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DIVERSITY OF LANDSCAPE AESTHETICS IN RURAL, PERIURBAN AND URBAN ECOSYSTEMS

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Abstract. The article presents a research on aesthetical variety in landscapes. The aim of this study was to examine the current situation in different ecosystems by researching the aesthetical variety in three types of landscapes present in the territory of Latvia, namely, in rural, periurban and urban ecosystems. The research was carried out from 2010 to 2012. The ecosystems in four old watermills territories were explored in rural landscapes. The periurban landscapes were investigated according to four areas including ecosystems of private housing villages. Urban landscapes were explored by comparing the ecosystems of four public parks. According to the research approaches and based on previously developed criteria, the research reflected both diverse and similar characteristics of landscape aesthetics in different ecosystems.

Keywords: Latvian landscape, watermills, urban parks, private housing villages, assessing approaches of landscape aesthetics.

Introduction

Due to specific and various functions and landscape elements of different landscape types – urban, periurban or rural ecosystems, as well as due to the peculiarities of human perception, an understanding of landscape aesthetics or beauty of these ecosystems varies. The impact of globalization processes on landscapes is increasing (Reenberg, Primadahl 2009). Globalization processes connected to rapid expansion of cities – transnational migration of people, introduction of new technologies and materials, prevalence of urban life style over rural style (Antrop 2005) – threaten the existence of traditional aesthetical features of each given landscape type (Antrop *et al.* 2000; Bulcao *et al.* 2004; Swensen, Jerpasen 2008), and influence the transformation of overall human understanding of aesthetics.

The research on the landscape aesthetical variety in different ecosystems – rural, urban and periurban – has become a topical issue alongside to the need for mutual coordination and harmonization of various functions and resources in these ecosystems (Antrop 2006; Cadenasso, Pickett 2008). Therefore such aspects as ecological, technological and social, as well as different planning tools and approaches applied to different landscape types – urban, periurban or rural – should be taken into account in the planning process of aesthetics of a given area.

In order to better understand the diversity of landscape aesthetics, the aim of this study was to identify appropriate assessment approaches of landscape aesthetics applicable to different landscape types, examine and compare the current situation in different ecosystems by making research on the aesthetical variety in each type of landscape: rural, periurban and urban ecosystems.

Within the framework of the research, the following themes have been analyzed: the role of human perception in understanding of landscape aesthetics in different ecosystems; assessment approaches of landscape aesthetics; and landscape aesthetical variety in rural, urban and periurban ecosystems.

Human Perception and Aesthetics

The word 'aesthetics' is connected to the concept of beauty. Aesthetic is defined as the study of sensory or sensory-emotional values, sometimes called 'judgments' of sentiments, passions, prevailing morals, tastes, but the judgment of taste is essentially subjective (Mark, Marek 2012; Zangwill 2010; Kundziņš 2004). Landscape may constitute a discourse through which different social groups historically framed themselves and their relations to other human groups (Cosgrove 1984). Two interpretations of aesthetics could be drawn – that of a hidden aesthetics stored in human subconscious from the times of cognition of nature (Bell *et al.* 2007; Vining *et al.* 2008), and direct aesthetics, which alongside with art and science reflect the philosophy, traditions, lifestyles, consequences of most important political and economic events determined by traditions and events of a specific period of time (Kundziņš 2004).

The cognition of hidden or primeval aesthetics facilitated introduction of compositional techniques, which, starting with building traditions of ancient cultures, are widely used till nowadays in different fields of art, architecture, design and other fields (Ode 2003; Kundziņš 2004). Today, there is still a need to understand that design of modern landscape has developed on the foundation of rules of nature (Kundziņš 2004).

The peculiarity of human perception plays an important role in interpretation and evaluation of aesthetics and other aspects of landscape. Perception is a person's individual impression and cognition of the surrounding landscape (Melluma, Leinerte 1992; Ellis, Ficek 2001); it is formed by visual, sensory and cognitive perception, which by interacting interprets what we have seen and heard in our consciousness. Cognitive perception can be described as unconscious perception (Kundziņš 2004), because it is connected to each individual's previous knowledge, experience and level of knowledge, and therefore, with the capability to analyze and understand the processes (Vining *et al.* 2008).

It is possible to state that the aesthetical interpretation of a landscape is explained by the factors, which constitute the landscape aesthetics: understanding of beauty determined by human cognitive perception; landscape physical appearance determined by visual perception; sensed aesthetics formed by human sensory perception – through smell, sound, taste and touch; and time, where change, development or transformations take place (Fig. 1).

Historically and, to some extent, today, development of science and technology plays an important role in creation of new landscape aesthetical forms. The most vivid example is the Baroque French gardens of the 17th century, which, alongside with the trends of science and philosophy, reflected a human being's desire to subdue nature to mathematical principles. Urbanization and industrialization brought the regularity to the landscape in a new dimension. Digitalization has also influenced the interpretation of landscape aesthetics in obtaining a new landscape form – virtual landscape. Nowadays landscape architects, planners and designers need to understand how virtual reality is perceived and decide how close that virtual reality is connected to real landscapes, and how proficient the evaluation will be (Palmer 2003).

At the human perception level, humans consciously create and change the landscape space around them, thus directly or indirectly influencing the ecological processes, as well as technological and social aspects of the same. Thus, it is possible to argue that each definite landscape type has its own aesthetical criteria and forms developed by interaction between nature processes and human actions. For example, a landscape that seems beautiful and fit to the rural ecosystem could be understood as inappropriate for urban or periurban ecosystems.

Rural landscape designer seeks to understand and embody the unique characteristics of natural or cultural landscapes, where the effect of urbanization is perceived

