

MART REIMANN

Formation and Assessment of
Landscape Recreational Values



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LIST OF PUBLICATIONS

This dissertation is based on seven original articles that have been published in international peer-reviewed scientific journals. These articles will be referred to in the dissertation by their respective Roman numerals.

- I** Palang, H., Printsman, A., Alumäe, H., Kaur, E.; Oja, T., Prede, M., Pungas, P., Reimann, M., Sooväli, H., 2003. Local people as shapers of sustainability of rural landscapes. In: Tiezzi, E., Brebbia, C.A., Uso, J.-L. (Eds.). *Ecosystems and Sustainable Development, Volume II*, Wessex Institute of Technology Press, Southampton, 873–882.
- II** Reimann, M., Lamp, M.L., Palang, H., 2011. Tourism Impacts and Local Communities in Estonian National Parks. *Scandinavian Journal of Hospitality and Tourism*, 11 (sup 1), 87–99.
- III** Reimann, M., Sepp, K., Veersalu, T., 2013. Combining Nature Conservation and Recreation Management in Urban Green Area. In: Scutelnicu, E., Rotondo, F., Varum, H. (Eds.). *Recent Advances in Engineering Mechanics, Structures and Urban Planning*, WSEAS Press, 151–156.
- IV** Reimann, M., Ehrlich, Ü., Tõnisson, H., 2014. Regional Differences in Recreational Preferences of Estonian Coastal Landscapes. *Journal of Coastal Research*, SI 70, 420–425.
- V** Reimann, M., Ehrlich, Ü., Tõnisson, H., 2012. Public Demand for Shores in Natural Condition: a Contingent Valuation Study in Estonia. *International Journal of Geology*, 6 (1), 36–43.
- VI** Ehrlich, Ü., Reimann, M., 2010. Hydropower Versus Non-market Values of Nature: a Contingent Valuation Study of Jägala Waterfalls, Estonia. *International Journal of Geology*, 4 (3), 59–63.
- VII** Reimann, M., Ehrlich, Ü., Pädam, S., 2011. Non-use Value of the Natterjack Toad (*Bufo calamita*) in Estonia: a Contingent Valuation Study. In: Vincenzo, N., Ka-Lok Ng. (Eds.), *Recent Researches in Chemistry, Biology, Environment and Culture: Recent Researches in Chemistry, Biology, Environment and Culture*, Montreux, Switzerland, December 29–31, 2011. WSEAS Press, 202–206.

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AUTHOR'S CONTRIBUTION

- I The author was involved in methodology formation and fully responsible for the data collection in Harjumaa county and participated in writing the manuscript.
- II The author was fully responsible for the formulation of research concept; primarily responsible for the data gathering and fieldworks; data analysis and interpretation; and was primarily responsible for writing the manuscript.
- III The author was responsible for formulating the research questions, composing the study design; was fully responsible for the data collection and interpretation; and was primarily responsible for writing the manuscript.
- IV The author was fully responsible for the research concept; was fully responsible for composing the study design and data collection, and was responsible for interpretation and primarily responsible for writing the manuscript.
- V The author was partially responsible for composing the study design; was primarily responsible for data collection; responsible for interpretation and writing the manuscript.
- VI The author was responsible for the study design, was fully responsible for the data collection and responsible for interpretation and writing the manuscript.
- VII The author was responsible for the study design, was fully responsible for the data collection and responsible for writing the manuscript.

I. INTRODUCTION

Values are increasingly discussed in our societies today. The controversies of values dominate the discussions in governance and decision-making processes as well as traditional and social media alike. The idea for this research topic started years ago due to the author's involvement in decision-making process as a nature conservation expert in the Estonian Ministry for the Environment, as a project leader for recreational areas planning for the whole Estonian state forest which covers one quarter of Estonia. As a tour guide and tourism entrepreneur the author has participated in developing strategies and quality standards for Estonian rural tourism and adventure tourism. As an indigenous local resident and a municipality council member the author has also participated in planning and decision-making process in Estonia's second largest rural municipality Kuusalu which, due to its proximity to the Estonian capital Tallinn, suffers under heavy pressure of different development interests and value conflicts.

The meaning of the noun "value" according to the Oxford English Dictionary refers to "the regard that something is held to deserve; the importance, worth, or usefulness of something" and "principles or standards of behaviour; one's judgement of what is important in life". The verb "value" refers to the monetary equivalent or worth of something and considering (someone or something) to be important or beneficial (Oxford English Dictionary).

The present thesis addresses people's personal set of values which reflect people's mental belief and contains a conscious mental recognition. A true value is not only part of people's belief system but is ideally also integrated into their behaviour.

The typically critical and subjective emphases of the newer landscape studies suggest that wider society can and should be actively and constructively involved in landscape assessment. They should then develop greater confidence to become involved in the democratically established processes of formal planning and policy, in the management of the landscape (Schofield 2008).

The assessment regarding the values in decision-making processes is a great challenge when it comes to comparing values from the point of view of social sciences, economic sciences and landscape research. Ideally, decision-making processes should be value-based. It will be an everlasting question how to compare and prioritize values. There are different methods for assessment of values, but the discussion about the advantages and disadvantages of different methods have been limited. According to the author's knowledge, such cross-disciplinary comparison has not been done before in the academic context.

The main objectives of this doctoral thesis are:

- to analyze and compare different methods for assessment of landscape values;
- to identify the appropriateness of the value assessment methods for different planning and management purposes;

- to identify the relevance of the applications of monetary equivalent for landscape recreational values.

This doctoral thesis addresses the theoretical literature of the landscape concept, value preferences and value assessment. In the empirical part the following methods have been applied:

Interview method in local communities to identify what people value in landscapes and how to protect them (I, III);

landscape preferences method was used in the field for assessment of recreational values for urban recreational area (Paljassaare) and for Estonian coastal landscapes analysed by photographs;

contingent valuation method was utilized to identify the monetary equivalent for the recreational values of Estonian coastal landscapes (V), Jägala waterfall (VI) and protection of the natterjack toad (VII).

2. THEORETICAL BACKGROUND

This dissertation investigates landscapes by using the theoretical framework of landscape values. Landscape forms a central concept in geography (Sauer 1925) and has been the main study object for geographers for hundreds of years (see Humboldt 1807, Ritter 1852, Granö 1922, Sauer 1925, Tammekann 1933, Varep 1964, Haggett 1967, Forman & Godron 1986, Grosjean 1987, Cosgrove 1989, Jones 1993, Antrop 1997, Antrop 2004, Jones 2003, Howard *et al.* 2013). Landscape used to be a topic of classical physical geography, but it has become an important topic in cultural geography as well as in social sciences and semiotics.

2.1. Historical Aspects of Landscape Research

Words for “landscape” which are traceable back to Latin roots include the Italian “paessagio”, the Castillian Spanish “paisaje” (Keisteri 1990) and the French “paysage” – all derived from the form “pagensis” recorded in the Latin of the imperial time 100–200 BC. The form “pagus” denoting an inhabitant of a defined area and a restricted area is attested from the second century BC, but Romans did not associate this word with pictures from landscape (Walde & Hoffmann 1954). As the earliest reference to the word “landscape” in world literature, the Book of Psalms (48.2) can be cited. Here “landscape” is a beautiful overall view of Jerusalem. The English word “landscape” incorporates the meaning of both, a physical scene or view and its pictorial representation. The origin of the word “landscape” comes from the Germanic languages. One of the oldest references in the Dutch language dates from the early thirteenth century when “lantscap” (“lantscep”, “landschap”) referred to a land region or environment. It is related to the word “land”, meaning a bordered territory, but its suffix -scep refers to land reclamation and creation, as is also found in the German “Landschaft”– “schaffen” = to make. Its meaning as “scenery” is younger and comes with Dutch painting from the seventeenth century, international renown introduced the word into English but with an emphasis on “scenery” instead of territory (Antrop 2013).

Landscape has first been academically researched by Alexander von Humboldt (1769–1859) and Charles Darwin (1809–1882) during their naturalistic explorations. The first one of the explorers explained “landscape” in scientific – geographic term relating it to the total character of an Earth region (1807). For him the “landscape” denoted a holistic phenomenon perceived by humans and he associated it with landscape paintings, literary descriptions of landscapes as landforms characteristic to individual countries. Ritter (1852) treated “landschaft” as an artistic and aesthetic phenomenon related to natural landforms and historic areas. Thus, they both address it as the land and the description of it.

A French geographer Paul Vidal de la Blache's (1845–1918) approach to landscape was more literary and historical than von Humboldt's. Their main difference, however, was regarding Blache the importance of local society in organising landscape, the way of life ("genre de vie") and depicting landscape as a holistic unity, as visual indicators of holistic relationships among humans and natural environments. According to him, the regional differentiations resulted not merely from different natural conditions but also from patterns of settlements, different cultures and social territories (Claval 2003). All three of them perceived landscapes as aesthetic phenomena.

