

## AESTHETIC ASPECTS OF LANDSCAPES IN THE RURAL-URBAN INTERFACE ZONES

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The interest in landscape research has increased since the advent of the European Landscape Convention. However, recent literature reviews on landscape development and research trends demonstrate that not all the categories of landscape and not all the areas of landscape research receive the attention they deserve. One of such interesting, however, often overlooked areas are the so-called *rural-urban* or *rurban* landscapes, which emerge as a consequence of urban pressure on countryside or as a part of rural-urban continuum. These landscapes can be characterized with such peculiar features as dynamism, diversity, complexity, mix of rural and urban features, fragmentation, and interdependence with a city. This is no doubt that such landscapes reflect the major challenges of landscape research including landscape aesthetics, which, in fact, presents new challenges in the context of contemporarily prevailing mechanistic view of landscape and predominant ecological concerns. This justifies the relevance of our research, which is aimed at discussing the peculiarities of aesthetics and aesthetics research of rurban landscapes. In order to reach this aim, the contemporary trends of landscape aesthetics research were distinguished and the aspects of their applicability to the landscapes emerging in the areas of rural-urban interface were discussed.

**Key words:** landscape research, landscape aesthetics, rural-urban interface, rurban landscape.

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### INTRODUCTION

#### Relevance of the research

Urban settlements had affected the surrounding natural and agricultural areas throughout the history through pressures for production, exchange of goods, influences on the visual character of landscape. However, as M. Antrop (2000) notes, until relatively recent times the

agrarian cultural landscape with its distinctive features and identities was created in parallel to the development of the urbanized society. Historic rural landscapes had distinct, clearly distinguishable aesthetics and oftentimes they, together with natural areas, not the urban areas, shaped the image of the countries and regions. The present situation is much different in the fields of landscape aesthetics and country's or region's image formation and in the field of interactions between the urbanized, rural, and

natural areas. Industrialization and globalization had radically altered the situation in these areas. For example, P. Jacobs & R. Mann (2000) note that growing populations seeking increasingly centralized markets and employment opportunities generate the spread of urbanization across the globe; thus landscapes are subject to enormous forces of centralization and to increasing uniformity. Traditional urban-rural dichotomy could not be maintained in such conditions and the rural-urban continuum had emerged, where the mobile middle classes have built a highly dispersed pattern of activities developing not on a place, but on a region (Adell 1999). The processes rapidly changing world's landscapes seem unidirectional, and there is no reason to believe that these pressures on traditional rural and natural landscapes will diminish. The urban expansion rapidly changing the face of countryside is evident even in those countries where the general number of inhabitants is decreasing (Bardauskienė & Pakalnis 2012).

Due to global travel and rapid communication, cities and their zones of influence nowadays not only play the prominent role in global economics, but also shape the image of countries and regions more than countryside, which is increasingly transformed into the areas devoted to large scale agricultural production. It is not surprising that these changes in landscapes and landscape perception had engendered new terms and even fields of research. The term *urban fringe*, expressing the changes in urban form and lifestyles, was for the first time used by the American geographers during the 1940s and 1950s (Adell 1999). Contemporary landscape researchers use a variety of terms and neologisms characterizing suburban, urban and rural interaction, areas located in the urban influence zone and their internal structure. Numerous new terms – *rural-urban fringe*, *metropolitan fringe*, *peri-urban*, *edge-cities*, *near-urban*, *pre-urban*, *exurban*, *post-suburban landscapes*, *extended metropolitan region*, *rurban*, *ruralurban*, *pseudo-suburbs*, *urban satellites*, and *pseudo-satellites*, *inner* and *outer urban fringe*, *rural non-farm areas*, *rurban periphery*, *urban hinterland* (Adell 1999, Low Choy et al. 2008) – and the entire area

of rurban or peri-urban studies have emerged. Some terms, such as *urban fringe*, *peri-urban*, imply the dualism and antagonism between the rural and urban realms, and, according to D. Low Choy et al. (2008), depict the peri-urban zone as invaded countryside threatened by the urban fabric expansion and a new population invading traditional local communities. The understanding of complexity of links between the city and the countryside is evolving rapidly, shifting towards new conceptions of landscapes, where rural-urban links are being redefined. The views had emerged that the transitional landscapes between city and countryside were not necessarily the result of solely urban-driven processes, thus coining terms as *rurban* or *ruralurban* (Adell 1999). The terms *rural-urban interface*, *rurban*, *ruralurban* attempt to transcend the traditional urban-rural dichotomy and the view, that urbanization is always the only factor shaping the identity of these areas. Thus these terms are used in this research. The plethora of new terms implies that these new types of landscapes are very well studied and analyzed taking into account the increased interest in landscape caused by the emergence of the European Landscape Convention. Actually natural, rural, urban and peri-urban areas all are the concern of the Convention. However, as E. Conrad et al. (2011) note, the landscape knowledge and technical capacities for landscape protection, planning and management are unevenly distributed across the landscape types. They note that one of the types of landscapes, which to date have not been well-studied and need to be better addressed, are the rural-urban interface areas.

