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Tom Dedeurwaerdere (FRS-FNRS/UCL)

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Abstract This paper analyses the governance characteristics of an innovative policy instrument for sustainable forest management in Flanders, namely a mechanism based on social learning and collaborative planning within joint forest management organizations. These organizations have been successful in involving non-industrial private forest owners in managing the transition towards sustainable management in small-scale forestry. Why was this innovative scheme successful? And what are its shortcomings and possible limitations? The hypothesis developed in this paper is that the success of the forest groups has been made possible by the explicit organization of a process of social learning, leading to change in the beliefs and the social norms of forest owners and users. Based on the analysis of this case of cooperative forestry, and on theoretical insights from governance theory, the contribution to fostering social learning from three distinct mechanisms is established, these being (1) the recourse to sustainability criteria and indicators as an open-ended learning device, (2) the experimentation with disruptive action strategies to put new beliefs into practice, and (3) the building of new forms of social cooperation around these new beliefs and practices.

Keywords Forest groups · Institutional analysis · Governance · Coupled socio-ecological systems

Introduction

Socio-economic research in the last decade has shown that a strict focus on the species diversity concept, and the related policy of strict nature reserves, is not

T. Dedeurwaerdere (✉)
Centre for the Philosophy of Law (CPDR), Université catholique de Louvain, Collège Thomas
More, Place Montesquieu 2, Box 15, Louvain-la-Neuve 1348, Belgium
e-mail: tom.dedeurwaerdere@uclouvain.be

appropriate for the management of the important parts of biodiversity that are situated outside nature reserves. The research on ecosystems services has developed an alternative concept, which seems more appropriate for the management of coupled human and ecological systems. However, the translation of this concept to the reform of institutions for environmental governance is still far from complete.

This paper analyses the role of institutional design and social learning in the transition towards ecosystems management. In particular, two types of mechanisms are examined which are important conditions for generating institutional change, and which have been studied in the broader context of new institutionalism in the social sciences (Brousseau 1999; Aoki 2001; North 2005; Eggertsson 2005; Dedeurwaerdere 2006). The first is the creation of incentives for knowledge generation and experimenting with new beliefs—the cognitive dimension of the process of change—and the second is the creation of mutually supportive dynamics between institutional change and change in the social norms—the social embedding of the process of change. The hypothesis behind this analysis is that a combination of cognitive and normative mechanisms of social learning is needed to generate effective institutional change.

The research procedure developed in this paper is based on the comparison of various mechanisms of social learning, from both a theoretical and an empirical perspective. The aim is to show the relevance of the theoretical propositions in governance which explicitly address the question of the organization of social learning. As well, the case of forest groups in Flanders, where a specific model of social learning has been implemented, is investigated. The analysis of the mechanisms of social learning in the forest groups will be based on a combination of data coming from actor representations, mainly original interviews of experts and past surveys of forest owners, and artifacts produced by the organizations, such as internal meeting notes and official reports.

The paper is structured as follows. The first section discusses the role of the forest groups in the context of forest policy in Flanders. The second section presents the framework used in the analysis of the social learning in the forest groups. The third section evaluates the contribution of the two components of dynamic institutional efficiency to social learning. The last three sections draw some implications of this analysis for the role of the forest group coordinator in the process of change and for possible governance frameworks for addressing the collective action problems encountered in complex forest landscapes.

Forest Groups in Flanders and the Problem of Social Learning on Sustainable Forest Management

In densely populated regions, such as Flanders, multifunctional forest management appears to be the most to-hand means of extending the forest-related services. Since in Europe and the USA non-industrial private forest (NIPF) owners control more than half of the forests (approximately 70% in Flanders), the promotion of multifunctional management depends strongly on the cooperation of NIPF owners. To encourage NIPF owners to adopt the government policy of multifunctional forest

management, policy-makers have used a wide range of regulatory, economic and informational instruments. The NIPF owners mostly do not support these instruments because the underlying ideas conflict with their opinions, harvest rights are not protected and they consider that there is too much interference from the federal government (Brunson et al. 1996). Accordingly, more successful instruments should inform and educate forest owners, allow wood trade, involve the owners of neighbouring forests and be independent of government (Brunson et al. 1996). Forest groups (forest cooperatives, forest owner associations and cooperative forest management arrangements) exhibit these characteristics and are used in more than 15 European countries (Kittredge 2005).

