

# Framework for understanding and analysis of rural-urban interface areas and other relatively unknown landscapes: cultural ecology perspective

Indre Grazuleviciute-Vileniske, *Kaunas University of Technology,*  
*Department of Architecture and Urbanism*

Erika Zaleskiene, *Kaunas University of Technology,*  
*Department of Architecture and Urbanism*

Maija Veinberga, *Latvia University of Agriculture,*  
*Department of Landscape Architecture and Planning*

**Abstract.** Despite the enormous scale and pace of impact of modern humans on the environment, the landscapes that are not well comprehended by the contemporary society and the research community still exist; in this research the term “relatively unknown landscapes” was applied to define these environments including the emerging new types of landscapes, the landscapes of new complexity mainly in the areas of rural-urban interface. The aim of this research was to formulate the framework for analysis of relatively unknown landscapes. The framework is based on the hermeneutic circle that allows continuous learning and on the concept of cultural ecology, which allows understanding of landscape from human perspective and simultaneously understanding of human place in landscape. The proposed framework consists of four interrelated stages - The First Grasp (formulation of the first general impression of landscape under analysis), The Inspection of Details (testing the assumptions formulated in the first stage, filling the research gaps), The Contextualization (integration and interpretation of obtained data, comparison of landscape under analysis with different landscapes and their social contexts, communication of results and receiving feedbacks), and The Deeper Understanding (prognosis of trends, policy making, formulation of management directions, awareness raising, rethinking research focus) – and is adaptive to different natural and anthropogenic landscapes including the rural-urban interface areas, presents the possibility of gradual learning, and could be used for integration of the existing knowledge obtained using different methods.

**Keywords:** landscape research, relatively unknown landscapes, rural-urban interface areas, holistic approach, hermeneutic analysis, cultural ecology, integrated analysis framework.

## Introduction

The 20<sup>th</sup> century and the beginning of the present century are characterized by the large-scale human environmental impacts with corresponding unprecedented landscape changes. It is even stated that no environments unaffected by humans exist on the surface of the planet [8]. However, the landscapes, environments, areas, that are not well comprehended by the contemporary society and not sufficiently analysed by the researchers, exist on the face of the planet and even in our everyday living environment - the urbanized world. We use the term “relatively unknown landscapes” to define these environments, bearing in mind that the considerable amount of data on them exists; however, they lack the comprehensive understanding and the coherent image and this makes their representation and management difficult. Generally speaking, several categories of these environments or landscapes can be distinguished:

1. The emerging landscapes characterized by newness, strangeness and can even cause senses of alienation and cognitive dissonance. Such landscapes can emerge after the radical political, social, agricultural or industrial reforms or innovations, radical economic changes etc. This category includes but is not limited to: chaotic and overgrown landscape of abandoned agricultural and industrial areas, the fringes of the shrinking cities, the cities affected by the decline of inner areas, landscapes with renewable energy production installations.

2. The landscapes of new complexity can be characterized with reference to Phillips et al. [33] as the amorphous and mobile environments. These complex, dynamic, mutable, and often fragmented landscapes often emerge in the areas of rural-urban interface, which experience a huge pressure for development.

3. The landscapes in hardly accessible, sparsely populated areas. These landscapes, if compared with the ones described above, can be characterized by relative naturalness and integrity. It is possible to say that landscapes in the unsafe areas, where long-lasting military conflicts are taking place, can be also attributed to this category as their analysis, not even mentioning the visits by tourists, raise many difficulties.

4. The contested landscapes are those that embody conflicting values and are the objects of conflicting interests. With reference to Stephenson [43], the aspects that are contested can be surface or embedded (hidden), thus the conflicting values embedded in landscapes may not be visually apparent. Contested landscapes may include the valuable cultural landscapes under pressure for development, rural landscapes affected by pressures of spatial and social urbanization, landscapes, which embody different values to different ethnic groups etc.

The European Landscape Convention [16] encourages analysing and understanding all kinds of landscapes whether they are degraded or every day landscapes or landscapes of outstanding value. In the context of provisions of the Convention the above-distinguished relatively unknown landscapes certainly deserve attention. However, another issue that justifies this research also should be mentioned: the problems regarding knowledge fragmentation and generalization in the field of landscape research. The increasing amounts of data concerning various aspects of landscapes are being gathered by different disciplines using different methodologies and approaches; According to Conrad et al. [11], numerous study fields including sociology, economics, law, philosophy, anthropology, sociology, history and design and more and more new study fields and approaches, like psychology, environmental and heritage economics, hermeneutics, and even gender studies etc. are dealing with landscapes together with such key disciplines as life/physical sciences and planning/management. They note that the increasing volume of information leads to knowledge fragmentation: “researchers are effectively ‘preaching to the converted’”, and mostly to those who speak their own language. There is a lack of multi-, inter-, and trans-disciplinary approaches to studying landscapes, as Ewald [17] notes. The problem of knowledge fragmentation embodies the contradictions between the modern sectorial approach to landscapes, miscommunication between disciplines and the holistic nature of landscapes. This problem also can be viewed from another angle: holistic landscape analysis models might just present a general picture, while the detailed qualitative and quantitative data might be lacking.

The aim of this research is to formulate and propose the holistic framework for analysis of above-mentioned landscapes, which would be adaptive to different natural and anthropogenic landscapes, including the dynamic and complex rural-urban areas, would present the possibility of gradual learning, and could be used for integration of existing knowledge obtained by different methods, though will not remain just a collection of unrelated sets of data. According to Stephenson [43], such integrated landscape analysis framework should enable the multiplicity of information from different sources to be seen as an interlinked whole.

### **Integrated approach to relatively unknown landscapes**

The aim of this research was to create the model for the analysis of relatively unknown landscapes, thus for the cases then we are faced with the lack of knowledge or the separate unrelated data sets exist and the common picture has to be created and the knowledge gaps identified. This kind of model should emphasize the research processes and be based on the universal model of learning, not be limited only to provide the parallel shelves to put the existing data and the methods to obtain it. In such framework one set of data could affect the other and encourage new research: the framework should be suitable for integration of subjective and objective data starting from literature and philosophy to environmental research and economics in a way that the interaction of information could be possible. Regarding that the subject of analysis is the relatively unknown landscapes, their understanding, valuation, and management, thus the perceptible dimension, the view towards landscapes, both natural and modified by human activities, as cultural phenomena is compulsory to this model; such approach should be maintained even handling objective, quantitative, graphical data. This view can also be motivated by the idea that the preservation of nature is the act of culture. Moreover, cultural landscape studies show, that even natural landscapes can be viewed by the populations as cultural phenomena [43].