Rapidly changing rurban landscapes embody the main challenges of contemporary landscape research. One of such challenges is landscape aesthetics research. The aesthetic dimension of landscape is a classical area of interest. It is just enough to mention the emphasis on natural and countryside aesthetics and the feelings these landscapes can induce in the epoch of Romanticism. However, the increase in the array of available methodologies and general knowledge about landscapes has not induced simultaneous increase in landscape

aesthetics research. E. Conrad et al. (2011) claim that there appears to be a bias in academia towards ecological concerns. P. Jacobs (2011) argues that the idea of landscape implied by contemporary landscape research has narrowed to a predominately mechanistic view: landscape is seen and analyzed as an outcome of interactions between the biophysical and social drivers of change and the consequent planning and design interventions aimed at mitigating impacts.

### *Aim and methods of the research*

The article is aimed at discussing the peculiarities of aesthetics and aesthetics research of rural landscapes. In order to reach this aim, the contemporary trends of landscape aesthetics research were distinguished and the aspects of their applicability to the landscapes emerging in the area of rural-urban interface were discussed. The methods applied in the research include the analysis of literature, comparison, synthesis, and generalization of data.

## **MATERIALS AND METHODS**

### *General features of rural landscapes*

In order to understand the peculiarities of landscape aesthetics research in the areas of rural-urban interface, it is necessary to distinguish the main characteristics of rural landscapes:

1. *Remnant*. One of the basic features distinguishing rural landscapes from urban areas or suburbs is the presence of rural dimension. Thus, these landscapes can be characterized as *remnant*: landscapes transformed by urbanization or social pressures, however, retaining relevant historic dimension or landscape memory. Legibility of the rural features can be different in different landscapes, thus they can be analyzed and classified accordingly.

2. *Transient*. Another important characteristic of rural landscapes is their *transitional* character. This type of landscapes has emerged very rapidly – during the last century; thus it changes very

rapidly: the rural landscape with some urban features can be rapidly replaced with rural landscape with fragments of rural environment, which in turn can become increasingly urbanized.

This shows the dynamism of rural landscapes and the relevance of the dimension of time. If the dimension of time of rural landscape is analyzed, the aspects of stability and dynamism, the frequency of change of elements, and the extent of territorial development can be identified (Antrop 2000, Ahern 1995). The question even may be asked: is rural landscape a place or a process? Transient character is also visible in the spatial dimension: the landscape acquires more rural landscape features moving away from the city (Antrop 2000).

3. *Contested*. The processes of formation of rural landscapes induced by the territorial and social urbanization inevitably produce an array of *conflicts*: between urban and rural uses, between urban and rural lifestyles, between urban and rural aesthetics etc. Thus these landscapes in some aspects can be seen as *contested* areas, especially in the initial stages of their development.

4. *Complex*. M. Antrop (2000) notes that once cities formed a centre in a rural hinterland; meanwhile, nowadays, rural areas are scattered and fragmented by the urban network into relict zones of the original hinterland. Rural landscapes have both urban and rural features and in the interface or collision of the supposedly antagonistic features new qualities, characteristic solely to these landscapes, can emerge; thus these landscapes can be described as *diverse*, *complex*, or in some cases as *fragmented*. F. Marshall et al. (2009) notes that peri-urban is still conceptualized as a *heterogeneous* mix of urban and rural features. However, a mix of well known features can result in a new quality. Rural landscapes can be seen as *landscapes of new complexity*.

5. *Interdependent*. Another characteristic of rural areas is their links to and dependence from the urban area. M. Antrop (2000) underlines that historically the rural hinterland was vital for the

subsistence of the city; meanwhile, now cities are vital for the subsistence of the rural hinterland or rural areas. In other words, urban area is a crucial component in development of rural areas; it performs a role of a driver.