Late nineteenth century Anglo-American geography was based on morphological as opposed to causal analysis: the phenomenological study of forms and relations as they naturally occur. Davis (1915) and Sauer (1925) focused their work on landforms and their development. Their holistic approach differed significantly from mainstream science dealing with the social, economic, political or physical processes that underlie the landscape (Duncan & Duncan 2009). It sustained its presence in geography through the influence of the Berkeley School with the leadership of Carl Sauer. Their view was that interpretation should be detailed, without recourse to the mediation of theoretical statements. Sauer claimed the visible landscape to be an important topic for science due to "common curiosity" alone. He introduced (the German concept of) landscape in the USA and made it the corner stone of cultural geography (Sauer 1925). Sauer defined cultural landscape as an area successively changed by humans through their cultural activities and generated by cultural groups from the natural landscape that preceded human activity. Sauer's ideas were criticised by Richard Hartshorne (1939) who thought that dividing landscapes into cultural and natural landscapes was not logical since cultural elements were inherently part of landscapes. Hartshorne argued that "cultural landscape" for American geographers meant the present landscape of an inhabited region. Thus, the natural landscape could only be in the areas never touched by humans. He suggested that natural landscapes and those altered but uncontrolled by man might be called "wild landscapes", in contrast to "tamed" or "cultivated" landscapes. He remained to be critical of Sauer's emphasis of landscapes as the focus of geography (Jones 2003). Nevertheless, landscape became a central topic in geography and was seen as a link between the natural and cultural characteristics of a region. Methods such as surveys, maps, literature, sketches and terrain photographs were used to study landscape. Methods were developed for detailed description of landscape elements and for making typologies.

Theoretical debates about the nature of landscape became important in the first half of the twentieth century, in particular in Germany. Different national schools developed, with different emphases on natural or cultural landscape, on history and region. Around the beginning of the twentieth century, the loss of nature and traditional rural landscapes generated movements of protection of monuments, sites, nature and landscapes in most Western countries. Landscape became accepted as common heritage and laws for protecting it were enacted.

Exemplary is the foundation of the National Trust (NT) in 1895 in the UK (Antrop 2013).

After the First World War, aerial photography gave a completely new approach to the study of landscape. The bird's-eye perspective revealed clearly its holistic character. Complex patterns became visible reflecting hierarchies of spatial scales, suggesting that multiple processes were involved. This made Carl Troll (1939) say that "Luftbildforschung ist zu einem sehr hohen Grade Landschaftsökologie" ("air photo interpretation is to a large extent landscape ecology"), thus introducing "landscape ecology", which he also called an "Anschauungsweise" ("a way of seeing"). After the Second World War, landscape research was still mainly descriptive, resulting in regional monographs, mainly the result of doctoral theses. The emphasis was on landscape classification (chorology and typology) and landscape genesis, both natural and historical, and landscape as the basis for regional identity.

The German concept of "Landschaft" shaped to a large extent the corresponding concept of landscape in the minds of Soviet geographers, who like German scholars were mostly concerned with the emphasis on landscape processes (Sepp 1999). The leading concept in the complex physical geography in the Soviet Union was developed by the Moscovian school of landscape morphology, headed by Solntsev (1949). This school's approach concentrated mostly on large scale mapping of typological landscape units and rigorous taxonomy of these units. Most Russian definitions handle landscape as a natural geographical complex defined mainly through its natural features (Glazovskaja 1964, Armand 1967, Sochava 1978, Gvozdetski 1979, Isachenko 1991). For example, Isachenko (1991) handles landscape as the main category in the hierarchical system of natural territory units.

Continual specialization in science and the introduction of quantitative techniques changed research profoundly in the 1960s and 1970s. Most important was the "new orientation" in a brief history of landscape research geography, aiming at more explanations based on theory and modelling. New techniques of spatial analysis laid the foundation of geostatistics. Regional geography and landscape studies became old-fashioned and Jan Zonneveld (1980) called it the "gap in geography". In West Germany, this led to a crisis in the "Landschaftskunde" with endless theoretical discussions about definitions, losing all societal significance (Paffen 1973). Meanwhile, the theoretical basis for landscape science continued to develop in Eastern Europe (Neef 1967).

Soon the "gap in geography" was filled and landscape research took off again from different sources. The economic recession, consecutive energy crises and increasing environmental problems made it clear that the problems became too complex to be handled by non-concerted actions of different specialized disciplines (Moss 1999). Environmental impact assessment, first enacted in the USA in 1969, stimulated the development of new methods for studying the landscape, such as the Leopold matrix for qualitative expert assessment (Leopold et al. 1971). It lasted until 1985 before the EU introduced an

Environmental Impact Assessment Directive, which included “landscape and the (visual) surroundings” as one aspect to be studied.

Looking at the end of the twentieth century, different approaches in landscape research could be recognized. Landscape ecologists focused on the relations between spatial patterns of land use and ecological processes. Historical geographers and archaeologists focused on the genesis of the landscape and its meaning as heritage. Humanistic and cultural geographers focused upon the landscape as a mental and social construct with important symbolic meanings. Separately, landscape architects and design practitioners focused on scenery. Each of these approaches used their proper definitions, concepts and methods, but a full interdisciplinary integration was still lacking.

The end of the twentieth century can be called an era of “landscape crises” when people felt that they could not cope with the fast changes in societies which made it difficult to manage landscapes in a sustainable way and created the feeling of alienation from the landscape. There was a shift towards more applied and trans-disciplinary landscape studies (Lowenthal 1997; Kolen and Lemaire 1999, Austad 2000; Palang, Alumäe and Mander 2000, Pedroli 2000, Lörzing and Simon 2001, Lemaire 2002, Cosgrove 2003, Antrop 2005).

Estonian landscape research started with J. G. Granö, whose career as Professor of Geography at Tartu University spanned the first half of the twentieth century (Sepp 1999, Peil *et al.* 2004). Prof. Granö elaborated the ideas of Landschaftskunde creating a doctrine of “pure geography” (Granö 1929) based on the idea that the real object of geographical research should be the environment as perceived by various human senses and regions based upon those perceptions (Granö 1922, 1924). The landscapes were first divided into natural and cultural landscapes in the 1930s. Edgar Kant, a renowned Estonian pioneer in the field for geography has claimed that cultural landscapes must be researched in the same way as other landscapes considering their artificial nature influenced by human activities (Kant 1933). During the Soviet period the study of physical landscapes was emphasized to create landscape science establishing a sound theoretical basis and turning geography to a fundamental science. Geomorphology was seen as the main factor in landscape research focusing on landscape genesis. The concept of a landscape as a visual pattern was again emphasized in the 1990s by the researchers inspired by the humanistic Scandinavian and Anglo-American research. This time the focus was broader and included perception and experience of landscapes formed in the minds of the common people Europe and being inspired by the humanistic Scandinavian and Anglo-American research.

2.2. Current Concepts of Landscape

In current landscape research, on the one hand, landscape is seen as something concrete and objective. It is defined as the sum of physical surroundings, both natural and human-made, a manifestation of ecological and social processes. On the other hand, landscape is something abstract and subjective. It is a set of aesthetic or affective attributes associated with our physical surroundings. In other words, landscape incorporates or symbolises ideas of beauty, historical association and local or national identity (Jones 1993).

The concept of landscape has been discussed in many places and has different meanings in different contexts and because of the multiplicity of its usage, every study dealing with landscape should explain how the term is used in this very context (Palang 1998, Jones 2003)

Although the value of traditional, natural and rural landscapes as heritage and their meaning for quality of life was already recognized in law in many countries, the application was restricted to rather small classified areas considered highly valuable. The multiple meanings of landscape complicated inter- and trans-disciplinary co-operation and made it difficult to implement the concept in legislation. Also some common definition was needed in participatory planning processes involving many stakeholders with different interests demanding more appropriate translation of scientific knowledge allowing easy and clear communication.

This resulted in a new formal definition, i.e. standardized definition based upon a consensus by all signatory parties of a convention.

The European Landscape Convention (ELC) states that “Landscape means an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors” (Council of Europe 2000a, Ch. I, Art. 1a). According to that landscape is more than an area, it also expresses the perceptions of an area that are shared, valued and used by people (Jones *et al.* 2007, Olwig 2007). It means that the perception of landscape could move from a real and visible level to a mental one, based on different values.

The ELC approach to landscape creates something of a challenge to much traditional landscape research as a form of layered scene with “nature” understood as the geomorphologic foundation for the natural flora and fauna, and “culture” perceived primarily in terms of visible material objects superimposed by human beings in accordance with, or in resistance to, the demands of the natural environment (Olwig 2007). This approach can emphasize the character or aesthetic appeal of scenery, but it can also emphasize ecological relations. According to ELC landscape is not a given installation of physical objects, which can be objectively analysed by the natural or social scientist. It is rather the collection of subjective cultural perceptions.

