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# Landowner Attitudes and Typologies in Relation to Forestry

Heimo Karppinen  
Finnish Forest Research Institute, Finland

## Abstract

The article reviews typologies of non-industrial private forest (NIPF) owners' values, attitudes and ownership objectives. Private forest management is primarily a voluntary action with few legal constraints. Forest owners are largely free to decide which management activities they pursue in their forests. The characteristics of the forest holding, owners' values and attitudes towards forestry, and objectives concerning their own forest property are each important factors that affect management decisions.

Theoretically well-founded attitude or value typologies have been rare in the NIPF literature. The adoption of universal socio-psychological value theories is restricted by their generality and inability to adequately depict forest values. They can be employed as the basic theory of human requirements that are present also in the relationship between humans and nature. However, more specific theoretical value typologies towards nature or forests have been presented and also empirically tested. Empirical typologies concerning the objectives of forest ownership or motivations for forest management have been more commonly created and adopted, and from the practical point of view they have been more useful.

Forest management behavior is basically volitional. Knowledge of forest owners' values, attitudes and landowner objectives and their impact on actual behavior is therefore important when planning and implementing public forest policies concerning non-industrial private forestry. Such knowledge is essential, for instance, when matching the supply and contents of forestry extension services to the varying motivations of forest owners. The identification of owner groups with different values, attitudes and objectives by readily observable owner and holding characteristics is crucial in this respect, but, unfortunately, too often ignored.

## Introduction

Private forest management is primarily a voluntary action with few legal constraints. Typically, there may be an obligation to reforestation after final fellings. Forest owners can largely decide which management activities they pursue in their forests. The characteristics of the forest holding and the financial position of the owner are important in this decision-making. However, forest owners' attitudes towards forestry " or basically their values " and their objectives concerning their forest property are the most important factors affecting the management decisions. This is an underlying assumption in many empirical studies on non-industrial private forest owners' (NIPF) forest management behavior.

This assumption has often been implicit, rather than being explicitly based on direct measurements of motivational factors. Demographic characteristics, such as income or occupation, are often interpreted to reflect owners' attitudes or preferences. Even when attitudes or "reasons for owning forest land" have been explicitly measured, the analysis of their effects on actual behavior has often been descriptive.

Theoretically well-founded attitude or value typologies have been rare in the NIPF literature. For instance, the adaption of universal socio-psychological value theories, such as

those of Rokeach (1973) and Schwartz (1992), is restricted by their generality and inability to adequately depict forest values. However, they can be employed as the basic theory of human requirements that are present also in the relationship between humans and nature.

Pietarinen (1987, 1991) has presented a specific typology of value orientations towards nature and forests in general. Pietarinen's typology considers the commonly used distinction between anthropocentric v. biocentric orientations (e.g., Rolston and Coufal 1991, Steel *et al.* 1994). Materialism and humanism in Pietarinen's typology can be regarded as mainly anthropocentric, and primitivism as biocentric in orientation. The typology also identifies a mystic value orientation which is not common in the literature. The theory has also been tested empirically (Karppinen 1998, 2000). Other, more empirically than theoretically grounded attitude typologies have been presented in the NIPF literature (e.g. Kurtz and Lewis 1981, Bliss and Martin 1989, Kline *et al.* 2000).

Private forest management behavior is basically volitional. Knowledge of forest owners' values, attitudes and ownership objectives is therefore of crucial importance in understanding and predicting forestry behavior in private woodlots. This kind of knowledge should be available for policy-makers in the sphere of environmental and forest policy, especially if NIPF owners form a considerable landowner group.

This article is a review of studies concerning private forest owners' values, attitudes and ownership objectives. The article describes both theoretical typologies and empirically grounded classifications.

## **2. Theoretical typologies**

### **2.1 Socio-psychological value theories**

There is a limited number of basic human problems for which all cultures must find a solution. The relationship between humans and nature is included in the five most important problems of mankind (Kluckhohn 1957). The relationship can be exploitative, harmonious or subjugated. Universal value theories should cover all the basic requirements of human existence (Schwartz 1992, Helkama 1999), including the relationship between humans and nature.