In order to coordinate and integrate the subjective and objective aspects, the culture and nature, the viewing of landscape from the different human perspectives (individual, cultural, social) and the understanding of human (individuals, groups, societies) place in landscape, the approach of cultural ecology might be useful. The association of environmental sciences and human culture into the concept of cultural ecology is allowed by the two-sided view of human nature and environment

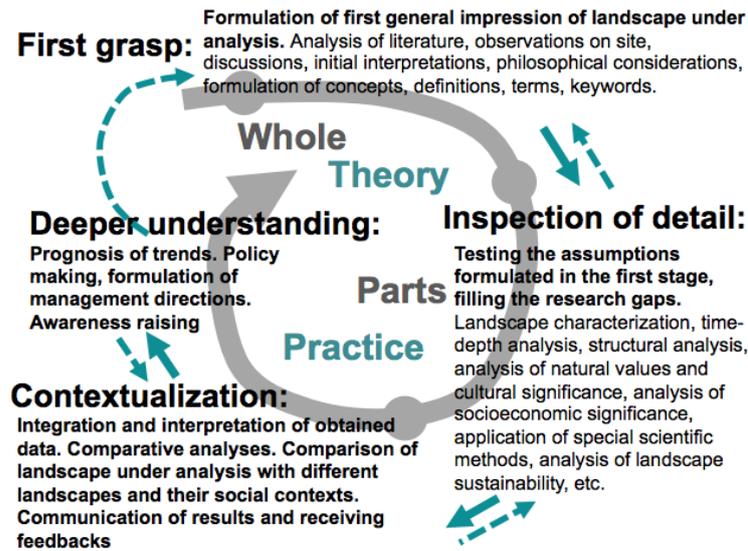


Fig. 1. Scheme of the proposed framework for understanding and analysis of relatively unknown landscapes demonstrating the process of research and its principal stages and the possible links between different sets of data [4, 23, 36, 49]

explained by von Bertalanffy: the material side is the one in which each human being lives with a physical, biological body; in the other side, according to von Bertalanffy, each person creates, uses, dominates, and is dominated by a universe of symbols [13]. Landscape is not only a set of natural forms, ecosystems, sites, buildings etc. it also refers to spiritual legacy, beliefs, and traditions. Different studies on landscape preference prove that correlation between ethnic background of landscape observer and his selected landscape as attractive and pleasant exist [24]. Conception of natural landscape is historically influenced by the human experience, traditions and cultural norms [33]. Endo [14] shows that the culture affecting the rest of the variables (international relationships and politics, science and technology, economy, industry, employment, life and society) and vice versa, that these variables affect culture; many of these interactions can be traced as the surface or embedded (hidden) aspects in landscape. According to de Bustos [13], a specific problem in one area would generate the dysfunctions in the rest. The concepts of sustainable development and sustainability also imply the links between culture and ecology. The idea of development has changed: if we state that development is supposed to be human and sustainable, then culture becomes relevant; there cannot be sustainable development without cultural sustainability, as de Bustos [13] notes. Bearing in mind the concept of cultural ecology and the need for adaptive model allowing gradual learning for landscape analysis, we have selected the hermeneutic circle as a basis for our landscape analysis framework (Figure 1). In hermeneutics our grasping of what is new in the present depends on what was already understood in the past; the historicity of human understanding is represented by the hermeneutic circle in which

a continuous flow of information prevents it from becoming a vicious circle [6]. The simplified scheme of the proposed framework for understanding and analysis of relatively unknown landscapes is presented in the figure 1 and shows how the understanding of landscape 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 [23, 49], thus one set of data can affect another. Four stages in the process of analysis are distinguished: The First Grasp, The Inspection of Details, The Contextualization (meaning both physical and social contexts), and The Deeper Understanding. Below we discuss each stage of analysis in greater detail.

#### *The First Grasp*

The initial stage is aimed at formulating the first general impression of landscape under analysis. This stage of research involves the collection and analysis of various kinds of data: analysis of scientific literature, iconographic material, initial discussions with professionals and locals, the review of existing artistic work regarding the landscapes under analysis, exploring landscapes on site. For initial explorations of landscapes on site the method of overall impression can be applied. The method of overall impression is the way of landscape research, where not landscape itself but the impressions made by it are analysed, in order to understand how various people perceive landscape [29, 49]. The First grasp stage should also include the initial interpretation, philosophical considerations based on the collected knowledge and formulated impressions. For example, the Burra Charter [10] adopted in 1999 by the Australian

ICOMOS encourages the interpretation of places of cultural significance; the document proclaims that cultural significance of many places is not readily apparent, and should be explained by interpretation. The initial analysis of literature and interpretation can include the selection from various sources or even formulation of new concepts, definitions, terms, and keywords defining the relatively unknown landscape under analysis. For example, Hill [25] underlines the significance of inventing, coining new terms in a groundbreaking research or in order to promote the desirable social responses. In the paper entitled *The Shock of the New* Taylor & Lang [45] had selected from literature 100 new concepts describing the recent urban change and rural-urban interface, including such neologisms as *penturbia*, *rururbia*, and *servurb*. Traditional concepts regarding landscape perception and beauty such as *picturesque*, *sublime*, *beautiful* can be examined in the context of landscapes under analysis as it was done in the study by Nohl [34] as well. The result of *The First Grasp* is the descriptive analysis. The formulated images, impressions, concepts and the useful part of the collected unprocessed data go to the following stage of the research.