Different landscapes exist because of their distinct character, which is the result of the continuous interaction between natural processes and human activities. History, economy and ecology are essential factors in the structuring

and understanding of landscapes. But ELC definition is not made to “special” landscapes such as “spectacular” or “ordinary” ones, to rural, industrial or urban ones; all landscapes should be considered equally. The ELC was opened for signatures on 10 October 2000 and in October 2011 35 countries of the 45 member states of the Council of Europe ratified the convention. Although the convention has no legal power to enforce it, such as EU directives do, its impact on policy and research is already important and still growing.

Brunetta and Voghera (2013) interpret the ELC landscape concept as an alternative to the consolidated approaches. They consider landscape a “meta-structure of relations between different systems” – geomorphologic, ecological, environmental, historical-cultural, aesthetic, socio-economic, territorial – that includes all genetic, biological and functional relations among the components of each part of the earth’s surface. According to the ELC philosophy, this definition focuses on the need for innovation in the approach to landscape interpretation and in policy-making.

In the current research landscape is seen according to the ELC approach as more than an area; it also expresses the perceptions of an area that are shared, valued and used by people. It means that the perception of the landscape could move from a real and visible level to a mental one, based on different values. Perception is also how people see and identify themselves in relation to the landscape. This stresses the perception by humans as well as actions and interactions taking place on the landscape. The ELC approach is relevant for current studies because it has main focus of values, preferences and perceptions.

2.3. Landscape Values

Several parts of the ELC refer to landscape qualities and values. Landscape is an important part of the quality of life for people everywhere: in urban areas and in the countryside, in degraded areas as well as in areas of high quality, in areas recognised as being of outstanding beauty as well as everyday areas (Council of Europe 2000a, Ch. I, Art. 1a).

Jones (1993) divides landscape values into three groups:

- Economic values which include subsistence value (related to an underlying rationality of survival if people are still directly dependent on the landscape for their daily subsistence without going through the market), market value and utilitarian ecological value (long term utility of landscape as an economic resource considering the ability of vegetation and soil to renew themselves);
- Amenity values which include intrinsic ecological value (maintenance of biodiversity based on the view that all natural beings have right to existence, ethical value that is wider in scope than the utilitarian argument), scientific and educational value (landscape as a source of information for teaching and research), aesthetic and recreational value, orientational and identity value

- (importance of landscape elements as landmarks and landscape as an element of cultural identity and sense of place);
- Security value, which includes defence value (landscape as asset for military bases, firing ranges and fortifications) and demarcation value (landscape as a marker of territoriality).

Jones argues that values are not intrinsic to the landscape but lie within people or groups of people. Thus landscape values depend on perceptions in the way in which landscape can serve or satisfy the needs and desires of people or groups of people. In other words landscape is seen as a resource.

De Groot (2002, 2006) divides landscape values into three types: ecological, socio-cultural and economic value. He argues that ecological value or importance of a given ecosystem is determined both by the integrity of the regulation and habitat functions of the ecosystem and by ecosystem parameters such as complexity, diversity, and rarity (de Groot *et al.* 2003). Socio-cultural values identify important environmental functions, emphasizing physical and mental health, education, cultural diversity and identity (heritage value), freedom and spiritual values. The economic value is possible to measure in monetary terms.

2.3.1. Recreational Value

Most of the authors in landscape values research have emphasized also recreational value of landscape as a place where people can come to rest, relax, refreshment and exercise (Jones 1993, de Groot 2002, Aasetre & Gundersen 2012, Goio & Gios 2012). Through the aesthetic qualities and natural resources, landscape provides many opportunities for recreational activities, such as walking, trekking, camping, kayaking, swimming etc. With increasing numbers of people and increase of the leisure-time, the demand for recreation in outdoors will most likely continue to increase in the future.

The discovery of nature and local history can also enhance the recreational experience thus recreational values can be also described through historical values. Yahner and Nadenicek (1997) argue that landscapes that contain both past and present can provide their residents with a feeling of community integrity and richness. This historical continuity gives the landscape a depth of meaning and a sense of time, providing recreational resources and enhancing landscape aesthetics.

The value judgement underlying this is that positive aesthetic and recreational experiences are important for mental and physical health. In the latest studies recreational value is often connected to health and wellbeing (Howard *et al.* 2013). Landscape is described more and more as a health resource in a variety of ways. It is stressed that landscape planning can maintain and enhance health resource values. Landscape recreational value includes scenery as well as all the history, sounds, smells and challenges which landscape can provide for recreational activities.

2.3.2. Use and Non-Use Values

While making choices in life, people tend to compare different options and appraise the value they receive from one choice over another. Many public goods can be used free of charge, e.g. bird watching and swimming in a lake. The value of these activities can be assessed by the choices individuals make. Krutilla (1967) has claimed that individuals receive utility from natural assets just because they exist. Thus, utility may originate from the pure knowledge of conservation of a species of a certain wilderness area. Starting with Krutilla's work, it is now widely recognized that the value of the environment can be divided into use value and non-use value (Ehrlich 2007, Pädam 2012).

The traditional model of value taxonomies used in economics and psychology can be applied to landscape and recreational research. This model considers rational pursuit of values (Hausman & McPherson 1996). Rationalism can be explained within the framework of neoclassical economics, where actors are perceived as relating to their surroundings as 'economic man', which refers to 'a hypothetical individual who acts rationally and with complete knowledge, but entirely out of self-interest and the quest to maximize personal utility' (Businessdictionary.com 2014).

Traditional value taxonomies often use a classification from use value (direct use) to what is often labelled as "existence value". Existence value integrates nature conservation value, moral value, and altruistic value. A conventional value taxonomy (based on Aasetre & Gundersen 2012, Tyrväinen 1999, Turner *et al.* 1994) is shown in Fig. 1, includes categories designated as direct and indirect use values, as well as options such as value, bequest value, and existence value.

The value people ascribe to using landscape directly, either for exploitation purposes (logging, housing development), consumption for recreational intentions (bathing, bird watching, camping), or indirectly via the use of ecosystem services (forests for erosion protection) is the use value. Estonian wilderness provides direct use values to the people who visit them. Other people receive indirect use values by merely watching a television show about the Estonian nature and its wildlife. People may also receive indirect use values from an input that helps to produce something else that people use directly.

Option value is the value, which presupposes a wish to preserve the environment for future use, although the person in question does not currently use it. At first proposed by Weisbrod (1964) and later clarified by Lindsay (1969) to be the insurance premium, i.e. willingness to pay for opportunities of future use. For example, a person may hope to visit the Estonian wilderness area sometime in the future, and thus would be willing to pay something to preserve the area in order to maintain that option.

Similarly bequest value is the value that people place on knowing that future generations will have the option to enjoy something. Thus, bequest value is measured by peoples' willingness to pay to preserve the natural environment for future generations. For example, a person may be willing to pay to protect the

Estonian wilderness area so that future generations will have the opportunity to enjoy it.

Non-use value relates to no use at all. It is commonly recognized that non-use values include existence value, i.e. benefits derived from knowing that a resource exists, and intrinsic value, which relates to the willingness to pay for maintenance of natural areas and biodiversity, independent of its usefulness to humans.

While use values might be private or public goods, non-use values are pure public goods. Altogether, use values and non-use values are expected to cover the whole spectrum of values associated with landscapes. In the current thesis the recreational value as use value is investigated.

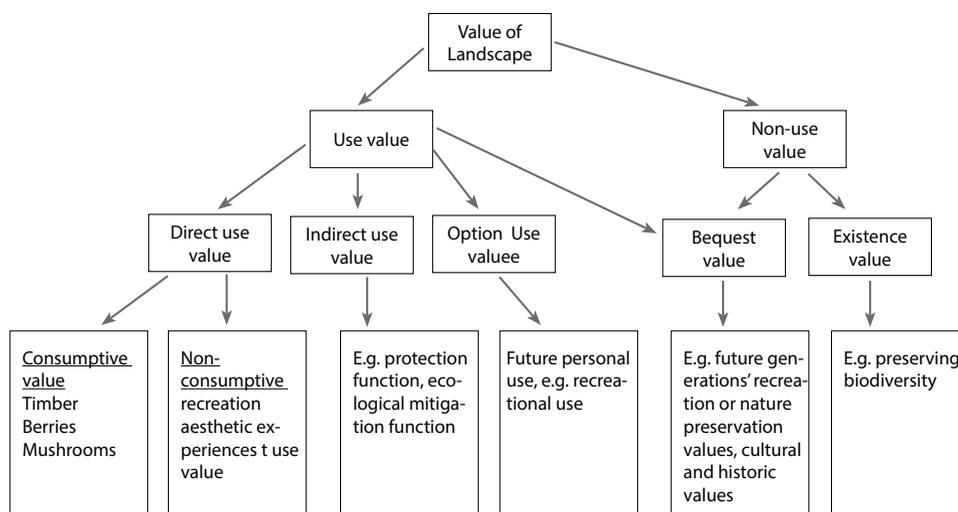


Figure 1. A conventional value taxonomy (based on Aasetre & Gundersen 2012; Tyrväinen 1999 and Turner *et al.* 1994)

2.3.3. Monetary and Non-Monetary Values

Monetary values are typically formed in markets. When the government has to decide whether to build a new road or protect a beautiful landscape, a monetary calculus is needed. Non-monetary values are characterised by having no price developed in the purchase-sale process. Therefore the non-monetary values have no automatic monetary equivalent, but for decision making and prioritizing process monetary equivalent is often needed, because other ways it can be a danger that non-monetary values will be neglected in decision making. Which will bring the greatest increase in total wellbeing: the road or protection of the landscape? Every person's judgement of his/her life quality contains an assessment of his/her living standard and of non-monetary values perceived-valued-regarded as necessary by him/her. Theoretically every person can evaluate what (how big) part of his/her income he/she is ready to donate (how

much they want to spend) for the achievement of which non-monetary value – in order to improve overall value of his life quality (Freeman 2003, Bockstael & McConnell 2010, Haab & McDonnell 2002).

