ENVIRONMENTAL BELIEF SYSTEMS: EMPIRICAL STRUCTURE AND A TYPOLOGY

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Abstract. The article presents an overview of some theory-based classifications of environmental belief systems and compares them with an empirical structure of environmental beliefs in an Estonian sample (N = 440). Based on factor analysis, the main organizing principles of environmental beliefs in the Estonian context are described. Respondents were classified into four groups (*pragmatic*, *conservationist, radical eco-centric* and *indifferent)* according to the structure of their environmental beliefs, and predictable associations between environmental beliefs and preferences towards societal development were found.

Introduction

A person (re)constructs his or her environmental mentality in a particular socio-cultural context. This context is manifested in public discourses, cultural models and meaning complexes that all provide explicit and implicit "social suggestions" (Valsiner 1998) for an individual. Environmental beliefs are subjective theories about the human-nature relationship that form a conceptual basis for more specific attitudes, beliefs and behaviors towards the environment. On the one hand, environmental beliefs are embedded in various cultural messages (which are heterogeneous and rapidly changing in our times). On the other hand, these beliefs are a component of individual or group level environmental mentality.

Our analysis will proceed in the framework of social representations theory, which encompasses both of these aspects.

The aim of the article is to analyze the organizing principles and empirical types of environmental beliefs in an Estonian subpopulation.

Theory of social representations

The theory of social representations (Moscovici 2000, Flick 1998) deals with shared belief systems that are tied to certain social identities. Social representations are forms of knowledge (operationalized as attitudes, beliefs and practices) that are produced and sustained by certain groups or populations. Social representations (SR) are differentiated from similar concepts like "individual representation" or "shared diffuse ideas". The following aspects have been highlighted:

1) SR are related to a specific *group identity* (Wagner, 1995) and therefore define not only the object but are also used for social self-definition of a subject;

2) SR are a *structured* set of ideas, *systemic organization* of thought content (not a loose aggregate of ideas);

3) SR are *dynamic*, variable and negotiable, they are the product of interaction and communication (vs. static and unquestionable character of collective representations and cultural beliefs);

4) differently from attitudes, SR are exteriorized and institutionalized, and can be studied also in the media, cultural artifacts, etc.

In relation to an individual, social representations function as social resources and limitations, mediating social regulation and enabling self-positioning in the social space. In relation to a group, social representations function as means of communication and tools for constructing social objects. A social representation has often a simple and vivid form (e.g. metaphorical) in order to be easily communicable and "easy to think with".

We can differentiate between two general approaches in analyzing a SR:

A widespread approach deals with SR as shared explicit content of thought. This approach focuses on within-group similarities in the content or structure of beliefs, emphasizing concrete and consensual aspects of SR. In this framework SR are "surface" phenomena, easily accessible tools for meaning-making and prediction in social interactions.

Within such systems of knowledge it is possible to differentiate central elements (primary ideas, core beliefs, axioms, etc.), which generate and organize all the other elements of social representations. These primary beliefs are organized as a "synthesis of oppositions" (Moscovici & Vignaux 1994:68) which are anchored in pairs of opposing and interdependent notions.

An alternative approach deals with SR as implicit organizing principles ("structuring structure"). These abstract underlying principles (categories, dimensions, reference points) reflect the regulative influence of the social meta-system on cognitive functioning and they organize symbolic relations between social agents (Doise 1994). According to these principles individuals or groups identify and differentiate themselves, choosing their relative positions within the representational field. Doise et al (1993:4) note that: "More than consensual beliefs SR are (---) organizing principles, varied in nature, which do not necessarily consist of shared beliefs, as they may result in different or even opposed positions taken by individuals in relation to common reference points".

These organizing principles are usually not directly observable but are deduced from a pattern of responses: they may be described as dimensions in the semantic space or as a set of implicit rules. This is a structuralist approach, which stresses the importance of underlying structures in the social and cognitive metasystems. These structures determine the symbolic space ("representational field") which delimits the possible choices of symbolic self-positioning for members of a group. This approach enables to take into account both consensual aspects of SR and their inherent variability (different positioning of social agents in relation to a few organizing dimensions). This model also enables to differentiate explicit and implicit aspects of SR.

The theory of social representations gives a framework for describing the variety of social belief systems, which co-exist and interact with each other in a certain sociocultural context. It also enables to find the shared dimensions with the help of which social representations are organized.

Theoretical typologies of environmental belief systems

Several varieties of environmental beliefs have been distinguished in theoretical thought (philosophical tradition, social theory, ideology) (see an overview in Dobson 1995). They are also expressed in public environmental discourses (Hajer 1995, Harré et al 1999, Dryzek 1997, Eder 1996). These cultural messages constitute symbolic coordinates within which individuals and groups may take various positions.

All ecological beliefs can be classified according to some underlying organizing principles that focus on certain aspects of human-environment interaction. Among the possibly unlimited number of such principles we have chosen the most relevant ones in the historical perspective. As representations are "structures which have achieved stability through the transformation of an earlier structure" (Duveen 2000:13), they necessarily contain historically heterogeneous elements.

