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Effectiveness of Sermon Policy Instruments: Forest Management Planning Practices Applying the Activity Theory Approach

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Recent and ongoing societal changes have brought about a need to foster multiple-use forestry and to strengthen customer orientation in family forestry outreach. The study assesses how forest management planning in family forest holdings could be developed to tackle these challenges. The approach introduces a new way of evaluating the effectiveness of information- and communication-based policy instruments. Here, the cultural-historical activity theory is applied in studying the interwoven practices of present-day planning and the associated advisory services targeted at landowners. The data, comprising semi-structured in-depth interviews with 19 professional planners, were qualitatively examined, and a forest management planning activity model was constructed with the emphasis placed on the inherent contradictions of planning work. As the main contradiction, the forest and the forest owner compete as objects. The aims of making the forest productive and advising the landowners towards an increased activeness motivate forest management planning but the planners feel that they lack the opportunity to respond to the needs of the landowner. A wood-production-emphasizing interpretation of the benefits to the national economy frustrates the policy goal of genuinely promoting the goals of multiple-use forestry. The conclusion drawn is that the actors engaged in forest management planning can reveal the needs for change by discussing their opinions and practical innovations. This can be done with the aid of facilitation by e.g. researchers oriented to developmental work study.

Keywords activity theory, advisory, extension, forest planning, forest policy, non-industrial private forests, qualitative study
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1 Introduction

1.1 Scope of the Concept of Sustainability

The overall aim of forest policy is to guarantee sustainable forest management – SFM (McDonald and Lane 2004, Hoogstra et al. 2004). The SFM concept has evolved during last 20–30 years, having such milestones in international processes as "Our common future" in 1987 and "Agreement on sustainable development" in 1992. The continuing processes of international forest policy have brought about a need to modify the interpretation of sustainability from traditional orientation of maximizing the sustainable allowable cut to also include cultural, social and ecological sustainability (e.g. Hellström 2001, Söderlund and Pottinger 2001).

In addition to the pressures from international forestry and environmental policies (e.g. biodiversity protection), general societal changes such as urbanizing and the evolving of multiple-stakeholder problems have revolutionized the working agenda of forestry professionals (Twight and Lyden 1988, Tipple and Wellman 1991, Hoogstra et al. 2004, Hoogstra and Schanz 2008). As a consequence, more sophisticated substance and methodological expertise is nowadays needed to solve multi-dimensional and ill-defined problems in the field of forestry. Simultaneously, the goal structure of forest owners is diversifying from wood production to multiple goals (Karppinen 1998 & 2000, Hugosson and Ingemarson 2004, Rickenbach et al. 2005, Wiersum et al. 2005, Karppinen and Hänninen 2006). In Finland the multiple goals of forestry are emerging in such issues as maintaining biodiversity (e.g. Hänninen and Kurttila 2004, Primmer 2008), entrepreneurship (Leskinen 2006), and recreational values (Kurttila et al. 2006).

1.2 Challenge of Effective Information Dissemination Policy

Policy bodies that attempt to involve non-industrial private forest owners in their policies have financial instruments (so-called carrots), regulative instruments (sticks), and informational instruments (sermons) at their disposal (Serbruyns and Luyssaert 2006). Sermons are common instruments which encourage and help forest-owner families to manage their forests. Examples can be found around the world, where a variety of public and private assistance and education-and-training programs are available (e.g. Baumgartner et al. 2003, Baynes 2007).

Sermons such as extension need a normative starting point, which is concretized by some means. Often a forest management plan formulated by forestry professionals serves this purpose. Actually, forest management planning (hereafter: forest planning or planning) has been regarded as being the most effective forest policy instrument (e.g. Hysing and Olsson 2005). There are probably no difficulties in generating sustainable forest policies and management plans insofar as only sustainable timber production is covered and when forestry professionals can base their work mainly on knowledge about timber resources. The challenge comes when the plan and forestry professionals confront society: the general public, stakeholders, and forest-owner families and their multiple values. The modern concepts of sustainability call for effective and fair participation in planning (Webler and Tuler 2001, Webler et al. 2001, Hunt and McFarlane 2007), and also taking into account the various stakeholders and public.

A common way of evaluating the effectiveness of extension or educational policy tools is to analyze whether the tool implemented is positively associated with the number of forest management practices completed by forest-owner families (Baumgartner et al. 2003, Niskanen 2005). Evaluation itself is usually done by collecting and analyzing data on the participants' or forest owners' perceptions concerning the planning process or extension and education practices (Baynes 2007, Hunt and McFarlane 2007). Sometimes evaluation is supported by collating a chain of evidence from multiple sources of data: interviews and conversations, reports by extension staff, corroboration by external observers, and visual observations (Baynes 2007).