It might be argued that some sorts of values cannot be translated into monetary terms. A family might regard a great grandmother's brooch as a unique, irreplaceable item. Its value at the antique shop might be low, but to the family it has great worth. Perhaps it could be argued that even this sort of value could be given a monetary equivalent. If the brooch were stolen, there would be a maximum amount that the family would pay to get it back. Equally, suppose that the Road Administration wanted to drive a motorway through the nice traditional village. There would perhaps be some level of payment that would function as an effective inducement for the residents to leave, and this could be taken to represent the monetary equivalent of the non-monetary values inherent in the place.

However, the fact that some monetary translation can often be found for non-traded values does not mean that it always can be, nor does it mean that in those cases when such a translation is possible the non-monetary value has been reduced to the monetary. Money can be used as the medium of exchanging values, but far from making it the most significant or fundamental kind of value, it reveals its secondary, dependent status. Money only works because there are other sorts of values, which are worth having in their own right. Another way of putting this is to say that money is a proxy for some sorts of values (Thompson 1999).

Research into the recreational value of “the countryside” has looked at the amounts users would be willing to pay in order to continue enjoying it. For example, environmental economists have carried out a study of the use and non-use values of the British canal network, by asking respondents how much they would contribute towards a programme that maintained boating, towpath and heritage features along canals. The researchers estimated the value of these aspects to be £145 million per annum, a sum far in excess of the income of the revenue of British Waterways and government grant in aid (Adamowicz *et al.* 1995).

When one first reads of the moves economists have made to put monetary values on intangibles like scenery or recreation one may be surprised or even affronted, for it is not apparent *prima facie* that this exercise is valid. It seems inappropriate to stick a price tag on the beautiful landscape. The philosopher, Arne Naess, reacts against the economists' approach arguing that “you cannot slap a price tag on nature” (Naess 1989). The economists can respond to such criticisms by saying that the lack of quantitative data in support of protection functions as if data actually were offered; namely, the price zero. Thus the economists may claim that what they try to prevent is the price zero from being used in the decision-making process. This is an expedient move, which skirts around some serious philosophical difficulties, but still the monetary equivalent is possible to identify with appropriate economic research methods.

3. METHODS

3.1. Interviews

Local communities play an important role in landscape planning and conservation process. Sometimes not all the residents identify themselves as community members with neighbours. There are people who live temporarily in the area or they just live in the area without communicating with other people in the neighbourhood and they are not active to express their opinions. Thus, this is important to get the opinion from locals with community attachment.

Community attachment is a complex, integrating, multi-faceted concept that incorporates the relationship between people and their communities. Community attachment encompasses several interrelated and mutually defining components. The underlying properties that permeate the literature as core elements are emotion, affection, meaning, feeling, bonding, and value. This implies that in order for one to be attached to a community, he/she must appreciate value, be loyal to as well as identify with the place. To this end, community attachment can play a key role in influencing the perceptions and attitudes of residents towards changes or developments in their community (Nicholas *et al.* 2009).

In the current thesis in-depth and focus group interviews and questionnaires were used in order to gain feedback on the proposed valuable landscapes and suggestions for designating new areas. Several experts carried out this method since it stemmed from the planning project initiated by the Planning Department of the Ministry for the Environment to design the theme plan of Valuable Landscapes. Interviews involved local inhabitants, local authorities, business leaders, NGOs, nature conservation agencies, tourism managers, etc., found by the snowball method (Alumäe 2006, Palang *et al.* 2011).

Snowball sampling is often useful for exploratory research purposes (Babbie 2010), as it takes advantage of the social ties among members of a community. Snowball sampling helps establish the credibility of the “outsider” researcher and builds rapport with “insider” subjects whose experiences are the focus of study (Ryen 2001, Derrien & Stokowski 2014). In this study snowball sampling helped identify and reach the people with community attachment.

Paper I explores the landscape value assessments of local people in six Estonian counties plus two more detailed test areas. Based on questionnaires and interviews the landscape valuations of the local people were studied to analyse which landscapes they consider characteristic of Estonia. In-depth and focus group interviews and questionnaires in order to gain feedback on the proposed valuable landscapes and suggestions for designating new areas were used. Interviews involved local inhabitants, local authorities, business leaders, NGOs, nature conservation agencies, tourism managers, etc. found by the snowball method and through responses to notices in local newspapers.

The outcome of the planning exercise in the paper I was not to create new protected areas, but rather to establish rules and examples of good practice for further management, so that the outstanding values indicated during the project could be taken care of and sustained. The purpose of the second study (II) was to assess values in the areas which are already under protection. The research was carried out in all 5 national parks of Estonia.

First, interviewers met local authorities that knew their municipality and could recommend local leaders who then would suggest other potential study participants. Hence, in the smaller parks like Karula and Vilsandi, the sample included one person per household, and in the case of very small communities like in Soomaa every resident of the National Park was included in the sample.

3.2. Landscape Preferences

The landscape preference method is an integrated approach to studying the landscape values. It combines psychophysical methods, visual landscape stimuli and statistical analysis in the assessment of landscape quality and has been widely used in landscape studies (Lyons 1983, Kaplan & Herbert 1987, Lothian 1999, Herzog *et al.* 2000, Larsen & Harlan 2006, Pinto-Correia & Carvalho-Ribeiro 2012). In landscape preference surveys, photographs are often used to identify observer preferences (Shafer & Richards 1974, Daniel & Boster 1976, Shuttleworth 1980, Hull & Stewart 1992, Daniel & Meitner 2001, Scott & Canter 1997, Lothian 1999). This is much less expensive than taking respondents to real landscapes, and they are considered to be valid as landscape surrogates for research on visual aspects of landscapes (Trent *et al.* 1987). Palmer and Hoffman (2001) discussed the validity of photographs, warning that negative findings often do not get published. They also express concern regarding the ability of one photograph to represent an often complex site. In this study, it is not the sites per se, but the character they represent (in terms of visual scale) that is being rated, in which case the photographs are valid representations (Tveit 2009).

Some investigations, which have been based on field investigations and photographs, have shown that landscape preferences assessed on the field and by pictures are similar (Daniel & Boster 1976, Kellomäki & Savolainen 1984, Shuttleworth 1980). On the other hand, Bishop and Rohrman's (2003) study, which compared landscape preferences assessed by computer-generated environment simulations and an empirical field study, showed that even detailed and time-consuming computer simulations do not necessarily generate the same responses as the corresponding real environment.

The study of Scott and Canter (1997) showed that people conceptualise photographs differently according to whether they are asked to evaluate the photograph or the place represented by the photographs. They point out that it needs to be clear what is being evaluated, a picture or a place (Scott & Canter

1997). However, one of the limitations with the use of photographs in preference surveys is the lack of control of the content of the image that may impact the observer's perception (Ode *et al.* 2009). Research related to imagery used in decision-making processes has shown that the general public and professionals are able to make decisions based on more abstract visualisations, but with some differences between the groups (Appleton a& Lovett 2003, Messenger Belveze & Miller 2005). The study by Appleton and Lovett (2003) showed that some elements are more important than others, i.e. foreground vegetation and the appearance of ground surfaces. The study by Messenger Belveze and Miller (2005) found that similar pictorial quality in the imagery is important in ensuring consistent rating scores.

In this thesis, landscape preferences for recreation were studied on the field (III) and using the photographs (IV).

The field study took place in Paljassaare Peninsula, which is located within the borders of Tallinn, next to the city centre. The Paljassaare Peninsula was a strictly closed border zone since World War II until 1994. Today the area with several coastal lakes has no human settlements and has been preserved in natural conditions. The area looks antithetic to classical urban recreational areas – very wild with reeds scrubs, many dead and fallen trees and branches with very limited recreational facilities and infrastructure. The study explored visitors preferences of the landscape with a main question if respondents want to have the current situation (wild and natural conditions) maintained or if they want the area to be more managed like a classical urban recreational area. Visitors were interviewed during four weeks in May because at that time the variety of visitors is the biggest.