### ***Classification of landscape aesthetics research trends***

It may seem that the aesthetics of rural space has more problems than opportunities. In order to understand the peculiarities of aesthetic analysis of rural areas, it is necessary to review the methods of landscape analysis and their classifications. Landscape, considering its conception, is an object of interest of many scientific and professional fields. The problems of landscape valuation are solved by philosophy, sociology, environmental psychology, geography, ecology, and etc. Every field has its own attitude and methods of landscape research. To integrate these diverse aspects of landscape research, Terkenli (2001) developed a conceptual framework, which identified three inter-locking aspects of the landscape: *the visual*, *the cognitive* and *the experiential*. This framework highlights the interrelatedness and interactive nature of these components and the need for interdisciplinary research of landscape (Burgess et al. 2009). *Visual aspects* of landscape are analysed by morphological, aesthetic/visual, iconological, spectral/colour/thermal methods; *experiential aspects* of landscape are analysed by behavioural, ethnographic, empirical (bio-ecological, economic, etc.), humanistic (pragmatist, phenomenological, etc.) methods; *cognitive aspects* of landscape are analysed by semiotic, ethnographic, hermeneutical, functional-structuralist and other methods (Terkenli 2001). Here we focus on the main trends of landscape visual aesthetic research and their applicability to rural-urban interface areas.

There are various classifications of landscape visual research. The most common classification divides all methods to *expert/design* approach and *perception-based* approach. The *complex* or integrated approach exists as well and it is now more and more widely used in practice.

1. *Expert/design approach* transforms landscapes into formal design parameters through the classification of landscapes biophysical features (geomorphological forms, vegetation, water, etc.) into characteristics which are considered to be important for landscape aesthetics i.e. forms, lines, textures, colours, and the relationships between these features, e.g. variety, vividness, unity, harmony. Experts are involved in the selection of characteristics of the landscapes and the rules and guidelines which are used to rank the landscapes in terms of landscape quality (visual quality or scenic class) (Burgess et al. 2009, Daniel 2001). Non-experts are considered only when selecting viewpoints and the numbers of potential viewers of the landscape and the context in which the landscape is viewed (Daniel 2001). These methods are also called *descriptive* inventories which include *ecological* and *formal aesthetic* models which are mostly applied in an objective manner (Arthur et al. 1977). Some authors call them *indirect*, methods which evaluate the landscape on the basis of the presence and/or intensity of designated features (Fines 1968). Some state that such methods aggregate landscape components in order to obtain a total value, implying that overall scenic quality is the sum of its parts (Arriaza et al. 2004, 2005, Briggs & France 1980). But the expert techniques have been criticized for having inadequate levels of precision, reliability and validity (Daniel & Vining 1983, Daniel 2001).

2. *The perception based approach* can derive evaluations of landscape visual quality through the use of psychological scaling methods such as paired comparisons undertaken by human viewers (distribution of associative attributes, the theory of Ch. Osgood, 1957) or in accordance with behaviour patterns in the space (the theory of K. Lynch, 1960) (Burgess et al. 2009, Kamičaitytė-Virbašienė & Janusaitis 2004). Zube et al. (1982) identifies two paradigms of the landscape quality assessment related to the perception based approach: *psychophysical*, where non-expert judgements are made over landscape stimuli and objective properties of landscape, and *cognitive*, where landscapes possess meaning. Daniel & Vining

(1983) split these methods into *psychological*, *phenomenological* and *psychophysical* models. The *psychological*, *phenomenological* methods evaluate landscape as a whole and the *psychophysical* models analyse separate factors of landscape and their influence on visual quality. Psychophysical methods integrate landscape evaluation as a whole and split it into objective landscape indicators as well. Therefore they can be classified as complex methods and are discussed in detail further. Some authors analyse what features of landscape and observers influence judgements about landscape quality: biophysical features of the landscape, informational and functional needs of humans (Daniel 2001, Brown et al. 1986), people's needs to understand and explore natural landscapes (Kaplan & Kaplan 1989). Considering findings of the latest research, four concepts of landscape evaluation can be distinguished: *complexity* (variety within the landscape), *mystery* (desire to explore), *legibility* (ease of finding your way around), *coherence* (how well does the landscape fit together: correspondence with ideal situation/harmony, unity, uniformity, land-use suitability, balance and proportion, etc.) (Burgess et al. 2009). Tveit et al. (2006) add more concepts to the mentioned ones: *naturalness* (wilderness, vegetation health, etc.), *stewardship* (sense of order and care, upkeep), *disturbance* (intrusion, alteration, impact, lack of contextual fit, etc.), *historicity* (historic continuity and richness), *visual scale* (visibility, openness, enclosure, etc.), *imageability* (genius loci, sense of place, uniqueness, place identity, etc.), and *ephemera* (seasonal, weather changes). The following methods by some authors (Arthur et al. 1977; Briggs & France 1980; Pérez 2002) are also called *direct* methods, which compare the scenic preferences of members of the public for landscapes in order to reach a consensus (Arriaza et al. 2004, 2005). In contrast to the expert approach, perception based assessments have generally achieved high levels of precision and reliability (Daniel 2001).