In terms of broad developmental stages it is possible to differentiate traditionalist, modern and postmodern environmentalism (e.g. Seippel 1999, Kidd & Lee 1997).

Traditionalist environmental beliefs are embedded in local communities. Milton (1996) gives an overview of the major types of ecological beliefs in different traditional (non-industrial) cultures. His overview may be summarized by using several organizing principles: the environment has been conceptualized in such societies either as *powerful* or *passive, as resilient* or *fragile, as resource-abundant* or *with limited resources* in relation to man.

Another important organizing principle in pre-modern ecological belief systems is the *symbolic and spiritual* dimension of nature (image of inherent spirituality of nature). Such animism has widely spread also in Estonian folk beliefs about the natural world.

In *modern (materialistic)* environmentalism the reference point is individual, and the main motive in dealing with the environment is to secure human survival, health

and safety through economic growth. Social context favors consumerism and pragmatism, environment is conceptualized instrumentally as an exploitable resource.

The main organizing principles of contemporary environmentalism were described by Dunlap & Van Liere (1978) and Milbrath (1984) who distinguished between two systems of general beliefs: *New Environmental Paradigm* (NEP) opposed to *Dominant Social Paradigm* (DSP). Dominant paradigm is described as a system of beliefs in limitless economic growth, human exceptionality and justified domination over the natural world, as well as beliefs in abundance of ecological resources and resilience of nature. Alternative environmental paradigm is based on an image of a fragile and threatened environment that needs human protection and requires the restriction of human expansionist activities.

"Environmental paradigm" contains specific attitudes and beliefs not only concerning the natural environment but also economy and technology, the desired principles of public organization and political life. This view is characterized by a critical attitude towards limitless economic growth and association with post-materialist values (Inglehart 1990). Milbrath (1984) associates varieties of environmentalism with certain views on society. According to his model the bearers of DSP tend to resist the social change and value material wealth. Supporters of environmental paradigm can be divided into two subgroups (vanguard environmental reformers and nature conservationists) on the basis of their opposing stance (advocates or resisters) concerning the social change. However, in particular social context this paradigm may be interpreted in most varied ways. For example, Yanitski (1991) has described the specific content of this paradigm in the late Soviet Union and he differentiated social groups associated with certain varieties of environmental beliefs.

Relying on the major distinction between growth-centered and environmental paradigms, further classifications of environmental belief systems may proceed either as differentiation between different intensity of "environmental friendliness", or as differentiation between qualitative varieties of environmental thought.

Most obvious is the opposition of *radical* and *reformist forms of environmentalism* that differ in their attitude to social change. *Radical* or critical environmentalism (aiming at profound social change in the name of the environment, opposing economic growth and trying to change basic values and the way we understand our relations with nature) is opposed to *reformist environmentalism* (that pragmatically accepts economic growth and tries to act pro-environmentally within the existing social framework, aiming to improve human management of nature with the help of new technologies, not challenging the dominant value system of industrial society) (see comparative analysis in Dobson 1995). Further differentiation of these two opposing orientations may reveal more subtle shades of environmentalism like *anthropocentric, sociocentric*, *technocentric*, *biocentric* or *ecocentric* orientations with various subtypes (see overview in Dobson 1995; O'Riordan 1995, Grendstad & Wollebaek 1998). Eckersley (1992) differentiates several subtypes of anthro- and ecocentrism in green political thought.

Anthropocentrism (whose guiding image is human domination over nature) can be expressed as *resource conservation*, *human welfare ecology*, *preservationism* or *animal liberation ideology*. Subtypes of *ecocentrism* (which is guided by the image of great ecological whole with humans as only a small part of it) are *transpersonal ecology* and *intrinsic value ideology*. These varieties of environmental beliefs are differentiated by the dominant line of argumentation.

Postmodern environmentalism has been described in association with individual quality of life and a certain life style (personal self-realization) on the one hand, and with universal ecological concerns, on the other (Seippel 1999). This orientation is related to value clusters that differentiate individualistic and humanistic varieties of postmodernism – self-enhancement and hedonism on the one hand, and universalism on the other.

Wagner (1998), who departs from the theory of social representations, claims that different (historical) forms of environmentalism co-exist in a culture. Depending on concrete context (or identity), different types of representations may be actualized. At home we may have one representation of environment, and a totally different one at work or at leisure time. He describes a case study which distinguished three historical types of environmental representations: *organic* (archaic) that are related to personal biography and collective memory; *mechanistic* (rational) where nature is represented as a resource for humans who are entitled to control and exploit the natural world; and *cybernetic* representations containing an image of systemic interconnectedness of the world and integrating seemingly contradictory beliefs of control over nature and its protection. Under some circumstances new forms of environmentalism replace the older ones, in other circumstances the new and old forms may exist side by side.

There are some attempts to integrate various contemporary thought systems. For example, ideology and discourse of *sustainability* (e.g. Olson 1995) seek to reconcile seemingly controversial economic and environmental concerns. They consist of "imaginative attempts to dissolve the conflicts between environmental and economic values" (Dryzek 1997), interests of individual self-realization, community well-being and environmental requirements (thus trying to integrate anthropo- and ecocentrism). Although conceptually fuzzy, the concept of sustainable development acts as a powerful regulative principle in the contemporary world.

