2003), but there is neither an explicit enabling of such local assessments, nor a clear connection of these initiatives to the overall assessment process.

It seems therefore that the institutional design of the social learning process on the trade and sustainable development *nexus* initiated by the SIA's remains an important stake to be addressed. SIA has been developed as a way of integrating sustainable development in the different policies of the European Commission, through improving the evidence base on which decisions are made, and hence the quality of decision making. As such, the experiment on SIA underway in the DG Trade has a broad ambition and can be considered as a potential extension of the Environmental Policy Integration (EPI) requirement mentioned in the EU founding treaties[7]. This requirement states that environmental considerations should be integrated into the design, adoption and implementation of policies in all policy sectors. At the current state of the methodology this broad objective has been implemented through an institutional process that allows to network independent experts, key negotiators and relevant stakeholders. As such, in a similar manner to the implementation of the EPI, it is a good example of the concept of network governance promoted by the European commission. However, as we argued throughout this paper, a long-term development of such networking can only be successful if it is able to develop in the same time incentives for organizational learning in the broader institutional environment of the networks.

Conclusion

The emerging networks of public-private partnerships and contracts aim to offer innovative answers, in the international context, to the present difficulties faced by the system of multilateral cooperation. Nevertheless, in most cases, these answers still remain confined to a functional adaptation to the new requirements for global regulation, and fail to take into account the reflexivity of the different actors in the construction of the networks. Indeed, the principle of these networks is to bring together, often by the use of contractual relationships, areas of competence and actors of a different nature around a common object, thereby attempting to bridge and articulate different levels of governance. However, there is no reflection on the mode of construction of a common perception or common norms in the networks, nor on the mode of organization of the rules for cooperation within the networks. It is this dimension that this paper developed, on the basis of case studies in the field of sustainable development, in order to enhance our understanding of the construction of such networks.

Our analysis showed that one can already identify, through these experiments of network governance, two steps in the ameliorations of our institutions for global governance. A first step aims at mobilizing the capacities for self-regulation of the actors in order to improve the current governance arrangements. A second step tries to integrate the necessity for organizational learning into the institutional environment of the self-regulated sectors of network activity. This further step considers the role of a polycentric set of institutions in enabling an evolution of the background of normative beliefs, on which the successful implementation of sustainable development through self-regulation depends.

Following the critical analysis of Schout and Jordan of the concept of network governance in the White Paper of the European Commission, we argued in this paper the limits of a concept of network governance solely based on self-organization for implementing sustainable development policies. Indeed, as extensive research on self-organizing solutions to the management of common resources has shown, the sustainability of these initiatives depends on

[7] Initially in the 1987 Single European Act ; more recently in Article 6 of the 1997 Amsterdam Treaty.

background beliefs in the broader institutional environment in which the networks are operating. That's why we argued, relying on the work of Peter and Ernst Haas, Olivier Godard and Bernd Siebenhüner, to supplement the current network approach to sustainable development with initiatives that foster organizational learning in the institutional environment of the networks. In particular, the creation of appropriate institutions for social learning on the trade and sustainable development *nexus* should allow enhancing the credibility, legitimacy and saliency of the network institutions. As we tried to show in our case study on Sustainability Impact Assessment, the further development of hybrid tools such as contextual models that better integrate social values and the enabling of local assessment capacity that broadens the information base from the field could enhance both the legitimacy and the credibility of the models.

Finally, we would also like to indicate some theoretical issues for further research. The basic argument in the literature for the advantage of network governance over traditional command and control regulation or, alternatively, recourse to market regulation, is its capacity to deal with situations of intrinsic uncertainty and decision making under bounded rationality (Haas, 2004b ; Ostrom, 2001 ; Brousseau and Curien, 2001). It is also this argument that we have used in this article, both in our analysis of the contribution of self-regulation to sustainable management of natural resources, as in our analysis of the amelioration of network governance through organizational learning. In those cases of complex interdependent systems, we argued, network governance provides for a functional amelioration of our governance arrangements, as it provides for the emergence of collective action under appropriate conditions for organizational learning in the institutional environment.

However, the choice for the network approach can also be based on a second motivation. Indeed, the functional analysis is a static approach to institutions and as such compares the relative advantage of one type of governance institution over another. But, introducing a new institutional mechanism also has a dynamic aspect. Indeed, the introduction of a new governance arrangement is always both a solution that is adequate to the actual state of a certain context and a new incentive that will transform that context. Considering this second, evolutionary, dimension of institutional innovation, one can consider the contribution of network governance to ameliorating current governance arrangements from a different perspective. An evolutionary process is always both a process of generation of new possibilities and selection of possibilities (Hodgson, 1999). In this evolutionary process, the network approach to sustainable development could have a role in maintaining the broadest possible range of possibilities of action for the concerned actors. Indeed, the feedback loops considered in the interactive networks allow organizing an institutional process of critical evaluation of the consequences of new institutional mechanisms that aim to implement sustainable development policies. This critical evaluation can consider both the unintended consequences of new mechanism from the point of view of the concerned actors or re-evaluate the possible contribution of possibilities of action that have not been selected for in the evolutionary alternatives[8]. It is this critical – or reflexive – dimension of network governance that we also have tried to highlight in this paper, through our focus on combining self-regulation with polycentric governance on the one hand and organizational learning with the development of context-based assessment capacities on the other. However, it still remains to be seen if network governance would be an appropriate tool for such a reflexive approach to institutional innovation and, if so, how one could address the enabling of the reflexive capacities in the networks.