1.3 General Aim and Context

The primary aim of the paper is to inform the development of forest planning via qualitatively

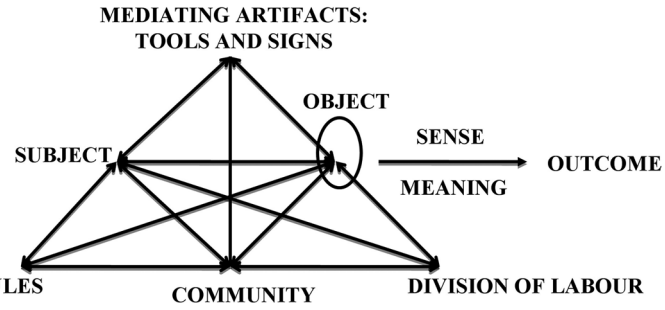

Fig. 1. The structure of the human activity system (Engeström 1987, p. 78).

assessing planning as a social practice. Concurrently, we introduce a new approach to evaluating the effectiveness of information-and-communication-based policy instruments. We make use of the evaluation of Finnish forest planning and advisory work as a case study. This activity is undergoing a rather fundamental change in which, along with the adoption of new technology, policy aims, owner-specific aims, effectiveness and efficiency are considered with due diligence (Paananen 2002, Rakemaa 2003, Vierula 2003, Greis 2007). The situation of the case study is described in more detail in the beginning of the next chapter.

Our approach in this study is to investigate how effectively the policy-level needs and goals of forest planning are met at the implementation level. The emphasis in the theoretical approach is that policies are implemented as locally adjusted social practices (Leskinen 2006). These practices should be explored as a part of the interwoven interaction relationship prevailing between social communities and ecological systems. The values, attitudes, and beliefs of forestry professionals influence the implementation of forest policy tools (Dove 1992, Pregernig 2001, Primmer 2008) and so practices are assumed to differ. Several studies have revealed that investigating "ground-level" practices is a fruitful approach in studying the development of planning (Flyvbjerg 2001), counseling (Silverman 1997), and policy implementation (Leskinen 2006). In Finland, there has so far been little qualitative research close to forest planning and advisory functions. However, Jokinen and Holma (2001) have studied the routine practices of governance in Finnish non-industrial private forestry. They found that institutionalized practices reinforce the traditional approaches and thus restrain more diverse needs being served.

1.4 Activity Theory Approach and Detailed Objectives

The theoretical base for conceptualizing planners' constructions of their work is provided by the cultural-historical activity theory and developmental work research (Leontjev 1978, Vygotsky 1978, Engeström 1987, 1995, 2001, Nardi 1996, Engeström et al. 1999, Chaiklin et al. 1999, Seppänen 2002, Mäkitalo 2005). The basic unit of analysis is an *activity system* (Fig. 1). This is an object-oriented conceptual model, a culturally and materially mediated system within a community. It helps to analyze human activities as socio-technical entities. Even when the consideration is individual, it brings the social nature of the activity to the fore as an essential aspect of examination. The activity system, in this study forest planning and advisory work, has a collective object and motive to transform the object into the outcome.

Activity theoretical research identifies and analyses the components of the activity system. Any activity is under continuous development and historical development strongly affects future development. For example, forest planning work has been developed alongside the development of automatic data processing and GIS technologies, and in future it will also need to take into account

biodiversity and scenic value aspects more explicitly. An activity system is not a coherent system, and there is diversity in practices and opinions. An activity system possesses a kind of ability for learning. However, this learning ability is limited because the elements of the activity system are often deeply institutionalized along the historical course of development. The key argument of developmental work research is that expansive transformations are possible when externally aided. The external aids guide the actors of the system to understand the latent meanings of the system elements. The concept "zone of proximal development" (Vygotsgy 1978, Engeström 1987, 1995) defines expansive learning potential. Incoherence, i.e. contradictions and diversity of individual perspectives (multi-voicedness) are important sources for expansive development (Engeström 2001). In a forest planning situation, expansive transformations can lead to new practices, e.g. in combining wood production and biodiversity maintenance, or incorporating aesthetic values in planning.

When the environment changes or when the system adopts new elements, the balance of the activity system is disturbed and this leads to inner contradictions whereby the old elements collide with new elements. The contradictions appear as disturbances, difficulties, contradictory requirements, etc. New and different practices may also be signals of contradiction. In the activity system, contradictions can be seen inside the elements (primary contradictions) or between the elements in the activity system (secondary contradictions). Tertiary and quaternary contradictions may also appear when a new and more advanced object or motive arises or when there are changes in neighboring activities (Engeström 1987, 1995, 2001). Releasing the tension caused by these contradictions may make the planning work more focused and effective. This may require rearrangement of the activity system, which means redefining or expanding the object or the outcome of the activity.

This paper focuses on the interwoven practices of present-day forest planning and advice in connection with forest holdings owned by families in Finland. The research question is as follows: How is effectiveness achieved in practical forest planning and extension work? The research question can be answered by studying how the interwoven planning and advisory practices build up the planning system. Special focus is on the contradictions, motives and objectives of the planning system. The rationale of research is that, at its best, external intervention, like scientific study, can contribute to an activity system revealing tensions inhibiting the expansive transformations needed to fulfill the modern-day requirements of sustainability.

This approach and inferences can be transferred to other countries and cases where there is an interest to evaluate the practical level effectiveness of forest policy instruments. Studying concrete practices is crucial to understanding the challenges involved in implementing policies in practice.

2 Material and Methods

2.1 The Case

In Finland, the Ministry of Agriculture and Forestry (MoAF) has to deal with all dimensions of sustainable forestry in the circumstances of small-scale family forestry, which provides more than 80% of the annual commercial roundwood removals (Finnish Forest Research Institute 2006, pp. 54, 186). Forest planning and extension together play an essential role in Finnish forest policy practices. The annual object in regional forest resource data collection, providing the basis of planning, is almost one million hectares of non-industrial private forest (NIPF) land and the objective in extension is to reach more than 45,000 forest owners (Ministry of Finance 2008, § 30.60.42), representing some 10% of the total number of forest owners.