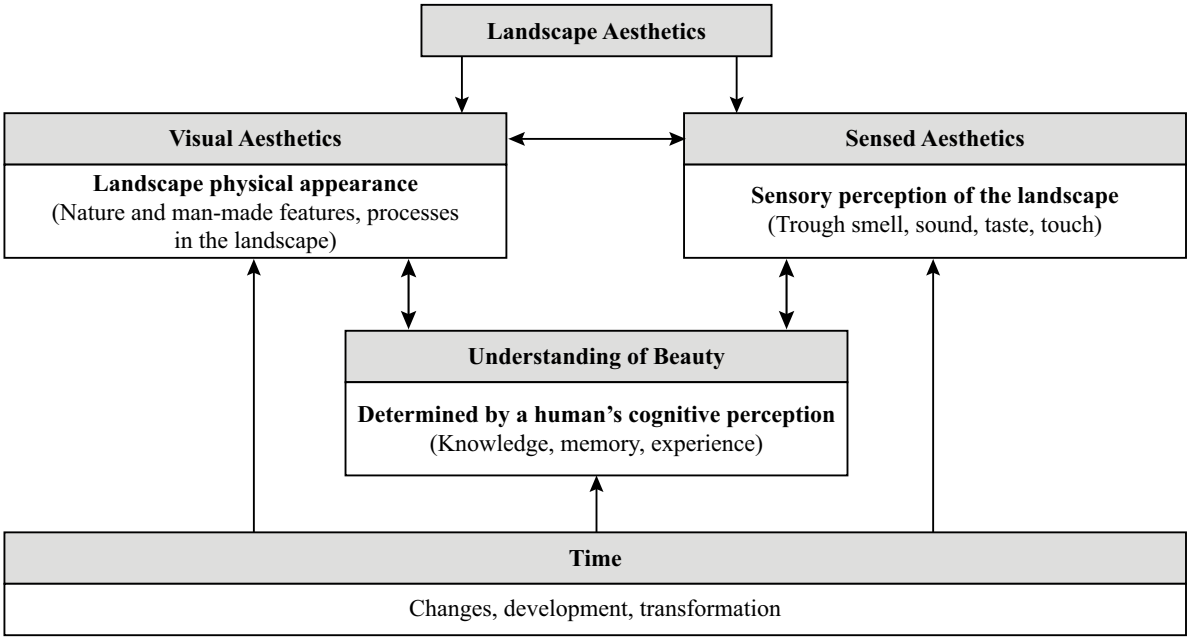

Fig. 1. Formation of landscape aesthetics through interaction of visual aesthetics, sensed aesthetics, understanding of beauty and time. *Source:* designed by D. Zigmunde

more as a result of elements located in rural landscape, whereas the urban landscape designer seeks to develop a spatial arrangement, appearance and functionality of buildings and infrastructure, to shape the urban landscape. At the same time, the rural and urban design have many similarities; for example, the aim to enhance the quality of life (Thorbeck 2010).

Approaches to the Research of Lands1cape Aesthetics

In landscape analysis usually the foll2owing three categories of methods are applied:

1) Descriptive inventories;
2) Public preference models;
3) Quantitative holistic techniques

(The James … 2010; Arthur *et al.* 1997).

In descriptive inventories, the methods are mostly applied by experts in an objective manner; in public preference models, the methods are often applied using questionnaires; and quantitative holistic techniques are a mixture of subjective and objective methods, and they include psychophysical and surrogate component models (The James … 2010).

The Public preference (subjective) approach is based on people's psychology and philosophical approach in the evaluation of landscape aesthetics (Melluma, Leinerte 1992; Ellis, Ficek 2001; Ode 2003; Zigmunde 2006). While applying this approach, people disclose their reactions according to questions asked or situations presented in different questionnaires. In this approach, two groups of subjective perception criteria can be distinguished as it is used for evaluation of landscape aesthetics. The first group of criteria is the observer's personal features influencing the evaluation of the aesthetic quality of the landscape (*e. g.,* mentality, gender, age, profession, previous experience, social status, place of residence, a local inhabitant/newcomer, and even the person's emotional mood at the moment of perception) (Melluma, Leinerte 1992; Daniel 2001; Ellis, Ficek 2001). The second group is formed by the specific criteria developed according to the main aim of the questionnaire.

Experts' (objective) approach characterizes the landscape aesthetic aspects by analyzing the visual structure through the sum of theories and conclusions used in composition and planning (Ode 2003; Briņķis, Buka 2008). Within the framework of this approach, the physical elements of landscape; *e. g.,* forms of relief, bodies of water, trees, *etc.* are simplified, perceived and analyzed as geometric objects having a certain form, line, texture, color and other properties (Antrop *et al.* 2000; Ode 2003). To characterize their mutual interactions such terms as diversity, harmony, rhythm, *etc.* are frequently used (Zigmunde 2006). 'The term 'landscape diversity' also includes visual and aesthetical variety. Thus, a measure of visual diversity (which should really be called 'variety') is often associated with land use and ecological parameters. These criteria, and other similar criteria, such as harmony, order, and coherence, can be classified using parameters in greater details on the characterization of landscapes, such as pattern, texture, feature (Cassatella 2011).

Within the framework of design approach, the criteria of aesthetic landscape evaluation are divided into two groups. The criteria in the first group pertain to the pattern of landscape, which shows the arrangement of landscape elements and mutual influences. These criteria could be divided into three subgroups: presence of landscape elements and typicality of location; qualities of elements; and mutual interaction forms of landscape elements (Daniel 2001; Ode 2003; Hildago *et al.* 2006; Gobster *et al.* 2007). Such perceptual values as scenic quality, tranquility, wildness, and representativeness also apply (Cassatella 2011; Swanwick 2002).

The second group of criteria characterizes the scenery composition (Ribe 2005). For this characterization the criteria of accessibility and visibility are used. These are evaluated by the features that indicate how a landscape or some special element in it stands out against the common background and according to the number of observation points, from which it can be viewed (Nikodemus 2001). Other criteria are defined in the EIA manual of the Italian Association of Environmental Analyst (Colombo, Malcevschi 1999), where perceptual indicators are classified in three areas: generic perceptual; perceptual from a single point of view; and perceptual in relation to new interventions (Cassatella 2011). Then, the next criteria are the compositional structure of the scenery, and expressiveness of the visible landscape (Palmer, Hofmann 2001).

For successful research and planning of a landscape, both methods of the quantitative holistic techniques should be used simultaneously, since only by combination of both approaches it is possible to reach the optimal result that could satisfy human needs for emotional and logical understanding of appearance of surrounding landscape (Lange, Bishop 2001; Schmid 2001; Palmer 2003).

In order to characterize aesthetics of a landscape, the criteria of subjective or objective approaches should be analyzed depending on different levels of planning – regional, local or more detailed elements. Thus, it is possible to determine the problematic levels of planning and problem-causing factors, also to predict possible solutions, as each level has its own planning tools.

Aesthetical Variety of Different Landscape Types

The present research was carried out on an aesthetical variety of landscapes in rural, urban and periurban ecosystems. For example, old watermill territories in rural landscapes, private housing areas in the periurban areas, and city green areas were chosen. Several indicator techniques were studied according to the specific types of landscapes: natural, agricultural, urban, and periurban (Cassatella 2011).

Rural Ecosystems and Watermill Territories

The development of watermill territories was closely related to development of technologies and construction of small-scale hydroelectric power plants (HPPs). Small-scale HPPs were constructed in several types of locations: in newly build up territories on rivers; in territories where the old infrastructures of watermills were left (without the remaining main watermill building); and inside the buildings of historical watermills or next to them. Many former watermill territories still exist without any small-scale HPP disturbance, but the real aesthetical, technical or other condition of them is not very clear.

There is no absolutely credible historical data, only some information exist that watermill territories in Latvia were developed from the start of the 13th century (Teivens 1985). The territories of watermills or small-scale HPPs have been recently researched by different scholars with the aim to display the historical review (Teivens 1985; Siļķe 2008), and more than 400 watermill territories in Latvia have been identified according to the maps from the period of 1920–1937 (Ģeodēzijas). The ecological reviews have been made and impact of small-scale hydroelectric power plants on the fishery have been also researched (Mazo … 2004; Vides Ministrija 2009), as well as the possibilities for using hydroelectric power from Latvian rivers by reviewing more than 500 possible territories for electricity production (Magelis 1994), and this is a high number in comparison to the existing low number of approximately 145 working small-scale HPPs in Latvia (Graudiņš 2012). These country-side watermill sites have often been described as places of special beauty (Teivens 1985), and several research projects on these areas from a landscape architect's point of view have been performed by Lazdāne (2011 and 2012). The landscape aesthetic value in these territories was influenced by several factors – the economic and political impact and globalization processes. The main landscape structure elements in these territories are the water reservoir, river, historical buildings of watermill or small-scale HPP, vegetation and relief.