3. *Complex or integrated approach* encompasses methodical aspects of descriptive and perception based methods. These methods are called

*psychophysical* and *surrogate component* models (Buhyoff & Riesenmann 1979, Review of... 1997, Issues of Preference... 1997). The statistical techniques are used to determine the mathematical relationships that exist between landscape components and the scenic preferences of observers (Arriaza et al. 2004, 2005). Multiple regression analysis is used to establish a mathematical relationship between components of the landscape and the scenic preferences of observers. Weights for landscape components are estimated from preference ratings collected from the public. The weights, multiplied with a set of measurements of landscape components, produce an overall scenic quality score for the other similar landscapes. These predictive models have tended to be more a tool for research than for impact assessment. Their orientation is to predict scenic quality based on the presence of quantifiable landscape attributes (Palmer 1983; Review of Existing... 2010). Psychophysical modelling uses measurements of physical landscape features to predict people's preferences for the overall visual quality of the landscapes (Daniel & Vining 1983, Review of Existing... 2010). Surrogate component techniques are based on the identification of physical landscape components, which can be compared with preference ratings (Bishop & Hulse 1994, Review of Existing... 2010). Some methodological problems and errors can be encountered in this case: whether numerical ratings of landscape beauty represent people's preferences for the landscapes, their judgements of scenic beauty of the landscapes, or both; incorrect use of numbers derived from place in a classification; incorrect use of numbers to stand for words; use of spurious numbers in simple mathematical operations; use of bad data in complex mathematical and statistical operations; use of data that does not satisfy requirements of the model; use of numbers to support, derive, or demonstrate meaningless, spurious or useless concepts; and use of concepts without adequate operational definitions (Hamill 1985, Review of Existing... 2010). Nevertheless, these methods are more and more used as precise and reliable tool for landscape visual aesthetic quality research. Feasibility of their application is increased by using GIS, remote sensing

technologies, and etc. (Review of Existing... 2010, Wu et al. 2006, Arriaza et al. 2004, 2005, Uzun & Mūderrisoglu 2011).

Considering the main features of rural-urban interface areas it would be also appropriate to use another classification of landscape visual quality evaluation methods. Rural landscape is complex, fragmented, dynamic and mixed, considering natural, rural and urban features, and at the same time all the mentioned characteristics are interconnected. Accordingly, we have to comprehend this landscape as a whole or system and as particular factors of landscape visual quality at once while evaluating its aesthetic potential. Taking into account this notion such main methodological trends of landscape research can be distinguished (Kamiciaitytė - Virbasiene 2003, Review of Existing... 2010):

### 1. *Methods of overall impression (non-structural).*

This is landscape research, where not landscape itself but impression made by it is analyzed, in order to understand how various people perceive landscape (psychological, phenomenological methods).

### 2. *Methods of structural (quantitative and comparative) analysis.*

Using the following methods, landscape structure, components and elements, relations of them and factors conditioning them are analyzed. Landscape is evaluated according indicators of its structure – quantity of the components and elements, relations between them and etc. (ecological, formal aesthetic methods, visual resources management systems). In 1968 K. Eringis & A.R. Budriunas developed the method of structural quantitative analysis and evaluated aesthetical resources of all territory of Lithuania. In the same year G. Daniulaitis & P.Kavaliauskas developed the method of structural comparative analysis and evaluated the landscape of south Lithuania region for the purposes of recreation and tourism (Kamiciaitytė - Virbasiene 2003).

3. *Complex methods.* The following methods integrate aspects of non-structural and structural quantitative and comparative analysis in order

to consider landscape characteristics and public preferences. At first landscape is analyzed structurally (components and elements of landscape, their indicators, characteristics, relations) and then public opinion about that landscape is analyzed (psychophysical and surrogate component methods). This method was developed by M. Purvinas in 1982 in Lithuania (Kamiciaitytė - Virbasiene 2003).

The first trend is related with the undividedness of landscape's visual impact, while the second stresses the importance of separate factors that determine landscape's visual character. However, seeking to solve the questions of spatial planning properly and to consider subjective and objective aspect considering public preferences and landscape characteristics, the most suitable method should have to integrate aspects of *non-structural* and *structural quantitative and non-quantitative (comparative) analysis*. Those are *complex methods*, which are more advanced and precise and consider the subjective and objective aspect of landscape evaluation (Review of... 1997, Arthur et al. 1977, Daniel & Vining 1983).

The methods of *non-structural analysis* have to be used because any technology of evaluation will reflect the opinions of landscape evaluators and the relation of those opinions, as landscape is valuable in regard to people. The methods of *structural analysis* explain why a particular landscape unit, which is evaluated, has a definite visual quality: a comparative weight of the characteristics of separate landscape components to that quality is estimated (Kamiciaitytė-Virbasiene & Janusaitis 2004). The possibilities of integration of structural analysis results and public preferences are extended using GIS.