A holding-specific forest plan in Finland contains stand-wise data as well as information on incomes and the costs, and a summary of the growing stock, growth, cuttings, silvicultural operations and biotypes having special importance for nature conservation. Figures and thematic maps illustrate the data. The state pays subvention to cover partly the planning costs. The planning process consists of several phases: preliminary work (office work); inventory (field work); construction of the plan (calculations); and delivery of the plan (see Appendix 2). The forest

owner can participate in the planning process. In order that the management proposals matching the owner's objectives may be defined, conducting a talk and/or a questionnaire on the needs of the forest owner is an important element in the planning process. Marketing the plan to the owner and advising him/her in the use of the forest plan are included in planning process (Hokajärvi et al. 2006, Nuutinen 2006).

The MoAF strives to increase the effectiveness of forest planning so that the objects set in the National Forest Programme 2015 and the regional forest programmes can be reached (Ministry of Agriculture and Forestry 2008b). Forest policy effectiveness means that forests are fully and sustainably utilized. Thus, the effectiveness of the forest plan as a policy instrument has been interpreted to be such that proposals for treatments in the forest plan should be realized in the forests to a high degree. Because having a forest plan is voluntary in Finland, and because applying the plan is not mandatory, many proposals do not result in real actions in the forest. However, according to the official forest planning strategy, the forest owners should have, when making decisions, updated knowledge about their forest resources, the silvicultural needs, and different usage options (Ministry of Agriculture and Forestry 2008a). Inevitably, the strategy challenges the traditional profession of the planner, calling for more communication with forest owners.

Finding a reliable extension officer and a varying degree of the sharing of decision making power appeared to be essential phenomena in Finnish forest owners' communication perspectives (Hujala et al. 2007, Hujala and Tikkanen 2008). These observations suggest that the challenge in achieving effectiveness is how to meet different forest owners in practical communication situations in a sound and meaningful way. It seems, therefore, evident that initiating operations calls for forest-owner-specific guidance and advice, which should supersede straightforward expert-led providing of solutions.

2.2 Data

Altogether nineteen semi-structured in-depth interviews were conducted with professional forest planners. In order to capture as wide a range of forest planning practices in Finland as possible with the available resources, the interviewees were selected from the regions covered by three regional Forestry Centres. The official guidelines on planning and the structure of the forest owner distribution differed between these regions (Hokajärvi et al. 2006). The study regions represent each of the three major areas of the country: Forest-Finland, Agriculture-Finland, and Northern Finland (Karppinen et al. 2002). In Forest-Finland, the owners are less often classified in recreation objective group; owners in Agriculture-Finland are less often absentee owners; and Northern Finnish owners are on average lower educated than owners in other regions (Karppinen et al. 2002). The planners were selected as a purposive sample to support diversity (cf. Silverman 2005, pp. 129–130) in working practices. The criteria in selection were planner's age, work experience, and region. All the interviews took place at the planners' workplaces in August–September 2005 and in January 2006. The first two authors of the paper conducted the interviews.

The interviews focused on the relationship and interaction between the planner and individual forest owners. The components of the activity theory guided the themes and the questioning. However, the idea was to achieve a natural conversation about work. The interview guide (see Appendix 1) comprised the following themes: 1) the personal professional history and the work as a forest planner; 2) the planner's own activity with the forest owner; 3) the variation in activity with different forest owners; and 4) the development of interaction in forest planning. The average duration of the interviews was 77 minutes, ranging from 43 to 128 minutes.

2.3 Analysis

The contents of the transcripts were analyzed with the help of the framework of the activity theory (Engeström 1987, 1995, 2001). In order to answer the main research question concerning the interwoven planning and advisory practices, the following sub-questions aligning the analysis were applied: 1) How do planners mentally construct the object and the outcome of their plan-

ning work? 2) What is thus motivating planners in their work? The initial procedure for finding out those patterns was data-driven. The object is the most important component in defining the activity (Engeström 1987). It may be concrete, but it is also the mental construction of the subject reflecting the motivation and the outcome (Engeström 1995, Mäkitalo 2005). To transform the object into an outcome motivates the subject (Fig. 1). The aim in the analysis was to identify the practices of planning and advisory work for constructing a general model of that activity.

In the beginning of the analysis, fourteen interviews, including interviews from all three regions, were analyzed. Firstly, the interviews were coded into two categories: sentences concerning (1) the working process of the planner, and (2) the meeting(s) with the owner. Secondly, each interview was separately analyzed in order to deconstruct the elements of the planning activity. The reasoning method was theory-directed qualitative content analysis (Hsieh and Shannon 2005). There were about fifty nodes and subnodes referring to phases of the work, motivation, owner, silviculture, etc. Some examples of classification are shown in Table 1. The analyses of the interviews were then integrated and a more generalized presentation about the planning-related phenomena was constructed. The phenomena were named as forest, forest owner, "good silviculture", and principles of the regional way of inventory. Also, the phases of the work were recognized. Finally, the phenomena of the planning activity were interpreted as realizations or reflections of the related activity-theoretical concepts. At the end of the analysis, the remaining five interviews were analyzed to test if the interpretations converged with them, too. The testing did confirm the results.