#### *The Inspection of details*

The aim of the second stage of analysis - *The Inspection of Details* - is to test the assumptions formulated during *The First Grasp* analysis, to fill the detected research gaps in the general picture. The detailed information on various aspects of landscape obtained in this stage may encourage returning to the previous stage to correct or change some concepts or to move forward to the stage next stage - *The Contextualization*. This is the most labor intensive stage, which may include the analysis of the existing data, field research, sociological research, analysis of maps and aerial photographs, interpretation, etc. The approaches can be, though are not limited to:

*Landscape characterization.* This type of research focuses on the perceived character of landscape and its features. Sometimes it is referred to as visual characterization, however, others maintain that the landscape assessment should include all of the human's senses of perception (sight, hearing, touch, smell) and it is dependent on their personal experience, level of education, place of residence, traits and mood of landscape observer, and knowledge of ecological processes in landscape [5, 19, 37]. Landscape characterization methods focus on what features of landscape and of observers influence landscape preferences [49]: biophysical features of landscape, informational and functional human needs [7, 12], people's needs to understand and explore natural landscapes [36] etc. Various concepts are used

in this kind of research; for example: 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.) [30]; 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) [48]; coziness, interestingness, mystery, coherence, impressiveness, originality, neatness, and links with the past and culture of the nation [29] as criteria for visual and aesthetic valuation of landscape. These concepts can be used for landscape description by the experts or for sociological survey of observers. Characterization may not be limited with aesthetic aspects. At the end of 20<sup>th</sup> Century the research of landscape was focusing on the question: whether visual attractive landscapes are sustainable and ecological and vice versa [19]? New theories emerged which pointed out that landscape assessment includes not only visual or aesthetic values but also ecological values. The trend of 'ecological aesthetics' includes the principles of ecology and consideration that those valuing landscape should have the ecological knowledge to describe the landscape characteristics [18]. Whereas 'aesthetics of visual stewardship' includes the criterion of visible stewardship that describes landscape as attractive in users opinion if it is well maintained and cared for [39]. In this theory natural and wild landscapes can also be seen as aesthetic and pleasant if there are visible traces of landscape management and care. There are many landscape characteristics which are useful for different landscape assessment methods from different viewpoints. However, there is a lack of combined landscape assessment methodologies that includes all aspects of landscape.

*Time-depth analysis.* The approaches oriented towards history are very useful understanding the development and distinguishing valuable anthropogenic and natural elements in landscapes, as many natural values remain as isolated relicts lost in the superimposed landscape structured by man in a different way, as Antrop [2] notes. According to Jacobs & Mann [28], layer upon layer of meaning is invested in the form and pattern of the landscape, as much in the city as in the country. Thus the information regarding the presence and visibility of historic character in all parts of the landscape provides an important tool [14].

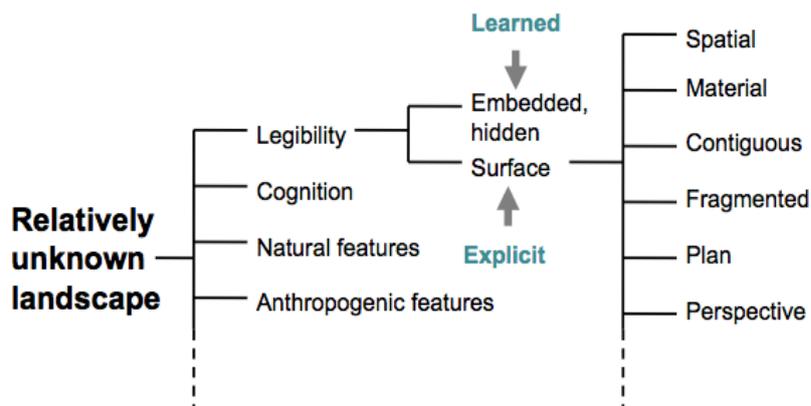


Fig. 2. Time-depth of landscape and its present legibility [14, 43]

The methodology of Historic Landscape Characterization [26] contemporarily applied in the United Kingdom is used for organically evolved rural landscapes, however Dobson [14] has analysed the possibilities of its application in urban environment. Historic Landscape Characterization projects produce interactive GIS-based descriptions of the historic dimension - the time-depth (Fig. 2) - that characterizes the analysed landscape. Time-depth projects find ways to identify the historic depth of the present day landscape from morphological analysis, general understanding or extrapolation [1]. Even if this description methodology seems past-oriented, one of the principles of Historic Landscape Characterization is “present not the past”: it is the present day landscape that is the main object of the study [42].

*Structural analysis of landscape.* Here landscape is evaluated according to indicators of its structure – type, quantity of the components and elements and relations between them [49]. Structural analysis, which is an expert-based approach, transforms landscapes into formal design parameters through the classification of landscapes biophysical features (geomorphologic 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 [9, 12, 49]. Structural analysis might include both physical tangible and visible elements and intangible characteristics and functions: values (names of places, stories and meanings, sense of community, local distinctiveness, etc.), webs (grids) (water networks, distinctive pattern of settlements, etc.), spatial aspects (landforms, quality of light, etc.), nodes (towns, homestead and farming buildings, church, post office, etc.), networks (walking tracks, etc.), features (old trees, archaeological sites, scattered cottages, sheds, etc.), activities [40, 41]. Stephenson [43] also distinguishes forms, practices

and relationships as the categories of landscape analysis and their interaction over time.

To understand patterns of both natural and man-made or transformed shapes or elements in landscape special scientific methods (for example, fractal analysis, method developed by Salingaros etc.) can be used as well. These methods are useful because they relate environmental features with human perception of the environment and its cognitive aspects [49].

*Environmental analysis /analysis of natural values in landscape.* This aspect of detailed landscape analysis is intended to integrate various objective environmental, ecological, landscape ecology approaches. These might be the analysis of specific floral and faunal species (including aspects, such as productivity, behaviour and movements) and ecosystem/nutrient/sediment dynamics [11], also the identification of the threats, the consequences of human interventions or different uses. Aerial photographs and GIS are usual tools for such analysis. Landscape ecology, as an applied science, can play an important role in addressing today’s major conservation and land-use issues and in developing responses to the pressing problems arising as a result of human-induced global change [11]. Landscape studies in ecology are based on the ecosystem services, which characterize multifunctional landscape [31]. Nowadays functionality of different landscapes is very important by taking in to account the increase of anthropogenic load and lack of natural green areas. Multifunctional landscape should provide performance of more than one category of ecosystem services (provisioning, regulating, supporting and cultural). The analysis of natural values can be linked with cultural values analysis. The elements or areas of outstanding environmental significance can be identified in this stage as the natural objects having potential cultural significance.

