Objectives and Motivations of Small-scale Forest Owners; Theoretical Modelling and Qualitative Assessment

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Forest management changes with societal change, and it has been debated if economic development in society places material objectives in a less preferable position: it is assumed this is also the case as regards forest management. The aims of this study were to propose a theoretical model for empirical studies of objectives and motivations within this field and to depict motivations and objectives of small-scale forest owners in Sweden. Comparative literature studies were undertaken and qualitative methodology was used for the empirical studies. Firstly, to depict general trends among forest owners, interviews with professional foresters were conducted. Secondly, forest owners throughout Sweden were interviewed to compare the results of the interviews with the professional foresters on the motivations and objectives of small-scale forest owners. Within the literature, there were no consistent views on the subjective grounds for owning and managing small-scale forest estates. The proposed theoretical model originated from the cultural concept. Sets of interpretive and normative qualities were seen as underlying people's actions, and such sets were related to basic values. The 'objectives' were clustered into groups creating four clusters i.e. 'motivations'. The four motivations depicted were: Conservation; Utilities; Amenities and Economic Efficiency. The empirical results highlighted that the objectives and motivations of forest-owners covered a broad field and a move towards conservation interests was indicated. The theoretical model presented here is suggested a suitable tool for both depicting the motivations and objectives of forest owners and for making future comparisons.

Keywords small-scale forest owners, professional foresters, forest owners' objectives, forest owners' motivations, forest owners' values, forest management
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1 Introduction

Ideas regarding proper forest management appear to change in conjunction with value-changes in society. Economic development appears to render material objectives less preferable and are gradually replaced by objectives concerning quality of life. Several studies indicate that a change in human values has taken place (Harding et al. 1986, van Raaij 1993, Hakelius 1996, Bengston and Xu, 1997) and it may be assumed that this also affects ideas on forest management. The structure of forest ownership in Sweden is changing. Changes in the law for forming land (1970:988), the government bill (1993/94:27); the committee for residences' report (1993/94: BoU4); the land acquisition law (1979:230), the government bill (1990/91:155) and the committee for agricultures' report (1990/91:JoU26) resulted in deregulation of the property market. The farmer's pre-emptive rights were largely terminated which gave possibility for a new generation of forest owners, with a different set of values, to enter the property market. The changing attitudes were politically manifested as a new Forestry Act (1979:429), the forestry decree (1993:1096), and the Forestry Boards' regulations and general advice (SKSFS 1993:2) passed by the Swedish parliament, became valid in 1994. In the first paragraph (Handbook of… 1994, p. 8) it is stated: 'The forest is a National resource. It shall be managed in such a way as to provide a valuable yield and at the same time preserve biodiversity. Forest management shall also take into account other public interests.' At the same time the regulations of the Act are less detailed leaving decisions largely to the forest owner. One example is the lowering of the minimum age required for final felling. In the context of this paper, an important difference between the two Forest Acts lies in the emphasis on the forest management plan. In the former Act, a forest management plan was required, whereas the Forestry Act of 1994 required only a description of the forest. In order to construct a management plan according to the wishes of the forest owner, data on how owners intend to manage their forest is required i.e. to try to develop the current management plan that parallels traditional aspects and ideas corresponding to the old legislation.

Studies of the internalised driving forces of people can be utilised for increasing awareness of the different types of values and ideas in relation to forest management and enhance the opportunities to manifest personal ideas in the construction of forest management plans and silvicultural systems. Gibbs (1975, p. 19) defines management and silviculture. 'Management is the administrative and regulatory process whereby the policies and objectives established for a forest property are attained … Silviculture is the process whereby forests are tended, harvested and replaced resulting in a forest of distinctive form'. Silviculture is an integrated part of forest management and the subjective ideational aspects of silvicultural activities are relevant to this study.

The most important qualitative and quantitative studies of forest owner's objectives have been conducted in Finland (Karppinen 1998), Sweden (Lönnstedt and Törnqvist 1990, Lönnstedt 1997) and the US (Kurtz and Lewis 1981, Bliss and Martin 1989). However, no consistent model has been used in these studies and different theories have been applied as a basis for describing the forest owners' objectives. This renders the comparison of different studies difficult. If the objectives concern a particular field of action, in this case silvicultural activities, it could create possibilities for implementing the results within forest management. This is not the case with the models studied during the literature review.

The assessment and representation of subjective qualities such as objectives, and general human values, is a precarious task. To enable consistent depictions allowing comparisons over time, and with regard to different populations, the same concepts and theoretical apparatus for different assessments needs to be applied. Thus, the following is required as regards further studies:

- A consistent theoretical framework enabling depictions and analysis of particular fields of actions
- A conceptual model allowing comparisons between different studies
- Further studies on forest owners' objectives

In Sweden, there is a long forestry tradition among professional foresters. The oldest Higher Education for professional foresters started in 1829 at the Royal College of Forestry in Stockholm and was supervised by chief forest officer Israel Adolph

af Ström (Brynte 2002). The forest industry has been of great importance for both the Swedish economy and employment. Formerly, firewood, charcoal and tar were extracted, whereas today the biggest volume raw material is used for producing pulp. The forest owners in Sweden are usually divided into four groups: Private forests, State-owned forests, community forests and company forests. Some of the private properties are owned by several people. With about 400 000 owners and an average estate size of about 45 hectares, private holdings encompass approximately 50 percent of the total area of forest, or 10.7 millions of hectares (Enström 1997).