The researcher's interpretations in the context of the interview play a significant role in defining the elements of the activity system. The researcher should be able to construct the system through the narratives of interview themes. Several ways to assure the reliability of the results were used (Yin 2003): data were collected from three regions to obtain diversity of the work practices; the analyses were carried out and archived systematically using the NVivo 7 program; and the researchers analyzed and discussed the interpretations together. The verification of the results with 5 out of 19 interviews served the reliability of the study as well. Again, the results were presented and discussed with the planners during the analysis in five separate meetings and verification was obtained from the "key informants".

Table 1. Some examples of nodes. The number of interviews (of the total of fourteen) including the passages in question and the total numbers of passages.

Name of the node (class)	Nr of interviews	Nr of passages
Field work – demands	10	16
Field work – accuracy	7	10
Field work – importance	3	6
Marketing – reasoning for owner	11	22
Marketing – means	14	39
Motivation – owner	11	21
Motivation – initiating operations	9	14
Connections – with forest management association	14	52
Connections – with Forestry Centre	9	14
Connections – with timber buyer	9	14

3 Results

3.1 The Diverging Practices of the Planners

The main course of the planning process is quite congruent, e.g. the instructions have a common base at the national level (Hokajärvi et al. 2006). The main phases of the planning process were recognized and named, and a short description of each phase was constructed (Appendix 2). Fig. 2 shows a summary of the planning process, i.e. the phases, which are conducted for one individual forest owner. Separate phases in the working process, interwoven with the contact points with the forest owner can be identified. Marketing the plans always begins in the preliminary phase. The needs of the forest owner are usually enquired about just before launching the field investigation or when the plan is being constructed. Advice is mainly offered when the plan is delivered to the owner. The process may vary according to the habits of the planner or as an adaptation to the needs of the owner.

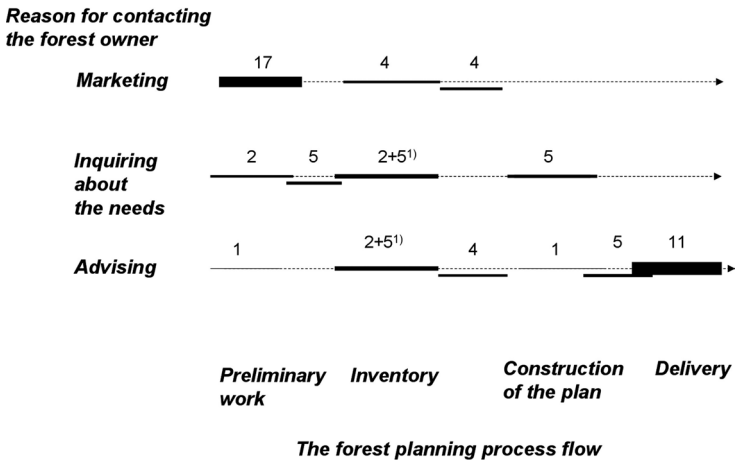

Fig. 2. The interwoven phases of the forest management planning process. Phases where the planner contacts the forest owner are interlinked in the forest management planning process flow. The thickness of the line reflects the number of informants presented above the line. The total number of informants is 19. 1)The field trip with the owner mainly consists of providing advice, but it also includes inquiring about the needs of the forest owner.

It can not always be distinguished why the planner contacts the forest owner, i.e. whether the contact is for marketing, for providing advice or for finding out the forest owner's needs and wishes. The reason can include all of these at the same time. In practice, the planner may communicate with the forest owner whenever s/he finds an opportunity for doing so. Marketing may include an advisory function when the planner introduces examples about how the plan can be beneficially used. The field trip typically includes both advice and inquiring about the forest owner's needs. The planner reverts to the wishes of the forest owner when constructing the plan.

Despite the overall congruence of the work process among planners, some diverging practices and the reasoning behind them were discovered. These diverging practices were analyzed as locally adapted practical innovations representing the need for a greater change. Plans are mainly constructed during the winter months, quite a long time after the field inventory, if the forest owner does not spontaneously require more immediate delivery. Construction of the plans along with the fieldwork is the primary way of working for three of the planners interviewed (MS105/MS106/MS203). By doing so, they can remember the particular forest better and the forest owner does not have to wait so long, but it is a bit of a waste of efficiency with regard to the limited length of the field work period. One reason for starting construction immediately is to "get the ball rolling".

> "Lately I have been digitizing quite a lot… it is against our instructions, but now we are turning to that… at a moment's notice… it is in your recent memory and therefore you can use the map immediately, so I attempt to… because there has been a lot of projects to get started on… they may have been waiting to get the information from the plan to see the thinning and… things like that so we have been digitizing and… to give it to the extension officer [of the local forest management association] and the owner… is a bit of a waste of time at that moment, but…[work on computer/office during field period is inefficient] "/MS203

In one region, the planners argued for marketing *after* rather than before the fieldwork (see Appendix 2). Marketing is better allocated when the planner knows the benefits of the plan for that particular holding and the exact price of the plan in question. In some regions, the planners

performed the advisory function *before* rather than after printing the final plan. With that kind of advice, the forest owner has the possibility to give his/her opinion after seeing the draft of the concrete plan, and any mistakes can be discovered then as well. This practice gives room for the forest owner's voice with a deliberate cost of short-term efficiency.