All the above discussed theoretical systems presuppose that environmental belief systems are closely tied to beliefs and attitudes that concern the social world (especially views on economic growth and societal organization). *General attitude to economic growth* seems to be the main organizing principle that differentiates broad varieties of environmentalism in our days. Environmental beliefs have also been theoretically associated with preferences for *egalitarian* or hierarchical social relations (Dake 1991, Dake & Thompson 1999). Thompson & Rayner (1998) present a typology of cultural models (*myths of nature)* which are anchored in the typology of social relations by Mary Douglas (Douglas 1973, 1982). According to this theory, certain kinds of representations of nature are determined, justified and sustained by certain forms of social relations. Thompson et al (1990) distinguish

four "ideal type" rationalities that regulate man-environment relations. In particular, egalitarian cultural bias is strongly related to the concern about the environment, whereas holders of individualistic and hierarchical worldviews tend to be technologically optimistic and perceive the nature as resilient to human impact and therefore show less concern about the environment.

Whether and how these various forms of environmentalism are represented in lay consciousness remains a topical research question.

Empirical studies of environmental beliefs

The most frequently used standardized scale for measuring general environmental beliefs is probably NEP scale (Dunlap & Van Liere 1978) which consists of 12 (in later version 15, Dunlap et al 2000) statements taken from ecological and environmental literature of the 1970s (beliefs concerning limits to economic growth, protection of environment, vulnerability of the natural world as opposed to beliefs in individualism, freedom, abundance and limitless growth). Empirical studies (e.g. Scott & Willits 1994, Pligt 1995, Bechtel et al 1999) have found 3 factors: balance of nature, limits to growth and rightful domination of man over nature. NEP scale has demonstrated its validity in distinguishing ecological activists from non-activists. But general attitudes and beliefs measured by NEP scale have weak correlation with more specific environmental attitudes and beliefs (e.g. to waste recycling) or with environmentally friendly behavior (see Gardner & Stern 1996). Gooch (1995) has used a shortened NEP scale in Estonia. He extracted two factors (1) human dominance over nature and (2) balance of nature together with resource limitation factors. However, the internal consistency of the scale was rather low in his study.

Eckersley's (1992) typology of environmentalism was empirically tested by Grendstad & Wollebaek (1998) using single item measures in a national survey in Norway.

Numerous recent survey studies have shown that non-radical forms of environmentalism (e.g. attitudes against pollution, concern for environmental quality motivated by human well-being and health) are widespread and nearly normative in the contemporary world (Nas 1995, Kempton et al 1995, Pakulski & Tranter 1998). They form a "hegemonic" social representation (Moscovici 1988) that is not tied to specific social categories but is shared by an overwhelming majority of group members. A responsible environmental concern without the desire to revolt against existing socio-economic structures seems to have spread in all strata of the industrial societies.

Radical forms of environmentalism (with a critical attitude toward economic growth) are more marginal and specific to only certain subcultures. For example, Skogen (1999) showed how environmental beliefs are embedded in cultural orientations among the Norwegian youth. The author identified *anti-environmentalist* orientation that was tied to male racist lower class subculture. *Conven-*

tional (pragmatic) environmentalism (support to economic growth and protection from pollution) is characteristic of traditional humanistic and conventional cultural profile, whereas *critical environmental perspective* (rejection of economic growth, ecocentrism) was tied to radical countercultural profile. Such cultural contextualization determines the symbolic meaning of environmentalism for different social groups. The author stresses that instead of one-dimensional environmental concern there is a diversity of environmental perspectives that is tied in multiple ways to broader cultural patterns.

There are some attempts to map the structure of environmental attitudes and beliefs in the Estonian samples (e.g. Lauristin & Firsov 1987, Gooch 1995, Kaasik et al 1996). Lauristin (1987) constructed an empirical typology of ecological consciousness in Estonia based on measures of environmental concern, dimensions of ecological argumentation (economic, juridical, historical, technological, ethical, aesthetic, religious, etc.), and sources of ecological information.

Qualitative interview studies have revealed great heterogeneity in beliefs about the environment. An example of an inductive approach could be a study by Kempton et al (1995) who describe shared belief systems derived from semi-structured interviews. Distinct value clusters denoted as *anthropocentric* (utilitarian emphasis on human welfare), *biocentric* (belief in the intrinsic value of nature), and *religious* are used as moral guidelines for thinking about human-environment relationships. The authors distinguish the following conceptual underpinnings of popular American thinking about the environment: 1) nature as a limited resource upon which humans rely, 2) nature as balanced, interdependent and unpredictable, and 3) alienation and separation from nature in the modern materialist and market-dominated societies, idealization of the environmentalism of primitive peoples. The authors note that such cultural models are simplified and selective versions of scientific models (reflecting some earlier stages of scientific knowledge), and contain several misconceptions about global ecological processes (Kempton 1997).

People understand a wide array of environmental issues through relating them to a limited set of cultural models (belief systems). These models provide appropriate or inappropriate cultural resources that aid or hinder public understanding of environmental issues.