Sweden is an useful empirical case as it has a long tradition of forestry and the forest property market changes allowed the possibility of a new generation of small-scale forest (sometimes referred to as non-industrial, smallholder or family forest (Harrison et al. 2002)) owners, with a different set of values, to enter the property market. The aims of this study were firstly, to propose a theoretical model for empirical studies that could allow comparisons with other models and secondly, to use the proposed model for depicting general motivations and objectives of small-scale forest owners in Sweden.

Firstly, a literature review was conducted to study the research within the scientific field. A theoretical model was then constructed and was used during the collection and analysis of the data. Thirdly, empirical data was collected through qualitative interviews with foresters and small-scale forest owners. Finally, a model with motivations and objectives of the small-scale forest owners was presented.

2 Literature Review

The field of enquiry is relatively young in forest science and a majority of the work emanates from the last couple of decades. In this context, the works presented below are salient and important.

Kurtz and Lewis (1981) use a theoretical concept consisting of predefined objectives and motivations to generate a typology of small-scale forest owners. The set of notions is seen as the small-scale forest owners' decision framework and the typology was the result of the application of that framework and a Q-sort testing technique. The two types of subjective ideational qualities ('objectives' and 'motivations') assumed in the theory are causally related and affected by different constraints. The theory states that objectives express 'the end sought' and that motivation represents general 'guiding forces'. Combining a finite set of objectives and motivations, the Q-sorting technique evaluates these combinations with regard to different people's preferences. According to the authors, it is possible to generalise, from sets of subjective evaluations, about typical rationales underlying forest management decisions. These are expressed as four owner types: timber agriculturalist, range pragmatist, timber conservationist and forest environmentalist.

Bliss and Martin (1989) conducted a qualitative study of a group of small-scale forest owners who were particularly interested in forest management. In this work, the notion 'motivation' is chosen in order to represent the driving forces of the chosen group. The notion is not formally defined but from the result, it can be clearly interpreted as a broad category that includes material and social background conditions, as well as general values, for actions relating to forestry. The category includes phenomena such as ethnicity, family, personal identity and forest values. The empirical result of the study indicates that personal identity type of motivations is the most important for the forest manager's actions.

Lönnstedt (1997) compiled a qualitative study presenting goals emerging from forest owners in Sweden. These are divided into five classes: formal economic goals; informal economic goals; production; environmental goals; and intangible goals. Formal economic goals include the categories cash flow, liquidity reserve and capital growth: hunting, firewood and wood for household purposes are included among informal economic goals. Production goals contain different silvicultural methods and aesthetics. Intangible goals include a certain life style. The environmental goals are not discussed. A similar result can also be found in Lönnstedt and Törnqvist (1990), where the emphasis is on forest owners' decision options and the owners' material goal structures are directly considered with no relation

to deeper values.

Conducting a quantitative study, in which a typology created by Pietarinen (1987) is applied, Karppinen (1998) studies the values and management behaviour of small-scale forest owners. Karppinen (2000) refers to (forest-) values and objectives, which may be short and long-term and are seen as equivalent to goals. Objectives are generally portrayed as more concrete than values and 'can be considered as subordinate to values in personal decision hierarchies' (Karppinen 2000, p. 25). Long-term objectives are permanent concepts of desire, which influence behaviour and the results indicate that general (forest) values and long-term objectives of forest ownership are not strongly correlated. Karppinen classified the forest owner into four groups, as originally suggested by Kuuluvainen et al. (1996, p. 303) – 'multi-objective owners; recreationists; self-employed owners; and investors'.

3 Theoretical Modelling

3.1 Driving Forces Underlying Actions

A proper model should reflect the driving forces of small-scale forest owners and be able to reflect and represent traits related to actual silvicultural activities. The model should, secondly, enable representations of general as well as specific driving forces, that is, applied categories and notions should be able to represent traits that would be more stable over time as well as specifically related to present silvicultural practices. Finally, a proper model should also allow other proposed models in the field of forest science to be put into context, that is, it should preferably affiliate to ideas previously proposed. Thereby action-oriented theories would be particularly useful as sources of inspiration.

Theories of action within social sciences are often related to action theory within philosophy. With roots in classical thinking, e.g. Aristotle, the nature, content and metaphysics of action has been examined and discussed, and a classic view of action is represented in the so-called belief and desire (BD-) model (Moya 1990, Mele 1997, Petersson 2000). Briefly, action is related to the beliefs and desires that are 'items' within the subject's mind. These items are 'produced' and 'reproduced' within the mind of the subject as she/he interacts with and interprets different social and physical conditions as a basis for actions in a particular context. The theory is thus causal and dynamic. Firstly, the items created are seen as causing the particular actions performed. Secondly, the items themselves are influenced by the outcomes.