Additionally to evaluate complex structure of rural landscape such *special* scientific methods can be used: *fractal analysis*, *video-ecological method*, and *method developed by N. Salingaros*. The following methods are useful because they relate environmental aesthetic features with our perception of the environment and its cognitive aspects. The fractal index is the most commonly used to classify and model urban structures

and to evaluate their complexity (Frankhauser 2004). However, the latest researches show possibilities of fractal analysis application not only to evaluate complexity of the analysed structure but its livability, multifunctionality, morphological variety, capabilities of evolution and adaptation, and even visual quality as well (Zaleckis & Kamicaityte - Virbasiene 2011, Hagerhall et al. 2004). The essence of video-ecological method is its approach to visual environment as an ecological factor. Today's urban environment usually is video-uneecological environment. The main criteria of evaluation of visual environment ecological potential are homogeneity/heterogeneity, aggressiveness and comfortability (Filin 2001). The method of N. Salingaros helps to evaluate informational variety and structural optimality of environmental spatial patterns of urban environment. There are three laws which have a scientific validity and can be applied for rural landscape visual quality evaluation as well (Ramanauskas 2011): order on the smallest scale is established by paired contrasting elements, existing in a balanced visual tension (1), large-scale order occurs when

every element relates to every other element at a distance in a way that reduces the entropy (2), the small scale is connected to the large scale through a linked hierarchy of intermediate scales with scaling factor approximately equal to  $e = 2.718$  (3) (Salingaros 1995).

## RESULTS AND DISCUSSION

### *Challenges of landscape aesthetics research in rural-urban interface areas.*

Bearing in mind the general features of rural areas and the methods of aesthetic landscape analysis discussed above it is possible to distinguish the main challenges in the aesthetic analysis of rural-urban interface areas:

*1. Challenges of defining new landscapes and their aesthetics.* In the areas of rural-urban interface new types of landscapes emerge; this raises the challenges of new definitions and of understanding new aesthetics trends, which may arise in rural-urban interface process.

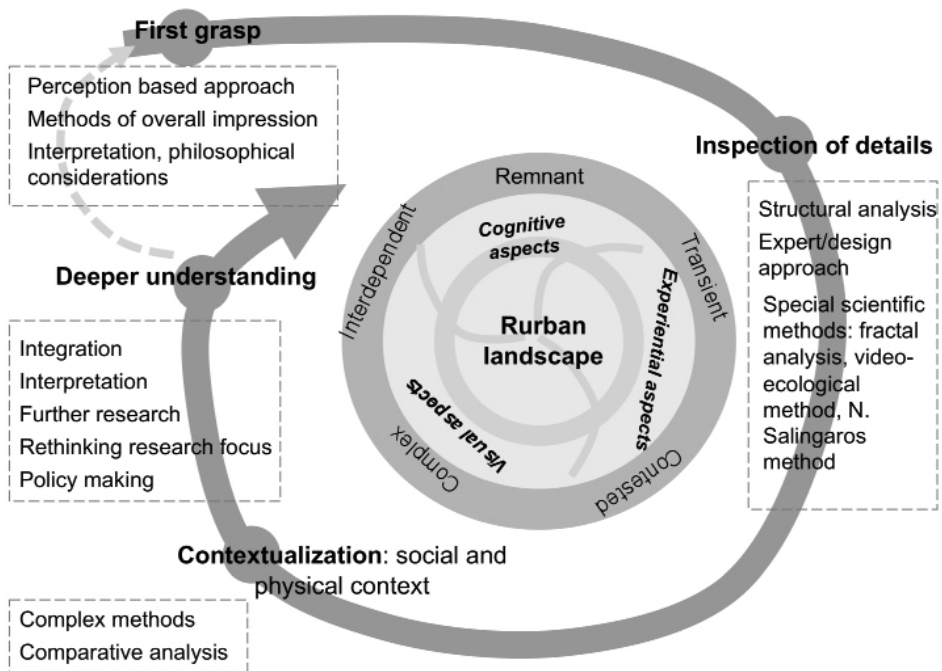


Fig. 1. Steps of aesthetic analysis of rural landscapes with reference to Terkenli (2001).