According to the theory of social representations (Doise et al 1993) these cultural models contain basic structural dimensions (symbolic coordinates) in relation to which various individual (or group specific) positionings are possible.

Our study

The overall aim of our study is to find out 1) how the environmental beliefs are structured, 2) whether distinct belief systems are associated with certain social identities, and 3) how environmental orientations are related to some socio-political attitudes.

In particular, our aim is

1) to clarify the consensual field – which aspects of human-environment relations are similarly understood by people living in Hiiumaa?

2) to find out the organizing principles of individual variability of environmental beliefs – which are the dimensions that regulate thinking about the environment?

3) to find out how this variability is anchored in social identities.

4) to clarify the meaning of environmental beliefs in a particular social context by analyzing their associations with other meaning systems, especially those concerning preferences of social development and the type of social relations.

Hypotheses

We suppose to find at least two distinct organizing principles of environmental beliefs – orientation to human needs and domination over nature (anthropocentrism) and orientation to ecosystemic requirements (ecocentrism) (Eckersley 1992, Dunlap et al. 2000).

We also predict that ecocentric environmental beliefs will be associated with the opposition to rapid economic growth, and positive attitudes to the promotion of egalitarian social relations (Thompson et al 1990).

Theory of social representations stresses the articulation of particular belief systems with certain social identities. If distinct forms of environmental belief systems are systematically related to certain group identities, we can speak about specific social representations. Alternatively, when environmental beliefs are diffused across different social groups and not related to particular social identities, we are dealing with diffuse beliefs.

Sample and procedure

The data are based on a questionnaire study of a representative sample of the adult population of Hiiumaa. The details are described in Raudsepp (2001).

Measures

Environmental beliefs were measured with several question batteries that contain fragments of various environmental ideologies that seem to be relevant in the local context.

Pre-modern (animistic) beliefs were measured with two items: "Do you believe that there are mysterious or supernatural forces in nature?"; and a question about the belief in the sacredness of forest. In addition, respondents assessed the degree of their subjective religiosity on a 7-point scale.

Contemporary environmental beliefs were measured using items from the scales proposed by Eckersley (1992) and Grendstad & Wollebaek (1998): (anthropocentrism-ecocentrism, resource conservation, transpersonal ecology, human welfare, preservationism), as well as 4 items from the NEP scale (Dunlap & Van Liere 1978). The items expressed abstract statements about the relations between humans and the natural world.

As we use elements from different scales, we are also interested in the articulation of different scales: do they retain their separate status or are they integrated into some other structures? Are pre-modern and modern beliefs differentiated?

General socio-cultural orientation was measured with a block of projective questions concerning the desirable path of development for Estonia (4 questions, each containing 2 alternatives): 1) emphasis on rapid economic growth vs. emphasis on preservation of nature and sustainability (contextualization of anthropocentrism and ecocentrism), 2) preference of personal freedom and opportunities for action for everyone vs. valuing common resources and taking care of the weakest (a choice between liberalism and communitarianism), 3) preference of openness and social development vs. preservation of Estonian life-style and traditions, 4) preference of rapid integration of Estonia into EU and NATO vs. cautiousness in joining new alliances (a choice between socio-political openness vs. preserving status quo).

Measures of social identity included 1) *socio-demographic variables*, 2) *frequency of participating* in ecological organizations or pro-environmental collective actions, and 3) assessment of the kind of *work* (whether it is related to nature or not).

Data analysis

We proceed from the methodological logic presented by the Geneva school of structural analysis of SR (Doise, Clemence, & Lorenzi-Cioldi, 1993) for revealing the structure of SR as organizing principles of symbolic relationships. Data on opinions and beliefs is analyzed in 3 steps of quantitative analysis:

a) a shared field of representation (common knowledge) and principles of organization (underlying dimensions) of the common semantic space of a given population is revealed;

b) analysis of positioning of individuals and subgroups within this framework, individual or group based variation in relation to common dimensions;

c) exploration of social anchoring: relations of SR with other symbolic resources (system of values, attitudes, and identities), analysis of systemic relationships within symbolic realm.

Proceeding from this logic we will firstly describe areas of consensus and variability in environmental beliefs; thereafter we use factor analysis for revealing underlying dimensions that organize inter-individual variability, and analysis of variance will be used for assessing group-based distinctions in relation to these dimensions. Lastly an empirical typology of environmental beliefs will be constructed with the help of cluster analysis.

Results

1. Areas of consensus and variability

There was a high level of agreement concerning the majority of the environmental belief items. Most of them elicited consensual response from more than 70 per cent of respondents: (e.g. "It is necessary to protect pristine nature even if it is not directly related to human interests" – agree 93%, "Modifying the environment for human use seldom causes serious problems" (an item from the NEP scale) – do not agree 79% , "The balance of nature is very delicate and easily upset by human activities" (an item from the NEP scale) – agree 72%, "Humans have to reduce the production and consumption because it endangers the balance of nature" – agree 72%, "Forest is sacred" – agree 74.2%, "Resilience of nature is so great that human activity does not cause serious problems" – do not agree 79.3%). On this level of analysis we are dealing with consensual representations, widely shared among the population.