According to the planning instructions, the forest owner is allowed to participate in the field work (Hokajärvi et al. 2006). This opportunity is offered, but there is variation in the eagerness to take up this offer. It was unanimously agreed that providing advice is at its most efficient in the forest, but many planners say that the forest owner's presence disturbs their fieldwork and so they prefer to arrange a separate field trip after they have finished the field work.

> "But always when we find out that there is a need, the forest owner wants to go into the forest… so we, or at least I, prefer doing the field inventory and then set aside half a day to be spent with the forest owner"/MS303

In one region, the planners had agreed on a division of duties. One planner in the team was mainly responsible for marketing and carried out most of the plan construction, advice and preliminary work. The others concentrated more on the field work. These planners were more efficient being able to make use of their strengths.

3.2 Outcome, Object and Motive of planning

Planning has diverse objects. The forest is an important object in planning, but also the forest owner was identified as an object (Fig. 3). The plan is a concrete outcome delivered to the forest owner, but the purpose of the plan is to influence the knowledge and the behavior of the forest owner. The overall aim is to create benefit for the forest owner and to improve the productiveness of the forest.

The overall object of planning is the productiveness of the forest. The plan is made so as to maintain or increase timber production in tune with the environment. The forest holding should be in good (growing) condition, and (if possible) the cuttings are planned evenly to achieve a constant future income. The official forest management guidelines and "naturalized" professional knowledge, meaning that the professional view has become an inconspicuous part of the work, serve in providing an image of what the forest holding should look like (Fig. 3).

Another object of planning is the knowledge and the behavior of the forest owner. The planner argues mainly that s/he is working for the forest owner. The forest owner is an important factor making the work more influential and thus meaningful. The diversity of forest owners brings variety to the lonely field work of the planner. It is motivating to find out that a forest owner begins to understand the benefits of the plan. The benefits the forest owner gets are mainly economic. Ownership, property rights, and authority of one's own decisions are highly respected, but the planner tries to induce the forest owner into taking action in the forest (Fig. 3).

> "But the most important… work we do is for the forest owner and… supposedly it is important to show… the needs in the forest… to be able to utilize it… right away… and to give the possibility…"/MS201

Indeed, the planner has a strong collective motive for his/her work. This motive is to initiate operations in the forest holding. The planner feels motivated when s/he notices actualized treatments attributable to the plan. S/he shares this motivation with his/her colleagues working at the Forest Management Association (FoMA), forestry companies, and other organizations within the region covered by the particular Forestry Centre (Fig. 3). The collective motivation originates from societal wellbeing, and it is undoubtedly deeply internalized during the planner's professional career and education. Although the plan is made for the forest owner, the planner is aware of the fact that often the primary user of the information is another forestry professional. An up-to-date plan helps colleagues at the FoMA to do their work.

> "… it is important for the national economy and forest policy so that… we would not have any employment if the wood did not move… that way we get the money for the silvicultural work… and

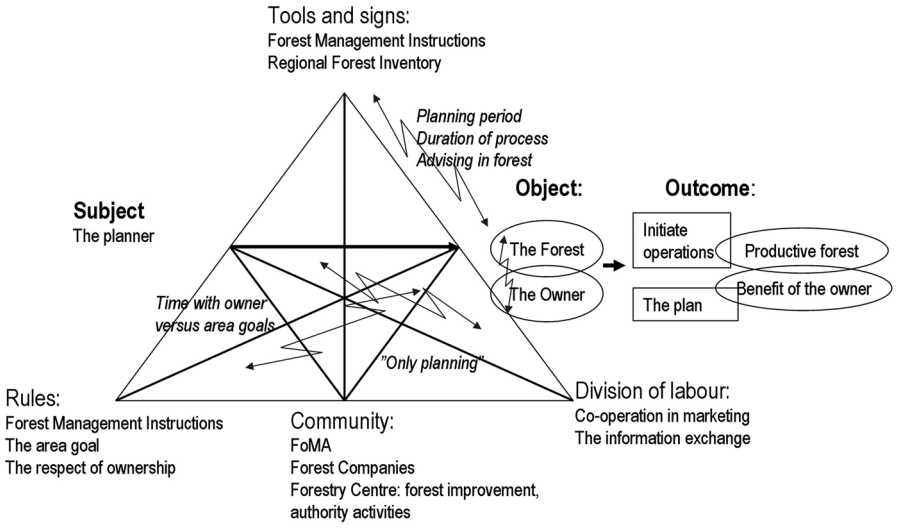

Fig. 3. The structure of the forest management planning activity and the contradictions faced in practical work.

employment in the village for many people… there is the timber buyer… felling contractors, timber transport, shopkeepers, housing, and anything else, but the forest has a significant role here"/MS102

3.3 Contradictions

The planner has to combine two objects, the forest owner and the forest, in his/her work, which is not an easy task. Planners see that marketing, providing advice and other communications with the owner are necessary for initiating operations in the forest holding. Communication with the forest owner takes too long according to planners, because they have real goals (meaning hectares) for inventory to achieve. Especially advising in the forest is effective, but it is also time consuming. Moreover, secondary contradictions can be recognized, between the object and the rules (Fig. 3).