In the case of Flanders, formation of forest groups has led to quite impressive outcomes in a relatively short period. The overall region which is covered by the forest groups recognized in 2006 is estimated to be 100,000 ha which amounts for 75% of the forest cover in Flanders (Demaeyer 2007). Each of the forest groups focuses on sub-areas within their respective working area, where forest degradation is progressing most rapidly or where dispersed ownership is highest. The forest groups are not dealing with large public forests or, in principle, with private forests larger than 5 ha. Therefore, the management activities have to be targeted according to the needs of the small forest owners (who mostly manage between 0.5 and 1.5 ha). The main decision-making body of the forest group is the general assembly of forest owners, assisted by a forest group coordinator and one administrative officer. All decisions on forest management, felling and negotiations with user organizations are taken by the general assembly, on the basis 'one man, one vote', independently of the forest area owned. The forest groups also strive for a balanced membership amongst small public and private forest owners, requiring a majority of private forest owners in the general assembly.

A well-established forest group is the Bosgroep Zuiderkempen (BZK), which operates in a landscape containing about 8,000 ha of forest. Within this landscape a priority working area of 1,134 ha of highly scattered forest was selected for building cooperative forest services during the period 2003–2006. In the management plan for 2007–2010 it is specified that another 801 ha will be added to this working area. In the working area, meetings with forest owners are organized, membership to the forest group proposed and forest management plans discussed. As a result of this process, in total 513 ha of private forest (45% of the working area) has been integrated in detailed common forest management plans, involving a total of 462 small private forest owners (an estimated 30% of the total number of owners in the working area). Moreover, through the negotiation of access plans between the forest group, user representatives and the local authorities, a total area of 342 ha of private forest has been opened up to the various user groups (30% of the working area). If similar results could be accomplished in the other forest groups in Flanders, then an expected total area of 5,909 ha could be opened up for forest users in the near future, which is more than the total area of the largest remaining public forest in Flanders.

Why is this innovative scheme successful, in a policy field where the command and control and economic incentive policies that were already in place from 1990 to 1996 were not able to produce the desired outcomes? Firstly, the failure of the

transition to sustainable forest management cannot be explained by an insufficient level of economic incentives such as cost-share policies (Serbruyns and Luysaerts 2006). This is in sharp contrast to the failure of the Flemish afforestation policy on farm lands, where the level of economic incentives is clearly insufficient for compensating for the lost revenue (Van Gossum et al. 2008). Indeed, as revealed by an in-depth study of forest conversion which includes the BZK working area, the economic incentive scheme covers more than the revenue lost to forest owners through forest conversion (Verheyen et al. 2006). For instance, the lost revenue is estimated to be between 45 and 96 €/ha/year for conversion from a Corsican pine stand to pedunculate oak under a rotation period of 77 years while the direct subsidies are about 150 €/ha yearly. Nevertheless, between 1990 and 1999 only 200–250 owners per year applied and received the reforestation subsidy (Serbruyns and Luysaerts 2006). Second, from an ecological point of view, the 1990 Forest Decree was already based on a detailed set of criteria and indicators for multifunctional forest use and management, which have been agreed upon in the Pan European Forestry process, where both forest interests and nature movements are represented. Hence it seems that the issue at stake here is not the lack of economic incentives or inappropriate legal concepts from an ecological point of view.

The main innovation introduced from 1996 on, through the progressive creation of the forest groups, is the explicit organization of processes of collective learning amongst the forest owners and stakeholders. The task of the forest group is to assist individual forest owners with the drafting of their individual forest management plans, to organize their approval as part of an overall management plan of the forest group, and to deliver a set of forest management-related services to help with the implementation of these management plans. Examples of these services are training and technical assistance in preventing the further spread of invasive species and the organization of the selling of wood from the small-scale forest plots. An important element in this voluntary scheme is that individual forest management plans that are approved as part of the overall forest management plan of the forest group do not need a separate approval by the forest agency. All other individual forest owners that are not part of the forest group need to apply individually for such permission.

In order to analyze the potential contribution of the forest groups to social learning on sustainability, the following research questions are addressed. What was the nature of the social learning in the forest groups? Was this social learning successful, and if so, what were its main strengths with regard to the sustainability debate? What are the main stumbling blocks and shortcomings? What are the mechanisms that are proposed within the forest group to go beyond these observed shortcomings, and did these mechanisms bring any progress?