At the same time there were some critical statements that were not consensual:

"Are there mysterious or supernatural forces in nature?" no – 5.8%, do not know 35.6%, yes 58.4%.

Self-placement on the anthropocentrism – ecocentrism scale (Grendstad & Wollebaek, 1998): "Humans are masters over nature" (agree 26.2%) versus "Humans are a small part of nature" (agree 40.3%).

"It is necessary to limit population growth in order to preserve nature" (critical question that differentiates shallow and deep ecologism used by Grendstad & Wollebaek, 1998) – agree 32.2%, do not agree 30.9%).

On the one hand we can thus differentiate between a set of environmental beliefs that are almost consensual among general population. Previous studies (Kaasik et al 1996, Gooch 1995) have recorded similar consensuality on the same questions. These beliefs represent a "moderate" level of environmentalism. On the other hand, there are beliefs that have a less consensual character. In our study they contain elements from pre-modern systems of beliefs (spirituality of nature) and more radical ideas about the optimization of human-environment relationships.

2. Organizing principles of environmental beliefs

22 environmental belief items were factor analyzed in order to reduce them to fewer dimensions. When retaining all components with eigenvalues over 1, the 6-factor solution explained 57.1% of the variance. Although it was possible to interpret meaningfully all 6 factors, I decided to reduce the number of factors in order to make the subsequent structural analysis more clear.

4-factor solution (after Varimax rotation) accounts for 51.2% of the total variance. Table 1 presents the list of all items and their factor loadings.

I factor (20.6% of variance) has the highest loadings on items that characterize belief systems labeled as "soft ecocentrism" or "preservationism" (O'Riordan 1995), or "balance of nature/limits to growth" beliefs (Dunlap 2000). Various

environmental values (cognitive, spiritual and aesthetic value of nature, rights of the animals), as well as justifications related to human welfare (health, interests of the next generations) are united in this factor. We labeled this factor "general pro-nature beliefs". It seems to reflect general humanistic orientation to nature (responsible concern) that has become widespread.

Table 1

Factor loadings and percent of variance for principal components extraction and varimax rotation on environmental belief items: loadings under 0.32 (10 per cent of variance) are omitted

Item	F1 pro-nature	F2 utilitarian	F3 ecocentric	F4 radical
Humans are masters over nature		.635		
Pristine nature must be saved if it is in the interest of humankind		.655		
Pristine nature must be saved even if it is not in the interest of humankind				.442
Natural environment exists primarily for human use		.678		
Natural resources should be used effectively for economic development		.556		
All human beings must increase their self-awareness so that they may feel at one with all living creatures			.802	
Humans must learn to show compassion for everything that is part of the ecological community			.779	
Natural environment should be preserved at any cost because man-made environment cannot provide optimal life quality	.396		.577	
We have to care and respect natural environment because we have not created it	.390			
Environmental protection is important in order to promote human health	.458			
preserve nature for the next generations	.583			
protect the rights of the animals	.649			
preserve beautiful landscapes	.711			
may be later used by science	.717			
preseve life conditions for all living beings	.504			
ecosystem is intrinsically valuable	.565			
preserve the legacy of our ancestors	.737			
preserve nature as national heritage and source of pride	.714			
Human impact on nature should not be over-emphasized, people can adapt to man-made environment		.640	–.347	
The balance of nature is strong enough, humans cannot harm it		.690		
People should restrict their consumption and production because it threatens natural balance				.583
Earth's population growth should be radically restricted in order to preserve nature				.710
Per cent of variance	20.6	12.2	11.0	7.4

II factor (12.2% of variance) unites items characteristic of anthropocentric environmental beliefs – natural resources exist for the benefit of humans (O'Riordan 1995), "cornucopian" beliefs of resilience of nature (O'Riordan 1995), belief in human rightful mastery over nature – a dimension of NEP scale (Dunlap 2000, Scott & Willits 1994), reliance on man-made environment and technological optimism, practical exploitation of natural resources (Kellert 1996). This factor is labeled "utilitarian beliefs". People who score high on this factor prefer pragmatic and instrumental stance towards nature, and they tend to deny any spiritual dimensions of human interconnectedness with the environment.

III factor (11.0%) has high loadings on items related to ecocentric and transpersonal ecological beliefs (views of human unity and equality with the environment, intrinsic value of environment). The factor is labeled as "ecocentric beliefs". Persons with high scores on this factor could be called "deep environmentalists" (O'Riordan 1995).

IV factor (7.4%) has high loadings on items expressing ecocentric and critical anti-technocratic beliefs (protection of nature even if it is not related to human interests, readiness for radical measures and self-restriction of human activities – economic and population growth). The factor is labeled "radical beliefs" because it is defined by statements that are critical towards the existing practices and support radical measures for changing human-environment relationships.

The 4 items from the NEP scale (Dunlap et al, 2000) are positioned into the pro-nature (I), utilitarian (II) and radical (IV) factor, reflecting the dualism of human dominance and balance of nature/limits to growth dimensions, as predicted.