"I feel worried… the unceasing insufficiency… they ask daily about hectares… I have the impression that the hectares are not important at all… most important is that you encourage the forest owner to do the right thing… treatments at the right time and …"/MS204

Planners also feel that mere planning work is not enough to activate the forest owner. They "only" plan and have no means to encourage real operations to be implemented. They can only give operators' contact information to the forest owners. They have little to do after the plan is made, but they at least try to be fast in providing the information. The planners could help more to co-ordinate actions between the forest owner and the forestry professionals, and they would be pleased to promote actual operations. These contradictions can be located as secondary contradictions between the subject and the division of labor (Fig. 3).

The regional way of inventorying (RFI) is a procedure with a long tradition of making plans in Finland. There are secondary contradictions between the object and tools similar to the contradictions mentioned above (Fig. 3). The planner has many simultaneously ongoing plans. The planning process for a single holding takes almost a year. This is a long time for both the planner and the forest owner and this kind of a procedure does not support interaction and co-operation with the forest owner.

The planning period included in RFI is ten years (twenty years in Northern Finland). Regardless of the timescale, the immediate treatments receive a lot emphasis in the planning process. Often,

the planner's work focuses on the present state of the forest holding and activating the forest owner to perform the most urgent treatments, and so long-term proposals appear to be in vain. Consequently, there are no adequate tools for assisting the forest owner in practicing systematic and rational forestry.

4 Discussion

4.1 The Interwoven Practices

The results of the study show that planning work incorporates parallel and partly conflicting motives. Although the interwoven nature of the practices may make everyday work meaningful, some drawbacks have also been observed. In particular, the contradictory objects of the work combine in a way that appears to frustrate the planners. It is evident that they are faced with ambiguity when constructing the outcome of their work from two competing targets related to the forest owner and the forest.

The present results show that this ambiguity has been institutionally dismissed by arguing that the best interests of the forest owner are served by economic benefit, which in turn means recommendations for good silviculture. These recommendations are means towards policy interests such as safeguarding the supply of round wood to forest industry companies (Leskinen 2007). The interests of the forest owners rarely fit seamlessly together with the policy targets of the timber procurement, even though, as an aggregate, forest owners' objectives may be close to those of society. This can be seen in the present observation where merging the forest owner with the forest as the object of the planning work turns out to be a conflicting situation. It may well be that this combination is unfeasible until the policy-driven forest-targeted planning endeavor begins to be truly multi-objective and owner-oriented, which means that the diversified objectives and needs of forest owners are accepted as the starting point for planning and advisory interventions.

The interweaving of planning and advisory activities also brings up the contradiction between efficiency and effectiveness. Area-based efficiency targets set strict boundaries as regards the resources available for pursuing effective planning in communication with the forest owner. Planners need both time and organizational support in order to achieve better effectiveness. It seems that planners are under pressure to function in a customer-orientated manner, but the present way of operation does not support this. The development of planning technology for the sake of efficiency contributes to the effectiveness of planning only if a major effort is made to renew the entire working system from the viewpoint of effectiveness.

4.2 Dealing with Contradictions

The activity known as planning appears to be dividing more clearly into two parts: the inventory system and the advisory system. It seems that this contradiction of objects has already been noticed and reacted to in the discussion related to forest planning (Paananen 2002, Rakemaa 2003, Vierula 2003, Paananen and Uuttera 2003, Greis 2007). Encouraged by the evident signs of related contradictions in the present data, we join this discussion by proposing to separate the two objects of planning. Following this proposal we proceed to considerations to be taken into account when developing planning. The proposal and the considerations based on the findings of this study, completed and supported using literature, are as follows:

A) The object of the *forest informing system* is clearly the forest, and the outcome is the information forwarded to the forest owner and others with the consent of the forest owner. This activity is motivated by multiple societal aims and sustainable development. In order to maintain the acceptability of the informing system among the families of forest owners it is assumed that the State will fund this activity as a whole, as it does now. The data would include, in addition to standwise field data, a list of expert opinions about the silvicultural needs and cutting potential. Maintaining and delivering the information are essential parts of this system, but so is informing the forest owners to initiate operations and activating networks.

B) The object of the *consultative decision support system* is the forest owner. Cockman et al. (1999)

> defined consultants as those who influence people or advise them to improve the effectiveness of any aspect of their operations without having formal authority over them or without willfully using their authority. Genuine customer-oriented planning is initiated by the forest owner and guided by the concepts of the forest owner's own needs, hopes, aims and concerns, for example. While the information produced by the informing system provides the basis for decision support, further information may be gathered to support the forest owners multiple goals.

The secondary contradictions recognized are closely connected with object of planning. Regional inventory procedure (RFI) does not support the work done with the forest owner. The timetable for a single plan should be shorter and more like a project in order to support the forest owner. There is a need for and also some plans to have a continuous and adaptive planning system so that the forest owner can get the plan when s/he needs it (Greis 2007). Adaptability also means a variable planning period. Adaptive decision support has many dimensions and these have been recently studied by researchers such as Pykäläinen et al. (2006) and Leskinen et al. (2009).