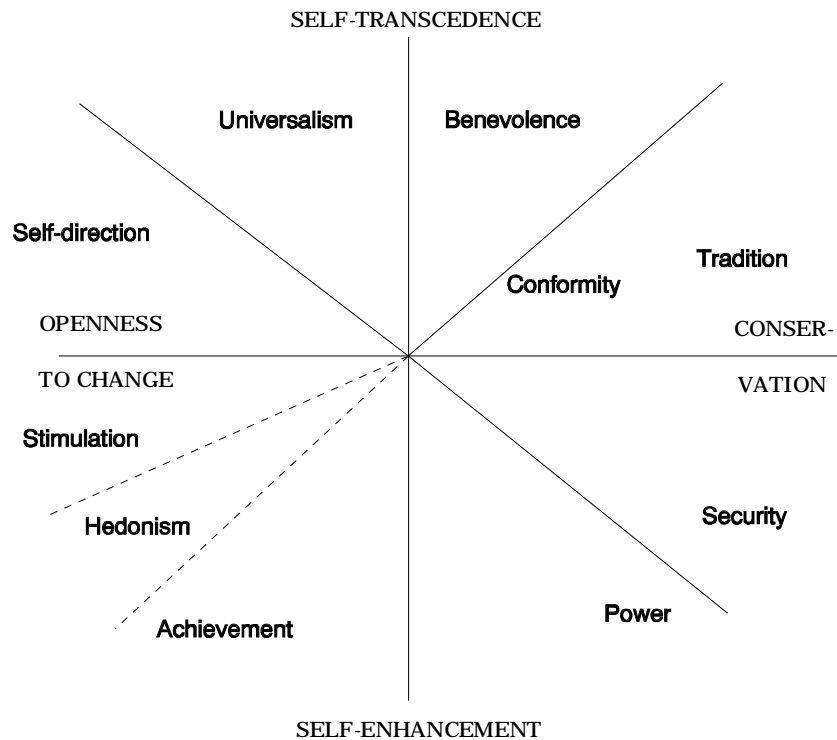
Two universal socio-psychological value theories, those of Rokeach (1973) and Schwartz (1992), are briefly discussed below in order to assess their applicability for describing forest values. A basic distinction in Rokeach's theory is the division between instrumental and terminal values, the former referring to modes of conduct and the latter end-states of existence (Rokeach 1973). Terminal values can be divided into personal (e.g., peace of mind) and social (e.g., world peace). Instrumental values are means to achieve the sought end and can be either moral or competence values (e.g., honest v. logical). Rokeach's theory has been measured empirically by using eighteen terminal and eighteen instrumental values that are regarded to describe basic requirements for human existence (Rokeach 1973).

Values explicitly associated with the relationship between humans and nature are almost entirely lacking in Rokeach's list of values. The only directly relevant terminal value concerns aesthetics: a world of beauty, considering beauty of nature and the arts. Obviously, this kind of general value theory is not useful, at least without further modifications, to depict values related to forests.

A more recent endeavor to develop a universally applicable value theory has been carried out by Schwartz (1992). The theory is a successor of Rokeach's theory and assumes that values have a universal content and structure (Fig. 1) (Helkama 1999). It is therefore a more solid theory than Rokeach's theory, which is merely a list of two sets of values with loose

interconnections. Besides the content and structure of values, comprehensiveness and equivalence of meaning are also considered. Value structure is described by consistent conflicts and compatibilities between values (Schwartz 1992)

**Fig. 1.** The structure of value types in Schwartz’s model. Sources: Schwartz 1992, p. 45, Helkama 1999, p. 64.



According to the theory, eleven motivational or value types can be identified and measured by 56 specific values. The motivational types can be summarized as follows (Schwartz 1992, p. 5-12, Puohiniemi 1995, p. 16):

- SELF-DIRECTION** Independence of thought and action – choosing own goals, creating, exploring
- STIMULATION** Excitement, novelty, challenge in life
- HEDONISM** Pleasure or sensuous gratification for oneself
- ACHIEVEMENT** Personal success through demonstrating competence according to prevailing cultural standards
- POWER** Social status and prestige, control or dominance over people and resources

<b>SECURITY</b>	Safety, harmony and stability of society, of relationships and of self
<b>CONFORMITY</b>	Restraint of actions, inclinations and impulses likely to upset or harm others, and violate social expectations or norms
<b>TRADITION</b>	Respect, commitment and acceptance of the customs and ideas that one's culture or religion impose on the individual
<b>BENEVOLENCE</b>	Preservation and enhancement of the welfare of people with whom one is in frequent personal contact
<b>UNIVERSALISM</b>	Understanding, appreciation, tolerance and protection of the welfare of all people and nature
<b>SPRITUALITY</b>	Endowing life with meaning and coherence in the face of the seeming meaninglessness of everyday existence

The specific values attached to universalism are interesting with regards to the relationship between humans and nature. Unity with nature, a world of beauty and protecting the environment can be found among the eight indicators in this motivational type. Consequently, Schwartz's theory considers the mystic, aesthetic and pro-environmental aspects of the relationship between humans and nature. Schwartz's value theory is, however, too general to be directly useful when analyzing values related to forests.