Items from scales that derive from Eckersley's model (1992) are positioned in utilitarian factor (2 anthropocentrism and 2 resource conservation items), pro-nature factor (2 preservationism items) and ecocentrism factor (2 transpersonal ecology items).

As different scales were included in a single model, the extracted dimensions reflect a more general structure of environmental beliefs. We can conclude that these factors represent the underlying principles that organize environmental beliefs in our sample.

On the basis of these factors, four environmental belief indexes were constructed by adding up the mean scores across the items that determine respective factors (alpha reliabilities ranged from 0.61 to 0.84).

When comparing the mean scores of 4 environmental belief indexes in different socio-demographic groups (one-way ANOVA), statistically significant differences were revealed in different *age groups* (pro-environmental, utilitarian and ecocentric dimension, $p < 0.001$), at different *educational* levels (utilitarian belief index, $p < 0.001$) and between *men and women* (pro-nature belief index, $p < 0.05$). Women have significantly higher scores on pro-nature belief dimension, men have slightly higher scores on utilitarian index. Utilitarian, pro-nature and ecocentric beliefs tend to increase with age. People with higher educational level have significantly lower scores on utilitarian dimension. No differences were found in mean values of environmental indexes between groups with different

levels of income, speciality, or depending on the kind of work (whether it is related to nature or not).

3. Empirical typology of environmental beliefs

At this level of analysis we are interested how the organizing dimensions described above are naturally distributed among people, whether they are organized into distinct belief systems and how they are associated with certain social identities. The analysis proceeds first by identifying the number of natural clusters based on the multidimensional similarity of respondents, by describing the content of these clusters, and by associating them with socio-demographic and other background variables (cf. Fife-Schaw 1993).

Hierarchical cluster analysis of standardized scores of all belief items (Ward's method) identified four natural groups of respondents according to their environmental beliefs. The classification produced the following groups: 1) a group of respondents who have the highest scores on general pro-environmental arguments – labeled as conservationists (44.6% of respondents), 2) a group preferring pragmatic arguments (20.2%), 3) a group who prefers ecocentric and radical arguments (16.9%) and 4) an indifferent group (19.3%) with mixed preferences. "Conservationist" group is significantly more homogeneous than other 2 groups (mean distance from cluster center is significantly lower, $p < 0.001$).

Age and education showed significant differences between the groups, whereas gender composition of the groups was similar (see Table 2).

Table 2

Socio-demographic composition of the groups with different environmental orientations

	Conservationist	Pragmatic	Radical	Indifferent	p
Mean age	47.5	47.4	36.5	34.4	***
15–29 (per cent)	18.6	24.4	37.1	46.5	
30–54 (per cent)	45.0	37.8	53.2	45.0	
55–89 (per cent)	36.6	37.8	9.0	8.4	
Education (years)	11.5	10.1	13.5	12.3	***

The mean age of conservationist and pragmatic groups is significantly higher than in radical and indifferent groups ($p < 0.001$), pragmatic group is characterized by the lowest level of education, radical group is most educated on the average ($p<0.001$).

The structure of environmental beliefs is different in the extracted clusters (see Figure 1).

Conservationist group has the highest scores on pro-environmental and eco-centric belief dimensions and low scores on utilitarian dimension. Pragmatic group is characterized by the highest scores on utilitarian dimension, and relatively high pro-nature belief scores. Radical group has low scores on pro-environmental and

utilitarian beliefs but high scores on ecocentric and radical dimensions. Indifferent group has the lowest pro-nature and ecocentric belief scores.
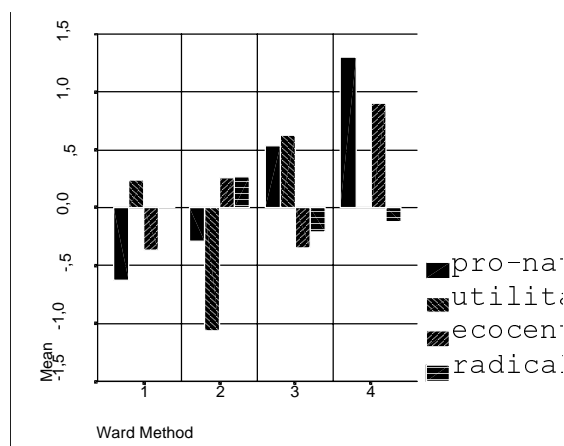

Figure 1. The mean factor scores of environmental beliefs in 4 typological groups (1 – conservationist, 2 – pragmatic, 3 – radical, 4 – indifferent)

Based on the analysis of relative positions of the extracted subgroups on some other measures of environmentalism (see the description of the measures used in our study in Raudsepp 2001), we can characterize the groups as follows (Table 3):

Table 3

Characteristic features of groups with different environmental orientations

	Conservationist	Pragmatic	Radical	Indifferent	p
Environmental concern	+	0	0	–	***
Ecological behavior	0	0	0	–	***
Perceived norm of environmentalism	+	+	–	–	*
Perceived control over environmental situation	+	–	+	–	**
Close contacts with nature	+	0	0	–	***
Disinterested in nature	–	+	–	+	***
Nature experiences in childhood	+	+	0	–	***
Forest is sacred	+	0	0	–	***
Belief in spirituality of nature	+	–	+	–	***

+ – above mean score, – below mean score, 0 approximately mean score
 * $p<0.05$, ** $p<0.01$, ***$p<0.001$

Conservationist group consists mainly of middle-aged and elderly persons. Their scores on all indicators of environmentalism (environmental concern, pro-environmental behavior, preference of close contacts with nature, nature

experiences in childhood) are above the average and highest among the groups. They believe more than others in the spirituality of nature and in the sacredness of forest. This group reports high levels of norm of pro-environmental behavior in their in-groups, and the highest level of perceived control over the environment. They have frequent and direct experiences with nature.