*Analysis of cultural significance.* The analysis of cultural significance is usually qualitative, descriptive analysis, however, it can involve such methods as observation on site, architectural, historical and other scientific analysis, statistical analysis, critical evaluation, and sociological research. Several approaches towards eliciting cultural significance can be mentioned. The Burra Charter [10] provides the guidance for the conservation and management of places of cultural significance. The approach towards cultural significance presented in the Charter is applied towards contested cultural landscapes of Australia and thus can be suitable in this case as well. Document underlines that the co-existence of cultural values should be recognized, respected and encouraged, especially in the cases where they conflict. Cultural significance here means aesthetic, historic, scientific, social or spiritual value for past, present or future generations; it is embodied in the place itself, its fabric, setting, use, associations, meanings, records, related places and related objects. The Charter also distinguished the categories of associations and meanings that are important for understanding the cultural significance of the place: associations mean the special connections that exist between people and a place (social or spiritual values and cultural responsibilities for a place); meanings denote what a place signifies, indicates, evokes or expresses and generally relate to intangible aspects such as symbolic qualities and memories. Other classifications of the aspects of cultural significance also exist: aesthetic value, spiritual value, social value, historical value, symbolic value, and authenticity value [27, 46]; maturity of form and structure, rarity and representativeness, the historical connections and continuity, and the relations to context [8, 21]; the criteria for assessing historic heritage values presented in the report Sustainable Management of Historic Heritage [42] present eighteen value categories (including: archeological, architectural, technology, scientific, rarity, integrity, etc.) subdivided into three groups: physical, historic, and cultural. Historical landscapes can be evaluated according to their maintenance, management and development plans including exploration and integration of cultural and natural elements.

*Analysis of socioeconomic significance.* The experience of the fields of economic valuation of ecosystems and cultural goods can be useful in the socioeconomic analysis of landscape. The analysis first of all can include the description of landscape as the economic cultural good distinguishing its dimensions – public cultural good, private cultural good and merit cultural good [20]. This initial part of analysis can be based on the analysis of documents and interpretation.

The categories of economic value of the landscape under analysis can be distinguished on a similar basis. These values may include the market and non-market values. The economic values of landscape can also be classified into exchange values, use values, non-use values. The use values of landscape can be classified into direct and indirect use values. The values generated by the indirect use of landscape through publications, photographs, recordings and other sources are attributed to the subcategory of indirect use values. The direct use values can be classified into the market direct use values generated by the direct use of landscape, which brings income and profit and non-market direct use values generated by the living in the preferred environment, the direct visual or recreational use of landscape, and other direct uses, which do not bring any direct financial benefits. The category of non-use values unrelated with any direct or indirect use of landscape encompasses the existence value (the mere existence of landscape is valued), bequest value (willingness to preserve landscape for future generations), investment value (willingness to pay for a landscape because it influences the price of the real estate, for example, proximity of recreational areas, quality of view), option value (willingness to visit site in the future), and altruistic value (willingness to preserve landscape in order the others could visit it) [20]. The methods based on sociological research and existing market data, such as Hedonic Price Method, Travel Cost Method, Contingent Valuation Method can be applied to elicit these landscape values. Tourism market analysis, analysis of landscape representations can be carried out to determine the types of use values and their changes. The use and non-use values provided by the landscape under analysis to locals and visitors, to different social or ethnic groups can be compared. Historic analysis how these values had changed over time can also be useful.

*Analysis of landscape sustainability.* The analysis of sustainability of landscapes also provides possibility integrating cultural and ecological aspects. Initially sustainable development was seen as the priority of landscape ecology, which emphasizes the importance of local diversity and the interactions between parts of an ecological system [43]. This concept has gradually expanded and currently encompasses social, cultural, environmental, and economic spheres, in which the analysis of landscape sustainability can be carried out. In order to avoid generalized descriptions, contemporary research presents various sets of sustainability indicators for ecology, economics, society, built environment, etc. An interesting parallel can be seen with the emerging discourse on cultural sustainability and the role of landscape in

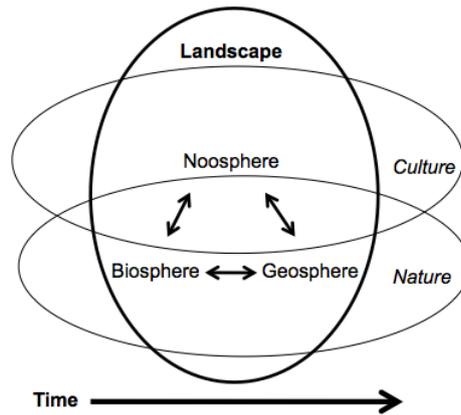


Fig. 3. Landscape model by B. Tress and G. Tress demonstrating five landscape dimensions and their interactions over time [47]

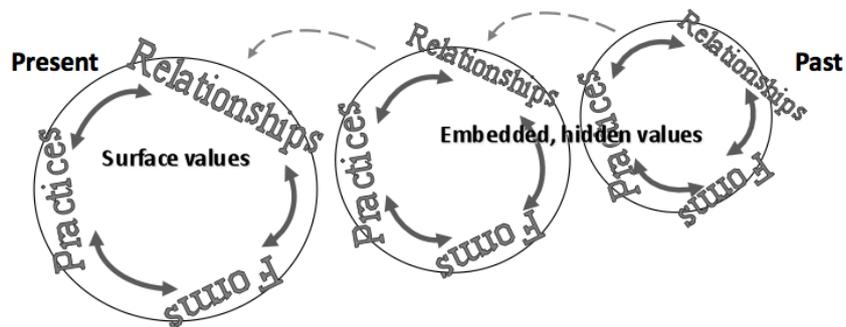


Fig. 4. Cultural Values Model by J. Stephenson for analyzing cultural landscapes showing the dynamic interaction of forms, practices (processes) and relationships over time and surface and embedded values in landscape [43]

maintaining cultural diversity [43], as the European Landscape Convention urges to recognize landscapes as an essential component of people's surroundings, an expression of the diversity of their shared cultural and natural heritage, and a foundation of their identity. Thus the dimensions of cultural sustainability - symbolic dimension, social dimension, political dimension, cooperation dimension [13] - can be analysed in the context of landscapes. Musacchio [32] distinguishes six interrelated dimensions of landscape sustainability: aesthetics, environment, ethics, equity, experience and economy. The discussion of sustainability of all these dimensions and the analysis of weaknesses and strengths, threats and opportunities can be carried out.

#### *The Contextualization*

The results of the second stage of landscape analysis are both quantitative and qualitative descriptive data. The problem arises how to present this data in a consistent manner and to set it into context. The third stage of the research encompasses the integration and interpretation of the obtained data and setting it into physical/spatial and social context.