## 2.2. Pietarinen's typology

Pietarinen (1987, 1991) has presented a specific typology of value orientations towards nature and forests in general. The basically philosophical typology includes the three types of relationships between humans and nature presented by Kluckhohn (1957): exploitative, harmonious or subjugated-to-nature. According to Pietarinen, mankind's relations to nature can be described by four value orientations: materialism (utilism), humanism, mysticism and primitivism.

In *materialism*, forests are regarded merely as a means to increase the material standard of living. Natural resources are considered to be the storage of raw material for industrial and energy production. Materialism expresses a strong faith in technology, which is seen to be able to solve all mankind's problems. The main problem of this orientation is contrafinality: the outcome is opposite to original goals. For instance, increased production may lead to increased material standard of living, but at the expense of the quality of environment.

*Humanism* stresses that forests should be used to promote many cultural pursuits, not only material benefits. These pursuits, of course, presuppose material well-being. Nature should provide mankind with aesthetic satisfaction, advance moral character, promote mental health and positive relations between persons. The ideal is a "socratic" human being who aims at ethical, aesthetic and intellectual perfection. As Passmore (1980, p. 33) puts it: "to perfect nature is to humanize it, to make it more useful for men's purposes, more intelligible to their reason, more beautiful to their eyes." The main problem in humanism is how to strike a

balance between culture and nature. The idea of self-control, included in the Socratic virtues, aims at rejecting unnecessary production and consumption, which is certainly not easy. Though humanists optimistically believe in the possibility of harmony with nature, they also face the problem of contrafinality.

*Mysticism* addresses the immediate experience of the unity of man and nature, it seeks something beyond objective reason. The sacredness of nature can especially be experienced in natural forests. Mysticism argues for the preservation of nature in as pristine state as possible. The problem is achieving a balance between material well-being and the sanctity of nature. Mystics, nevertheless, optimistically consider that the sacredness of nature cannot be totally destroyed. The American transcendentalists, such as Ralph Emerson and Henry Thoreau, are typical representatives of mysticism.

*Primitivism* denies all human privileges in nature. Man has no right to endanger other forms of life: nature has intrinsic value. Each species should be considered equally important and therefore have the same right to exist. All ideals of civilization and material well-being must be rejected and human beings must “return to nature” to live in primitive circumstances. Primitivistic ideals may be brought about, for example, by an ecological catastrophe or via events leading to the violent reduction of the population and the destruction of industrial society.

Pietarinen’s typology addresses the commonly used distinction between anthropocentric v. biocentric orientations (e.g., Rolston and Coufal 1991, Steel *et al.* 1994). Materialism and humanism in Pietarinen’s typology can be regarded as mainly anthropocentric and primitivism as biocentric in orientation, although it does not satisfactorily represent the full spectrum of biocentric values. The typology also distinguishes a mystic value orientation, which is not common in the literature.

Pietarinen’s theoretical typology has also been tested empirically (Karppinen 1998, 2000). The study indicated that NIPF owners supported different kinds of forest values. Three kinds of value orientations were found by principal component analysis: materialism, humanism and primitivism-mysticism. However, no grouping of forest owners could be established based on these value dimensions.

### **2.3. Rolston-Coufal model**

Rolston and Coufal (1991) took five statutory multiple uses of forests (1960 Multiple Use -Sustained Yield Act) as a starting point for developing a typology of forest related values in the spirit of Leopold’s Land Ethic. These uses were recreation, timber, range, watershed and wildlife and fish. Ten categories were established integrating human and biotic values: life support values, economic values, scientific values, recreational values, aesthetic values, wildlife values, biotic diversity values, natural history values, spiritual values and intrinsic values.