Within contemporary sociology well-expressed models of action are not easily found, perhaps due to the general scepticism towards firm definitions and theorizing instigated by post-modernism in the '80s and '90s. Although influenced by post modernism (e.g. Marcus and Fischer 1986, Tyler 1986), anthropology preserved a basic theory of action (e.g. Kuper 1996) that emanated from the classic anthropologists Kroeber and Kluckhohn. This inspired and influenced the methodology of contemporary social sciences in general (Denzin and Lincoln 2000). A classical theory of culture can be used for depicting particular aspects of social life and particular collectives. Thereby it is applicable for depicting underlying reasons for the management activities of small-scale forest owners.

Culture is thus an aspect of action (Schneider 1976), and within anthropology, practically oriented value-theory is essential to the core concept of culture. Values are ideals of what can be achieved, they are related to the desires of the subject and seen to touch upon the subject's deep emotional as well as intellectual character (Hakelius 1996). According to the classical view of culture, expressed by Kroeber and Kluckhohn (1952), values are seen to guide subjects' interpretation of the 'world' and of normative ideas for actions. From the cultural viewpoint, 'the world' is an arena that consists of ongoing actions, products of actions, and other physical conditions for actions; all these items exist in the real world. 'Under' this arena, i.e. not objectively perceivable cultural traits are created while the subjects perceive, interpret and reflect on this arena. These cultural traits are mental objects that eventually form coherent patterns linked together through the attached, underlying values. With regard to the individual subject, these patterns of traits constitute a kind of a 'mental container', containing

traits at different levels of depths.

Two aspects of the cultivating process can be distinguished: an interpretive and a normative side; 'culture is of and for [action] acquired' (Kroeber and Kluckhohn 1952, p. 181). On the interpretive/'of' side, the subject describes and interprets the picture of the world. On the normative/'for' side, the values guide the creation of norms, which leads to action. In practice, these processes occur more or less simultaneously within subjects, however, the correct causal order may be problematic to establish. The ideal causal direction in the cultural model is through interpretations of norms from which an action is eventually performed. This indicates that interpretation of some kind always precedes actions. The model is fully dynamic in that the eventual actions and the results are thus subject to interpretation.

As a depiction, culture is an attribution to an 'idealised third person' (Werner and Schoepfle 1986). The cultural student 'gathers' traits from a number of subjects with experience of the particular arena and constructs a coherent 'mental container' as an idealized suggestive example. This means that from the point of view of the individual subject he/she can be a carrier of that culture to varying degrees. Important for this conceptualisation of culture is that it is seen as emerging over time. In such a process, the guiding values tend to move away from the awareness of subjects. Thus, values often have to be inferred by the researcher from peoples' explicit interpretations of actions, from norms for particular actions, or from the actions themselves. Furthermore, there is no fixed number of levels between that objective 'surface' and the fundamental underlying values; the deepest level in the container. The number and relative depth of traits in a cultural system is thus left for the student to decide.

To represent culture as such a system, there is a need to define and identify traits on at least three levels: a) ideas concerning concrete actions and conditions for actions; b) ideas concerning types of actions; and c) ideas concerning actions in general terms. In the case of forest management, the first level can be exemplified by specific ideas on soil and water conservation that leads to certain silviculture practices being performed, for example using natural regeneration under shelter instead of clear cutting. The second level would reveal a persistent idea in favour of, as in this example, conservation, and the third level would accordingly reflect general ideas and mental tendencies in favour of a better environment.

3.2 The Proposed Model

The authors proposed that the classical ideas of culture should be utilised in conceptualising the driving forces of small-scale forest owners, particularly on the basis that they are well suited to depict driving forces that concerns particular fields of action; i.e. in this case silvicultural practices. Further, the principal cultural model depicting culture as a system should be used for conceptualisation. In the model presented here, the normative ideas were divided into 'motivations' and 'objectives'. Corresponding interpretive ideas were divided into understandings and descriptions. Values represented the deepest aspect of the model, underlying both normative and interpretive traits.

For studying the driving forces of small-scale forest owners, the motivations and objectives should be primarily considered and depicted. Thus, motivations, being rather general traits, concerned classes of actions; objectives concerned particular types of actions that could actually be performed, such as silvicultural practices. The model considered traits on several concrete levels that reflected subjects' motivations, enabling generalisations of different objectives within a particular group of small-scale forest owners and the classes of actions.

3.3 Discussion about the Proposed Model

It was assumed that the properties sought were rather complex and hard to define and depict. This condition did not necessitate a relaxation of theoretical clarity, rather the opposite. The theoretical proposition originated from classical anthropological ideas and from notions previously used within forest science. The primary reason for choosing the main source was that this approach gave a coherent and systematic depiction of different qualities connected to the process of building normative ideas for actions within groups

of people. In the model proposed, the notions – 'motivations' and 'objectives' for representing the driving forces of small-scale forest owners also affiliated with previously presented ideas (Kurtz and Lewis 1981, Bliss and Martin 1989, Lönnstedt and Törnqvist 1990, Lönnstedt 1997, Karppinen 1998, Karppinen 2000).