Social Learning and Sustainability: A Theoretical Model

Drawing upon concepts of organizational learning from political science and organizational studies, a scientific framework may be developed for the analysis of the social learning processes in the forest groups. Social learning is an intensively

discussed topic in various academic disciplines, and has been defined in numerous ways. In the more specific context of the use of sustainability impact assessments in organizations, which is the focus of this paper, social learning has been defined as a process of long-lasting change in the behavior or the general ability to behave in a particular way that is founded on changes in knowledge (Siebenhüner 2002, p. 421). Because the focus here is on the effects of the creation and the operation of specific organizations—the forest groups—on change in behavior of forest owners, there is good reason to focus on the processes of change that take place at the collective level. The notion of organizational learning implies that these are processes which go beyond the mere sum of individual learning by the members of the forest groups. However, organizational learning is also dependent on individual members, their learning and their behavioral changes. In line with this reasoning, the literature on organizational learning understands organizational learning as the change of procedures, structures, shared beliefs and knowledge that are assembled from individual contributions through the division of labour established by the organization (for example Argyris and Schön 1996). In the case of the forest groups, one can similarly assume that the cognitive division of labour allows for the possibility of organizational learning both on the sustainability assessments and the common management plans.

For the purpose of this analysis, a more detailed framework is needed that helps to generate hypotheses about possible influences on social learning in cooperative management organizations. Drawing on the research findings and concepts of organizational learning, this analysis distinguishes between two basic types of organizational learning, and discuss some explanatory factors as they have been developed in the context of the work of Charles Sabel on democratic experimentalism (Dorf and Sabel 1998).

In the various models of organizational learning, a number of learning processes have been distinguished. One of the most important distinctions, which is also a key feature of this case study, is that between first order and second order learning, or between adaptation and learning as reframing, as discussed for example by Haas (1990). The first type of learning, 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 through a feedback process from the environment. This type of learning characterizes complex adaptive systems faced with changing environmental conditions. The central idea of this first type of learning process, when applied to organizations, is to enable an organization to maintain its principal functions within established limits, under variable environmental conditions. This first type makes it possible for an organization to meet the challenges posed by new demands, without having to reassess the organization's program in its entirety, or the justification that underlies its own legitimacy (Haas 1990, p. 34). However, organizations do not merely have a capacity for biological adaptation; they are also capable of reassessing their own fundamental principles. These self-programming abilities are the basis 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 1990, 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 possibilities of action that are necessary to promote an ethos of sustainable development.

The conditions for reframing beliefs in open-ended situations have been studied in more detail by Charles Sabel (1994), both in the context of firm behavior, in the so-called non-standard firm, and in the context of public policy, in so-called deliberative polyarchies. Because the interest here is in the cooperative learning in forest groups composed of non-industrial private forest owners, the hypotheses developed in the theory of the non-standard firm is relevant, and is adapted to these hypothesis. In his work, Sabel showed the important role of two specific conditions that are crucial to effective open-ended learning: first, the role of practical incentives for promoting the exploration of disruptive possibilities (Dorf and Sabel 1998, p. 286), and second a set of institutional rules that define the engagement in the cooperative enterprise. An example of a process illustrating the first condition is the recourse to benchmarking. Benchmarking consists in a survey of current or promising products and processes, which identify the products and processes superior to those a firm presently uses, yet are within its capacity to emulate and eventually surpass. Benchmarking thus allows a comparative evaluation with possible improvements, and hence provides an incentive to disrupt the current routines and representations of possible outcomes. A second example is the simultaneous engineering by teams in the firm based on the initial benchmarking and on the correction of errors revealed by comparing the results amongst the teams. The second condition points to the importance of defining a set of rules of engagement of the actors in the joint enterprise. Examples of such rules are mutual monitoring of each participant's contribution, information sharing and the mutual assessment of each participant's reliability in relation to the joint activity.

Based on these two conditions, the practical incentives and the rules of engagement, increased productive learning on the background beliefs in the forest groups can be expected to occur when the assessment process generates (1) joint investigation and comparative evaluation of disruptive possibilities, and (2) mutual comparison to verify the reliability of the outcomes proposed by various groups. In the cases where these conditions are realized, one expects a broadening of the set of possible productive action strategies beyond the current routines and representations of the organization.

Case Study on Social Learning in the Forest Groups in Flanders

This section presents the results of the analysis of the mechanisms of social learning in the case of forest groups in Flanders. The aim of this analysis and the research methodology adopted are first presented. A framework based on the use of sustainability criteria in the assessment of the activities of the forest group and in the development of its management targets is then developed. Finally, comments are made on failures in addressing particular sustainability issues, and the contribution

of disruptive learning to overcoming some of these failures, both within the forest group and between the forest group and the forest user groups.