A landscape preference study with photographs was conducted to investigate recreational preferences of Estonian coastal landscapes (IV). The Estonian natural coastline is classified into five shore types: cliffs, till, gravel, sandy and silty. Those shore types are easily distinguishable and recognised by scientists and the general public. The questionnaire contained photos of the five shore types and descriptions of all shore types. The preference question in the questionnaire was formulated as follows: “Please rank the shore types according to your preference to visit them for your leisure time (5 – most preferred, 1 – least preferred)”. All the respondents were also asked to comment on their preferences. The sample included respondents from all counties proportional to the number of inhabitants.

3.3. Contingent Valuation Method

Contingent valuation is a survey-based methodology for analysing values people place on goods and services. It was first introduced by Davis in 1963 to estimate the value of a big game hunting in Maine. In 1974 Hammack and Brown (1974) used contingent valuation for valuing waterfowl hunting.

Simultaneously, the method was used for valuing visibility in the Four Corners region of the Southwest and since then it gained recognition as a methodology for estimating Hicksian surplus for public goods (Randall *et al.* 1974). Contingent valuation filled the gap to assist in valuing objects when markets do not exist and preference methods were not applicable (Boyle 2003). Since 1970s, the method has been increasingly used and it is today widely used in all advanced democracies, serving as an instrument for adopting informed decisions. In his overview of the contingent valuation Carson (2011) provides references on over 7,500 contingent valuation papers and studies from more than 130 countries.

The contingent valuation method (CVM) tries to identify respondents' willingness to pay (WTP) for hypothetical changes in environmental quality. The value attached to the object by the respondents in the form of willingness to pay is contingent in relation to the simulated market (or market scenario) in the questionnaire (Portney 1994). If there is no actual market for some goods, it has to be created hypothetically. Respondents are asked to state how much they agree to pay for increasing the quality or quantity of the goods (or to avoid a loss), which is regarded as willingness to pay (Aakkula 1999). In order to test the method, hypothetical situations need to be created and hence the CVM is still under scrutiny (Loomis *et al.* 1996, List and Gallet 2001, Murphy *et al.* 2005, Pädam 2012). The majority of the tests conducted have shown that the hypothetical CV estimates of WTP are significantly greater than the real WTP for the goods.

The majority of CVM validity tests have been conducted in laboratory settings using common market goods, such as paintings (Neill *et al.* 1994) or chocolates (Johannesson 1997), rather than non-market environmental goods. The findings from the laboratory experiments have, in almost all instances, found that hypothetical CV payments have overestimated the actual or real payments for the good by a factor of between twofold (Loomis *et al.* 1996) and fourfold (Neill *et al.* 1994). As a result of meta-analysis of hypothetical bias Murphy *et al.* (2005) discovered that, on average, hypothetical values exceeded actual values by ca 300%. Loomis *et al.* (1996) showed that valuation from laboratory experiments often tend to reflect what the respondents consider to be a fair market price for a particular good rather than express their maximum WTP for that good. Therefore Loomis *et al.* (1996) argued that actual field experiments that address environmental goods provide a more robust approach for testing criterion validity.

There have been mainly two types of field experiments: those involving donations to environmental causes (Duffield and Patterson 1992, Seip and Strand 1992, Macmillan *et al.* 1999) and those involving payment for hunting permits (Bishop and Heberlein 1979). Loomis *et al.* (1996) argued that experiments using donations to environmental causes have the advantage of focusing on public goods, thus strongly reflecting the focus of CV studies. The Macmillan *et al.* (1999) experiment, which is one of the few criterion validity

tests that have addressed environmental goods, found equality between hypothetical and actual WTP. In a survey of red kite conservation in Wales, Christie (2007) finds that there is equality of hypothetical and actual WTP among those who provide a positive bid. The explanation to the deviation between the hypothetical and real WTP amount may thus be that contingent valuation surveys exaggerate the intention to pay rather than the willingness to pay (Christie 2007). Another survey that studied real and hypothetical donations for a public good (purchase of a remote Scottish island for nature conservation purposes) did not find any significant difference between real and hypothetical amounts (Macmillan *et al.* 1999).

In this thesis contingent valuation method was used in three studies. All studies included a market scenario and photos. The willingness to pay question was formulated as an open-ended question. The respondents were asked how much they agree to pay annually with no ready-made answers to choose from. Every respondent could write exactly the amount he/she wanted.

It was stressed in the questionnaire that although the answer did not presume actual payment, the respondents were asked to answer as honestly as possible and considering their financial reality. Additionally, all the respondents were asked to write down their sociometric indicators: gender, education, age and average monthly income. Insufficiently completed questionnaires were not used in the analysis.

First CVM study was applied to Estonian coastal landscapes (V) using the same photographs as in the landscape preference study (IV). All the respondents were asked to read through the questionnaire, the market scenario and seashore descriptions. After that, they were asked to answer the following questions: 1) “Do you agree that Estonia shores should be preserved in their maximum natural condition?” and 2) “In case you agree that Estonian shores should be preserved in their maximum natural condition, then how much are you willing to pay for this annually?” Answers were asked to be provided for every seashore type separately.

Second CVM study (VI) was about recreational value of Jägala Falls which is the highest and most powerful natural waterfall in Estonia. Photos of it illustrate numerous materials presenting Estonia as a tourist destination and 50–100 thousand people from Estonia and abroad visit it annually. The study was conducted before the reconstruction of a hydro power plant in the Jägala Falls. Together with a start of the operation some of the water was directed past the waterfall into the power plant’s turbines and the amount of water in the waterfall did decrease. Research investigated the impact of water reduction on the aesthetic and recreational value of the Jägala Falls. Two photos were presented in the survey. On the first photo the Jägala Falls was recorded with medium natural water flow. On the second photo, the amount of water falling down the falls was approximately equal to the minimal water flow the power plant has to give to the falls. The respondents were asked how much they agree to pay annually for preserving the natural flow of the Jägala Falls

Third CVM study (VII) involved the natterjack toad conservation which belongs to the first protection category of the European Union. The natterjack toad (*Bufo calamita*) used to be important part of Estonian coastal landscapes and soundscapes in the first half of the 20th century, but has become rare during the last twenty years. In order to avoid the final disappearance of the natterjack toad in Estonian nature, main toads habitat – the coastal meadows need to be taken into use again. The amount that needs to be spent for conservation and restoration of the natterjack toad in Estonia is at least 35,200 Euros per year. The respondents were asked how much they agree to pay annually for preserving the natterjack toad through the restoration activities.

4. RESULTS

4.1. Perceptions of Local Stakeholders

The responses to the question: what is valued? (I) could be divided into two groups. The first contains concrete places, the second certain types of objects. Leaving the former aside, the latter point to cultural features such as churches, cemeteries, monuments, schools, or to outstanding natural objects, like sandstone outcrops, hills, lakes. Only very few respondents mention generalized, abstract or complex features like historic field pattern, forested landscape, bogs, etc. that are usually highly valued by experts.

County-wise, the listed places clearly indicate the natural differences. In Harjumaa, people appreciated natural objects connected with limestone, such as waterfalls, coastal cliffs, karst features. The people of Viljandimaa, once among the richest areas of Estonia, put high value on human-influenced landscapes, such as castle hills and manor complexes. The people of Valgamaa, the most remote region, mentioned manor landscapes as valuable. An exception here was the Otepää Upland as one of the most visited regions by tourists, admired for its attractiveness for recreation and for its natural beauty – diverse landscape with certain well-known objects. Also, the Otepää people claimed that their home area carries the very values of Southern Estonia and rated nature conservation values the highest. This has also historical impact, as the whole Otepää region has been a Nature park for more than one generation. The people of Jõgevamaa appreciated the unique drumlin field with its natural and human features. They gave extra value on Palamuse, a place where some novels known by all Estonians were staged. In Põlvamaa, people tended to prefer landscapes of natural beauty, such as primeval valleys with sandstone denudations; bogs and bog lakes. Traditional villages were valued as well. The Tartumaa people pointed out views: lovely little roads, variable views, and little lakes. Together with neighbouring Jõgeva and Põlva, people gave high assessment to the landscapes created by the Russian Old-Believers on the shores of Lake Peipus.

The answers to the question “What kind of landscapes make you feel as Estonian?” clearly distinguished people from the north of the country from the rest. In Harjumaa the most frequent answer to this was coast – coastal landscapes represented the very Estonianness. Coastal villages and cliffs were considered as most Estonian-like landscapes. Also forests and bogs were mentioned.

In Saaremaa, the respondents were asked to bring forward the features that determine the peculiarity of Saaremaa. The most prominent aspects, both among pupils and farmers, were predominantly connected with natural attributes of the landscape (60% of all answers). The more detailed examination showed vegetation type and geologic attributes (e.g. juniper shrubberies, limestone outcrops, flat relief) as the key determinants in the landscape experience.