Urban Ecosystems and Urban Parks

Most of the parks in urban areas of Latvia are landscape parks with scenic design, separate groups of trees and wide open glades. A park is a spatial limited area, where greenery, paths, small garden architecture, sculptural works and recreation grounds are integrated into a natural area (Briņķis, Buka 2006). Urban parks in Latvia can be divided into four groups: 1) Completely renewed parks or historically formed urban parks with recent improvements; 2) parks of the Soviet design and infrastructure replaced with all new and modern elements; 3) parks of the Soviet design with outdated elements of low aesthetical quality; and 4) abandoned parks or areas, which are left for unattended nature process without any improvements. Landscape aesthetical quality of parks is influenced by the current situation in planning, quality of man-made elements (ground cover, benches, lighting, water features, *etc.*), landscape management, periodic maintenance of landscape (Nassaurer 1995), landscape scenery, and particularity of the place (Ode 2003).

Periurban Ecosystems and Private Housing Villages

At the beginning of the 21st century, there was a seemingly rapid improvement of the economic situation in Latvia stimulated by different financial opportunities. Due to this, the middle class, previously deprived of any possibilities to realize its dreams, started purchasing homes, cars and other household items. As a result of these changes, a new landscape structure started to develop close to Latvia's larger cities, and it was characterized by haphazardly located housing construction sites, new housing settlements or villages. It was a new kind of landscape development in Latvian periurban areas (Zigmunde 2010a). In the previous research (Zigmunde 2010b), 32 territories of the new private housing settlements were evaluated in a more detailed way within a range of different planning regions of Latvia – Zemgale, Vidzeme, Kurzeme and Riga, but mainly in the territories around Riga. The region around Riga can be characterized by dense housing developments, comparatively small building plots and a varying number of building plots in the territories based on the demand for property in the vicinity of Riga and comparatively high price of land. The territories developed due to the beauty of nature are mainly located in Vidzeme and Kurzeme regions and can be characterized by larger variations in building plots, lower density of building developments and smaller number of building plots in the territories. The landscape quality of private housing villages in periurban areas varies. According to the previous research carried out in 2010

(Zigmunde 2010b), the high quality areas are less (19%) than middle and low quality (81%) ones, and they have a well-developed infrastructure, buildings and greenery system. There are also public spaces (parks, squares, meeting places such as shops, cafés *etc.*) separate from private plots, and good connections to the city, schools, jobs, *etc.*

Nevertheless, very often new private housing settlements in the periurban areas are monotonous in their uniformity and mono-functional without their own identity and connections with the surrounding rural or urban landscapes. Thus, it is important to identify main characteristics of a landscape and its elements, which could enhance an aesthetical and other qualities of definite periurban area, and develop the planning principles based on the landscape peculiarities of a given region and the distance to the nearest urban centre or city.

Materials and Methods

This research was carried out within the period of 2010–2012. Landscape objects of rural, urban and periurban ecosystems were chosen to make a comparative study for the differences of landscape aesthetics and to identify the most suitable assessment approach for a definite landscape type.

Selecting Representatives

To compare the landscape aesthetics of different landscape types, several representatives of these landscapes were selected according to their size and functionality.

To study the landscapes of 'rural ecosystems', four watermill territories in rural areas were chosen. The location of these territories was in different regions of Latvia (Fig. 2). The main criterion for selecting these territories was the development of newly constructed buildings after the independence of Latvia (1990), with the existence of water reservoir and public access to the territory and buildings. These territories were: The Obiteli watermill (in the Latgale region), Juku watermill (in the Kurzeme region), Igate watermill (in the Vidzeme region), and Nitaure watermill (in the Vidzeme region). The visible area of the selected territories varied from three to nine hectare, but the ownership of lands in each territory could belong to more than one private owner.

Parks selected for the 'urban ecosystem' landscape-type assessment varied in their areas from 4,0 ha to 2,7 ha. Two parks were located in Jelgava and two in Valmiera (Figs 2, 3).

These selected areas represented each of the four urban park groups. The Uzvaras Park located in Jelgava was constructed in 2007. It has an up-to-date design and new small architecture forms. The Park of Jelgava Palace represented the second group with old design and retained path system, as the design of this park was changed in 1961 for the last time. The park was regularly fitted with new man-made elements. The Vecpuisu Park in Valmiera had the Soviet period planning design and low quality of small architecture forms. It had a need for a reconstruction and improvement. The last selected park – the Janparks – was located in the periphery of Valmiera, and it was abandoned without regular maintenance and improvement. The park was natural, and it had the most variety of indigenous plant species and wildlife, compared to other selected parks.

To conduct the assessment of 'periurban ecosystem' landscape type, private housing settlements were chosen, which were characterized by higher landscape quality in the previous research (Zigmunde 2010b), and were selected for the research of landscape aesthetics of periurban eco-

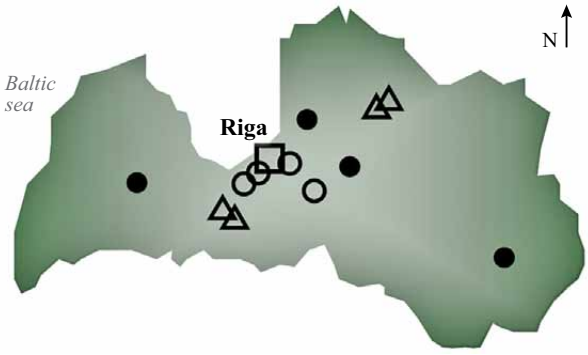

Fig. 2. The locations of researched territories on schematic map of Latvia; Legend: ● – rural ecosystems; ○ – periurban ecosystems; ▲ – urban ecosystems; □ – Capital of Latvia. *Source:* Designed by L. Lazdāne

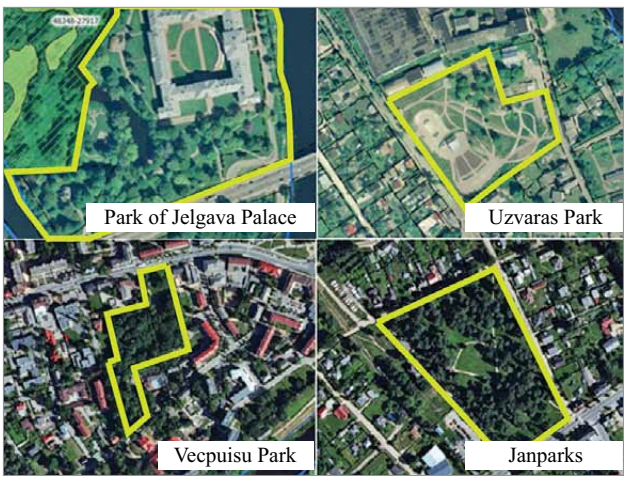

Fig. 3. Selected urban green spaces. *Source:* designed by M. Jankevica on the maps of Rural Support Service