Application of the methods based on expert/design approach and perception based methods and their combinations may be difficult, because the landscape experts and society may not be aware of the peculiarities of rural landscapes. According to M. Antrop (2000), perception determines the valuation in an important manner. Difficulties may arise in grasping aesthetics of new landscapes, in fitting these new landscapes into predefined concepts, such as *mystery, coherence, legibility, naturalness, stewardship* etc., relating them to these concepts. The rural landscapes can be viewed as totally aesthetically unacceptable by the society and by some experts regarding the conflicting rural and urban features resulting in dissonance. Such concerns certainly would not be without foundation as visual disorder in the zones of rural-urban interface may have the adverse effect on the image of entire regions and countries. However, the possibility cannot be rejected that these areas may bring new aesthetic contribution to human habitat. The difficulties related with perception of rural landscapes encourage not only applying *complex* assessment methods including non-structural and structural analysis, involving society and experts, but also including the *special* scientific methods - *fractal analysis, video-ecological method*, or the *method developed by N. Salingaros* – into the composite research methodologies. The latter methods are valuable because they link the objective features of environment with subjective perception of environment and its cognitive aspects. The comprehensive analysis of aesthetics of rural landscape can include such steps: 1) overall understanding, general impression, interpretation, philosophical considerations as many aspects of landscape beauty do not easily lend themselves to the quantitative analyses typical of so many of our contemporary research reports and articles (Jacobs 2011); 2) distinguishing landscape types, understanding of its components and features; 3) analysis of scenic preferences of the members of society. Figure 1 shows the steps of aesthetic analysis of rural landscapes. The diagram is constructed based on the idea of hermeneutic circle and shows how the understanding of rural landscape aesthetics can be thought of a circular reinforcing movement: understanding

is a development of what is already understood, with the more developed understanding returning to illuminate and enlarge one's starting point (Hermeneutics 2013).

## 2. *The diversity of landscape types, complexity and fragmentation of landscapes in the rural-urban interface zones may cause difficulties of formulating and expressing general impression.*

Many sub-zones and sub-types of rural landscapes can be distinguished. Distinguishing, understanding and describing these new landscape types in aesthetic terms, their further classification require comprehensive expertise. For example, rural-urban regions are seen as the overall territorial units with functional urban area (zone of daily commuting) and the surrounding rural hinterland. The inner and outer edges of the city are often identified in theory and practice. The inner fringe is characterized by higher building density, faster population growth, more dynamic functional conversion processes, and complex transport system compared to the outer fringe (Adell 1999). For example, A. Piorr et al. (2011) distinguish urban areas and peri-urban areas; urban area is further subdivided into city center, inner urban territories, and suburban territories; the peri-urban area is subdivided into urban fringe, urban periphery, and rural hinterland. The classifications of landscape types and rural-urban interface areas may be case-sensitive and vary from country to country, from region to region and even from one urban area to another depending of geographical factors, agricultural traditions and policies, and urban expansion patterns.

Official legislation may even ignore the presence of rural areas and see them as rural or urban depending on the intensity of urbanization. Take for example Lithuanian landscape classification and the place of rural areas in it. The official Lithuanian landscape classification (Lietuvos Respublikos Vyriausybė 2004) is based on the natural and anthropogenic factors shaping the landscapes and their interactions. Depending on the degree and type of the human impact, solely *natural, rural, and urban* landscapes are



Table 1. Classifications of Lithuanian landscape types and the place or rural landscapes in this context

Classification of Lithuanian landscape types									
Natural			Rural			Urban			
Lithuanian landscape morphotypes (Kavaliauskas 2011)									
Marshy	Wooded	Wooded-agrarian	Wooded-slightly urbanized	Agrarian	Agrarian-slightly urbanized	Agrarian-urbanized	Urbanized		
Classification of landscapes in the areas or rural-urban interface (Brinkyte & Graluzeviciute-Vileniske 2013)									
Natural, rural			Rural or natural landscape with <b>slight</b> manifestations of features of urban environment and / or of urban lifestyle	Rural landscape with <b>clear</b> features of urban environment and urban lifestyle		Landscape where the features of rural and urban environment and rural and urban lifestyles are <b>equally</b> present	Urban landscape with <b>clear</b> features of rural environment	Urban landscape with <b>slight</b> manifestations of rural environment	Urban
			<u>Referred to as:</u> <i>Outer fringe</i> <i>Outer boundary</i> <i>Rural hinterland</i> <i>City's hinterland</i>			<u>Referred to as:</u> <i>Exurbia / exurban</i>	<u>Referred to as:</u> <i>Rurban</i> <i>Ruralurban</i> <i>Peri-urban</i> <i>Rural-urban fringe</i> <i>Rural-urban interface</i>		

distinguished: natural is considered a landscape, which is shaped by natural processes and develop this way up to now, human activities have minimal impact for the landscape development (remaining relatively natural forests, wetlands, water bodies); rural (agrarian) is a landscape that was formed by natural processes and human activities and which had preserved the main structural features of natural areas (agricultural land, extensive development of villages); urban is a landscape strongly altered, maintained, and developed by human activities (cities, towns, densely built-up villages and areas of large engineering technical complexes). Meanwhile, P. Kavaliauskas (2011) distinguished the following Lithuanian landscape morphotypes: marshy, wooded, wooded - agrarian, wooded - slightly urbanized, agrarian, agrarian - slightly urbanized, agrarian - urbanized, and urbanized. The relicts of historical types of Lithuanian rural landscape (*ikivalakinis* (landscape before the land reform of 16<sup>th</sup> century), *valakinis* (landscape after the land reform of 16<sup>th</sup> century), *vienkieminis* (landscape

of the inter-war period), *kolukinis* (landscape of the Soviet period)) also can be distinguished (Bucas 2001) and the urban pressures on these types of historic landscapes may produce very different aesthetic results. Table 1 shows the classifications of Lithuanian landscape types and the place or rural areas in this context. Figures 2 - 6 demonstrate some of the types of rural-urban interface landscapes in the fringes of Siauliai city (Lithuania)