A thirteen-item modified version of the Rolston”Coufal typology was empirically tested by Brown and Reed (2000) among Alaskan residents, i.e. not by a sample of forest owners. Additional values such as cultural, therapeutic, subsistence and future (bequest and option) values were included while wildlife values were excluded. A sum of \$ 100 was to be allocated between these thirteen items. Principal component analysis found no latent structures suggesting that the selected items were distinct dimensions of forest related values.

### **2.4. McKinsey’s matrix**

The concepts and theories of strategic marketing have also been used as a theoretical

framework to classify forest owners according to their forestry attitudes. Kurttila *et al.* (2001) used forest owners' attitudes towards internal and external environments of forestry when they identified business units according to McKinsey's matrix describing the strategic position of forestry. According to the theory, there are four kinds of business units: stars, cash cows, wildcats and dogs (Fig. 2).

**Fig. 2.** Strategic groups of forest owners (business units) according to their attitudes towards internal and external factors (SWOT analysis). Source: Kurttila *et al.* 2001.

		INTERNAL FACTORS	
		Strengths dominant	Weaknesses dominant
EXTERNAL FACTORS	Opportunities dominant	Stars	Wildcats
	Threats dominant	Cash cows	Dogs

*Stars* have a promising future concerning external factors while internal strengths are also emphasized. This group can be interpreted to represent “the profitability strategy” in forestry, which is reflected in economic effectiveness in forest treatment, obedience of optimal rotations, maximum sustained yield cutting policy and use of natural reforestation.

*Cash cows* have a weaker position in the markets than stars. The best forestry strategy for cash cows may be “liquidity”: forest owners cutting decisions are guided by financial needs. Cutting levels vary according to the financial position of the owner's economy. The level of silvicultural activity is relatively low.

*Wildcats* operate in promising and high growth markets, but their position is not very strong. Wildcats may emphasize “progressive forestry”, investments for the future. This strategy implies forest improvements, long rotations and artificial reforestation indicating a low time preference. Cutting levels are below the sustainable yield in order to increase future cutting potentials.

*Dogs* have a poor position in unattractive markets. In forestry, a worthwhile solution could be the selling of the forest property. Another solution would be intensive cuttings on the short-term and the avoidance of investments. Kurttila *et al.* (2001) also tested the theory and established a link between the strategic attitude groups, owner and holding characteristics and owners' forest management behavior.

### 3. Empirical attitude typologies

#### 3.1. Decision-making framework

Kurtz and Lewis (1981) developed a decision-making framework for NIPF owners. Owners' motivations and objectives on the one hand, and constraints on the other, guide and



restrict the selection of forest management strategies. Motivations were seen as guiding forces and five distinct motivations were identified:

- 1) financial return (regular income)
- 2) investment (maintaining ownership for its increased value)
- 3) satisfaction or aesthetics (intangible qualities)
- 4) residence
- 5) social responsibility (preserving forests for future generations)

Whereas motivations are regarded as guiding forces, objectives represent the end state to be sought. Four primary objectives were distinguished:

- 1) timber production (selling timber)
- 2) recreation and wildlife (enhancing recreational potential and proliferation of wildlife)
- 3) grazing (providing wooded pasture for domestic livestock)
- 4) preservation (maintaining forests undisturbed)

According to Kurtz and Lewis (1981), management constraints can be caused by market conditions (e.g., anticipated timber prices and costs of growing timber), personal characteristics of the owners (management and marketing experience, socio-demographic characteristics), forest resources and societal and institutional factors (legislation, forestry regulations, public incentive programs).

Forest owners were classified by their motivations and objectives using a psychological testing technique (Q-sort). Four owner types were identified: timber agriculturist, range pragmatist, timber conservationist, and forest environmentalist (c.f. Marty *et al.* 1988).

*Timber agriculturalists* grow and harvest timber in a sustained manner. They keep the land in the most effective use, in timber production. However, timber production is not considered to exclude other benefits, such as aesthetic amenities. This group is business-oriented, attempting to maximize the financial return from timber. Land property is regarded as an asset and a hedge against inflation. Clearing of forest land for agricultural production (pasture) is not favored.

*Timber conservationists* manage their forest land for timber production. Forest management is considered to be beneficial to wildlife and aesthetics, as well as other amenities. Timber conservationists are less business-oriented than timber agriculturalists and represent a combined production-consumption orientation. Forests are preserved for future generations for their enjoyment and utilization. Clearing of forest land for grazing is strongly opposed.