The division of labor refers to how the work is coordinated among forestry professionals. As the goal of concrete actions in the forest motivates the planners, they feel, according to our data, that they have been provided with limited tools in that they only plan and distribute contact information. Resolving this problem would be essential for improving motivation on part of the planner, but it would also improve the logistic effectiveness of forestry. Some experiments and recommendations exist in this direction. It has recently been suggested that when performing ditch-network maintenance projects all of the treatments needed in the project area (e.g. ditch cleaning, thinning, etc.) should be implemented simultaneously (HE 72/2008 vp, Ministry of Agriculture and Forestry 2006, 2007) and based on regional forest inventory data. Future information systems could enhance this kind of an inclusive implementation model, with regard to many kinds of forest and nature management tasks, where local co-operation is needed between forest owners and other actors.

The motivation in planning was provided by well-being or "national economy". Multiple goals in forestry are dominating forest policy more and more (Ministry of Agriculture and Forestry 1999, 2008b). The starting point in planning continues to be traditional wood production. Both the work done in the forest (inventory work) and the work done with the forest owner (providing advice) rely on Forest Management Guidelines (i.e. "good silviculture") and the aim of bringing about an even supply of timber. These empirical findings indicate that the environment is taken into consideration, but the other objectives, multiple goals in forestry, have not been strongly promoted in planning or when providing advice: one cannot argue about genuinely multiple goals if objectives other than wood production are considered only as constraints impacting on the primary aim.

One obstacle to the approach of having multiple goals in forestry is that only forestry professionals belong to the community (Fig. 3). There are no actors asking for needs other than traditional forestry to be met, e.g. rural developmental or entrepreneurship, activities supporting recreation or biodiversity. The organizational commitment of forest planners is undoubtedly high and thus to gain more diversity in forestry goals, changes are needed at the organizational level. Also some conflicts may occur when striving to achieve the objectives (cf. Twight and Lyden 1988, Tipple and Wellman 1991). But as in this study, some diversity has been discovered, and consequently potential for change and adaptability does exist.

Finland's Forest Management Guidelines were updated in 2006. The main arguments that launched this reformation process were profitability and diversity (Forestry Development Centre Tapio 2006); profitability is seen as being owner-specific; thus, for example, interest rate expectations vary among forest owners, and the same applies to orientation towards objectives other than solely economic ones. It is believed that the guiding principle in practical planning and advising ought to be to consistently offer options to forest owners. Our data show that this attitude in planning is currently weak. Even so, it was noticed that in many cases forest owners did not disclose special aims, and this reflects the sharing of decision-making power with an expert (cf. Hujala et al. 2007). Offering options could

bring about some more interest in specifying one's goals and in making the level of sharing decision-making power more deliberate.

The diversifying goal structure of non-industrial forest ownership by families is reflected on owners' decision making in practical situations and it should be taken into account in customer-oriented services such as planning and providing of advice (Tikkanen et al. 2006, Hujala et al. 2007). It can be assumed that by serving and supporting the diversified goals of forest owners, it also becomes possible to achieve the multiple policy goals. One recommendation to facilitate the emergence of support for multiple goals of planning is to raise the status of forest owner's motivations as determining the goals and phases of planning (Hujala 2009). This would also contribute to customer orientation and alleviate the present contradictions, i.e. the planners' frustration of serving owners' needs with inadequate support and time. In other words, planning should be regarded as serving owners' customer values, and a new activity model for that should be collaboratively constructed.

The changes in planning require changes in structures, organizations and instructions as well as in education and training. Real political will is also needed in order to respond to societal changes. If wood production still dominates and if there are no real alternatives for the forest owner, it will be impossible to bring about changes in the practices.

4.3 Conclusions

This paper, as a result of studying the work of planners in a systemic way, offers a comprehensive view for how to develop the forest planning practice. The activity system model, based on the cultural-historical activity theory, helped to overcome the unfruitful border between natural and social systems (Haila and Dyke 2006). Forest planning became understood as a mix of interwoven social practices. The theoretical tool helped to analyze motivation and the object of the work together with the other elements of the forest planning activity system. Through identifying contradictions and recognizing diversity, new knowledge was gained of the grass root level of effectiveness of forest planning as a policy tool. Simultaneously, some important seeds supporting future development were sown.

Davydov (1999) lists eight philosophic problems not yet solved in activity theory concerning e.g. structure and components of activity and communication. From the viewpoint of human resource development Torraco (2005) reviews work design perspectives, in which activity theory is also included. He underlines the need for multilevel work design theory and proposes activity theory as a basis for further development of multilevel work design theory. This criticism does not, however, ruin the value of the activity theory in developing practices via studying activity systems and solving inherent disturbances (Paavola et al. 2004). Even though the activity theory proved fruitful as the framework of analysis in Finnish conditions, it could be useful to make another comparable study in future in other conditions, e.g. in Central Europe, where connections between the components of sermon policy activities may have evolved quite differently. This could validate the activity theory approach further and provide another set of comparable and/or conceptually transferable results for the benefit of practical actors and developmental researchers.

The in-depth interviews with professional foresters represent a proper way to study the motivation, objects and outcomes of the work. These interviews certainly supplement the information provided by surveys about the attitudes and opinions of forestry professionals and the implementation of forest polices (Twight and Lyden 1988, Dove 1992, Brown and Harris 1998, Pregernig 2001, Hugosson and Ingemarson 2004, Hoogstra and Schanz 2008, Kindstrand et al. 2008, Primmer 2008). It is suggested that in future development the social character of forest planning be emphasized and that the interwoven nature of planning and providing advice with societal norms being recognized.