As there was a need to depict idealised properties (items) representing driving forces at different levels, a broader more long-term category (motivations), as well as one category that reflected concrete alternatives for actions (objectives), was considered. The term 'goals' (as used by Lönnstedt 1997, Karppinen 2000) was considered as an alternative to 'objectives'; however, within decision making theory, goals represent a state that can be achieved or not (Keeny 1993), whereas objectives were considered as representing tendencies towards a particular state or activity. For depicting driving forces, 'objectives' was perceived as the better choice as these can be realised in actions, even though these actions do not necessarily lead to the fulfilment of particular goals.

For the broader category, the term 'forest-values' (discussed by different authors such as Bengston and Xu 1997, Karppinen 2000) was considered as an alternative to 'motivation'. Karppinen (2000) suggests that forest-values represent values that people hold towards nature and forests in general and do not necessarily concern (potential) actions or conditions on the particular forest-estate of the small-scale forest owner i.e. they are not necessarily applicable to the motivation behind actual activities that are performed. Thus, forest-values were seen as a subordinate to general values and possibly fitting within the second level of the model.

The theoretical model could be seen as a hierarchy of motivations and objectives of varying importance. On a subjective level, each forest owner will have an individual hierarchy of motivations. A theoretical model with distinctively different motivations will not exclude an interweaving of motivations, as forests are always valued in multiple ways, simultaneously (Bengston and Xu 1997). The model proposed by Bliss and Martin (1989) could be argued as an example of this, where the category 'motivations' represents traits from all three levels ('objectives', 'motivations' and fundamental 'values') according to the model presented here.

The model presented here can also be compared to that of Karppinen (2000), as there are many theoretical similarities between them. The 'objective' category of Karppinen, divided into long- and short-term objectives, roughly corresponds to the objectives and motivations according to the conceptualised model presented here. It could also be argued that Karppinen's long-term objectives emphasises deeper aspects than in our 'motivations' category. There also appears to be an unclear distinction between long-term objectives and forest values in Karppinen's model.

The category class of 'goals', as presented by Lönnstedt and Törnqvist (1990), can be seen to correspond to the category of 'motivations' in the proposed model. Different subcategories of these classes of goals can also be seen to correspond to the category objectives. The current authors suggest that specific external factors govern the forest owners' goal-making decisions, which implies that the class 'goals' does not depict ideas that produce actions if other external factors occur. As a result, it can be argued that their category 'goals' is not as deep as the category 'motivations' in the proposed model.

Kurtz and Lewis (1981) present the same notions as presented here although the category 'objectives' is termed 'the end sought'. Both categories of motivations and objectives include rather general traits, not specifying particular management activities and it was considered that their traits, described as motivations and objectives, were equivalent.

4 Empirical Studies

Firstly, professional foresters were interviewed to depict general trends and describe motivations and objectives among small-scale forest owners. The foresters were assumed to express the motivations and objectives through a structured method, because of their cultural background. Secondly, small-scale forest owners were interviewed to compare the results of the interviews with the foresters.

4.1 Qualitative Methodology

A qualitative method was used to explore the motivations and objectives of small-scale forest owners. Qualitative data, with an emphasis on a persons´ experiences, are suited to identifying attitudes towards events, processes and structures in their lives (Miles and Huberman 1994). The method is generally explorative, and the researcher has only preconceived ideas about the topics that should be discussed, thus the interviews are open-ended (Patton 1990, Kvale 1996, Denzin and Lincoln 2000). There has not been a shared tradition of qualitative analytical techniques, but in the past decade, more researchers have shifted towards a qualitative approach (Miles and Huberman 1994).

The qualitative interviews were tape-recorded and lasted on average two hours. They were semi-structured and open-ended, i.e. they followed an interview guide (see Appendices 1 and 2) with proposals on questions. The interviews were allowed to pursue a natural course, but all questions from the initial guide were discussed. At the end of each interview, the researcher verified his understanding of the statements and asked for amendments in accordance with the method used by Kvale (1996).

During the first round of interviews, foresters working on a daily basis with forest owners were interviewed. These informants were chosen primarily for their wide-ranging experience of small-scale forest owners and forest management, which was assumed to indicate that they had reflected upon the objectives and motivations of the forest owners. The informants were asked to describe the small-scale forest owners' management situation of the past, present and future. Different forestry service organisations throughout Sweden were represented. Each organisation, with the exception of the hunting association, could offer private forest owners a forest management plan. The selected informants worked with management services such as felling operations, forest conservation, forest administration, forest management plans, timber trading, forest policy, economic counselling and game management. Fourteen individual interviews with professional foresters were conducted during summer 2000. The professional foresters were men aged between 35 and 61 years. They had 10 to 35 years of experience of working with small-scale forest owners, the majority over 20 years of experience.