However, some people, especially the adult respondents, conceived the character of the landscape as culturally constructed and listed cultural features

(e.g. stone walls, windmills, historical farm and village patterns), as well as semi-natural elements (e.g. wooded, coastal and alvar meadows) of the landscape. The opinions of the promoters and county specialists collided with that of farmers and pupils. In the Southern Estonian counties two notions appeared – forest and well-cultivated fields, also diversity landscape in Otepää itself. There were no references to concrete spots; people rather described their favourite view or landscape type. The described landscapes clearly showed the human-nature interface, the need for visible human presence to create identity. At the same time personal places tend to be small clearly defined visual spaces seen from a safe place.

In the national parks study (II), with few exceptions, the respondents indicated that local values like cultural and natural heritage need to be protected by national park authorities. But many respondents were not satisfied with some “pointless” or “over-stringent” restrictions. In Matsalu the main problem concerned the view that the fishing restrictions during springtime were too severe. For the residents of Lahemaa, the biggest obstacles included building and forest cutting restrictions. In other national parks forest cutting restrictions proved to be the biggest obstacle. The respondents who answered that the park authorities were negative to their own activities claimed that the authorities lacked both flexibility and a desire to find compromises with local communities.

Visitor crowding can be a threat to national park values (cultural and natural heritage) and also to local communities. The Estonian national park inhabitants seemed to be more worried about damage to national park values than being disturbed personally. But none of these problems seemed to be very severe since the majority of the respondents reported no damage and little disturbance. Respondents who had experienced visitor disturbance were also worried about the damage of national park values.

The scope and specialty of tourism activities are different in each park. Residents of the most densely populated national park, Lahemaa, and the most sparsely populated national park, Soomaa, were more critical towards tourism activities than those in the other parks. However, the problems were generally not very severe. Soomaa inhabitants said that sometimes canoeists landed in their yards; this is because the riverbanks in Soomaa often are too wild and scrubby to make a landing, while there are open areas suitable for landing close to private homes.

A few serious disturbances occurred in Lahemaa coastal fishing villages (Altja, Hara, Virve, Viinistu). Lahemaa includes intensively visited sites in the coastal areas like well-preserved fishing villages and attractive beaches. In all the national parks the residents' proximity to the main natural attractions and the level of disturbance they perceived corresponded quite well; people living closer to the main attractions often felt more disturbed by the visitors.

4.2. Landscape Preferences

Results of the study in Paljassaare peninsula (III) showed that attractiveness of the area was considered to be very good by 38% of the visitors, good by 46%, satisfactory 16% and bad by 2%. 82% thought that nature was very well preserved in the area. Conditions of recreational facilities were very good by 33%, good 26%, satisfactory 23%, bad 2%, very bad 2%. 84% of respondents thought that the area was managed enough, 11% that too little was managed, 5% that too much was managed. This question can be applied for both landscape management and facilities' management. Several visitors said that there were enough crowded urban green spaces in Tallinn, it was good to have less people somewhere and even very dense vegetation, scrub, did not bother them. These 6 respondents who thought that the area was managed too much came to a short visit (less than an hour) and they have been visiting the area for three years or less. Two of them came by bike and their main purpose was sport. Two of them came to walk their dog and two had a walk in nature. The main concern of too high management was the fear for growth in visitor numbers. A large amount of respondents who thought that the area was too little managed were first-time visitors.

In the preference study of Estonian coastal landscapes (IV) sandy shore received by far the highest average score of 4.6. The comments on sandy shore are quite stereotyped, especially underlining the most typical shore-related recreational activities like swimming and sunbathing. The high preference rating is quite logical considering that for most Estonians the sandy shore associates with the most typical place to spend one's vacation. Gravel shore had the lowest average preference score (2.5). The lowest rating of this shore type is related to the following: it is not comfortable to walk barefoot on gravel; it lacks visually striking landforms (e.g. steep cliff shore, eye-catching large rocks and boulders of the moraine shore and the cosiness of the silty shore). Silty shore and cliff shore received equally 2.6 points. Comments indicate that the latter is the preferred shore type for hiking and bird watching. Owing to the fact that cliff shore in Estonia ascends from the sea (depending on the region) to 10–50 meters, it offers a better view of the sea compared to other types of shore.

Preferences of different respondent groups classified on the basis of the sociometric indicators used in the survey are not significantly different from average preferences of all respondents. However, some differences can be detected when taking a closer look. The ratings on the basis of gender differ for all shore types with the exception of the silty shore. Average preferences of men are similar (2.6) for all shore types except for the sandy shore. Till shore is valued lower by men (2.6) and higher by women (2.8) than average (2.7). Till shores are the second preferred type by female respondents. Many female respondents prefer till shores, but they do not like to sunbathe there but simply enjoy the presence of the sea. Many males, on the other hand, have pointed to the protective nature of the till shore from erosion of numerous rocks. A slightly

lower than average rating (2.6) is given by women to the cliff shore (2.5), which according to comments written in the questionnaire may be caused by the unsuitable nature of the steep cliff shore for walking with children. Some women believe the cliff shores give a threatening impression. The sandy shore is rated by men on average slightly lower (4.5). In comments both men and women were concerned about the large anthropogenic impact on the sandy shore, considering just this type of shore more threatened than others. The concern is well justified, because a large part of organized recreational activities and tourism are related to sandy shores, which received the highest preference. The sandy shore is also specifically picked out as a very suitable place for a family vacation, for swimming and sunbathing. It is the only shore type in Estonia where you can walk barefoot stress-free, without focusing attention to what is underfoot.

The effect of the educational level on differences in preferences is revealed first of all in the case of the silty shore. The average preference score by people with primary education is 3.0, which is the highest average rating for a non-sandy shore in all the survey on the basis of any sociometric indicator. At the same time, people with technical secondary education rate the silty shore relatively very low (2.4). The respondents with higher education value the till shore and cliff shore (2.8) higher than other educational groups, at the same time rating the sandy shore (4.4) lower than others. The comments allow concluding that in comparison with other educational groups people with higher education prefer cliff shore and till shore related active recreational forms (e.g. hiking, bird watching), preferring those activities to classical sunbathing and swimming. Respondents with higher education value also gravel shore lower (2.4) than average (2.5).

Regional differences in the ratings at the level of individual counties can be detected. Residents of seaside counties value their typical shore type lower than average and the shore type which is either rare or does not exist in their home county is valued higher. For example, people living in East-Virumaa have a relatively high preference (2.9) of the silty shore, which is scarce in that county. At the same time, the most typical shore type in that county, cliff shore, receives only 2.2 points on average. In Läänemaa, where the silty shore is one of the most typical shore types, it receives only 2.3 points on average. At the same time, the cliff shore, which is nearly absent in Läänemaa, got the highest rating, 2.7 in comparison with other shore types from the residents of Läänemaa.

4.3. Monetary Equivalent of Landscape Recreational Values

In the coastal landscape study (V) 75.3% of respondents were willing to pay something for at least one shore type. In Jägala waterfall study (VI) 60% of all the respondents were hypothetically willing to pay something; the sums were

between 0.06 and 1278 €. In the natterjack toad study (VII) altogether 88.3 percent of the respondents stated that they are willing to pay for the conservation of the natterjack toad and the willingness to pay (WTP) sums are between 0.1 and 320 Euros. The reasons for zero answers in all three studies can be divided into three main groups: 1) Low income and lack of financial means; 2) it is unethical to calculate the nature in monetary figures; 3) the state must deal with this issue, not citizens.

In the coastal study the overwhelmingly biggest average willingness-to-pay is for sandy shore (20.1 €) and the smallest for gravel shore (7.2 €). Willingness-to-pay for silty shore and for till shore is nearly equal (9.4 and 9.3 €, respectively). The second by willingness-to-pay is cliff shore (11.2 €), which is nearly half of sandy shore. The overwhelmingly biggest willingness-to-pay for preserving sandy shore in the natural condition is not surprising since sandy shore is preferred as a recreation area by most people irrespective of the sociometric indicators. Attitudes toward the cliff shore, which was second by willingness-to-pay, however, vary much more and the willingness-to-pay depends much more on sociometric indicators. Estonian shore types occur unequally, the total demand per 1 km of coastline is highest for cliff shore – 44 thousand euros, sandy shore is in the second position – 25 thousand euros. The demand per 1 km of silty shore and till shore is significantly smaller – 6 and 5 thousand euros respectively.

In Jägala waterfall study the monetary equivalent of the value of the Jägala waterfall with the natural flow of water as an environmental good is 10 million € annually. This study enables a comparison of the monetary equivalent of the non-market value of the Jägala Falls and the value from electricity production (i.e. compare the non-market economic benefit from the recreational use of the Jägala Falls as the natural value to direct economic benefit from electricity production). The planned capacity of the hydro-power plant at the Jägala Falls would be ca 1500 KW, annual operating time max 2000 hours and electricity purchase price approximately 0.1 € per kilowatt. Hence the power plant would produce 3 million kilowatts of electricity annually, with the total monetary value of 0.3 million €. According to the demand curve an estimated monetary equivalent of the Jägala Falls with the natural flow of water as an environmental good is 10 million € annually. It is nearly 35 times as big as the value of the waterfall for electricity production.