As a means of enriching the future development of planning with practical experience, the authors recommend developmental work research (Engeström 1995) based on activity-theoretical concepts (with practical actors as the main developers and the researchers as facilitators). The developmental history of Finnish forest planning system presented in Hokajärvi et al. (2007) should be completed with

more detailed and practical analysis of historical development. Further investigations of the praxis are definitely needed to support development. Be as it may, the authors acknowledge that the actual development direction should be in line with decisions in a political value-based process, which may differ from the above base. In addition, the critical findings made at the implementation level should provide impulse for improving the policy (Leskinen 2006, 2007).

Future research faces the challenge of deeper assessment of the properties of the informing activity that would be meaningful from the perspectives of the planner, the forest owner, other forestry institutions, and society. Moreover, it will be important to investigate how to motivate those planners, who enjoy working in the forest, but who in the new system are more and more forced to communicate with forest owners from their office or home settings. On the other hand, a crucial question is that of how capable a planner is in offering smooth communicative consultation if s/he has not become personally acquainted with the forest owner's forest holding. These questions arise when investigating both the positive and negative aspects of the proposal in meetings with key informants. In summary, the perceptions of forestry professionals towards their changing job descriptions and organizations need to be thoroughly examined.

In addition, the perceptions of forest owners should be investigated in order to assess the utility potential of a forest informing system as well as the need for a consultative approach in decision support. In particular, the differences between generations as well as between rural and urban forest owners would be of interest in order to forecast future trends in the preferences regarding providing of forest information as well as decision support service types.

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Appendix 1. Themes Discussed in the Interviews (Interview Guide)

Meeting the Customer of Forest Planning

1) History as a forest planner, the work of the forest planner in general
   – When and how did you end up as a forest planner
   – Training and courses, practical experience
   – Flow of a typical planning process (what kind of different actions and operations, with whom)
   – Conception of the characteristics of a good planner
   – What is essential in a planner's work, the most important phases
   – How has the planning work changed lately

2) The interviewee's own engagement with the forest owner
   – Which factors affect the treatment suggestions for the plan
   – What is the planner's own practice to help keep in touch with the customer
   – How s/he takes into account the wishes and goals of the forest owner (examples and explanations)
   – How s/he trains and guides the forest owner
   – How s/he tries to influence the plan

3) Taking into account different forest owners
   – What different kinds of owners are there as customers of planning (dream customer, difficult customer)
   – How s/he acts with different forest owners
   – How s/he reasons as to how to act in different situations
   – What kinds of feelings does the diversity of forest owners evoke

4) Development areas of interaction in forest planning
   – Opinion regarding customer segmentation into 'forest knowers' and 'forest wannabe-knowers'
   – How well does s/he know the guidelines of the service, opinions regarding them
   – Controls to support forest policy or customer-centered decision support
   – How s/he would develop contacts with forest owners
   – How s/he feels about making contact with the owner after planning
   – What kind of new planning approaches would s/he consider applying
   – The meaning s/he hopes the plan would have for the forest owner, metaphor

Appendix 2. Description of the Phases of the Planning Process

The purpose of *preliminary work* is to get acquainted with the forest. The special cultural or ecological values are studied from databases. This phase includes identifying the owners of forest holdings and their contact information. Thus the planner prepares him/herself for the inventory work.

Inventory consists of measuring and storing the data from forest. The planner investigates each stand and determines his/her suggestion for the next treatment and the scheduling. It is the dominant routine of the planner's work, and it takes most of the non-snowy season each year. The work done in the forest is independent, but also lonely. The inventory covers the whole planning region regardless of landowners buying plans or not. Each planner has an annual goal to collect data from a certain hectareage in a year. Parcels without ordered holding-specific plans are called intermediate areas, but the stands are measured in the same way for the future use of forestry professionals or for late orders of holding-specific plans.

When *compiling the plan,* the planner performs the planning calculations and determines the final proposals for treatments. This is done with the aid of the information system (SOLMU) in the autumn with the field work having been completed. Any mistakes are also corrected at this point in time. The final plan is printed out and filed either by the planner or by office staff.

Delivery is when the forest owner gets the plan either delivered in person or via the post.

The purpose of *marketing* is to sell the holding-specific plans to the owners. Under the prevailing conditions, marketing the plan to the owner is a distinctive part of the planner's work, and it begins with sending out marketing letters. The planner has to contact almost all of the forest owners and present solid cases for why they should have the plan. Co-operation with colleagues from other forestry organizations supports marketing.

The planner *enquires as to the forest owner's needs and hopes* to be taken into account in the final plan.

The owner usually has opinions concerning a certain stand or a specific treatment. The owner's willingness to do cuttings and to work her/himself in the forest are usually established. Many forest owners just want to find out the recommended treatments to keep the forest in a good condition, and they have no special needs.

In *advising* the planner advises the forest owner as to how to use the plan and points out the most essential silvicultural treatments. The aim is to make the forest owner understand "good silviculture", which is presented in the plan. Many planners consider providing advice to be most effective when done in the forest.