Research Methodology

The case of the forest groups in Flanders has already been the object of several studies and research papers (Serbruyns and Luyssaert 2006; Van Gossum and De Maeyer 2006; Verheyen et al. 2006). These studies provide an excellent assessment of the strengths and weaknesses of the forest groups, mostly from the point of view of an evaluation of the implementation of the current forestry policy in Flanders. The most salient of these strengths and weaknesses have been summarized in the first section above. However, the specific contribution of social learning to sustainable forest management, and the role of the various forms of social learning in managing the transition towards sustainable management, is not the specific focus of these studies. To address the latter issue, this paper draws on information available from the previous studies in the analysis of the social learning processes in forest complexes of the forest group Bosgroep Zuiderkempen. This forest group provides an ideal case study to compare the level of social learning and its effects amongst the forest complexes in a detailed manner. Bosgroep Zuiderkempen is one of the oldest forest groups in Flanders, and has nine forest complexes, and substantial survey data on individual forest owners within the area are available. To analyze the organizational learning in this forest group as a collective entity, a series of expert interviews with the forest group coordinator and with the coordinator of the forest group program at the Flemish Forest Agency were conducted in 2007–2008. The findings from these interviews have been integrated with the information contained in the internal meeting notes and official reports of the forest group, and with the results of the previous studies published in the literature.

Organizational Learning in the Forest Groups

The operation of the forest groups has been conceived as a gradual process where (1) management objectives are defined based on the perceptions of opportunities by forest owners, and where (2) the information generated is used to adapt the operational objectives of the forest group. The forest group receives support from the government, as long as the operational objectives, formulated through a clear set of indicators, are met and the indicators reveal progress in moving towards the government targets.

The government targets are formulated through the set of criteria and indicators that came out of the Pan European Forestry process, the so-called Criteria for Sustainable Forest Management (CSFM). The CSFM are a clear expression of what the concept of multifunctional forest management would look like in the ideal case. They define clear targets organized around six main sets of criteria of sustainable forestry. Each set of criteria is measured through a set of legally specified indicators, leading in total to a set of 24 criteria and 52 indicators, which can be grouped as criteria for:

1. implementation of the existing legislation
2. maintaining the social and cultural functions of the forest
3. maintaining the economic and productive functions of the forest
4. contributing to the protection of the environment
5. contributing to biodiversity conservation, and
6. monitoring and planning of the forest management.

The gap which exists between these government targets and the operational objectives adopted by the forest group can be analyzed by using the available data of the Bosgroep Zuiderkempen (BZK), which is considered a reference case by the Flemish government. In BZK, the learning process for the translation of the CSFM criteria into effective management has led to a detailed operational management plan for 2007–2012 adopted at the General Assembly of the forest group in 2006. This plan can be considered to be a synthesis of the debates that have been going on over the priorities for sustainable forest management in the BZK since its creation in 1999. The comparison between the government targets and the operational targets results in a matrix of correspondences and gaps. This matrix has been used to analyze: (a) the representation of sustainable forest management by the BZK organization (self-evaluation), and (b) the remaining challenges in the learning process, not addressed in the operational targets.

The main implications which can be drawn from this matrix are:

- (1) Correspondences between CSFM and BZK: all the indicators within the criteria set 2 (social and cultural functions) and 6 (monitoring and planning); most of the indicators of criteria set 3 (economic functions)
- (2) Gaps between CSFM and BZK: no clear reference in BZK to criteria set 4 (environmental services) and few to criteria set 5 (forest diversity)

The main sustainability indicators and targets that have been adopted by the BZK forest group concern the social and cultural functions of the forests and the protection of forest borders and of heath landscapes. A clear target of 690 ha forest area with selective access of the human population to the forest (35% of the extended working area) and an information and reporting system of the local population's wishes has been introduced (target audience 350 persons reporting to the forest group/year). Forest management measures for fragile and biodiversity-rich habitats have been planned with the use of a detailed geographical information system (GIS), for an area of 150 ha a year. Further action for combating invasive species (especially American bird cherry, *Prunus serotina*) will be pursued in the priority working area. These sustainability targets set by the forest owners are the result of awareness building and discussion and negotiation around experimental test cases.

The comparison also reveals some important gaps. Tree diversity as such is not taken over as an explicit measure of sustainability by the forest owners. Apart from habitat protection, most of the indicators within the forest biodiversity category (criteria set 5) are not taken into account. Also, the indicators for contribution to environmental protection (criteria set 4) do not appear in the targets of the management plan.