[8] For an excellent overview of the use of evolutionary models in international relations theory, cf. for example Kahler M. 1999 (especially p. 195 for the two perspectives suggested here). For an application of evolutionary thinking in the field of institutional economics and its contribution to reflexive governance, cf. also Dedeurwaerdere, 2005.

Acknowledgements

A first draft of this paper has been presented at the International Environmental Governance Conference in Paris organized by IDDRI (Centre Kleber, 2004) and at the *Seminaire de développement durable et économie de l'environnement* de l'IDDRI / Ecole Polytechnique-EDF (IDDRI, 2004). The case study benefited from a seminar on SIA organized within the SUSTRA network at the Université catholique de Louvain (Louvain-la-Neuve, 2003). We would like to thank the participants of these meetings for their input and comments on this work. A reworked version of this paper will be published in the collective volume of the Sustra network that will be published by Ashgate in spring 2005.

References

Borregaard N. and Bradley T. (1999), "Towards understanding costs and benefits of trade liberalization: a developing country perspective", presentation at the OECD Workshop on "Methodologies for environmental assessment of trade liberalisation agreements" held on 26-27 October 1999.

Brousseau E. (2001), "Régulation de l'Internet, L'autorégulation nécessite-t-elle un cadre institutionnel ?", in *Revue Economique*, Vol. 52 (hors série), pp. 349-377.

Brousseau E. and Curien N. (2001), "Economie d'Internet, économie du numérique", in *Revue Economique*, 52, pp. 7-36.

CEC (2001), "European governance: A white paper", COM2001.428 final, Brussels.

Clark A. (1993), *Associative Engines: Connectionnism, Concepts and Representational Change*, MIT Press, Cambridge (MA).

Diani M. and McAdam (eds.) (2003), *Social Movements and Networks: Relational Approaches to Collective Action*, Oxford University Press, Oxford.

Dedeurwaerdere T. (2001), *Action et Contexte, Du tournant cognitiviste à la phénoménologie transcendantale*, Olms, Hildesheim/Zürich/New York.

Dedeurwaerdere T. (2005), "From bioprospecting to reflexive governance", *Ecological economics*, forthcoming April 2005.

DG Trade. 2002. *Trade Policy Dialogue with Civil Society: Sustainable Development and Trade*. Available online at www.trade-info.cec.eu.int.

Gadgil M., Berkes F. and Folke C. (1993), "Indigenous knowledge for biodiversity conservation", in *Ambio*, Vol. 22 (2-3), pp. 151-156.

Godard O. (2003), "Sustainability impact assessment and integrated modeling in controversial universes", text presented at the SUSTRA conference, 27-28th March 2003, on line at www.cpdr.ucl.ac.be/workshop_program.php

Gould R.V. (1993), "Collective action and network structure", *American Sociological Review*, 58, pp. 182-196.

Gunningham N. and Grabosky P. (1998), *Smart Regulation: Designing Environmental Policy*, Clarendon Press, Oxford.

Haas E.B. (1990), *When Knowledge is Power: Three Models of Change in International Organizations*, University of California Press, Berkeley/Los Angeles/London.

Haas P.M. (1990), *Saving the Mediterranean: The Politics of International Environmental Cooperation*, Columbia University Press, New York.

Haas P.M. (2004a), "When does power listen to truth? A constructivist approach to the policy process", in *Journal of European Public Policy*, pp. 569-592.

Haas P.M. (2004b), "Addressing the Global Governance Deficit", *Global Environmental Politics*, forthcoming nov. 2004.

Haas P.M. and Haas E.B. (1995), "Learning to learn", *Global Governance*, 1, pp. 255-285.

Haas P.M. and Haas E.B. (2002), "Pragmatic constructivism and the study of international institution", in *Millennium: Journal of International Studies*, pp. 573-601.

Haas P.M. and McCabe D. (2001), "Amplifiers or dampeners: international institutions and social

learning in the management of global environmental risks", in *Learning to Manage Global Environmental Risks*, *Vol. 1*, MIT Press, Cambridge (MA), pp. 323-348.

Hammer M., Jansson A.M. and Jansson B.-O. (1993), "Diversity change and sustainability: Implications for fisheries", in *Ambio*, Vol. 22 (2-3), pp. 97-105.

Hodgson G.M. (1999), *Evolution and Institutions*: *On Evolutionary Economics and the Evolution of Economics*, Edward Elgar, Northampton (MA).

Hutchins E. (1995), *Cognition in the Wild*, MIT Press, Cambridge (MA).