5. DISCUSSION

Valuable landscapes study (I) focused on five values: historical–cultural, identity, aesthetic recreational and natural (Palang *et al.* 2011). Responses brought forward only the locals' view on their home area, but seldom provided wider contexts. The mental spaces set their limits, and people live and act within those spaces. The local knowledge was plentiful to certain limits, beyond those people knew only the object that had been made famous by some or another sort of event – tourism activities etc.

People appreciated signs of permanent residence – old manor houses, farms, ancient hilltop strongholds. Only the Otepää area in the Valga County is a separate case, as it is the only area in the studied counties where scenery formed the major part of the identity. It is perhaps the richest rural area in Estonia with seasonal sports and tourism landscape, where visitors are frequent, and therefore strangers were not regarded as such a serious problem as e.g. in Saaremaa. Landscape was seen as a resource for recreation, generating income through tourism, and traditions and culture were in the background (but clearly present).

However, as different values were included into valuable landscape study, respondents prioritized more historical-cultural and identity values. Value ranking in this study was: aesthetics – cultural/historical – identity – nature – recreation. Correlation existed between involvement of stakeholders and the rank of identity values. Counties where local stakeholders were more involved in the study process identity values were more prioritized (Rehema 2008). Respondents mentioned mainly local objects as valuable landscapes; on the other hand, the landscape preference study (IV) of coastal landscapes highlighted clearly that the most preferred shores for recreation are the ones less represented in respondent's county of residence. These results were similar to previous studies indicating that unfamiliar landscapes are found more interesting for recreation (Purcell 1992) and the further one lives from a certain landscape, the less negative aspects one sees in it (Tyrväinen 2001).

The outcome of this valuable landscape research project was not to create new protected areas, but rather to establish rules and examples of good practice for further management, so that the outstanding values indicated during the project could be taken care of and sustained. In the second study (II) landscape values in protected areas were investigated. The respondents clearly agreed that local values should be protected by the national park authorities but several respondents did not agree with some of the national parks' restrictions. While nature conservation legislation seemed to be understandable, the cultural heritage concept was unclear to several respondents. Some locals were blaming national park authorities for not having a good understanding of what to protect. Problems were especially severe concerning built heritage, for instance traditional buildings that have changed architectural style throughout the centuries. Many locals disagreed with national park authorities about how new

buildings should be built and old buildings restored, architecture has changed throughout the time and the question is from which time the architecture is worth to be protected. Another problem was related to the cultural landscape, because several so-called wilderness areas had been cultivated land according to old maps, hence, the locals were confused about how they could be protected as wilderness if they were cultivated landscapes some hundred years ago.

Both studies presented that in the areas where people were aware of tourism benefits locals saw some threats from the tourists to landscape values, but landscape was seen as a resource for recreation, generating income through tourism and providing good possibilities for the future development.

The first study (I) was about what is valuable and what to protect. In the second study (II) the question how to protect values were raised. Open-ended questions helped to understand some ideas of the values and problems and the outcome of these kinds of methods can be used as an input for strategies and general planning. But for the more concrete decision making the vulnerability of the valued features of landscapes should be dealt with in both the specific valuable landscape and its vicinity in order to plan maintenance activities further and rank priorities (Palang *et al.* 2011). In the first study respondents expressed their opinions of what is valuable and what should be protected, in the second study respondents agreed that values of the national park should be protected, but many locals did not like the way it was done then. An interview with a local community representative is a good method to interact with local community before and after landscape conservation legislation and strategy is planned to find out some specific topics which experts might neglect. However, setting priorities for more concrete actions about those topics more efficient tools are needed to involve wider audiences.

Landscape preference studies were carried out in the field study (III) and by the photographs (IV). The field study in Paljassaare peninsula showed that respondents were surprisingly positive of the area's attractiveness and management level. This does not match well with previous studies, which have been done using photographs from urban green areas where respondents preferred green areas to be open and well managed (Kaplan and Kaplan 1989, Tyrväinen *et al.* 2003, Bjerke *et al.* 2006). Several studies show that even in rural areas visitors often preferred open landscapes and open forest to wild unmanaged nature (Ribe 1989, Gundersen & Frivold 2008). As several visitors said that there were enough crowded and manicured urban green spaces in Tallinn, it was good to have less people somewhere and even very dense vegetation, scrub, did not bother them.

The landscape preference study of coastal landscapes (IV) presented that most popular shores for the recreation among the respondents were sandy shores and the least preferred were the gravel shores. Cliff shores were pointed out as the Estonian identity landscape in the valuable landscape study (I) and in previous studies, but people who are more familiar with those landscapes see also negative aspects (like safety) in addition to the romantic bias. Similar

findings were reached concerning silty shores. Respondents living in counties without silty shores pointed out that reeds offer privacy, while respondents living close to silty shores pointed out that reeds disturbed their view of the sea.

Contingent valuation study (V) of Estonian coastal landscapes helped in bringing out more details about the values of Estonian shores. Most and least preferred shores were the same, but with other shores some remarkable differences occurred. Cliff shore had higher priority in the CVM study than in the preference study according to the mean and cliff shore had by far the highest willingness to pay per kilometre. The contingent valuation has its limitations because the respondents who did not present their monetary equivalent for the willingness to pay had to be neglected in summarizing the research results and it was impossible to identify their preferences. However, we do not know the reasons for not being willing to pay – if it was due to lack of money, because of not valuing the object, or just protest by people who consider economic development also important beside the naturalness. As landscape preference methodology allows us getting to know preferences of all the respondents, those two methods complement each other very well. In landscape preference study it was asked which landscape one prefers and it was a neutral question. In CVM one's willingness to pay for preserving the Estonian seashore in its natural condition was asked and this suggested preferring nature conservation to development but conflict situations tend to create protests.

Two other CVM studies (VI, VII) had very concrete scenarios and very concrete objects. The aggregate demand of the Estonian working-age population for the natterjack toad comprises approximately 10 million Euros annually which significantly exceeds the amount of costs required for the protection and restoration of the necessary habitats for the species, which was estimated to be about 35,000 Euros. It is remarkable that as much as 88 percent of the respondents expressed willingness to pay for preservation of the natterjack toad.

In Jägala waterfall study (VI) according to the demand curve an estimated monetary equivalent of the Jägala Falls with the natural flow of water as an environmental good was estimated to be 10 million € annually. It is nearly 35 times as big as the value of the waterfall for electricity production. Critics of the CVM studies doubted about the validity of that methodology, because some studies found differences between hypothetical willingness to pay and real willingness to pay (Loomis et al 1996, Murphy et al. 2005). Anyhow, if the difference is 35 times like in the case of Jägala waterfall, there should be no questions of the priorities.

Several authors report that it is common that open-ended CVM can produce a high percentage of zero responses in empirical settings (e.g. Mitchell and Carson 1998 and Boyle 2003). According to the Boyle (2003) zero responses occurred by two groups of respondents. The first relates to people who give a response of zero because they reject some component of the contingent valuation exercise; these are protest responses and it is presumed that these are

respondents who do not report their true values. Second relates to those people who truly hold values of \$0 for the item being valued. It is quite possible that any policy may not be utility increasing for some segment of the sampled population, and respondents need a way to indicate such a lack of value.

It was also obvious in current CVM studies that the higher was the conflict in the scenario, the lower was the amount of people who were willing to pay and bigger was the amount of zero responses. In the case of Jägala waterfall (VI) only 60% of the respondents were willing to pay. This was a scenario to pose obstacles to very concrete economic activity, although the economic benefits of that electricity production activity were very low, still many respondents who were not willing to pay expressed their clear attitude that “again some greens want to stop the progress and development”. Many people who were in the high-income category but were not willing to pay showed their protest this way. But due to very low economic benefits of the project the result was still very remarkable which shows that in those cases CVM is a useful tool. In the coastal landscape study (V) 75.3% of respondents were willing to pay something for at least one shore type. Here was nature conservation opposed with real estate development and the conflict was vaguer than in the Jägala waterfall study. Despite the frogs are not too pleasant for many people, the scenario of endangered species through meadows and pond restoration got the willingness to pay of 88.3 percent of the respondents.

Summarizing the particularities of different methods for assessment of landscape values, we can say that:

- interviews are good for general planning purposes to identify landscape values;
- landscape preference methodology makes one step further in prioritizing values and allows involve wider sample to the planning process;
- CVM and applications of monetary equivalent is a valuable tool for planning and decision making process in case of concrete conflicts.

6. CONCLUSIONS

There are several methodologies to assess the landscape values and each of them is good for different purposes. For decision making it is possible to identify as well as prioritize the values. Landscape values are not universal. Landscapes are valuable for different purposes and for different reasons. For example people's identity values can be different from recreational values. Open-ended interviews with local stakeholders are good for an overview and identifying landscape values. It is good method for discussion on local values with local communities and useful for general plans and strategies. For more specific issues, methods which give more details are needed.