In summary, the use of indicators allows creation of a flexible framework for implementing the forest legislation and for coordinating and monitoring the use of various subsidy and economic incentives from both regional and European authorities. From a dynamic perspective, the legal framework leaves the forest groups room to build their own operational management plans by selecting the set of indicators that they consider most relevant for their own forest landscape. This use of indicators allows a process of internal self-evaluation around feasible and evolving targets in the collective management organization and a process of feedback to the government, leading to the design of new incentives schemes or adjustment of its policy.

Learning by Mutual Monitoring in the Forest Groups

The decentralized implementation of the Forest Decree through the creation of the collective management organizations has proved to be an effective tool in fostering social learning. In particular, effective learning on common operational targets has been achieved through the use of criteria and indicators as a common benchmark to gauge the progress in the learning process. However, important aspects of sustainable forestry, such as access to private forests in Flanders and biodiversity conservation, still remain underrepresented in this learning process. Moreover, broadening the scope of the representation of forest owners in the forest groups, which are based on voluntary membership, remains an important challenge to be addressed.

A second mechanism of social learning in the forest groups focuses on the social learning generated by the interaction between sub-groups within the organization. This latter mechanism has played an important role in overcoming some of the obstacles related to experimenting with forest access management plans in private forests and is expected to help to foster learning on issues that still encounter a lot of resistance from the forest owners, such as biodiversity of tree species in the forests. The main difference with the previous mechanism is that learning by monitoring is especially appropriate for more experimental forms of learning—the so-called disruptive forms of learning (Sabel 1994). While disruptive learning processes lead to actions that cannot be framed within the current representations of the forest groups, if these experiments lead to successful outcomes then they provide in turn an incentive for the revision of the current representations.

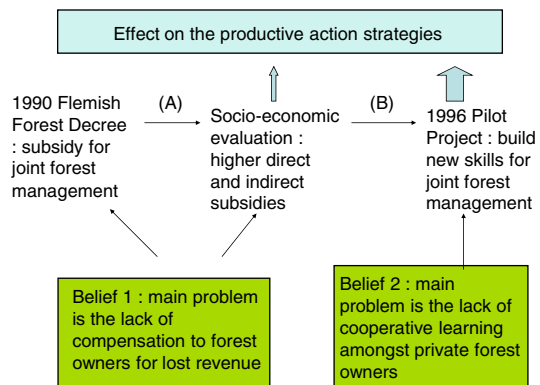
An example of incremental learning in the forest management regime is the increase in the level of direct and indirect subsidies to the forest owners in the implementation of the 1990 Forest Decree. This adjustment of the strategies for implementation was based on extensive socio-economic research, but did not reconsider the basic premises of the economic incentive politics that prevailed in the first phase of the implementation of the decree. An example of disruptive learning is the learning within the first 1996 pilot forest group. Here the learning, which initially started in a forest group under the 1990 Forest Decree, has led to new strategies and a new representation of the priorities to be addressed in sustainable forest management. This has led to a series of initiatives based on a belief of the necessity to invest in the organization of cooperative learning beyond the economic

incentive politics. The comparison of the learning that prevailed within the main beliefs under the early implementation of the forest decree (from 1990 to 1996) to learning that lead to the creation of the forest group under the new belief is represented schematically in Fig. 1.

Within BZK, the learning that lead to the adoption in 2006 of the quinquennial management plan can be regarded as incremental learning. The main belief (as for the 1996 pilot project) is the need for organizing cooperative learning amongst private forest owners. Incremental learning within the frame of this belief played a role for instance in the definition of the operational targets in terms of the criteria and indicators discussed above. However, this incremental process failed to generate progress on important remaining challenges, including the access of hikers and cyclers to private forests and forest conversion from planted pine forests to mixed broadleaf forests.

One of the main reasons for poor progress on issues such as biodiversity and access to the forest for various users is the lack of consensus amongst the various sub-groups that compose the forest group and the diverse constraints that are faced by small, medium and larger forest owners. For this reason, in 2006 an experiment was organized within a sub-group with outsourcing of the drafting of the management plan to an independent consultant in the case of larger forest owners (Bosgroep Zuiderkempen 2006, unpublished manuscript). This experiment produced some positive outcomes and as a result partnership with independent consultants for dealing with large private forest owners will be initiated. On the other hand, the current sustainable forest management plans are probably too demanding for small forest owners and are often not considered to be a legitimate objective for these owners. In particular, the conservation of tree species diversity, beyond the direct social, cultural and economic roles of the forest, remains a difficult issue. A new pilot project will commence in 2009, again with some specific sub-groups, in order to develop a specific methodology for integrating forest diversity in the management plans of small forest owners (Bosgroep Zuiderkempen 2006, unpublished manuscript). The explicit goal of the pilot project is to reconsider the basic concepts of the management plans with the forest owners and to foster the development of new initiatives that do not directly fall under the current conceptions of sustainable forest

Fig. 1 Incremental (A) and disruptive (B) learning in the forest management regime



management (Seynaeve 2007). These and other experiments illustrate the organization of open-ended initiatives by some sub-groups, in an attempt to go beyond the insufficiencies of the incremental learning by questioning the legitimacy of the current conceptions of sustainable forestry in the forest groups.