Informants ensure that the researcher contacts people, situations and events that contribute to the progress of the research. There can also be a risk if the researcher only relies on what the informants say rather than looking at the world through the eyes of the respondents (the forest owners) (Bryman 2001). Therefore a second round of interviews was performed. The results from the first round of interviews were used as a basis for constructing the questionnaire for the second round of interviews with small-scale forest owners. Eight National Board of Forestry districts throughout Sweden were asked to suggest 32 small-scale forest owners with special interest in conservation, production, amenities, economy or other specialities. This is a general stratification approach for selecting respondents (Bryman 2001). The professional foresters were expected to be well oriented among the local populations of forest owners and have a feeling for 'otherness' as they chose the forest owners. This resulted in sixteen interviews conducted with forest owners during summer 2003. The forest owners were asked to describe their connection to forestry and their activities in the forest and finally, their objectives were discussed. Seven women and nine men were interviewed, with ages ranging between 36 to 65 years. Within the group, there were people with a range of education background from university, college and forestry schools to not having studied in higher education. Three owners received all their income from the forests. Most forest owners worked with planting and cleaning, some with thinning, but very few with final cutting. The forest area varied between 18 to 880 hectares. In most cases, the land was inherited and some had bought their land.

In accordance with the method used by Miles and Huberman (1994), data reduction was used for focusing, sharpening and organizing data that appeared in the transcriptions. Transcriptions were made and the discourse written down. A coding scheme was devised to differentiate and combine the data. Codes are tags used to identify specific themes in a text. The mode of data display was transcribed field notes with attached codes. A list of code definitions was created from analysis

of all the objectives mentioned during the interviews. The codes were clustered, relabelled and revised during the analysis, in accordance with the method used by Miles and Huberman (1994). The method for analysing the data from the informants was the same as for the respondents. The clusters represented motivations and the codes under the motivations represented the objectives of the small-scale forest owners' (see Tables 1 and 2). Finally, the objectives were defined and empirical examples confirming the definitions were chosen from the data.

4.2 Empirical Results

4.2.1 Motivations and Objectives According to the Professional Foresters

During the first round of interviews, the informants were asked to describe forest management that are held by, or are in the process of becoming held by, small-scale forest owners. The following section summarizes the trends among small-scale forest owners in Sweden according to these foresters.

The objectives of forest owners' are changing and the category living on the farm is smaller today compared to twenty years ago. Due to current developments in society, many forest owners have jobs outside the forest business and the traditional forest owner working on their own property will soon be a minority. There used to be a large proportion of self-active forest owners living on the farms combining forestry and farming, but membership in the European Union resulted in a lower agricultural activity among the farmers. Today farm owners strictly performing forestry activities dominate.

According to a professional forester, the value of the property could previously correspond to the return from the forest. Today people are willing to pay for the value of the forest plus for other values. It is believed the interest of the forest has not decreased, rather other interests are considered more highly than previously.

In some districts, the prices of properties are so high that they cannot only be justified by the current timber prices. Because of this, many farmers cannot compete on the property market. There are, for example, successful shareholders and businessmen wishing to invest money in forest properties. One reason could be that owning land might give them possibilities for a better quality of life through activities such as hunting and horses. Another reason might be that money invested in forest properties is not subjected to taxes on capital yield. Further more, it might be an advantage to invest in property before a change of generation. As exemplified by one professional forester: 'The forest has not the same significance as in former days. People appreciate new values. The person buying a property today is of a different type compared to the person that bought land ten years ago. The deregulation of the property market resulted in a change in the structure of the owners. Previously, forest owners bought land to increase the area of their

Table 1. Small-scale forest owners' motivations and objectives according to the informants.

Motivation/Objective	Code	**Motivation**/Objective	Code
Production	P	**Conservation**	C
Timber Production	Pt	Nature Conservation	Cn
Game Production	Pg	Cultural Conservation	Cc
Mushrooms and Berries Production	Pmb	Water Conservation	Cw
Forest Grazing Production	Pf	Soil Conservation	Cs
Amenities	A	**Economical efficiency**	E
Forestry Tradition	At	Yield of Capital	Ec
Challenge of Management	Am	Liquidity Reserve	Er
Aesthetics	Aa	Annual Income	Ei
		Tax Planning	Et

own property. Today people buy a property for horses or hunting. Thereby the forest becomes a side issue and the reason for cutting will not be because of money.'

The professional foresters highlight that the objective is still often economic efficiency, but other values now have to be considered. The interest in natural and cultural values on the property has increased and water conservation is now an important part of the planning for the small-scale forest owner. The professional foresters also emphasized the interest in changing land use, for example to create pastures. Many forest owners feel a strong responsibility for managing the land for previous and future generations. Owning a forest property can also be an irrefutable way of maintaining contact with one's native community.

The motivations and objectives were described and structured according to the information given during the interviews. Four motivations emerged containing 15 abstracted objectives of small-scale forest owners in Sweden (as shown in Table 1).