Table 1. Characteristics of the selected private housing settlements. *Source:* Designed by D. Zigmunde, photos from the author's private archive

Photo of the place				
Location / year of formation	Beberi village, Riga district/ 2006	Eco-village Trenči, Riga district/ 2007	Village Juglasciems, Riga district/ 2008	Village Zaļās salas, Ogre district/ 2007
Total area / average area of plots / number of plots	300000 m^2/ 1000 m^2/ 128	33000 m^2/ 1300 m^2/ 15	677000 m^2/ 2500 m^2/ 280	70000 m^2/ 2500 m^2/ 29
Characteristics of settlement landscape	Partly developed multifunctional area; different types of houses, but in one style; apart from its plots, it has a separate public area park	Eco-style village with solar panels and green roofs system; two types of wooden houses in similar style	Partly developed multifunctional area with good connections to Riga; developed on degraded land; two types of houses with similar design; new greenery system	Multifunctional area close to the town Ogre; definite style for all village houses; existing old oaks are integrated into the settlement landscape plan

systems. These areas had a multifunctional character, well developed compositional landscape design and construction with high level of development and improvement.

This selection opened up wider opportunities to identify more features forming the aesthetical value of the definite area. Thus, the selected settlements were the following: Beberi, eco-village Trenči, Juglasciems in the Riga district, and Zaļās salas near the town of Ogre. Their characteristics are presented in Table 1.

Methods

The methods used for landscape assessment in territories of selected watermills in 'rural ecosystems' were aesthetic landscape assessment using scenic landscape value indicators with the group of assessment parameters: quality; acknowledgements; integrity; and functionality. In development of this assessment method, experiences by several researchers were used (Scazzosi, Di Bene 2006; Cassatella 2011; United … 1992; Nikodemus 2001; Environment … 2007).

The methods used for comparison of parks of 'urban ecosystems' were developed by taking a landscape inventory within the framework of landscape description (Vides Ministrija 2000) and landscape scenery analysis. The inventory inspection matrix contained sections of identified plantings, condition of man-made elements, architectural coherence, landscape management and landscape components. Photo fixation of selected parks in areas with significant viewpoints was made for landscape scenery analysis. The landscape aesthetics assessment matrix (Jankevica 2012) consisted of the following criteria: order, quality of man-made elements, visible human intentions, particularities, uses of foreign species and harmony with architecture.

In the research of landscape aesthetics of 'periurban ecosystems', a method of surveying *insitu* and comparative evaluation matrix of features forming the landscape aesthetics, as well as the method of photography were used. In the course of the survey, separate elements of landscape, as well as the total image and connection with the surrounding landscape were characterized. In order to reduce the subjective influence on the research results, it was necessary to develop a comparative evaluation matrix (Table 3), based on scientific conclusions and summary of theories, where an optimal value was found for each criterion. For characterization of different aspects of landscape aesthetics, the evaluation criteria were structured depending on different levels of planning. On the basis of reference values of the landscape evaluation criteria, aesthetics is the principle of gradualness. Observing this principle, the elements characteristic to a city and their compositional setting should be gradually replaced by those corresponding to a rural landscape (Gallent *et al.* 2006; Steiner, Butler 2007). The further the territory is located from the administrative borders of the city, the more it approximates the basic aesthetic principles of the rural landscape. The principle of gradualness pertains to a landscape in all three dimensions – horizontal, vertical and spatial. In the evaluation stage, the comparison of values shown in the comparative matrix with the obtained data determined their degree of correspondence

ce to the data of the matrix in three ways – corresponds, partially corresponds or does not correspond. According to the data obtained from the comparison, the aesthetical variety of a given area was analyzed, and features forming landscape aesthetics were identified.

Results and Discussions

Rural Ecosystems

The results of watermill landscape assessment by scenic landscape parameters (Scazzosi, Di Bene 2006; Cassatella 2011; United … 1992; Nikodemus 2001; Environment … 2007) show the diversity of landscape elements in each territory included and examined.

1. Quality.

1.1. Scenic quality (scale: openness; diversity; harmony; movement; texture; and color). The Obiteli watermill has a small-scale landscape; circumscribed by forests; various; in some parts disharmonious; peaceful movement; organized texture; and slightly colored architecture. The Juku watermill has a vast-scale landscape; circumscribed by forests; various; in some parts disharmonious; peaceful movement; organized texture; and colored architecture. The Igate watermill has a small-scale landscape; exhibited; complex; harmonious; live movement; organized texture; monochromic watermill architecture, but colored surrounded buildings (the Igate Palace and ancillary buildings of the palace). The Nitaure watermill contains a small-scale landscape; half exhibited and half circumscribed by forests; complex; harmonious; peaceful movement; organized texture; and slightly colored architecture.

1.2. Richness of visual stimuli. The Obiteli watermill is an expressive landscape, especially facing the water reservoir and at the entrance to the main building. There are several closed, narrow landscape spaces and medium-wide landscape spaces in this area, which are providing the diversity of the landscape experience. The Juku watermill is an interesting landscape, expressive for the design of architecture of the watermill building and composition of water reservoir with the surrounding terrain and vegetation, which is arranged at the centre of composition. However, the lack of diverse landscape spaces shapes the character of sparse landscape. The Igate watermill is an expressive and richly designed landscape that dates back to the 19th century. The area contains diverse landscape spaces in composition with building infrastructure, providing the views from and to the area. The Nitaure watermill is expressive in its landscape views to and from the area, has a richly designed front view to the main building area, the composition of terrain, vegetation, historical and modern architecture and water features. The several diverse landscape spaces are created with individual dominance of landscape elements.

1.3. Imageability. The Obiteli watermill – by the landscape experienced, the possibility is to remember the views of diversity, open space landscapes and colorful richness of the vegetation in autumn. The Juku watermill – by the landscape experienced, there is a possibility to remember the wide open space on the landscape surrounded by forests in composition with the water reservoir, terrain and the diverse architectural styles in the area. The Igate watermill – by the landscape experienced, there is a possibility to remember the character of the landscape and architectural design, and the contrast of building materials used for the palace and the watermill building. The views to watermill from the palace or from the watermill to the palace, and to the newly constructed church outside the territory have a high possibility to be remembered. The Nitaure watermill – by the landscape experienced, the possibility is to remember the first view to the main watermill building and view from it to the water reservoir, terrain, the composition of water reservoir, isle with a tree and the bell-tower of the church.