Learning Beyond the Current Forest Group Membership

The third mechanism for organizing social learning is also based on disruptive learning, but goes beyond the learning amongst the current membership of the forest groups. It addresses the second condition for generating institutional change, which is the social embedding of the new proposed institutional rules and policies. Its main focus is on building trust between categories of forest owners, in order to broaden the membership of the forest groups, and on building trust between the members of the forest groups and other stakeholders, mainly the various forest user groups.

The main progress in building new norms of cooperation has been achieved in the involvement of passive forest owners in the forest group. The main divisions amongst social groups as revealed by sociological analysis amongst forest owners in Flanders is between active exploitation (owners involved in use and management), active use (owners involved in use, not in management) and passive ownership (ownership only for investment or from heritage) of the forest (Verheyen et al. 2006). The active exploitant is most concerned by their forest and most inclined to participate in the forest management plans, whereas the passive is the least concerned.

Amongst these groups of forest owners, only between 3% and 13% of owners initially had a positive attitude towards collaborative forest management. This situation corresponds to the one that prevailed between 1990 and 1999, where no forest group existed (except for the 1996 pilot project). Self-organized forest groupings could already apply for subsidies, but few groups applied for these subsidies, even if those who applied were mostly successful (mainly some environmentalists and some active forest owners). Without social learning, the forest group would at best represent the active forest exploitant and some public forest owners who own small forests, which would mean a membership rate of about 10% in the BZK priority areas. Through the creation of the forest groups the average involvement rate has been between 17% and 34% in the initial phase and 41% and 76% after some years, in the selected focus working areas (boscomplexen). The BZK organization hence has been able to involve part of the active users and passive owners in the activities of the cooperative forest management.

A second case where cooperative learning has been built around the forest groups is in the creation of cooperation between the nature associations on the one hand and the forest owners on the other. These two groups have traditionally strongly differing positions, the first favoring for instance buy back policies of forest to non-profit organizations or to government, allowing implementation of a strict biodiversity protection policy, and the second favoring economic incentives and market mechanisms. However, through building collaborative dialogue around issues of common concern in adjacent forest areas, trust and increasing levels of cooperation have been established in the core working areas of the BZK forest group.

The contribution of the new social groups to forest governance can be modeled as a situation where cooperation is built through a combination of instrumental trust, based on reciprocity and enforced by increased transparency and means of verification, and social trust, based on symbols (languages, rituals, gestures) and enforced by creating respect and esteem (Tyler 1998). To build trust with the government and amongst the forest owners, the forest groups have focused both on instrumental and social trust. Instrumental trust has been built by enhancing verification of reciprocity through the C&I process. Social identities of the forest owners have been enforced, through generating respect for the owners' ideas and interests, by bringing owners back to their forest and by stimulating a sense of forest stewardship (Bosgroepen 2005, unpublished manuscript).

The main characteristic of the methodology used within forest groups for rebuilding trust is that all the actors are considered and treated from the perspective of forest owners and forest managers. Indeed, that is the common thread in the way in which nature associations and private owners are brought together and the way cooperation is built between active forest owners and recreationists. However, in these activities, no new action identity is built by the owners around the concept of multifunctional management. Instead, the old identities are simply reproduced within the new framework. Hence, for building social trust this methodology is incapable of achieving a more profound transformation of the identity of the forest groups, in relation to the remaining challenges for addressing the issues raised by the users of the forest-related ecosystems services and the building of cooperation with the local communities.

Within the forest groups, there is also a second approach, which takes into account the limits of this first approach and attempts to address the challenge of broadening cooperative learning with the users as a 'third party', without subordinating this cooperation to the current identity of the forest groups representing forest managers. Indications for such a second approach are clearly present in initiatives such as the experiment with the access negotiations in the Bosgroep Zuiderkempen and the integration of the complaints of the local population in the working of the forest groups (Bosgroep Zuiderkempen 2006, unpublished manuscript). This is also reflected in some position statements by the forest groups, on the cultural and social values of the forests, and the concern frequently expressed about the remaining gap between the interests of the nature associations on the one hand and the inhabitants and the forest owners on the other (Bosgroep Zuiderkempen 2006, unpublished manuscript; Bosgroepen 2005, unpublished manuscript). Hence, instead of the reproduction of the old social identities, within the context of a new cognitive frame, as is the case in the first approach, this second approach points to a more profound transformation that is going on at the same time, which is a more fundamental transformation of the identity of the forest group as the basis of the cooperative orientation that conditions further productive learning.