Landscape preference methodology makes one step further in prioritizing values. It is important to investigate preferences for recreation and not only general preferences. This allows bringing out more details and making data better comparable. The vast majority of landscape preference studies are done using photographs as landscape stimuli, this allows applying wider sample than field studies. However, it is good when preference is not only based on photographs but more concrete field studies are involved because landscape perceptions can be different in the field and it can bring out more specific information for landscape recreational planning purposes.

The contingent valuation method allows for the making of non-market values comparable with market values and provides the most concrete comparisons. In principle all values can be attributed a monetary equivalent but the question is if any objects need to be prioritized this way. The CV method certainly assists in situations with conflicting values and helps in solving those value conflicts for decision-making processes. The main advantage posed by the use of CVM in a decision-making process is its ability to measure the benefits of values in different situations. CVM can also help at public decision making by better understanding the objects under valuation and individuals' preferences for this object. Acknowledging some imprecision of obtained measures, it may still be more dangerous to leave public decision making in the hands of politicians without inclusion of public opinion and the fact that monetary equivalent for non-market value can be 35 times higher than market value like in the Jägala waterfall study, which turns the CVM into a valuable tool for a decision-making process. In the words of Hanemann (1994): "when the public valuation is the object of measurement, a well-designed CV survey is one way of consulting the relevant experts, the public itself".

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SUMMARY IN ESTONIAN

Maastike rekreatiivsete väärtuste kujunemine ja hindamine

Väärtushinnangud on meie tänapäeva ühiskonnas kõneaineks järjest sagedamini. Otsustusprotsessid takerduvad tihti väärtuste konfliktidesse ning teravad diskussioonid leiavad aset nii klassikalises meedias kui sotsiaalmeedias. Ideaalis peaksid otsustusprotsessid olema väärtuspõhised. Otsustajatele heidetakse järjest enam ette, et see nii ei ole või on otsustajate väärtused lihtsalt valed. Kõigi teiste väärtuste kõrval on järjest teravamalt esile kerkinud ühiskonna tervislik seisund ja puhkevõimalused ning rekreatiivsete väärtuste tähtsus meie ühiskonna heolule. Sellest tulenevalt on oluline väärtusi võrrelda ning seada prioriteetidid otsustusprotsesside tõhustamiseks.

Maastike väärtusi on uurinud ja võrrelnud nii sotsiaalteadlased, maastikuteadlased kui majandusteadlased, kasutades erinevaid meetodeid ja lähenemisi. Arutelud erinevate meetodite eelistest ja puudustest on sageli jäänud valdkonnakeskseteks ning autori andmetel ulatuslikumad interdistsiplinaarsed võrdlused puuduvad.

Lähtudes eelnevast on doktoritöö eesmärgid järgmised:

- võrrelda erinevaid meetodeid maastike rekreatiivsete väärtuste hindamiseks;
- hinnata erinevate hindamismeetodite sobivust planeerimis- ja otsustusprotsessideks;
- analüüsida monetaarse ekvivalendi leidmise otstarbekust maastike rekreatiivsete väärtuste hindamisel.

Töö põhitulemused on esitatud lisas olevas seitsmes publikatsioonis.

Publikatsioonides I ja II on intervjuueeritud kohaliku kogukonna esindajaid. Intervjuueeriti kohalikke arvamusi liidreid ning inimesi, kellel on kogukonnatunnetus. Intervjuud võimaldasid lahti seletada tausta, kuidas inimeste väärtused ning väärtuste konfliktid tekivad ning kuidas need on rekreatsiooniga seotud. Maastike rekreatiivset väärtust hinnati kõrgelt. Paljud inimesed pidasid turismi arengut positiivseks (I). Rahvusparkides (II) hindasid kohalikud maastike väärtust kõrgelt ning ei kahelnud looduskaitse vajadustes, kuid mitmeid maastike kaitseks seatud piiranguid ei pidanud vastajad otstarbekaks. Mõnel pool nähti turistides ohtu loodusväärtustele, kuid samas aitas turistide huvi erinevate maastike vastu suurendada ka kohalike huvi ning muuta väärtushinnanguid (Matsalu linnutornid). Uuringutes käsitleti väärtusi valdavalt üldistatud vormis. Tulemused näitasid, et kohalikud töid esile eelkõige ajaloolisi ja identiteediväärtusi, eelistati kodulähedasi kohti. Samas näiteks rannikumaastike eelistuste uuringus (IV) tuli selgelt esile, et vastajad eelistasid puhkuseks maastikke väljaspool oma kodukohta.

Intervjuud kohaliku kogukonna seas, mis põhinevad lumepalli meetodil, on sobivad üldisemate planeeringute ja strateegiate koostamiseks, kuid võimaldavad harva jõuda konkreetsete lahendusteni.

Maastikueelistuste meetodit (III ja IV) on kasutatud valdavalt fotode põhjal eelistuste järjestamisel. Vaid mõned üksikud uuringud on teostatud maastikul. Fotode põhjal läbiviidud ja vahetult maastikul tehtud uurimustes on leitud teatud erinevusi. Enamik uuringuid kinnitavad, et linnade puhkealadel on eelistatud hooldatud nn. klassikalised pargimaastikud. Paljassaare puhkealal teostatud uuring (III) kinnitas vastupidist. Rahvas eelistas metsikut ja hooldamata puhkeala. Selliselt läbiviidud uuringu puuduseks on muidugi see, et küsitleti vaid inimesi, kes ala külastasid. Neid elanikke, kes ala ei külastanud, valimisse ei õnnestunud kaasata. Samas külastas enamik inimesi seda ala, kuna see oli lähim nende kodule, mis tähendab, et nad oleksid seda ala külastanud igal juhul. Siit võib oletada, et metsikud maastikud on fotodelt vaadates ebameeldivamad kui reaalselt külastades.

Fotode põhjal teostatavas eelistusjärjestuses saab küsida palju enamate inimeste arvamust kui maastikul teostatavates uuringutes (IV). Mõnikord jääb siiski see meetod liiga pinnapealseks ning tekib küsimus, kui hästi ikka vastajad fotol nähtavat maastikku reaalsuses ette kujutavad. Rannikumaastike uurimisel selgus, et vastajad eelistasid puhkuseks neid rannatüüpe, mis jäid väljapoole nende kodupiirkonda. Vastustest selgus ka, et mida vähem inimesed teatud rannatüüpi külastasid, seda vähem oskasid nad näha selle negatiivseid külgi.

Maastikueelistuste meetod võimaldab teha juba konkreetsemaid valikuid kui struktureerimata intervjuud kohaliku kogukonna seas. Siiski täiendab tingliku väärtustamise meetod (*contingent valuation method* CVM) maastikueelistusi oluliselt (V) tuues välja rohkem detaile ning võimaldades selgemaid järeldusi: missuguste suurusjärgude võrra maastikueelistused erinevad (V, VI). Puuduseks on tingliku väärtustamise meetodil see, et kui maksevalmidus on 0, siis on raske selgitada, kas vastajatel ei ole piisavalt rahalisi vahendeid või nad ei pea objekti väärtuslikuks. Sellele vaatamata on CVM igati sobiv konkreetsemate probleemide lahendamiseks.

Tingliku väärtustamise meetodi puhul jääb küsimuseks, kas hüpoteetiline maksevalmidus sarnaneb tegeliku maksevalmidusega. Jägala joa puhul tulid väärtushinnangud kontrastselt esile, kuna rekreatiivse väärtuse monetaarne ekvivalent oli 35 korda kõrgem elektritootmisest tulenevast rahalisest väärtusest ning juttuselg-kärnkonna puhul oli maksevalmidus kordades kõrgem tegelikest investeringuvajadustest liigi säilitamiseks vajalikele töödele.

Põhimõtteliselt on monetaarset ekvivalenti võimalik arvestada igale väärtusele. Suuremate ja üldisemate probleemide puhul ei ole see mõistlik, kuid konkreetsemate probleemide puhul on monetaarse ekvivalendi leidmine vajalikuks abivahendiks otsustusprotsessis.

Kõikidel doktoritöös olevatel meetoditel on omad eelised ja puudused ning universaalset meetodit ei ole, kuid antud uurimustöö võimaldas analüüsida erinevate meetodite sobivust erinevates kontekstides ning on heaks lähtekohaks järgnevale uuringutele.

PUBLICATIONS

CURRICULUM VITAE

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DISSERTATIONES GEOGRAPHICAE UNIVERSITATIS TARTUENSIS

1. **Вийви Руссак.** Солнечная радиация в Тыравере. Тарту, 1991.
2. **Urmás Peterson.** Studies on Reflectance Factor Dynamics of Forest Communities in Estonia. Tartu, 1993.
3. **Ülo Suursaar.** Soome lahe avaosa ja Eesti rannikumere vee kvaliteedi analüüs. Tartu, 1993.
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13. **Tiit Tammaru.** Linnastumine ja linnade kasv Eestis nõukogude aastatel. Tartu, 2001.
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