1.4. Social – presence of visual and historically consolidated scenes. In case of the Obiteli watermill, it exists in the design of the main building, dam of the water reservoir and water reservoir. At the Juku watermill, it can be found in the design of the main building and water reservoir and the design of newly constructed camp site buildings. At the Igate watermill, it exists in the design of the buildings, water reservoir, composition of the park and wooden water wheel exhibited outside the watermill building. In case of the Nitaure watermill, it is found in the design of the buildings, water reservoir, composition of the landscape elements and vistas.

1.5. Acknowledgements and integrity. The Obiteli watermill: in part, the decorative building materials for the watermill building (stone) are preserved. Also, several old and thick crown trees and forest, and the open water territories are preserved. The Juku watermill: in part, the watermill building is preserved. Also, several old and thick crown trees and forest, and the open water territories are preserved. The Igate watermill: decorative building materials of the main watermill building (wood) and of the palace building (plastering) are preserved. Also, many old and thick crown trees and the open water territories are preserved. The Nitaure watermill: in part, the decorative building materials of the watermill building (stone) are preserved. Also, several old and thick crown trees, the open water territories, the view to the church bell tower are preserved.

1.6. Rarity – landscape structural elements, which in local visible landscape area are unique, distinct and have important value for cultural and aesthetical pleasure. The Obiteli watermill has such landscape elements as: a river, water reservoir, historical location of the watermill building and bridge over the dam. The Juku watermill has the following landscape elements: a river, water reservoir, historical location and design of the watermill building. The Igate watermill has the following landscape elements: water reservoir, historical location and design of the watermill and palace buildings, and trees in the park. The Nitaure watermill has such landscape elements as: a water reservoir, historical location of the watermill building, historical church design and the location outside the territory.

2. Criticality – degradation (loss, damage made to the natural resources, damage of cultural, historical, visual, morphological and testimonial character). The Obiteli watermill suffers from the loss of historically authentic landscape space, scale and architecture, and the landscape in some parts is cluttered with structures of different use (sports facilities, recreational equipment, and household buildings). The Juku watermill suffers from the loss of historically authentic landscape space, scale and architecture. In one landscape space, it is possible to observe a mixture of architectural styles, and vast territories of low grasslands have an impact on the limits of biological diversity. The Igate watermill suffers from the loss of historically authentic landscape space and architecture of the watermills, the presence of too colorful canopy in front of the watermill building entrance part, and the car parking spaces are located too close to the watermill building on the territory entrance side, and they contrast with the historical design of the watermill's architecture, too much of industrial design enclosure of the territory is used, which contrasts with the historical landscape design, and the relatively wide territories of low grasslands have limited the biological diversity. The Nitaure watermill suffers from the loss of historically authentic landscape space, the presence of too industrial style canopy in the backyard of the watermill building (on the view to water reservoir), and the parking spaces for cars prevent from convincing design solutions.

3. Functionality. The territory of the Obiteli watermill is used for tourism, a guest house is situated in the watermill building, and it is the only building used for such purpose. The watermill territory is located in the Rāzna National Park, which has a status of nationally protected area. The territory and buildings in the Juku watermill perform the main functions of tourism objects, and there are several buildings in the territory used for tourism and recreational needs. The territory and buildings in the Igate watermill also perform the main functions of tourism objects, and there are several buildings in the territory, which are used for tourism and recreational needs. A restaurant is located in the watermill building and the palace building hosts a hotel. The territory and buildings in the Nitaure watermill perform the main functions of tourism objects, and so are a few buildings in the territory. The main functions of the watermill building are of a guest house and restaurant.

The results show that the color in the landscapes plays an important role, and in the assessment of the 'scenic quality', all territories have been evaluated as 'colourful'. Buildings in rural landscape should be designed to meet the site's overall visual management objective: 1) a building should not be evident; 2) a building may be evident, but should blend in, and not be prominent in the landscape; 3) buildings may comprise some prominent features that contrast with their visual landscape setting (Environment… 2007). A few principles apply to buildings that have to fit in the landscape. In rural landscapes, building materials for buildings should blend in smoothly with the natural colors and textures of the landscape (Environment… 2007). The results of this research show that the landscapes in question have both, the color in architecture, which is not evident (the Igate and Nitaure watermills buildings), and the color in contrast with the landscape setting (the Juku watermill and Igate palace near the Igate watermill building). Bright, cream or white colors should be avoided as they usually draw attention in rural landscapes by producing strong visual contrast (Environment… 2007). Nevertheless, this principle is ignored at the Juku watermill, as several buildings in its landscape are of bright or white colors. In order to improve the composition of buildings or structures in rural landscapes as far as their architecture is concerned, they should be of similar materials, colors and style to the main house, because structures have less impact if clustered together (Environment… 2007).

Speaking of the parameter of landscape 'functionality', Nikodemus (2001) states that the landscapes used for residence, tourism and/or recreation purposes have a better potential for higher value. The results of the researched watermill landscapes show that the alternate possible functional use of all territories is for tourism. The main buildings are located in the place of the ancient watermill building, and they have several changes in architecture when compared to the original. In the Obiteli, Juku and Nitaure watermills, some parts of old architecture have been used in newly constructed architecture, but in case of Igate watermill, it is not clear, which part is the original one and which has been newly developed, and thus, there is a need for further research.

The results from landscape inventory showed that the biggest variety of plants was found in the Park of Jelgava Palace, as 51 different trees, shrubs and perennials were identified there. In comparison, only 27 plant species in the Uzvaras Park were observed, 24 in the Vecpuisu Park and mere 22 in the Janparks. Also, 10 rare in Latvia plant species were found in the Park of Jelgava Palace. Exotic species improve the aesthetical quality of green spaces. Historically, this was a method to create a picturesque and beautiful landscape.

The highest aesthetical quality of man-made elements (*e. g.,* different cobblestone ground covers, benches, and amphitheatres) was found in the Uzvaras Park due to its recent reconstruction. Also, the quality of elements in the Park of Jelgava Palace (*e. g.,* cobblestone ground covers, old styled lanterns, *etc.*) was high, and over the years it has been regarded the most structured park in the city of Jelgava. By contrast, there are many broken-down and inappropriate elements in the Vecpuisu Park – concrete steps, asphalt surfacing, benches and lighting fixtures. Finally, the quality of man-made elements found in the Janparks was low (too few benches, waste bins, *etc.*).

The Park of Jelgava Palace is located around the Jelgava Palace, which by itself is a significant Baroque architecture heritage site. The Villa Medem is next to the Uzvaras Park (Fig. 4); unfortunately, this historical building has to be reconstructed, and the park's design is not in accordance with the Classicist estate. The Vecpuisu Park is located near the multi-storey residential areas and low-rise public buildings. The results from the landscape scenery analysis showed that the Soviet style multi-storey buildings provide negative views from the park to the surrounding sites. The Janparks is located far from the city centre, and it is enclosed by private residential areas.

The results of research of the landscape management showed that three green areas were regularly maintained (the Uzvaras Park, the Park of Jelgava Palace and the Vecpuisu Park). There were neatly mown lawns, trimmed bushes and designed flowerbeds. The Janparks was left for uncontrolled natural processes, and tall grass, no flowerbeds and established presence of wildlife were found there.