By addressing the reconstruction of the collective identity of the forest groups, through experimenting with the association of the forest user groups to their activities, the initiative of BZK is able to address the failure of the cognitive approach to social learning, which is its incapacity to take into account the interaction with the changes in the social domain. The BZK has been one of the few

forest groups to explicitly design experiments for developing new methodologies for drafting forest management plans the scope of which was beyond the issues identified within the forest owner groups.

Discussion

The hypothesis of this paper is that cooperative forestry in forest groups can address some of the collective action problems that are encountered in the management of forest complexes with multiple small forest owners. Based on an analysis of the successes and failures in a specific case of cooperative forestry, namely the forest groups in Flanders, it has been shown that the organization of disruptive learning processes contributes to overcoming some shortcomings of the operation of the forest groups. In particular, the previously 'passive' forest owners have been successfully involved in various planning and management activities. Moreover, some more difficult topics for forest owners, such as tree species diversity and forest access management in the highly urbanized region of Flanders, have started to be successfully addressed in some new initiatives combining social learning with targeted experiments. However, it remains to be seen if and how it will be possible to generalize these experiments to all the forest groups in a more systematic way.

One of the major findings of this analysis of social learning in the forest groups is the importance of decentralized planning and of the organization and evaluation of pilot projects within the forest groups. Some implications may be drawn from the analysis for understanding the role of the forest group coordinator in the process of change, as an actor who plays an important intermediary role between the government and the forest group. Also, the case of the forest groups in Flanders may be compared with examples from the broader field of analysis of decentralized and collaborative natural resources management.

The Role of the Forest Group Coordinator in the Process of Change

The analysis of the mechanisms of social learning leads to distinguish three distinct models of the role of the forest group, namely its role in gathering information and coordinating the planning, its role in generating change in beliefs, and its role in generating change in social norms. In the first model, the role of the forest coordinator can be understood as an external monitor of the team work, as developed in several game theoretic approaches of free riding in teams (Alchian and Demsetz 1972; Holmstrom 1982). Indeed, in this first model, the operation of the forest groups is characterized by organizing joint information processing between the owners and the forest administration on the one hand and amongst the forest owners on the other. The role of the forest group coordinator is to organize these joint processes in an efficient way, especially through his contribution to the drafting of the joint forest management plans and the coordination of the wood selling activities. In this first model, the role of the members of the forest group is restricted to their contribution of information to the management and coordination process.

Because of the important role of the forest groups in organizing the process of change in beliefs and norms, the role of the forest coordinator also has to go beyond his role as a monitor of team work. The case of the forest groups in Flanders clearly establishes two other important roles of the forest group coordinator, these being his role as a political entrepreneur, who organizes a process of experimentation with new beliefs, and his role as a trusted intermediary.

Political entrepreneurship has been at the heart of the forest groups from their very beginning. The 1996 pilot project received early recognition as an instance where experiments could be conducted on new ways of dealing with forest management. The main contribution of this political entrepreneurship of the first forest group coordinator was to show the feasibility of combining economic and environmental objectives, by organizing collective selling of the wood that was generated by the management activities. Hence he has played a key role in initiating strategies for building a market in small-scale forest products, which went well beyond the original intent of the 1990 Forest Decree on multifunctional forestry and which did not exist before the operation of the forest groups. The new 1999 forest law was mainly inspired by the lessons that were learnt from this project. This sequence of experimentation and change in the policy framework has been reiterated in the subsequent development of the forest groups.

Finally, the case of the forest groups in Flanders also establishes the role of the forest coordinator as trusted intermediary in building renewed confidence of forest owner in the government's forest policy. Indeed, throughout the process of change, a clear division of tasks is established: the control function of compliance with government regulation remains with the executive bodies such as the forest administration, the forest rangers and the local authorities, while the social learning is the specific task of the forest group.

Possible Governance Frameworks for Collaborative Natural Resource Management

The case of cooperative forest management organizations is an important example of the recourse to decentralized networks in environmental governance. These networks 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 (Reinicke and Deng 2000; Hajer and Wagenaar 2003). The aim of network governance is to create a synergy between the various competences and sources of knowledge in order to deal with complex and interlinked problems.