The analysis of literature has revealed several landscape models that can be suitable for integrating

and presenting data on landscapes obtained by different methods and from different sources. For example, the model by Backhaus [3] contains four poles (Individual (Subjective pole), Culture (Symbolic pole), Society (Intersubjective pole), and Nature (Physical pole)) and six intermediate dimensions (Aesthetic, Economic, Political, Ecological, Corporeal-sensory, and Identitary). Terkneli presented the scheme of landscape aspects; the interrelated aspects are Visual aspect (forms), Cognitive aspect (meanings), and Experiential aspect (functions) [9]. Soini also presents a three-poled model of landscape multi-functionality: landscape qualities (ecological, aesthetic, historical or symbolic characteristics), landscape functions (the services that these qualities they produce) and value systems (which determine how and why people act in the landscape) [43]. These three and other models are useful tools for gathering, and presenting the information. However, the result of using similar integrated frameworks can be a static model of significance: a map of aesthetic, historic, social, ecological and other values, where values related to nature and culture are separated from experiential and social landscape values [22, 43]. In her research on different approaches towards landscape analysis and landscape models Stephenson [44] had distinguished static and

TABLE 1

Possibilities of integration and presentation of landscape research results using Cultural Values Model by Stephenson [22] and multidimensional landscape model by Tress & Tress [47]

	Cultural Values Model			Multidimensional landscape model				
	Forms	Practices, processes	Relationships	Spatial entity (physical-material dimension)	Mental entity (human sensory and reflective response to landscape)	Nexus of nature and culture	Complex system (involving the geosphere, biosphere and noo-sphere)	Temporal dimension
<b>First grasp: formulating the first general impression of landscape under analysis</b>								
Initial interpretation, philosophical considerations	+	+	+	+	+	+	+	+
Method of overall impression	+	+	+	+	+	+		+
<b>Inspection of details</b>								
Characterization of landscapes	+	+	+	+	+	+		+
Time-depth analysis	+	+	+	+	+	+	+	+
Structural analysis of landscape	+	+	+	+	+	+	+	+
Analysis of natural values in landscape	+	+	+	+		+	+	+
Analysis of cultural significance	+	+	+	+	+	+	+	+
Analysis of socioeconomic significance	+	+	+	+	+	+		+
Analysis of landscape sustainability	+	+	+	+	+	+	+	+

dynamic, spatial and temporal approaches. According to her, dynamic-spatial-temporal model, which puts emphasis on the interactions between forms, relationships, and practices over space and time, would be the most appropriate for landscape analysis and description.

This idea reflects contemporary trends in landscape research and theory. The researchers and thinkers increasingly tend to view landscape as a system. According to Antrop [2], landscape is a complex system, which can reorganize itself so drastically that it really becomes something new. Dynamic-spatial-temporal models used for integration of data on landscapes can represent these changes. Landscape models by Tress & Tress [47] and Stephenson [43] can be potentially applied to integrate and present the data on landscapes gathered in the second stage of analysis (Table 1). Tress & Tress [47] present the transdisciplinary landscape concept (Figure 3) based on five dimensions: landscape as a spatial entity (its physical-material dimension), as a mental entity (human sensory and reflective response to landscape), the nexus of nature and culture, as a complex system (involving the geosphere, biosphere and noo-sphere), as a temporal dimension [43, 47].

The Cultural Values Model was developed by Stephenson (Fig. 4) [43] as an attempt to create “a holistic conceptual structure for considering the

diversity of cultural values that might exist in any given landscape, and how these might relate to and reinforce one another”. The model demonstrates the interaction of tangible and intangible landscape components over space and time. According to Stephenson [43], this model allows utilizing, combining and seeing in a new light the already available data. It allows demonstrating cultural, aesthetic, memory, meaning factors not mere energy flows.

The setting of analysed landscape into spatial context means comparing it with other landscapes: finding its analogues and opposites, determining landscape types. Both separate aspects of landscapes, or their holistic representations using the above mentioned models could be compared. The other aspect of contextualization is the communication of the research results to the scientific community, the society and receiving the feedbacks. Transdisciplinary landscape researchers try not only to coordinate scientific approaches, but also to communicate with society, which becomes part of the research process [47]. This can be done by publications, lectures, films (documentaries), exhibitions (scientific, documentary, artistic). Sociological surveys, focus groups, discussion groups, conferences can be used for receiving social feedback.

*The Deeper Understanding*

In the last stage of analysis we have a body of knowledge on a specific landscape set in the spatial as well as the social context. When the deeper understanding of the landscape is achieved, follows the awareness raising on previously unknown relevant issues, prognosis of possible trends of landscape development, and policy making. At this stage the research focus may be rethought and new research may be initiated. Awareness raising is closely related not only to information, but also to interpretation. According to Burra Crater [10], interpretation means all the ways of presenting the cultural significance of a place. Interpretation may be a combination of the treatment of the fabric (e.g. maintenance, restoration, reconstruction); the use of and activities at the place; and the use of introduced explanatory material. Interpretation should enhance understanding and enjoyment, and be culturally appropriate. Prognosis of landscape development trends may address cultural and environmental issues; however the model by

Stephenson [43] integrating interaction of forms, practices, and relationships in landscape over a space and time, transdisciplinary model by Tress & Tress [47] or similar dynamic-spatial-temporal models can be applied not only for analysing the past and present, but also for prediction and modelling. According to Jacobs & Mann [28], securing the memories of the past is necessary to support our visions of the future. Policy making – planning and management – is concerned with environmental protection strategies, enhancement of cultural values or the integrated protection of cultural and natural values, compatible uses of landscape, landscape design, etc. As Burra Charter [10] underlines, the compatible use means the use, which respects the cultural significance of a place. Such a use involves no, or minimal, impact on the cultural significance.

Table 2 summarizes four above presented landscape analysis stages.