4.2.2 Motivations and Objectives According to the Forest Owners

The results from the first round of interviews were compared with the data set from the second round of interviews. The second interview guides' first part did not correspond to the formula or to the results of the first round of interviews. Still the results from the first round appeared to cover most objectives according to the forest owners themselves. During the second part of the interview, the forest owners were asked to evaluate the results from the first round of interviews. Four motivations emerged containing 16 abstracted objectives of small-scale forest owners in Sweden (as shown in Table 2).

Most objectives and definitions were kept from the results of the first round as they corresponded to the forest owners' opinions. *Challenge of Management* was renamed to *Challenge of Silviculture* as it is more specifically related to the production of timber and was mentioned more often by the forest owners than the professionals. According to the forest owners *Timber production* was associated with the objectives *Challenge of Management* and *Yield of Capital*. Thereby the objective *Timber production* is not found in the results from the second round and the motivation *Production* was renamed to *Utilities*. It was also necessary to divide the objective *Mushrooms and Berries Production*. Firstly, the practices suitable for mushrooms might not be suitable for berries. Secondly, a forest owner could find production of berries important whereas mushrooms may be of no interest. The objective *Emotional Tie* under the motivation *Amenities* differentiated the results of the second round from the first round. Forests are valued in multiple ways (Bengston and Xu 1997) and the following is an empirical example of interweaving of motivations: 'I do not clear cut the best areas for berries, instead I leave a shelter wood of pine. In many of these places I have been collecting berries since I was a little kid.'

Table 2. Small-scale forest owners' motivations and objectives according to the respondents.

Motivation/Objective	Code	**Motivation**/Objective	Code
Utilities	U	**Conservation**	C
Game Production	Ug	Nature Conservation	Cn
Berries Production	Ub	Cultural Conservation	Cc
Mushrooms Production	Um	Water Conservation	Cw
Forest Grazing Production	Uf	Soil Conservation	Cs
Amenities	A	**Economical efficiency**	E
Emotional Tie	Ae	Yield of Capital	Ec
Forestry Tradition	At	Liquidity Reserve	Er
Challenge of Silviculture	As	Annual Income	Ei
Aesthetics	Aa	Tax Planning	Et

Finally, four motivations emerged containing 16 abstracted objectives of small-scale forest owners in Sweden (as shown in Table 2).

The definitions of the objectives and empirical examples confirming them are presented below.

Utilities

The cluster *Utilities* (U) related to producing different products from the forest. It does not include traditional wood production.

Game Management (Ug) represented a will to improve habitats and the amount of forage for game. Examples of management activities were cleaning by cutting the stems at breast height to produce extra forage and limiting the cleanings on clearings. An empirical example: 'I have lots of game and I feel happy with my dense forest. Game management is important and I want my property to be a game preserve.'

Berries Production (Ub) secured the supply of berries in the forest. Some species are favoured by the clear cutting practices, whereas others are favoured by successive felling. An empirical example: 'I will not put any seedlings on a hill with superior cowberries so that the berries will get enough light.'

Mushrooms Production (Um) was one objective as the forest was also utilised by the forest owners harvesting mushrooms. An empirical example: 'to secure the supply of mushrooms, some areas might not be cut, at least under no circumstances become clear felled.'

Forest Grazing (Uf) was concerned with improving the possibilities for livestock grazing in the forest. Pasture could create park-like forests, suitable for recreational areas, for example close to built-up areas. An empirical example: 'I thinned the forest in the large pasture for young animals, to let more light come down through the forest canopy.'

Amenities

The cluster *Amenities* (A) had a close connection to strong underlying values and feelings of pleasantness for forestry. It concerned among other things managing the legacy, intellectual challenge and visual appearance of the forest.

Emotional Tie (Ae) involved the feelings a forest owner develops for special features on a property, a home district or a landscape where he/she has lived. An empirical example: 'During final felling we left a wider edge than usual against the field to lessen the negative emotional effect. My friend and I said farewell to the forest before it was cut.'

Forestry Tradition (At) represented a will to manage the forest for previous and future generations, not leading to a drastic change of the structure of the forest. An empirical example: 'It would be possible to see a bog from the farm, but father did not want us to see it and therefore we have kept that edge dense too keep the tradition.'

Challenge of Silviculture (As) concerned the forest silviculture as a source of intellectual, innovation and physical challenge. One challenge could be to achieve a certain assortment in a compartment. Shelter wood systems were one example of a suitable system for this objective. An empirical example: 'A great satisfaction results from directing, forming and watching how the forest grows.'

The objective *Aesthetics* (Aa) was about the visual appearance of the forest. Examples of aesthetic characteristics were the species, age, density and structure of the stand. An empirical example: 'There is nothing more pleasant than walking in and managing a beautiful forest.'

Conservation

Under the cluster *Conservation* (C), objectives concerning careful management of the forest resources for protective and preserving purposes were gathered.