### 3. Challenges of landscapes aesthetics assessment caused by the mutability and dynamics of landscapes in rural-urban interface zones.

The rapidly developing rural landscapes not only lack stable, historically formed identities and images in the consciousness of society. Rural areas clearly exhibit rapid continuous restructuring of space driven by the social processes, markets, and institutional policies. Thus it is even difficult to grasp stable aesthetic categories of rural areas. It is even possible



Fig. 2. Rural landscape with **slight** manifestations of features of urban environment. Place: Rekyva settlement, Siauliai, Lithuania (source: www.maps.lt).



Fig. 3. Rural landscape with **clear** features of urban environment. Place: Verduliai settlement, Siauliai Lithuania (source: www.maps.lt).



Fig. 4. Landscape where the features of rural and urban environment and rural and urban lifestyles are **equally** present. Place: Aleksandrija settlement, Siauliai, Lithuania (source: www.maps.lt).



Fig. 5. Urban landscape with **clear** features of rural environment. Place: Ginkūnai settlement, Siauliai, Lithuania (source: www.maps.lt).



Fig. 6. Urban landscape with **slight** manifestations of rural environment. Place: Dainiai in Siauliai, Lithuania (source: www.maps.lt).

to speak about aesthetics of change. Rurban landscapes can change even in the course of the valuation process. The processes of changes are multidirectional: decay of heritage buildings, renaturalization of abandoned agricultural lots, development of industrial agriculture, construction of new buildings and infrastructure due to urbanization pressures. The aesthetic valuation must be aimed not only at evaluating the present state, but also at identifying the trends of changes and their possible outcomes. One of the adverse outcomes of urbanization of rural areas is the increasing uniformity of rurban areas. The face of rurban areas is often defined by the typical suburban housing architecture, infrastructural and service objects without specific identity; these areas are shaped by market forces and urban middle class tastes. Thus, without appropriate aesthetic policies uniformity may replace both diversity and local identity.

#### *4. Difficulties of defining the aesthetics of contested areas*

Rurban landscapes may be viewed by the society and by some experts solely as the area, which will be completely urbanized in the future, as the land reserve for urban expansion or solely as the manifestation of negative processes making threats to cultural and natural heritage and agricultural land. In this case difficulties may be mostly related to so-called *direct* esthetic assessment methods involving society. The remnant rural dimension can be perceived with difficulties by new urban or suburban population; meanwhile the landscape changes driven by urbanization can be perceived with hostility by the population of rural areas subjected to urban pressures.

#### *5. Challenges of harmony of ecology and aesthetics in rurban areas*

Landscape aesthetics and ecology are equally important in rurban landscape development. The most important aspects of rurban areas are: built-up landscape (including urban fabric contour, suburban settlements, and road network) and open landscape (including suburban natural

areas, green recreational and agricultural areas) (Laukaityte-Malzinskiene 2005). The urban pressures and the expansion of urban fabric into rural hinterland mean the increasing intensity and density of human physical impact. As a result of this impact non-attractive, uniform, dissonant landscapes, that became a stereotype of suburban landscape, emerge (Antrop 2000, Walmsley 1995, Neniskis 2009, Bardauskiene & Pakalnis 2012).

In such case both ecological and aesthetic aspects of natural and rural landscapes affected by urbanization are in decline. However, the interconnection between the aesthetics and ecology in rurban areas are ambiguous and cannot be easily defined. The harmony between the high aesthetic quality of environment and its ecological health is desirable for cultural landscapes. Nevertheless the ecological health and balance are not always associated with high aesthetic quality: ecologically healthy landscapes may not be aesthetically pleasing and vice versa (Kucinskienė 2009). The rurban landscapes are affected by such contradictory trends as abandonment, decline of buildings of rural origination, renaturalization of abandoned agricultural areas, fragmentation of natural and agricultural land, contrasts of rural and urban aesthetics etc. M. Jankevica (2012) claims that there are many links between ecological and aesthetical values of landscape (for example, maintaining valuable plants has high aesthetical potential, not only ecological one; thus the highest assessment score for ecology and aesthetics coincide) and presents a combined landscape assessment matrix including ecological and aesthetic values (Table 2). The valuable features of landscape in the matrix have been selected from scientific literature; landscapes were evaluated according to 1 - 10 score system; 1 point goes to low quality, 10 points to – the highest quality.