Some implications of the analysis of decentralized forest management in forest groups may be drawn for the broader context of natural resources governance. Recent reforms in environmental governance worldwide show some important efforts which recognize the need for devolution of decision-making to new actor networks and a correlative need for a new role of the state authorities in their support for processes of social learning and building of adaptive competences, beyond their traditional role of regulation of network externalities. This approach seems especially appropriate in cases of the governance of local environmental

goods, which has both local and global impacts, but where mechanisms to deal with global ecological interdependencies are often lacking. In those cases the mobilization of new types of non-state collective actors in various functions of governance has proven to be a necessary complement to the state's regulation and economic incentive politics.

In the field of natural resource management in human-dominated ecological landscapes, two forms of network governance have emerged. The first is based on the creation of new collective management entities and the second is based on the decentralized coordination between existing constituencies. In order to situate the case of the forest groups in the broader discussion on new modes of governance, some salient examples of each of these forms may be examined. The new regional natural resource management approach in Australia is a clear example of the first approach and shows some important similarities with the case of the forest groups in Flanders. In this ambitious new governance experiment, 56 regional natural resource management bodies have been created (Gunningham 2008). These bodies generally comprise a mix of community, rural and other stakeholders and have formal office holders and responsibility for undertaking consultation, planning and priority setting. In this approach, provision is made to enable each region to develop their own regional plan and regional investment strategy for addressing management challenges within parameters set nationally. These activities are coupled with monitoring, evaluation and oversight by the regional bodies themselves and by State-lead steering committees. Crucially, these bodies are aware that should they depart substantially from the parameters laid down by the Federal Government, they risk losing their funding, dissolution and replacement by a new entity.

Another approach focuses on the coordination and cooperation between existing constituencies, without delegating new decision-making powers on resource management to regional collective entities. An interesting case is that of the New Forest in South England (Rydin and Matar 2006). New Forest comprises a landscape of 37,500 ha, with a mixture of forest land and heath land surrounded by large urban areas. Two networks for establishing collective action in this area have been created, the first a consultative panel, with 70 member organizations, including town and parish councils, NGOs, government agencies and local interest groups, and the second a more formal committee, the New Forest Committee, with nine members organizations, all of which have an already existing statutory role in the management of New Forest. The consultative panel has performed a useful function in bringing new issues to public attention, such as the declining economic viability of the grazing in the heath land and the conflict between landscape conservation by the commoners—which are farmers with grazing rights on the heath land—and timber and tourism interests. However, it is the New Forest Committee that was the key network for promoting collective action. The New Forest Committee has been able to establish concrete projects based in partnerships between the various actors, such as the development of a Forest Friendly Farming Accreditation Scheme funded under a European project, and to draft a New Forest Strategy published in 2003 based on intensive public consultation.

These brief examples are of course only illustrations amongst many and show the wide variety of potential forms of network governance in the field of management of

human dominated ecological landscapes. However, they both point to the importance of mechanisms of social learning in the networks creating normative and cognitive change and the new role of the government in facilitating the network dynamics. A crucial issue is to develop more empirical research, which would allow specifying the conditions under which alternative forms of network governance may succeed in accomplishing these functions and whether such conditions can be affirmatively created.

Conclusion

Based on an in-depth case study and theoretical insights from governance theory this paper established the contribution of three distinct mechanisms for fostering social learning on sustainable forest management, namely through: (1) the recourse to sustainability criteria and indicators as an open-ended learning device; (2) the experimentation with disruptive action strategies to put new beliefs into practice; and (3) the building of new forms of social cooperation around these new beliefs and practices.

The main research finding is the need to combine diverse mechanisms of social learning, including mechanisms based on in-group learning processes and on learning processes with external stakeholders. Only by combining these mechanisms is it possible to go beyond the insufficiencies of the command and control and economic incentive policies of the first years of implementation of the new 1990 Forest Decree in Flanders. Indeed, the case study on the forest groups in Flanders has shown that, in the absence of these mechanisms, the learning process was restricted by concerns over timber exploitation and independence from government intervention.

From the viewpoint of global and local ecosystems services, the case study on forest groups in Flanders has also shown the effective contribution of this governance mechanism to more integrated ecosystems-based management. In particular, the case study has shown that open-ended and disruptive learning in the forest groups allowed integration of important non-market values including landscape diversity, spatial externalities (through joint forest management plans) and concern for species diversity (through combating invasive species) in the forest management practices. However, the adaptation to new social demands such as recreation in private forests remains a difficult issue in the highly urbanized forest landscapes in Flanders.

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