TABLE 2

Summary of tools, methods, and approaches that can be applied in each stage of landscape analysis  
[Source: construction by authors]

Approach	Methods	Data sources	Type of results
<b>Stage 1: The First Grasp: formulating the first general impression of landscape under analysis</b>			
Initial interpretation, philosophical considerations	Analysis of scientific literature, iconographic material, initial discussions with professionals and locals, the review of existing artistic work regarding the landscapes under analysis, etc.	Publications, documents, artistic work, professionals, local communities, visitors, etc.	Qualitative
Method of overall impression	Exploring landscapes on site	Experiences, impressions on site	Qualitative
<b>Stage 2: The Inspection of Details</b>			
Characterization of landscape	Landscape description based on predefined criteria, application of concept of preferred landscape	Experiences, impressions on site, maps and other documents, professionals, local communities, visitors etc.	Qualitative and quantitative
Time-depth analysis	Historic Landscape Characterization methodology or similar approaches	Experiences, impressions on site, historical maps and documents, professionals, local communities, etc.	Qualitative and quantitative
Structural analysis of landscape	Distinguishing structural landscape components, such as nodes, networks, spaces, etc., elements, analyzing the links between them	Experiences, impressions on site, maps and other documents, professionals, local communities, visitors, etc.	Qualitative and quantitative
Analysis of natural values in landscape	Environmental valuation techniques	Data obtained during analysis on site, aerial photographs, maps, databases, etc.	Qualitative and quantitative
Analysis of cultural significance	Analysis of aspects of cultural significance, such as aesthetic, historic, scientific, social or spiritual values	Experiences, impressions on site, maps and other documents, professionals, local communities, visitors, etc.	Qualitative
Analysis of socioeconomic significance	Application of market and non-market valuation techniques	Professionals, communities, visitors, available market data, documents, etc.	Quantitative and qualitative
Analysis of landscape sustainability	Analysing landscape sustainability in different dimensions: social, cultural, economic, environmental.	Data obtained during analysis on site, aerial photographs, maps, documents, databases,	Qualitative and quantitative

Approach	Methods	Data sources	Type of results
	Sustainability indicators can be applied, SWOT analysis	professionals, communities, visitors, etc.	
<b>Stage 3: The Contextualization: integration, interpretation of obtained data, its spatial and social contextualization</b>			
Integration and interpretation of obtained data	Dynamic-spatial-temporal landscape models	Data obtained in previous research stages, interpretation	Quantitative
Comparison	Comparative analysis	Data obtained in previous research stages and similar data on other landscapes, with which the landscape under analysis is compared	Qualitative and quantitative
Communication of results	Lectures, discussions, publications, films, exhibitions, internet sites, etc.	Data obtained in previous research, interpretation	Qualitative and quantitative
Receiving feedbacks from society	Discussions, sociological surveys	Society, local communities, visitors, etc.	Qualitative
<b>Stage 4: The Deeper Understanding</b>			
Prognosis of trends	Dynamic-spatial-temporal landscape models, analysis, systematization	Obtained in previous research and constantly renewed data, interpretation	Qualitative and quantitative
Policy making	Strategies, plans, projects	Obtained in previous research and constantly renewed data, interpretation	Qualitative and quantitative
Awareness raising	Lectures, discussions, publications, films, exhibitions, internet sites, etc.	Obtained in previous research and constantly renewed data, interpretation	Qualitative
Rethinking research focus	Discussions, analysis, systematization, synthesis of the research results	Obtained in previous research and constantly renewed data, interpretation	Qualitative
Rethinking or redeveloping the aspects of the methodology	Discussions, analysis, systematization, synthesis of the research results	Obtained in previous research and constantly renewed data, interpretation	Qualitative

## Conclusions

1. The scientific novelty of the research lies in the development and characterization of the concept of the relatively unknown landscape applicable to the areas of rural-urban interface among other types of landscape and the integrative approach based on hermeneutics and cultural ecology towards the gradual accumulation, analysis and presentation of data regarding these landscapes.

2. Four categories of relatively unknown landscapes were distinguished in this research: the landscapes that emerge after the radical political, social, agricultural or industrial reforms or innovations, radical economic changes etc., so-called emerging landscapes; the complex, dynamic, mutable, and often fragmented landscapes that often emerge in the areas of rural-urban interface experiencing huge pressure for development, so-called landscapes of new complexity; the landscapes in hardly accessible, sparsely populated areas; the contested landscapes embodying conflicting values. The characterization of relatively unknown landscapes allows concluding that the complex, contested, dynamic rural-urban interface areas are the relatively unknown landscapes par excellence.

3. The considerable amount of fragmented data on such relatively known environments usually exists, however, they lack comprehensive understanding and coherent image and this makes their representation and management difficult. The research has demonstrated that the cultural ecology approach allowing the gradual learning and the integration of data into dynamic-spatial-temporal [43] models is appropriate for relatively-unknown landscapes including rural-urban interface areas.

4. The proposed hermeneutic circle based framework for analysis and understanding of relatively unknown landscapes consists of four interrelated stages: The First grasp aimed at formulation of the first general impression of landscape, it includes the analysis of literature, observations on site, discussions, initial interpretations, philosophical considerations, formulation of concepts, definitions, terms, keywords, etc., The Inspection of Details stage is aimed at testing the assumptions formulated in the first stage and filling the research gaps, this stage may include landscape characterization, time-depth analysis, structural analysis, analysis of natural

values and cultural significance, analysis of socioeconomic significance, application of special scientific methods, analysis of landscape sustainability, etc.; The Contextualization stage is aimed at integration and interpretation of obtained data, comparison of landscape under analysis with different landscapes and their social contexts, communication of results and receiving feedbacks; The Deeper Understanding is aimed at the prognosis of trends, policy making, formulation of management directions, awareness raising, rethinking the research focus.

5. The benefits of the developed approach lie in that the analysis of landscape in this circular reinforcing movement is adaptive to different natural and anthropogenic landscapes including the areas of

rural-urban interface, presents the possibility of gradual learning, and could be used for integration of existing knowledge obtained by different methods. The research has showed that the approach applied in hermeneutics can be successfully applied in landscape analysis as well. The potential disadvantages of the approach may be related with the large volumes of diverse data that can be potentially integrated using the developed model and the concise and clear presentation of the research results. The future research might include the practical application of the approach to different types of landscapes including the areas of rural-urban interface and the more detailed elaboration of the separate aspects of the overall model.