Nature Conservation (Cn) was a trait that concerned the creation of opportunities for a rich and varied plant and animal life, including biodiversity and forest landscape preservation. Examples of elements favoured were woodland key-elements, valuable hardwood and game trails. An empirical example: 'I promote the conservation of rare species, create suitable conditions for birds and accept damages due to wildlife'.

Cultural Conservation (Cc) represented a will to protect and preserve cultural values. Traces of cultural activities to preserve were for example old roads, croft ruins, milling plants, stonewalls, springs, and also the outward appearance of the landscape. An empirical example: 'Of course it is very important to protect cultural remains, such as stone fences and stone mounds from the Bronze Age'.

Water Conservation (Cw) implied managing water systems in a way that would not destroy the water quality and high conservation values. Water management was achieved, for example, by leaving a curtain of broad leaves along small brooks, or during cutting operations and scarification by limiting the flow of

soil particles into spawning-grounds. An empirical example: 'The salmon trout will not wander up a brook if the water is too warm. In one cleaning I left ten metres on both sides of the river untouched.'

Soil Conservation (Cs) was viewed as protection of the soil from leaching and erosion. It was associated with activities such as the harvesting of biomass for forest fuels, the use of fertilizers, liming, the recycling of ashes, soil scarification, ground damage caused by vehicles, and clear-cut operations. An empirical example: 'I do not like to walk in deep tractor tracks, therefore I write in all felling contracts that all tracks should be covered up.'

Economic Efficiency

Under the cluster *Economic Efficiency* (E), notions reflecting economic objectives for managing forestland were gathered.

The objective *Yield of Capital* (Ec) concerned a high financial return on forest management, including maximizing production. The rate of interest should be high and if the interest in the forest goes below a certain limit, for example 3%, it will be cut. An empirical example: 'The increment might even be negative if the forest is not cut in time.'

If the forest owner saw the forest as a *Liquidity Reserve* (Er), forestry probably did not provide his/her primary main income. The economic output taken from the forest may be used by the farmer, e.g. during years with poor crops, for restoration of buildings or for purchase of equipment. An empirical example: 'So far the forest has been a savings box, which is used for restoration of houses and other buildings.'

Annual Income (Ei) from forest property was an objective reflecting the importance of an even flow of income from the forest property. Annual income was often associated with a high degree of self-activity. The forest capital generated work-income for the forest owner. An empirical example: 'The forest is very important, because it is my livelihood.'

Tax Planning (Et) guided when and what type of management activities should be carried out, depending on the tax system and the structure of the forest. An empirical example: 'Tax planning is important for everyone. I make sure not to pay any taxes without cause, instead I invest the income in the forest.'

4.3 Discussion about the Empirical Results

The empirical model was considered adaptable for practical use because the objectives presented concern actions that could actually be conducted as silvicultural practices. This connection is not apparent as clear in the studies presented in the literature review. The interviews determined there are many objectives influencing forestry activities and the empirical results highlighted that the objectives and motivations of small-scale forest owners covered a broad field, and indicate a move towards conservational interests. Amenities are now an important motivation and should be considered during forest management planning for small-scale forest owners in Sweden. The informants indicated a change in objectives from the 90's onwards; examples included the objectives under the motivation Conservation and Tax planning. Some 'objectives' were similar to those found in Lönnstedt and Törnqvist (1990) and Lönnstedt (1997) (although terminology differs), but more categories emerged in the current study, e.g. Cultural Conservation, Soil Conservation, Water Conservation, Game Production, Forest Grazing Production, Challenge of Silviculture and Tax Planning. The objective Challenge of Silviculture was comparable with the results of Bliss and Martin (1989). The professional foresters interpreted a change among forest owners towards conservation. Lönnstedt and Thörnqvist (1990) assume that ownership of forest properties implies care for them, but there are no direct empirical links to different kinds of conservation as recognized objectives.

Tax planning is important for forest management planning in Sweden, for several reasons. Firstly, high income taxes may be transferred into lower capital interest taxes for the forest owner; secondly, investments in the private forest enterprise may reduce taxes because of favourable tax rules: and thirdly, forest properties are not subjected to taxes on capital yield. The position of owning land was, however, not an objective according to this empirical model, as the objectives should concern particular types of actions that could actually be conducted as silvicultural activities. Neither was recreation an objective as it was considered included in several other objectives of our model e.g. Game Production,

Mushroom and Berry Production, Challenge of Silviculture and Aesthetics.

As legislation limits possible silvicultural activities, and could limit preferred silvicultural activities, it was assumed that foresters and forest owners objectives were influenced by this. For example in areas where reindeer husbandry is active all year round, the private forest owner is obliged to consult with the Sámi (the Lapp population) about suitable silvicultural practices (Handbook of… 1994); however, this land-use pattern is geographically limited to North Sweden.

Certain criticism has been launched against qualitative research due to its lack of precise formulations of methodological approaches. 'The most serious and central difficulty in the use of qualitative data is that methods of analysis are not well formulated' (Miles 1979, p. 591). This old quotation is now only partly true. Several computer software packages are now available for handling the text, storing comprehensive transcriptions and performing a number of analytical operations (Tesch 1990, Miles and Huberman 1994, Weitzman and Miles 1995), but all scientific observations are theory-dependent and fallible (Chalmers 1999).