Pragmatic group consists also of middle-aged and elderly persons. Similarly to the previous group, they have many nature experiences in childhood and they perceive that environmental friendliness is a norm in their in-groups. Differently from conservationists they consider themselves relatively less able to control the environmental situation.

Radical group consists mainly of middle-aged and young persons. Perceived control over the environment is high, and perceived norm of environmental friendliness in in-groups is low. They are not very interested in close contacts with nature, yet on the abstract level they tend to express ecocentric views.

Indifferent group has the highest proportion of young persons. This group has the lowest scores of environmental concern and pro-environmental behavior measures. They prefer least close contacts with nature, and they report relatively few nature experiences in childhood. This group has the lowest scores on measures of perceived norm of pro-environmental behavior and perceived control over ecological situation. On all measures of environmentalism this group has the lowest scores.

Conservationist and *radical* groups are similar to each other in general environmental friendliness: they are interested in environmental problems and care about the environment. They differ from each other in the degree: pro-nature environmentalism represents moderate environmentalism (nature conservation), whereas radical group supports more radical beliefs (protection of the environment even if it is not in the immediate interests of humans and strong opposition to utilitarian views on nature). Compared to the radical group, conservationists report and prefer more close and direct contacts with nature.

Pragmatic and indifferent groups are both oriented towards practical exploitation of nature in human interest and they tend not to be constrained by idealistic considerations (devaluing spiritual dimensions of human-nature relationships). They seek less contact with nature and they perceive themselves relatively helpless in having any control over the environmental situation. Compared to indifferent group, persons with pragmatic orientation report relatively frequent nature experiences in childhood.

Clusters of general environmental beliefs do not differentiate very clearly between persons according to the frequency of everyday self-reported pro-environmental behavior: only indifferent group is characterized by significantly less frequent pro-environmental behavior. Nor do they differentiate persons according to their participation in ecological organizations or collective pro-environmental actions. It is noteworthy that the kind of work (whether it is related to nature or not) has no impact on these environmental orientations.

At the same time the groups differ on a statistically significant level ($p < 0.001$) in their subjective religiosity, perceived sacredness of forest and belief in the spirituality of nature. On all those scales conservationists have the highest scores, and the disinterested have the lowest ones.

4. Associations of environmental beliefs with societal attitudes

In order to test the hypothesis concerning the relation of environmental and social attitudes, we analyzed the associations of envionmental beliefs with *socio-political orientations* (operationalized in this study by choices of alternative types of socio-political development for Estonia). We computed an index of growth (counting choices of the first (pro-growth) alternative of the four questions) (see Table 4). This index showed significant correlations with indexes of pro-nature beliefs ($-0.335***$) and ecological beliefs ($-0.343***$): the higher is the score of pro-nature and ecocentric beliefs, the less is the preference for growth and openness in socio-political choices. The same regularity was observed in all age groups when analyzed separately. Utilitarian and radical dimensions did not correlate with this index.

Table 4

Distribution of choices of socio-political development in different environmental belief groups (per cent)

	Conservationist	Pragmatic	Radical	Indifferent	p
1a Rapid economic growth	17	33	27	52	***
1b Sustainable development and nature preservation	83	67	73	49	
2a Freedom and opportunities for everyone	38	45	60	72	***
2b Valuing common causes and taking care of the weakest	62	55	40	28	
3a Openness of society and constant change	23	26	31	46	**
3b Preservation of Estonian lifestyle and traditions	78	74	69	54	

All typological groups prefer preservation of environment to rapid economic growth, but conservationist group prefers rapid economic growth significantly less and preservation of nature significantly more than other groups. Indifferent and radical groups prefer individual freedom to common causes (differently from two other groups who prefer common causes and protection of the weakest). Preference for common causes and taking care of the weakest (the egalitarian alternative) is highest in the conservationist group. All groups prefer preservation of Estonian traditions to societal openness, the greatest contrast between these preferences is revealed in conservationist group and the least difference in the indifferent group.

The tendency of conservationist group to prefer egalitarian social alternative is in line with predictions stemming from the Douglas (Thompson & Wildavsky 1990) model discussed above, and with empirical findings elsewhere (Dake 1991; Grendstad & Wollebaek 1998). In our study general pro-nature beliefs were also associated with the tendency to prefer alternatives of social development that preserve the *status quo.*

Discussion

The aim of our study was to analyze the organizing principles and empirical types of environmental beliefs in Estonia.