*Forest environmentalists* emphasize non-timber benefits, such as aesthetic values, wildlife and privacy. The impetus for forest management is to preserve non-timber values of forest. The group expresses clear consumption orientation. Forest environmentalists are not profit-oriented but do recognize the investment value of forests. Clearing of forest land for pasture is opposed on ecological grounds.

*Range pragmatists* represent a business and production orientation. Grazing is the main source of income, but the investment value of forest land is also recognized. Timber production is not very important in the farm economy, but timber is harvested when it is economically feasible. Forest improvements to enhance timber growth are not regarded to be important, but clearing of land for pasture is common practice. Forests are also seen as a haven for wildlife.

Kurtz and Lewis (1981) described the timber management behavior of these owner

types. However, they did not attempt to identify the background characteristics of these forest owner groups, which would have been essential if the results were to be used for extension activities.

### 3.2 Typologies of ownership objectives

Values are often understood as fundamental, basic conceptions of the desirable guiding selective behavior (e.g. Williams 1968). Karppinen (1998, 2000) took the following definition of a value as a starting point in his analysis: "Value is a common and permanent conception of a desire or the desirable, learned from the environment, influencing the selection of goals" (Allardt 1983, p.51, Karppinen 2000, p.15). He considered that ownership objectives are more concrete than forest values and that they are based on owners' interests concerning their forest property, such as provision of monetary, recreational, emotional, and aesthetic benefits. Objectives can therefore be considered to be subordinate to values in personal decision hierarchies. The objective of forest ownership was defined as a "rather permanent conception of a desire concerning one's own forest property and influencing forestry behavior" (Karppinen 2000, p.25)

Landowner objectives were measured by twenty-one statements in a mail inquiry. Original variables were condensed into three principal components, which were used as grouping variables in clustering the owners. Grouping permitted different combinations of the main dimensions of objectives and enabled measuring the representation of these combinations among forest owners. On this basis, the forest owners could be classified into four groups: recreationists, self-employed owners, investors and multiobjective owners (Karppinen 1998, 2000). *Recreationists* emphasize non-timber and amenity aspects of their forest ownership, such as outdoor recreation, aesthetic considerations and berry-picking. *Self-employed* owners value regular sales and labor income from delivery sales (the seller does the logging and hauling), as well as employment provided by their forests. The importance of household timber is also emphasized. *Investors* regard their forest property as an asset and a source of economic security, such as security against inflation and for old age. Bequest motives are also emphasized. *Multiobjective owners* value equally both the short-term and long-term monetary benefits as well as amenity benefits of their forests.

A link was established between landowner objectives, owner and holding characteristics, as well as harvesting and silvicultural behavior. The forest owner groups based on their objectives were identified by owner and holding characteristics using logit-models. Silvicultural and harvesting behavior was also analyzed in these groups (Karppinen 1998). Besides descriptive analyses, dummy variables indicating assignments to these groups were included in the econometric timber supply function along with other explaining factors to investigate the effects of ownership objectives on timber sales (Kuuluvainen *et al.* 1996). The timber sales of NIPF owners were connected to their objectives: multiobjective owners harvested significantly more than the other three groups. Knowledge of forest owners' assignment to the groups based on ownership objectives was similarly incorporated in the models when analyzing forest owners' reforestation behavior. The results suggested that ownership objectives explained both seeding and planting, and seedling stand improvement activities (Hänninen *et al.* 2001).

Kurtz and Lewis (1981) divided their owner types into consumption- and production-oriented groups (see also Ferretti 1984). Using this classification, it appears that recreationists are mainly consumption-oriented, whereas investors and self-employed owners are production-oriented. Nevertheless, self-employed owners also emphasize the importance of the consumption

of household timber. Multiobjective owners, the most active group with respect to silvicultural and cutting behavior, represent a mixture of the two orientations.

Kline *et al.* (2000) used similar approach in their study concerning forest owners' willingness to accept incentive payments to forego harvesting in order to improve wildlife habitat. Principal component analysis and cluster analysis were used to classify forest owners by their ownership objectives, and these cluster memberships and owners' socio-economic characteristics were used in an empirical model explaining willingness to accept incentives (c.f. Kuuluvainen *et al.* 1996).