Table 2 presents the assessment of different landscape types, such as woodland, English landscape parks, and residential areas from ecological and aesthetic points of view by M. Jankevica (2012) and preliminary evaluation

Table 2. Combined assessment matrix with ecological and aesthetical values based on M. Jankevica (2012)

Approach	Types of landscape values	Landscape types									Rural-urban interface landscapes				
		Traditional small gardens	Multi-storey residential areas	French formal gardens	English landscape parks	Woodland	Overgrown meadow	Untouched waterbed	Degraded abandoned sites	Industrial areas	Rural or natural landscape with <b>slight</b> manifestations of features of urbanization	Rural landscape with <b>clear</b> features of urbanization	Landscape where rural and urban features are <b>equally</b> present	Urban landscape with <b>clear</b> features of rural environment	Urban landscape with <b>slight</b> manifestations of rural environment
Aesthetics	Order, regularity	8	4	10	5	4	1	1	1	2	2	3	4	5	5
	Quality of man-made elements	9	8	9	5	1	1	1	1	8	5	5	6	7	7
	Visible human intention	10	6	10	7	3	1	1	1	4	3	6	5	5	7
	Particularity	7	4	10	9	6	1	3	1	4	3	5	5	6	6
	Use of outlandish species	9	4	10	6	1	1	1	1	2	2	2	3	4	3
	Use of natural forms	6	4	3	10	10	10	10	5	3	8	7	6	4	4
	Accordance with architecture	7	4	10	9	-	-	-	-	4	2	5	6	6	6
Ecology	Biodiversity	5	3	2	7	9	10	9	2	2	9	7	5	3	3
	Accordance with landscape type	8	5	8	9	10	9	9	1	4	9	7	6	6	8
	Native species	5	4	4	7	10	10	9	3	2	9	7	6	3	3
	Natural elements	7	3	3	8	10	10	10	2	2	9	7	6	3	3
	Carelessness	1	3	1	4	9	10	10	7	1	9	7	5	3	3
	Wildlife	4	2	2	7	10	10	10	2	1	9	6	5	2	2
	Unaffected nature processes	1	1	1	5	8	10	10	3	1	9	6	3	1	1

of different types of rural landscapes in order to demonstrate the problems of ecoaesthetics in the areas of rural-urban interface. The evaluation confirms the ambiguous character of rural areas if compared to such clearly natural landscapes as woodland or clearly artificial and purposely designed environments as multi-storey residential areas or French formal gardens.

## CONCLUSIONS

1. The cities and towns had shaped the surrounding countryside for centuries, however, until the epoch of industrialization and massive scale urbanization, the differences of rural and urban areas were evident and their identities were distinct: the countryside was not completely subordinated to the urban. Contemporary factors of globalization, social, economic, and demographic urbanization had caused the emergence of rural-urban continuum and rural landscapes, which can be described as remnant (the presence of rural dimension), transient (transition from rural to urban in space and time), contested (the areas, where numerous conflicts and clashes of values happen), complex (diverse, fragmented, complicated areas), and interdependent (dependence from the urban area). This raises the challenges of new definitions and of understanding new aesthetics trends, which may arise in rural-urban interface process.

2. Landscapes, including the rural ones, are the objects of interest of many scientific disciplines including philosophy, sociology, environmental psychology, geography, and ecology. The landscape aesthetics research is interdisciplinary and can be related with every of the mentioned disciplines. It is possible to classify landscape aesthetics research methods into expert/design approach, perception based approach, and complex or integrated approach. Another classification includes the methods of overall impression (non-structural), methods of structural (quantitative and comparative) analysis, and complex methods. Complex methods that take into account both the subjective and objective aspects of landscape must be the

most appropriate for valuation of complex and hardly definable rural landscapes. The special scientific methods – *fractal analysis*, *video-ecological method*, and *method developed by N. Salingaros* – can be also applied to evaluate complex structure of rural landscape as they relate environmental aesthetic features with the perception of the environment and its cognitive aspects. Composite rural landscape research methodologies that include the above-mentioned approaches can be formulated.

3. Challenges of landscape aesthetics research in rural-urban interface areas include: the challenges of defining new rural landscapes and their aesthetics; the diversity of landscape types, complexity and fragmentation of landscapes in the rural-urban interface zones may cause difficulties of formulating and expressing general impression; the challenges of landscapes aesthetics assessment caused by the mutability and dynamics of landscapes in rural-urban interface zones; the difficulties of defining the aesthetics of contested areas; the challenges of harmony of ecology and aesthetics in rural areas.

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