Three parks were shaped by plastic lines of paths and greenery. The Vecpuisu Park had linear paths according to the main flows of migration of inhabitants. The landscape space was formed by groups of large trees and low shrubs. There were a few separately standing trees for embellished space. The Park of Jelgava Palace, the Vecpuisu Park and the Janparks had limited and partly opened views due to a few clusters of large trees. After the reconstruction, only one group of old trees was left at the Uzvaras Park. This park was made wide open and highly visible.

The Park of Jelgava Palace had the highest aesthetical quality because it was historical and had a variety of different plants and a regular maintenance schedule (Table 2). The Uzvaras Park had the highest quality of man-made elements due to the recent improvements. In this assessment the Vecpuisu Park had a slightly above average rating, but it lacked the reconstruction and diversity of plants. On the other hand, the Janparks had the lowest aesthetical quality; nevertheless, it had the highest ecological quality in its landscape.

Fig. 4. View to Villa Medem from the Uzvaras Park in Jelgava. *Source:* M. Jankevica's private archive, 2012

Table 2. Assessment of landscape aesthetics

	Order, regularity	Quality of man-made elements	Visible human intention	Particularity	Use of outlandish species	Accordance with architecture	Average
Uzvaras Park	4	5	5	3	4	1	3.7
Park of Jelgava Palace	4	3	5	5	5	3	4.2
Vecpuisu Park	3	2	3	3	2	2	2.5
Janparks	1	3	1	2	1	2	1.7

Source: Designed by M. Jankevica

Periurban Ecosystems

The results obtained from the research of landscape aesthetical variety in periurban ecosystems are shown in the comparative evaluation matrix (Table 3). The criteria with higher value were identified as the features promoting aesthetical variety of the definite area. A summary of these criteria has shown that the aesthetical qualities of landscape elements connected with color, texture, contour and shape of the element had to be treated as the aesthetical variety promoting factors at the element (detailed) level of planning. It is based on the proper use of the ground tones (typical in Latvia) in the architecture of buildings, as well as integration of existing nature elements into the landscape of the private housing settlement.

At the local level of planning (or inside the structure of the territory), the results characterizing the mutual accordance and harmony of landscape elements, have shown higher values. This suggested that the high quality design and planning approach of the analyzed areas was an important aspect of enhancement of the aesthetical quality

Table 3. Comparative evaluation matrix of landscape aesthetics of periurban ecosystems. *Source:* Designed by D. Zigmunde

Planning level	Evaluation criteria of features which are forming landscape aesthetics	An optimal value based on scientific conclusions and summary of theories*	A degree of correspondence to the optimal value**			
			Beberi village	Eco-village Trenči	Village Juglasciems	Village Zaļās salas
Element level of planning (details)	*Qualities of the element* typicality of location	nature and artificial elements characteristic for the definite periurban area	**3**	2	**3**	**3**
	shape, configuration	shape of landscape elements depending on the distance to the urban centre or city (from partly regular on the edge of the city to natural close to rural areas)	**3**	2	**3**	2
	area, size	area and size of plots depending on the distance to the urban centre or city (from small to large)	**3**	**3**	**3**	2
	density, intensity	density of building or greenery depending on the distance to the urban centre or city (from rare to dense)	**3**	1	**3**	**3**
	color, texture	color, texture of nature and artificial elements characteristic for the region or Latvian nature	**3**	**3**	**3**	**3**
Local (place) level of planning	*Inside structure of the territory* mutual location of elements, composition	multifunctional area with well-developed infrastructure and contemporary landscape design	**3**	2	2	**3**
	mutual balance of elements, proportion	natural or artificial elements of the area are mutually proportional or balanced in their size	**3**	**3**	2	2
	mutual accordance and harmony of elements	natural or artificial elements of the area are mutually balanced in their design, shape and other qualities according to the type of the surrounding landscape	**3**	**3**	**3**	2
	diversity	definite landscape have high diversity of landscape elements, as well as different functional zones	**3**	**3**	**3**	1
	qualities of the scenery	the area is visible from at least 5 view points, closed or open views depending of the type of the surrounding landscape	**3**	1	**3**	**3**
	accessibility	there is free access to the area	**3**	2	1	2
Regional level of planning	*Spatial interaction with the surrounding landscape* landscape pattern	design of landscape pattern depending on the distance to the urban centre or city (from organized, regular on the edge to naturally shaped and with regional characteristics close to rural areas)	2	2	2	1
	continuity of landscape pattern, integrity	landscape pattern of the area continues the pattern of the surrounding landscape; area is integrated into the surrounding landscape	2	**3**	1	2
	accordance with region, landscape type	according to the history of the city, regional characteristics and identity	**3**	2	**3**	2

* – *Based on the data from Lukez 2008; Swensen, Jerpasen 2008; Steiner, Butler 2007; Zigmunde 2010 b;*

** – 3 = corresponds; 2 = partially corresponds; 1 = does not correspond.

and variety of the place. Also, the overall landscape diversity and qualities of the scenery were features promoting the aesthetical variety of periurban landscape. The results obtained concerning the regional level of planning mainly indicated that the aesthetical quality design and planning approach of the analyzed areas was an important aspect in the enhancement of aesthetical quality and variety of the place. Also, the overall landscape diversity and qualities of the scenery were features promoting the aesthetical variety of periurban landscape. The results obtained concerning the regional level of planning mainly indicated the aesthetical quality in accordance with the specific territory, region or landscape type. This meant that the design of the definite area and its elements should be integrated into the pattern of surrounding landscape, and these areas should be developed according to the specific features and identity of the given landscape region to promote harmony and aesthetical value of the whole landscape.

Conclusions

The landscape aesthetics assessment methods elaborated in this research could be applied in future researches designed to assess similar areas.

Aesthetical diversity of the landscape in different ecosystems previously was stated mainly by the functional use of landscape. These functions, which could be maintained in each area or landscape, define the future development strategies of building sites, infrastructure characteristics, vegetation networks and design.

A higher diversity of separate landscape elements (*e. g.,* objects of art, multifunctional architecture, variety of decorative plants, *etc.*) has been observed in the territories, which are located in urban or periurban ecosystems in comparison to the rural ecosystems.

In rural ecosystems, one of the main factors of aesthetical diversity is the relationship between elements of nature (*e. g.,* terrain, natural vegetation, *etc.*), human-maintained elements (*e. g.,* grasslands, agricultural lands, plantings, *etc.*), human-made elements (*e. g.,* buildings, infrastructure, *etc.*), and general naturalness of the landscape character. It is important for the landscape quality to use natural materials in its design; develop a diverse scale of landscape spaces; include historical features and natural resources into the landscape design (e. g., rivers, water reservoirs, *etc.*). This landscape feature applied in landscape development in the future must be improved by planning building infrastructure in other landscapes, because the results shows also that with newly constructed landscape design, it is possible to loose the historical and aesthetical diversity value in scale, color and authenticity.