Four groups were identified: timber producers, recreationists, passive owners and multiobjective owners. *Timber producers* emphasize timber production and land investment considerations. *Recreationists* value non-timber objectives of forest ownership, such as recreation and enjoyment of green space, and they, to some extent, emphasize bequest motives. *Passive owners* tend to underline owner gratification " simple enjoyment of owning forest land, which was described by the appreciation of forest as a part of farm or residence and enjoyment of green space. *Multiobjective owners* emphasize economic, non-timber and gratification objectives equally.

Wiersum *et al.* (2002) also presented a similar classification of forest owners based on owners' forest management objectives in their pan-European study. Four groups were identified: indifferent owners, environmentalists, multifunctional owners and self-interested owners.

### **3.3 Forest management motivations**

Bliss and Martin (1989) identified factors that motivate active NIPF owners to practice forest management. The classification of the motivations was based on qualitative interviews. *Ethnic identity* was used to refer to shared and permanent cultural values and lifestyles of American immigrant groups. Forest ownership also has a role in creating *family identity* by increasing family cohesiveness and as a source of intergenerational continuity.

*Personal identity* can be shaped by childhood experiences related to forests. Forest management can be regarded either as recreational, therapeutic experience, or as a challenge. Forest management may be intellectual, innovational, entrepreneurial or physical challenge to the forest owner. One important part of personal identity is the need to control nature. Forest management may act as an agent of this control. Finally, forest management can contribute to the owner's identity through bequest motives: the forest property is seen as a legacy.

Bliss and Martin (1989) also identified *forest related values* in their classification of motivations. These moral considerations included resource protection, utilization, improvement and production ethics as well as integrated resource management.

### **3.4 A typology of objectives and motivations: forestry experts' views**

Ingemarson and Hugosson (2001) took a novel approach to the study of forest owners' objectives. They asked forestry professionals to assess NIPF owners' motivations and objectives by means of qualitative interviews. An anthropological theory by Kroeber and Kluckhohn (1952) was used for the development of a three-trait hierarchical model concerning values, motivations and objectives. The more concrete driving forces in particular fields of actions, i.e. motivations and objectives, were investigated empirically. Motivations were considered to be general traits concerning desirable states or types of actions, and objectives were regarded to concern particular actions, concrete forest management activities.

Ingemarson and Hugosson (2001) concluded that forest owners have four basic

motivations: conservation, production, amenities, and economic efficiency. *Conservation* includes objectives concerning protective and preserving forest management. Nature conservation comprises of both biodiversity and forest landscape preservation and can be enhanced, for instance, by preserving key habitats, valuable broadleaved species and the management of game trails. Cultural conservation presupposes, for instance, preservation of traces of cultural activities such as old roads, stone walls, meadows etc. Water conservation aims to high quality of water and soil conservation deals with protection of soil from leaching and erosion.

The *production* motivation comprises of wood production and harvesting for sale and for domestic consumption including fuelwood production. Game management through improving habitats and forage, and possessing and selling hunting rights also belong to this category. Mushroom and berry production can also be influenced by forest management. For instance, clearcuttings favor light demanding species. Finally, forest grazing can also be included in this category of motivations.

*Amenities* concern intangible aspects of forest ownership. Emotional ties to forest estate and social contacts with relatives, friends and foresters and other forest owners can be of importance for forest owners. Forestry tradition may demand forest owner to take care of the legacy in a traditional manner and pass over the forest holding to future generations. Aesthetic considerations and forest management as a source of intellectual, innovational and physical challenge can also be included in this motivational category.

*Economic efficiency* concerns economic objectives of managing forests. Yield of capital refers to financial returns from forestry and liquidity reserve concerns, e.g., hedging effects of forest property against years of crop failure in agriculture. The emphasis of immediate income for consumption is often connected to self-employment in forest management. Tax planning is also included in this category of motivations. Based on literature study, Hörnfeldt and Ingemarson (2002) used this typology of motivations and objectives in analyzing the association of silvicultural practices with ownership objectives.

### **3.5. Landowners' perspectives on the future of Rural Europe**

Wiersum *et al.* (2002) studied forest landowners' opinions on the role of forestry in rural development in Europe. Empirical data using the same questionnaire were collected from eight countries. A typology based on the perceived role of forests to local quality of life was established. Forest owners could be divided into five opinion groups.