## References

1. **Aldred, O., Fairclough, G.** *Historic landscape characterization. Taking the stock of a method.* English Heritage, Somerset County Council, 2003.
2. **Antrop, M.** Background Concepts for Integrated Landscape Analysis. *Agriculture, Ecosystems and Environment*, 2000, 1-2(77), p. 17–28.
3. **Backhaus, N.** Regional Environmental Governance: Interdisciplinary Perspectives, Theoretical Issues, Comparative Designs (REGov). Landscapes, Spatial Totalities or Special Regions? *Procedia Social and Behavioral Sciences*, 2011, 14, p. 193–202.
4. **Bargiela-Chiappini, F.** Hyphenated Research. *Forum: Qualitative Social Research*, 2011, 12, Art. 2.
5. **Bell, S.** *Landscape: Pattern, Perception and Process.* 2<sup>nd</sup> ed. New York: Routledge, 2012, 348 p.
6. **Bontekoe, R.** *Dimensions of the hermeneutic circle.* Humanities Press International, 1996.
7. **Brown, T., Keane, T., & Kaplan, S.** Aesthetics and Management: Bridging the Gap. *Landscape and Urban Planning*, 1986, 13, p. 1–10.
8. **Bučas, J.** *Kraštovarkos pagrindai.* Kaunas: Technologija, 2001.
9. **Burgess, D., Patton, M., Georgiou, S., Matthews, D.** Public attitudes to changing landscapes: implications for biodiversity. *Proceedings of the 11<sup>th</sup> BIOECON Conference*, Venice, Italy, 21–22 September 2009.
10. *Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance.* Australia ICOMOS, 1999 [online 03.01.2013.]. [http://australia.icomos.org/wp-content/uploads/BURRA\\_CHARTER.pdf](http://australia.icomos.org/wp-content/uploads/BURRA_CHARTER.pdf)
11. **Conrad, E., Christie, M. & Fazey, I.** Is Research Keeping up with Changes in Landscape Policy? A Review of the Literature. *Journal of Environmental Management*, 2011, 92, p. 2097–2108.
12. **Daniel, T. C.** Whither Scenic Beauty? Visual Landscape Quality Assessment in the 21st Century. *Landscape and Urban Planning*, 2001, 54, p. 267–281.
13. **De Bustos, J. C. M.** Cultural Ecology. *Infoamerica*, 2009, 1, p. 49–48.
14. **Dobson, S.** *Exploring ontologies of historic landscape characterisation: towards an approach for recognizing the impact of incremental change to historic legibility in urban areas, 2008* [online 01.03.2014.]. [http://www.towntology.net/Meetings/0710-Torino/articles/09Paper%20\(114-124\).pdf](http://www.towntology.net/Meetings/0710-Torino/articles/09Paper%20(114-124).pdf)
15. **Endo, N.** *The relevance of international communication for socio-cultural development with special reference to the new methodology vis-à-vis the application to an engineering approach.* Zagreb: Culturelink, 1996.
16. *European Landscape Convention.* Council of Europe, 2000 [online 01.03.2013.]. <http://conventions.coe.int/Treaty/Commun/QueVoulezVous.asp?NT=176&CM=8&CL=ENG>
17. **Ewald, K. C.** The Neglect of Aesthetics in Landscape Planning in Switzerland. *Landscape and Urban Planning*, 2001, 54, p. 255–266.
18. **Gobster, P. H.** An Ecological Aesthetic for Forest Landscape Management. *Landscape Journal*, 1999, 18, p. 54–64.
19. **Gobster, P. H., Nassauer, J. I., Daniel, T. C., Fry, G.** The Shared Landscape: What Does Aesthetics Have to Do With Ecology? *Landscape Ecology*, 2007, 22, p. 959–972.
20. **Gražnelvičiūtė-Vilenišké, I.** *Non-market valuation of built heritage. Theoretical context and methodological premises.* Saarbrücken: LAP Lambert academic publishing, 2010.
21. **Grazulevičiūtė-Vileniške, I., Matijosaitienė, I.** Cultural Heritage of Roads and Road Landscapes: Classification and Insights on Valuation. *Landscape Research*, 2010, 35, p. 391–413.
22. **Herlin, I.** New Challenges in the Field of Spatial Planning: Landscapes. *Landscape Research*, 2004, 29, p. 399–411.