In urban ecosystems, one of the main factors of aesthetical diversity is the human-made landscape elements, such as buildings, technical infrastructure, decorative plantings, recreational equipment, colors, open spaces and their structure. Urban landscape is perceived as more beautiful and aesthetical, if there is a visible human intention and noticeable care of the place to be implemented in the future not only in the landscape design, but also in the follow-up efforts obtaining enough resources for each human-made or human-cared landscape element maintenance.

In periurban ecosystems, the diversity of landscape varies, depending on the distance from a given territory to the city. The closer the territory is located to the city, the higher the landscape diversity is created by human-made or human-cared landscape elements (*e. g.,* buildings, fences, roads, *etc.*). The further the territory is located from the city, the higher the diversity of elements of nature (*e. g.,* terrain, natural vegetation, natural features, *etc.*) is developed, including the surrounded landscape of each territory. In future landscape design these aspects have to be improved considering the phenomenon of distance characteristics.

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References

Antrop, M. 2005. Why landscapes of the past are important for the future, *Landscape and Urban Planning* 70: 21–34. http://dx.doi.org/10.1016/j.landurbplan.2003.10.002

Antrop, M. 2006. Sustainable landscapes: contradiction, fiction or utopia?, *Landscape and Urban Planning* 75: 187–197. http://dx.doi.org/10.1016/j.landurbplan.2005.02.014

Antrop, M.; Van Eetvelde, V. 2000. Holistic aspects of suburban landscapes: visual image interpretation and landscape metrics, *Landscape and Urban Planning* 50: 43–58. http://dx.doi.org/10.1016/S0169-2046(00)00079-7

Arthur, L. M.; Daniel, T. C.; Boster, R. S. 1977. Scenic assessment: an overview, *Landscape Planning* 4: 109–129. http://dx.doi.org/10.1016/0304-3924(77)90014-4

Bell, S.; Penēze, Z.; Nikodemus, O.; Montarzino, A.; Grīne, I. 2007. The value of Latvian rural landscape, in Roca, Z.; Spek, T.; Terkenli, T.; Plieninger, T.; Höchtl, F. (Ed.). *European Landscapes and Lifestyles: The Mediterranean and Beyond.* Edições Universitárias Lusófonas, Lisbon, Portugal, 347–362.

Briņķis, J.; Buka, O. 2006. *Pilsētu un apdzīvoto vietu komplek-su arhitektoniski telpiskā plānošana*. Riga, Rīgas Tehniskā Universitāte. 236 p. (in Latvian).

Bulcao, L.; Ribeiro, L.; Arsénio, P. 2004. The protection of landscape as a resource. Case study – Monte da Guia protected area (Faial – Azores), *Management of Environmental Quality: An International Journal* 15(1): 48–54. http://dx.doi.org/10.1108/14777830410513603

Cadenasso, M. L.; Pickett, S. T. A. 2008. Urban principles for ecological landscape design and management: Scientific fundamentals, *Cities and the Environment* 1(2): 3–16.

Cassatella, C. 2011. Assessing Visual and Social Perceptions of Landscape, in Cassatella, C.; Peano, A. (Ed.). *Landscape indicators. Assessing and Monitoring Landscape Quality*. Dordrecht: Springer, 105–140. http://dx.doi.org/10.1007/978-94-007-0366-7_6

Colombo, A. G.; Malcevschi, S. 1996. *Manuale AAA degli Indicatori per la Valutazione di Impatto Ambientale*. 5. *Indicatori del paesaggio*. Centro VIA Italia: Federazione delle Associazioni Scientifiche e Tecniche, Associazione Analisti Ambientali, Milan (in Italian).

Cosgrove, D. E. 1984. *Social Formation and Symbolic Landscape.* Madison: University of Wisconsin Press. 293 p.

Daniel, T. C. 2001. Whither scenic beauty? Visual landscape quality assessment in 21st century, *Landscape and Urban Planning* 54: 267–281. http://dx.doi.org/10.1016/S0169-2046(01)00141-4

Ellis, L.; Ficek, C. 2001. Color preferences according to gender and sexual orientation, *Personality and Individual Differences* 31: 1375–1379. http://dx.doi.org/10.1016/S0191-8869(00)00231-2

Environment and Sustainability Directorate and Department for Planning and Infrastructure 2007, *Visual Landscape Planning in Western Australia. A manual for evaluation, assessment siting and design* [online]. Available from Internet: http://www.planning.wa.gov.au/publications/1205.asp

Gallent, N.; Andersson, J.; Bianconi, M. 2006. *Planning on the Edge. The Context for Planning at the Rural-Urban Fringe*. New York, Routledge. 232.

Ģeodēzijas topogrāfijas daļa. *Latvijas topogrāfiskā karte*. (Latvijas topogrāfisko karšu mērogā 1 : 75 000 komplekts, izgatavotas pēc 1911.–1927. gadu uzņēmumiem un rekonstrukcijas). Rīga, Armijas štāba Ģeodēzijas-Topogrāfijas daļa.

Gobster, P. H.; Nassauer, J. I.; Daniel, T. C.; Fry, G. 2007. The shared landscape: What does aesthetics have to do with ecology?, *Landscape Ecology* 22: 959–972. http://dx.doi.org/10.1007/s10980-007-9110-x

Graudiņš, U. 2012. *Kādu elektroenerģiju izvēlēties* (in Latvian). Available from Internet: http://la.lv/index2.php?option=com_content&view=article&id=355662:kdu-elektroeneriju-izvlties&layout=print&tmpl=component&Itemid=

Jankevica, M. 2012. Comparative analysis of methodologies for landscape ecological aesthetics in urban planning, *Science – Future of Lithuania, K. Šešelgis' Readings* 4(2): 113–119. Vilnius Gediminas Technical University.

Kundziņš, M. 2004. *Dabas formu estētika.* Rīga: SIA Madris. 168 lpp. (in Latvian).

Lange, E.; Bishop, I. 2001. Our visual landscape: analysis, modeling, visualization and protection, *Landscape and Urban Planning* 54: 1–3. http://dx.doi.org/10.1016/S0169-2046(01)00121-9

Lazdāne, L. 2011. The Historical Development of Watermills and small-scale Hydroelectric Power Plants Landscape in Latvia, in *Research for Rural Development 2011. Annual 17th International Scientific Conference Proceedings*. Latvia, Jelgava: Latvia University of Agriculture. Vol. 2: 200–206.

Lazdāne, L. 2012. Public Perception about Landscapes of Watermills and Small-Scale Hydroelectric Power Plants in Latvia, in *Research for Rural Development 2012. Annual 18th International Scientific Conference Proceedings*. Latvia, Jelgava: Latvia University of Agriculture. Vol. 2: 141–147.

Magelis, L. 1994. *Mazo HES ierīkošanas iespējas Latvijā*. Rīga. 67 p. (in Latvian).