*Enthusiasts* embrace forest in their locality and are unable to see that forests possess any negative aspects. *Moderate enthusiasts* are mostly positive about forests but are aware of the low profitability in forestry. They also have doubts about the contribution of forests to recreation and biodiversity. *Positive realists* consider that forests have only minor economic benefits to offer. They take a neutral stand on the landscape benefits of forests, but they disagree that forests have nothing to offer. *Skeptics* are aware of the benefits of forests, and even economic benefits are considered to be important. However, they regard forests to be a threat to other forms of land use and claim that forest causes feelings of isolation among inhabitants. *Skeptics* also think that (new) forests spoil the landscape and believe that local inhabitants have been against the establishment of plantations. *Adversaries* dislike local forests in almost every aspect, the only positive benefit of forests is the provision of places for outdoor recreation.

### 3.6 Commitment, situational difficulties and Mixed Rasch model

A psychometric model, called the Mixed Rasch model, was used as an analytical tool in studying private forest owners' current and potential commitment to forestry (Mutz *et al.* 2002). The model was used to distinguish between situational difficulties and general commitments. Basically two similar classifications were identified based on either behavior or motives.

*Economically oriented* owners use their forests as a source of immediate income for consumption and a source of economic security. *Leisure oriented* owners consider their forest mainly as a place for outdoor recreation or hunting, or as an object of nature conservation. *Selective users* utilize their forests mainly by harvesting for sale or household use, and they also emphasize the provision of amenities (e.g. landscape). The commitment potential, defined as proportion of owners who would do more for their forests if the situational conditions would allow, was high among economically oriented and low in the other groups. The commitment to the forest increased by the size of forest holding.

### 3.7 Forest conservation or forest utilization

Forest owners' attitudes towards forest conservation and utilization have also been used as criterion of creating attitude typology (Karppinen and Hänninen 2000). The procedure including the use of multivariate methods is similar to the one described above (Karppinen 1998, 2000). Four groups were established by discerning between those owners with strong attitudes towards forest conservation and economic utilization of forests, and those persons with more flexible attitudes towards these attributes.

In the first group, the forest owners emphasize forest conservation and do not support economic utilization. Consequently, such persons can be characterized as *supporters of forest conservation*. In the second group, the situation is the opposite: economic utilization of forests is emphasized at the expense of nature conservation. Thus the group can be labeled *supporters of forest utilization*. The owners belonging to third group consider that both forest conservation and economic utilization could be increased at the same time. The group can therefore be labeled *multifunctionalists*. The respondents of the fourth group take a negative attitude towards both forest conservation and economic utilization. They do not want to either increase forest conservation or economic utilization. The group can be labeled *the indifferent*. The analysis revealed that Finnish forest owners support the utilization of forests clearly more often than other Finns, but many forest owners also consider forest conservation important.

## 4. Conclusions

Theoretically well-founded attitude or value typologies have been rare in the NIPF literature. The adoption of universal socio-psychological value theories is restricted by their generality and inability to depict forest values. They can only be utilized as a basic theory of human requirements in general, which are present also in the relationship between humans and nature. However, more specific theoretical value typologies towards nature or forests have been presented and also empirically tested. Empirical typologies concerning the objectives of forest ownership or motivations for forest management have been more commonly established, and from the practical point of view they have been, perhaps, more useful.

Forest management behavior is basically volitional. Therefore a knowledge of forest values, attitudes and landowner objectives is important for the planning and implementation of public forest policies concerning non-industrial private forestry. But what kind of motivational

typologies of forest owners do the decision makers need? Certainly, the stand on a single attitude statement is not very useful. Attitudes are often contradictory; many respondents have favorable attitudes towards almost opposite alternatives, especially when they represent something “good”. Grouping forest owners by their response sets for a series of attitude statements can potentially lead to more useful typologies. The identification of these owner groups by rather easily observable demographic information, i.e. owner and holding characteristics, is crucial from the practical point of view. However, this description is too often ignored.

The groupings of forest owners become more meaningful and useful if motivational and demographic characteristics can be connected to certain types of behavioral patterns. There are few examples in the literature where all types of relevant factors, including motivational typologies, have been successfully incorporated in models explaining intended or actual behavior (e.g. Kuuluvainen *et al.* 1996, Kline *et al.* 2000). This kind of information can be utilized, for instance, when matching the supply and contents of private forestry extension services to the varying motivations and behavioral patterns of forest owners.

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