Janssen M. and de Vries B. (1998), "Global modeling: Managing uncertainty, complexity and incomplete information" in C. van Dijkum, D. de Tombe, and E. van Kuijk (eds.), *Validation of Simulation Models*, SISWO, Amsterdam.

Joshi N.V. and Gadgil M. (1991), "On the role of *refugia* in promoting prudent use of biological resources", in *Theor. Popul. Biol.*, 40, pp. 211-229.

Kahler M. (1999), "Evolution, choice and international change", in D.A. Lake and R. Powell, *Strategic Choice and International Relations*, Princeton University Press, Princeton.

Kirkpatrick C. (2003), "Consultation and Participation in European Governance Reform: The Role of Sustainability Impact Assessment", presentation at the SUSTRA seminar on SIA, 28th of March 2003.

Kohlberg L. (1981), *Essays on Moral Development, Vol. 1: The Philosophy of Moral Development, Moral Stages and the idea of Justice*, Harper et Row, San Francisco.

Lenoble J. and Maesschalck M. (2003), *The Action of Norms,* Kluwer International, London/New York.

Maesschalck M. (2001), *Normes et contextes*, *Les fondements d'une pragmatique contextuelle*, Olms, Hildesheim/Zürich/New York.

Neale A. (1997), "Organising environmental self-regulation: Liberal governmentality and the pursuit of ecological modernisation in Europe", in *Environmental Politics*, Vol. 6 (4), pp. 1-24.

Ogus A. (2000), "Self-regulation", in B. Bouckaert and G. De Geest (eds.), *Encyclopedia of Law and Economics*, *Volume V: The Economics of Crime and Litigation*, Edward Elgar, Cheltenham, pp. 587-602.

Ostrom E. (1998), "A Behavioral Approach to the Rational Choice Theory of Collective Action", in *American Political Science Review*, Vol. 92 (1), pp. 1-22.

Ostrom E. (1999), "Coping with tragedies of the commons", in *Annu. Rev. Polit. Sci.*, 2, pp. 493-535.

Ostrom E. (2000), "The danger of self-evident truths", in *Political Science and Politics*, Vol. 33 (1), pp. 33-44.

Otrom E. (2001), "Decentralization and development: the new Panacea" in K. Dowding *et alii* (eds.), *Challenges to Democracy: Ideas, Involvement and Institution*, Plagrave Publishers, New York, pp. 237-256.

Ostrom E., Burger J., Field C. B., Norgaard R. B. and Policansky D. (1999), "Revisiting the commons: Local lessons, global challenges", in *Science*, Vol. 284, pp. 278-282.

Ostrom V., Tiebout C. H. and Warren R. (1961), "The organization of government in metropolitan areas: A theoretical inquiry", in *American Political Science Review*, 55 (December), pp. 831-842.

Posey D. A. (1985), "Indigenous management of tropical forest ecosystems: The case of the Kayapo Indians of the Brazilian Amazon", in *Agrofor. Syst.* 3, pp. 139-158.

Reinicke W.H. and Deng F. (2000), *Critical choices: The United Nations, Networks and the Future of Global Governance*, International Development Research Council, Ottawa.

Schout A. and Jordan A. (2003), "Coordinated European governance: self-organising or centrally steered ?", CSERGE working paper, EDM 03-14, 25 pp.

Siebenhüner B. (2002), "How do scientific assessments learn?", *Envrionmental Science and Policy,* 5, pp. 411-427.

Siebenhüner B. (2003), "The changing role of nation states in international environmental assessments", *Global Environmental Change*, 13, pp. 113-123.

Singleton S. (2000), "Co-operation or capture ? The paradox of co-management and community participation in natural resource management and environmental policy-making", in *Environmental Politics*, Vol. 9 (2), pp. 1-21.

Ten Kate K. & Laird S.A. (2002), *The Commercial Use of Biodiversity*, Earthscan, London.

Thirion M.-C. (2003), "Sustainability Impact Assessment and Trade Liberalization in the Developing World: The case of the ACP countries", presentation at the SUSTRA seminar on SIA, 27th of March 2003.

Triantafyllou M. and Triantafyllou M. (1995), "An efficient swimming machine", in *Scientific American*, 272, pp. 64-71.

Ulmer K. (2003), "The gender dimension of impact assessment studies", presentation at the SUSTRA seminar on SIA, 27th of March 2003, on line at www.cpdr.ucl.ac.be/workshop_program.php.

Weick, Karl E. and Roberts, Karlene H. (1993), "Collective mind in organizations: Heedful interrelating on flight decks", *Administrative Science Quarterly,* 9 (38), pp. 357-381.

WWF (2002), "Changing the balance of trade: WWF briefing on sustainability assessment of EU trade policy", on line at www.panda.org/epo/.

Zerbe N. and Dedeurwaerdere T. (2003), "Sustainability Impact Assessment", SUSTRA policy brief paper, on line at http://www.agro-montpellier.fr/sustra/.