Mark, A.; Marek, P. E. 2012. *Landscape and Aesthetics Design Manual*. Texas Department of Transportation, 4. Available from Internet: http://onlinemanuals.txdot.gov/txdotmanuals/lad/lad.pdf

Mazo hidroelektrostaciju darbības izvērtējums. 2004. Rīga: Valsts SIA Vides projekti. 2004.gada decembris – 2005.gada janvāris (in Latvian).

Melluma, A.; Leinerte, M. 1992. *Ainava un cilvēks* [Landscape and Human]. Rīga: Avots. 175 lpp. (in Latvian).

Nassaurer, J. I. 1995. Messy ecosystems, orderly frames, in Swaffield, S. (Ed.). *Theory in Landscape Architecture*, University of Pennsylvania Press, Philadelphia, USA, 196–206.

Nikodemus, O. 2001. *Ainavu plānošana, apsaimniekošana un aizsardzība lauku pašvaldībās*: Metodisks materiāls. Vides aizsardzības un reģionālās attīstības ministrija. Rīga. 18 lpp. (in Latvian).

Ode, Å. 2003. *Visual Aspects in Urban Woodland Management and Planning:* doctoral thesis. Alnarp: Swedish University of Agricultural Sciences. 41 p.

Palmer, F. J.; Hofmann, R. E. 2001. Rating reliabity and representation validity in scenic landscape assessments, *Landscape and Urban Planning* 54: 149–161. http://dx.doi.org/10.1016/S0169-2046(01)00133-5

Palmer, J. 2003. *Research Agenda for Landscape Perception.* Available from Internet: http://www.masterla.de/conf/pdf/conf2003/52palmer.pdf

Reenberg, A.; Primadahl, J. 2009. Editorial: Globalisation and the local landscape, *Danish Journal of Geography* 109(2): iv-vi. Available from Internet: http://rdgs.dk/djg/pdfs/109/2/Pp_iv-vi_109_2.pdf

Ribe, R. G. 2005. Aesthetic perceptions of green-tree retention harvests in vista views. The interaction of cut level, retention pattern and harvest shape, *Landscape and Urban Planning* 73: 277–293. http://dx.doi.org/10.1016/j.landurbplan.2004.07.003

Scazzosi, L.; Di Bene, A. 2006. *La relazione paesaggistica, finalità e contenuti. Gangemi, Rome*. Available from Internet: http://www.coe.int/t/dg4/cultureheritage/heritage/landscape/compendium/LOIItalie.pdf (In Italian).

Schmid, W. A. 2001. The emerging role of visual resource assessment and visualisation in landscape planning in Switzerland, *Landscape and Urban Planning* 54: 213–221. http://dx.doi.org/10.1016/S0169-2046(01)00137-2

Siļķe, K. 2008. Ūdens enerģijas izmantošanas vēsture Latvijā, in *Mazā hidroenerģētika Latvijā*. Latvijas mazās hidroenerģētikas asociācija. Riga: SIA Adverts, 6–11 (in Latvian).

Steiner, F.; Butler, K. 2007. *Planning and urban design standarts*. New Jersey, John Wiley & Sons. 436 p.

Swanwick, C. 2002. *Landscape character assessment. Guidance for England and Scotland. Scottish Natural Heritage and Countryside Agency*. Cheltenham and Edinburgh. 84 p.

Swensen, G.; Jerpasen, G. B. 2008. Cultural heritage in suburban landscape planning. A case study in Southern Norway, *Landscape and Urban Planning* 87: 289–300. http://dx.doi.org/10.1016/j.landurbplan.2008.07.001

Teivens, A. 1985. *Latvijas dzirnavas*. Stockholm: Daugava. 298 lpp. (in Latvian).

The James Hutton Institute 2010. *Review of Existing Methods of Landscape Assessment and Evaluation.* Available from Internet: http://www.macaulay.ac.uk/ccw/task-two/evaluate.html#ref

Thorbeck, D. 2010. Rural Design: Establishing the Research Foundation for a New Design Discipline, in *International Conference on Architectural Research, ARCC/EAAE 2010.* Available from Internet: http://www.aia.org/aiaucmp/groups/aia/documents/pdf/aiab087196.pdf

United Kingdom Countryside Commission 1992. *Protected Landscapes in the United Kingdom*, Cambridge. Available from Internet: http://archive.org/stream/protectedlandsca92ukco#page/12/mode/2up

Vides Ministrija 2009. *Stratēģiskā ietekmes uz vidi novērtējuma vides pārskats.* Vides politikas pamatnostādnes 2009–2015. gadam projektam. Available from Internet: http://www.varam.gov.lv/lat/print/files/text/dokumenti//VIDMPamn_180609-VP.pdf (in Latvian).

Vining, J.; Merrick, M. S.; Price, E. A. 2008. The Distinction between Humans and Nature: Human Perceptions of Connectedness to Nature and Elements of the Natural and Unnatural, *Human Ecology Review* 15(1): 1–11.

Zangwill, N. 2010. *Stanford Encyclopedia of Philosophy.* Available from Internet: http://plato.stanford.edu/entries/aesthetic-judgment/

Zigmunde, D. 2006. Assessing public perception of urban landscape with use of photographic method, in *Annual 12th International Scientific Conference Proceedings, Research for rural development 2006*, 2: 123–128.

Zigmunde, D. 2010a. Preservation of Traditional Rural Landscape Identity as an Integrative Tool for New Housing Settlements in Latvia, in *International scientific conference proceedings of full papers – Landscape Legacy: Landscape Architecture and Planning between Art and Science* [CD-ROM].

Zigmunde, D. 2010b. *The Aesthetic and Ecological Interaction of Latvian Urban and Rural Landscape:* Summary of the Doctoral thesis. Jelgava, Jelgavas Tipogrāfija. 83 p.

KAIMO, PUSIAU URBANIZUOTŲ VIETOVIŲ IR MIESTŲ EKOSISTEMŲ KRAŠTOVAIZDŽIO ESTETIKOS ĮVAIROVĖ

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Santrauka

Straipsnyje pateikiamas kraštovaizdžio estetinės įvairovės tyrimas. Studijos tikslas – įvertinti esamą situaciją skirtingose ekosistemose, ištiriant trijų kraštovaizdžio tipų: kaimo, pusiau urbanizuotų vietovių ir miesto ekosistemų Latvijos teritorijoje estetinę įvairovę. Tyrimas atliktas 2010–2012 metais. Keturių istorinių vandens malūnų teritorijos tirtos kaimo vietovėse. Pusiau urbanizuotose vietovėse tyrinėtos keturios teritorijos, kuriose išsidėsčiusios privačių kaimų ekosistemos. Miestų vietovėse tyrinėtos keturių viešųjų parkų ekosistemos. Pagal tyrimo metmenis ir remiantis anksčiau suformuluotais kriterijais, tyrimo rezultatai atskleidžia ir skirtingus, ir panašius kraštovaizdžio estetikos požymius skirtingose ekosistemose.

Reikšminiai žodžiai: Latvijos kraštovaizdis, vandens malūnai, miestų parkai, privatūs kaimai, kraštovaizdžio estetikos vertinimas.