A selective sample of respondents was chosen. The authors' considered that qualitative research should be 'authentic' and 'explorative', in accordance with e.g. Silverman (1993) and Bryman (2001). Thereby, the particular phenomenon of objectives of forest owners' should be depicted 'deeply' and 'thoroughly'; however, this does not imply that the aim should be for determining how representative a particular objective is or the relative weight of different objectives, which could be the aim of a future quantitative study. However, informants were used and the professional foresters selected the respondents. This could result in some ideas of interest not being depicted.

The foresters' perceptions of forest owners objectives, in comparison to forest owners expressed ideas, indicated that the foresters could express the objectives of the forest owners'. It was reasonable to expect the foresters to be biased by their own values regarding forestry, making them unable to express other normative views. From a cultural point of view, it is reasonable the foresters hold strong and conservative views on how forestry should be performed (Hugosson 1999). However, another important feature of foresters' culture should also be acknowledged, that is a drive for 'correctness' and a 'straight forwardness': this implies the foresters should be very objective, even when it comes to opposing viewpoints. This could also explain why foresters were able to express different objectives. Both these culture traits were indicated by the manner in which interviews with the foresters developed. During the introductory parts of the interviews, the professional foresters' views tended to be limited by the cultural trait, aiming for efficient and effective timber production. However, midway through the interviews, other ideas about the forest owners were expressed, for example amenities. The interviews with the informants also illustrated how the foresters tended to describe the forest owners objectives in well-defined structures, whereas the forest owners themselves often expressed interrelations between objectives and were not as clear in their definitions. This could be interpreted in two ways. On one side, it could be consistent with a culturally related and exaggerated self-reliance when interpreting the forest owners' objectives. Alternatively, it could also be an indication of a true capacity to understand and pertinently express the views of the forest owners.

According to the theory proposed above, there were no absolute definitions of traits. The objectives and motivations presented here were considered interrelated and accordingly suggestive. The motivations that emerged from the study were extracted from the clusters of objectives considered appropriate according to the coding scheme. Empirical examples were chosen from the interviews, however, the relationship between symbols and meanings could have a private character. Hence, the particular expressions of the interviews could be assumed to represent slightly different phenomena (Wagner 1986, Simonsen 1997). A subject's discourse as a direct route to 'inner-experiences' is also regarded as problematic as there may be a reason for the subject to refer to ideal states rather than to actual experiences (Silverman 1989). These interpretations are also intrinsically linked to the presumptions that the interpreter brings to the interpretive context.

Within the literature, there are no consistent views on the subjective grounds for owning and

managing small-scale forest estates. The theoretical model presented here could be considered a suitable tool for depicting both the motivations and objectives of forest owners and for making comparisons with forthcoming work. Although the empirical results are currently limited to Sweden, the general theoretical assessments and clarifications may already have broader applications for the forestry sector in general. The study showed that small-scale forest owners could have many different objectives that affect silvicultural practices in different ways. Future work could focus on evaluating different practices' adaptability to these objectives. In time, the model presented here could prove a useful tool for predicting changes in small-scale forest owners' objectives and motivations for forest management.

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Appendix 1. The interview guide for the professional foresters.

1. How does your organisation construct a forest management plan?
2. What objectives do you think the forest owner has for his/her forest management?
3. Which objectives do you think the forest owner considers the most important today (place in order of precedence)?
4. How has the management situation changed for the small-scale forest owners' while considering past, present and future?
5. a. For what do you think the forest owner uses the forest?
   b. For what do you think the forest owner *would like* to use the forest?
6. Which different 'types' of forest owners do you have contact with?
7. Are you actively trying to find out what objectives the forest owners have?
8. What are the most common reasons that a conflict between forest owners' objectives arises?
9. If you were a forest owner, how would you plan when it comes to the objectives and the field of applications?
10. How should a forest management plan be developed to meet these objectives and field of applications?
11. Is the forest management plan constructed by your organisation adjusted to these objectives and field of applications?

Appendix 2. The interview guide for the small-scale forest owners.

1. Describe the history of your selves, your family and the connection to forestry?
2. Describe the history of the property?
3. Which objectives do you think are the most important today (place in order of precedence)?
4. How is the structure of your forest today (discuss about the data in the forest management plan)?
5. How would you like to have the structure of the forest in the future?
6. a. Why do you own forest?
   b. For what purpose do you use the forest/what are you doing while you are in the forest?
7. Do you have any objectives/directions as a forest owner?
8. a. Do you believe these objectives (table 2) are useful for describing your situation as forest owner (the forest owner comments each objective and relate it to his own situation)?
   b. Is there anything missing in the picture (table 2) described above?
9. a. What do you think about the forest management plan?
   b. Does the management plan reflects your objectives?
10. a. Tell about your contact with professional foresters?
    b. Do you believe the professional forester can describe the situation of the forest owners and the need of his/her forest management?