Empirical structure of environmental beliefs appeared to be in accordance with the prediction concerning most general dimensions. However, this structure appeared to be less heterogeneous than some theoretical constructions would suggest. Our data enabled to distinguish four dimensions of environmental beliefs labeled as "utilitarian", "pro-nature", "ecocentric" and "radical". The three last mentioned represent different levels of commitment to environmentalism: superficial and abstract pro-environmental position; more nature-oriented position that is explicitly antagonistic to utilitarian attitude towards nature; and radical claims about the necessity to subordinate human interests to the intrinsic interests of nature. Theoretically possible diversity of environmental beliefs is subjectively simplified into distinct meaning complexes: 1) general pro-nature orientation reflecting conventional environmental friendliness that is associated with a variety of arguments (health, beauty, spirituality of nature, interests of future generations, etc.); 2) a more radical pro-nature orientation that prioritizes nature's interests and opposes economic growth; and 3) general pro-growth orientation reflecting utilitarian and pragmatic attitude towards nature (taking it as a resource), without ideology-based constraints.

Such overall structure fits well with Kempton's (1995) classification of anthropocentric, utilitarian and biocentric values regulating the environmental representations. General pro-nature orientation seems to correspond to conservationist discourse described by Eder (1996) and it is in principle anthropocentric, with collective interests of the humankind being on the foreground (maintaining environmental quality is considered essential for the health and well-being of people). It integrates also some elements of pre-modern beliefs about the spirituality of nature. A different dimension consists of ecocentric views, where the interests of the biosphere are on the foreground, and where the environment is considered as intrinsically valuable. This position is adopted by a minority.

Our results indicate that oppositions between the idealistic and pragmatic orientations to nature, as well as between conventional and radical forms of environmentalism are valid in our days and in the particular Estonian context. Incoherence between manifest content and hidden premises of NEP and DSP (Dunlap et al 1978) forms a stable organizing principle in our thinking about man-

environment relationships, and reconciliation of these opposing paradigms is a challenge for sustainable development. Various subtopics and arguments or different environmental values inside the broad pro-environmental orientation (cf. Eckersley 1992, Kempton et al 1995) are not differentiated by general public but are united into a broad pro-environmental orientation.

Among socio-demographic categories age, sex and education differentiated positions along these main dimensions. General environmental friendliness (comprising "new ecological paradigm" and "soft ecocentrism") is more characteristic of older respondents and women. Less educated respondents and men tend to hold pragmatic and anthropocentric beliefs concerning the human-environment relations, reflecting "dominant social paradigm". Ambivalent type of environmentalism, uniting contradictory beliefs (technological optimism, support-ing growth of consumption and at the same time expressing environmental concern) is characteristic of more young and educated respondents. The last group seems to reflect inherent contradiction of hedonistic and humanist subtypes of postmodern culture (e.g. Seippel 1999, Nas 1995) with opposing consequences for environmentalism. Ambivalent environmental beliefs ("desire to drive a green Mercedes") reflect not only inherent heterogeneity of social representations (cf. Moscovici 2000) but also specific attitude conflict in industrial societies which has become evident only after transition to market economy in Estonia. Similarily, Strümpel (1990) describes inconsistent economic beliefs that reflect a dissonant cognitive structure (economic growth is damaging to the environment and yet growth is desirable for other reasons). The last, ambivalent structure of beliefs seems to be the most interesting, reflecting basic cultural cleavages of our time.

Empirical typology of environmental belief systems showed that the distinction between these main dimensions takes different forms among older and younger persons. Among older persons the opposition lies between idealistic pro-environ-mentalism and pragmatic attitude to nature, while the majority of younger people can be classified either as radical ecologists or holding relatively indifferent (ambivalent) attitudes towards the environment.

Our results show that environmental attitudes and beliefs are not something separate from attitudes and beliefs concerning society: clusters of ideas correlate with other clusters of ideas and together they form certain integrated "packages". Types of environmental beliefs are predictably associated with preferences concerning societal development (economic growth, distribution of resources). Probably a more fundamental symbolic system is operating here that organizes beliefs and attitudes in various more specific domains.

However, our results did not reveal consistent relations of environmental belief types and particular social identities (in this study operationalized as socio-demographic categories, kind of work in terms of connectedness to nature and participation in environmental organizations): general environmental beliefs have a diffused character and they tend to be dispersed among different social categories. This finding is in accordance with observations in Western Europe (Brand 1997) that there is no longer a distinct socio-demographic group (e.g.

young, educated, middle-class) who exclusively promotes the cause of environ-mentalism. We can conclude that on this level of generality, environmental beliefs are not used for self-definition in a social space.

Further studies should provide more detailed analysis of various ideas and motivations behind these broad environmental orientations. It is obvious that the survey method as it was used here reveals only how a group of people tends to classify fragments of cultural messages that are chosen for the study. Further studies should depart from the aggregate-level tendencies and describe environ-mental belief systems in more detail both on the individual level (how these cultural messages are integrated into individual meaning systems and how they are utilized in different circumstances), and as shared representations in actual reflexive groups. An intriguing research question concerns the associations of environmental beliefs with different types of pro-environmental behavior. Analysis of contemporary environmental discourses in Estonia is also required.

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