23. *Hermeneutics*. Hermeneutics Framework, 2013 [online 01.03.2014.]. <http://qualmethods.wikispaces.com/Hermeneutics>
24. **Herzog, T. R., Herbert, E. J., Kaplan, R., Crooks, C. L.** Cultural and Development Comparisons of Landscape Perceptions and Preferences. *Environment and Behavior*, 2000, 3 (32), p. 323–346.
25. **Hill, K.** Visions of sustainability. *In*: Benson J. F., Roe M. (eds.) *Landscape and Sustainability*. Abingdon: Taylor & Francis, 2007, p. 297–313.
26. *Historic Landscape Character*. English Heritage, 2013 [online 09.08.2014.] <http://www.english-heritage.org.uk/professional/research/landscapes-and-areas/characterisation/historic-landscape-character/>
27. **Holden, J.** *Capturing cultural value. How culture has become a tool of government policy*. London: Demos, 2004.
28. **Jacobs, P., Mann, R.** Landscape Prospects of the Next Millennium. *Landscape and Urban Planning*, 2000, 47, p.
29. **Kamičaitytė-Virbašienė, J.** *Kraštovaizdžio vizualinės kokybės reguliavimas kraštotvarkoje (Lietuvos pavyzdžiu)*. Ph.D. thesis. Kaunas: Kaunas University of Technology, 2003.
30. **Kaplan, R., Kaplan, S.** *The experience of nature: a psychological perspective*. Cambridge: Cambridge University Press, 1989.
31. **Lovell, T. S., Johnston, D. M.** Designing Landscapes for Performance Based on Emerging Principles in Landscape Ecology. *Ecology and Society*, 2009, 1 (14) [online 12.11.2011.]. <http://www.ecologyandsociety.org/vol14/iss1/art44/>
32. **Musacchio, R. L.** The Scientific Basis for the Design of Landscape Sustainability: A Conceptual Framework for Translational Landscape Research and Practice of Designed Landscapes and the Six Es of Landscape Sustainability. *Landscape Ecology*, 2009, 24, p. 993–1013.
33. **Nassauer, J. I.** Culture and Changing Landscape Structure. *Landscape Ecology*, 1995, 4(10), p. 229–237.
34. **Nohl, W.** Sustainable Landscape Use and Aesthetic Perception – Preliminary Reflections on Future Landscape Aesthetics. *Landscape and Urban Planning*, 2001, 54, p. 223–237.
35. **Phillips, D., Williams, K., Andrews, G.** et. al. *Literature review on peri-urban natural resource conceptualization and management approaches*. Peri-Urban Production Systems Research Natural Resources Systems Programme, University of Nottingham, University of Liverpool, 1999.
36. *Research Approaches*. Growing Knowledge, 2013 [online 01.03.2014.] <http://people.dsv.su.se/~evafaahr/lic/lic-2.html>
37. **Sevenant, M., Antrop, M.** Cognitive Attributes and Aesthetic Preferences in Assessment and Differentiation of Landscapes. *Journal of Environmental Management*, 2009, 9(90), p. 2889–2899.
38. **Sevenant M., Antrop M.** The Use of Latent Classes to Identify Individual Differences in the Importance of Landscape Dimensions for Aesthetic Preference. *Land Use Policy*, 2010, 27, p. 827–842.
39. **Sheppard, S. R. J.** Beyond Visual Resource Management: Emerging Theories of an Ecological Aesthetic and Visual Stewardship. *Forests and Landscapes: Linking Ecology, Sustainability, and Aesthetics*, 2001, p. 149–172.
40. **Stephenson, J., Bauchop, H. & Petchey, P.** *Bannockburn heritage landscape study*. Wellington: New Zealand Department of Conservation, 2004.
41. **Stephenson, J.** Many Perceptions, One Landscape. *Landscape Review*, 2007, 11, p. 9–30.
42. *Sustainable Management of Historic Heritage. Heritage Landscape Values*. Discussion paper No. 3, New Zealand Historic Places Trust, 2007 [online 01.03.2014.] <http://www.historic.org.nz/publications/sustainmgtseries.aspx>
43. **Stephenson, J.** The Cultural Values Model: an Integrated Approach to Values in Landscapes. *Landscape and Urban Planning*, 2008, 84, p. 127–139.
44. **Stephenson, J.** The Dimensional Landscape Model: Exploring Differences in Expressing and Locating Landscape Qualities. *Landscape Research*, 2010, 35, p. 299–318.
45. **Taylor, P. J., Lang, R. E.** The Shock Of The New: 100 Concepts Describing Recent Urban Change. *Environment and Planning A*, 2004, 36, p. 951–958.
46. **Throsby, D.** *Economics and culture*. Cambridge: Cambridge University Press, 2002.
47. **Tress, B., Tress, G.** Capitalizing on Multiplicity: a Transdisciplinary Systems Approach to Landscape Research. *Landscape and Urban Planning*, 2001, 57, p. 143–157.
48. **Tveit, M., Ode, A., Fry, G.** Key Concepts in a Framework for Analysing Visual Landscape Character. *Landscape Research*, 2006, 31, p. 229–255.
49. **Zaleskienė, E., Kamičaitytė-Virbašienė, J., Graluževičiūtė-Vileniškė, I.** Aesthetic Aspects of Landscapes in the Rural-Urban Interface Zones. *Acta Biologica Universitatis Daugavpiliensis*, 2013, 13, p. 15–30.

INFORMATION ABOUT AUTHOR:

**Indre Grazuleviciute–Vileniske** (Kaunas, 1981).

Associated professor at Kaunas University of Technology, Faculty of Civil Engineering and Architecture, Department of Architecture and Urbanism since 2012. Current and previous research interests: valuation and preservation of cultural heritage, management of rural-urban interface, sustainable architecture. Kaunas University of Technology, Faculty of Civil Engineering and Architecture, Department of Architecture and Urbanism. Address: Kaunas University of Technology, Faculty of Civil Engineering and Architecture, Studentu st. 48, LT-51367 Kaunas, Lithuania. Tel.: +370 37 451546, E-mail: indre.grazuleviciute@ktu.lt

**Erika Zaleskiene** (Radviliskis, 1986).

Ph. D. student at Kaunas University of Technology since 2012. Current and previous research interests: formation of green areas, rural-urban interface, rural landscapes, landscape aesthetics. Kaunas University of Technology, Faculty of Civil Engineering and Architecture, Department of Architecture and Urbanism. Address: Kaunas University of Technology, Faculty of Civil Engineering and Architecture, Studentu st. 48, LT-51367 Kaunas, Lithuania. Tel.: +370 37 451546, E-mail: erika.zaleskiene@gmail.com

**Maija Veinberga** (Riga, 1986)

PhD student at Latvia University of Agriculture since 2011.

Current and previous research interests: aesthetics and ecology of green spaces, urban planning, landscape perception, landscape assessment. Latvia University of Agriculture, Faculty of Environment and Civil Engineering, Department of Landscape Architecture and Planning Address: Latvia University of Agriculture, Faculty of Environment and Civil Engineering, Akademijas st. 19, LV-3001, Jelgava, Latvia. Tel: +371 63021413, E-mail: maija.veinberga@llu.lv

**Kopsavilkums.** 20. un 21. gadsimtu raksturo plaša mēroga cilvēka ietekme uz vidi un ainavu, kas izraisa dažādas neparedzamas un iepriekš nepieredzētas izmaiņas ainavā. Tiek uzskatīts, ka uz planētas vairs nepastāv vide, ko nebūtu skārusi mazāka vai lielāka cilvēka ietekme. Tomēr mūsdienās joprojām pastāv ainavas, kas mūsdienu sabiedrībā un ainavas pētnieku aprindās nav līdz galam izpētītas un izprastas. Šajā pētījumā termins "relatīvi nepazīstamas ainavas" tika piemērots, lai definētu šādu vidi, piemēram, jauna veida ainavas, jaunas kompleksas ainavas, kas galvenokārt veidojas kā lauku un pilsētu mijiedarbības zonas, grūti pieejamas mazapdzīvotas ainavas un diskutablās ainavas. Šī pētījuma galvenais mērķis bija formulēt zinātniski metodisku pamatojumu relatīvi nepazīstamu ainavu analīzei un izpētei.

Pētījumā izveidotā sistēma balstās uz hermeneitikas apli, kas iekļauj nepārtrauktu mācīšanos un kultūras ekoloģijas jēdzienu - izprast ainavu no cilvēka perspektīvas, vienlaicīgi veicinot izpratni par cilvēka vietu ainavā. Piedāvātā sistēma sastāv no četriem savstarpēji saistītiem posmiem - Pirmais iespaids (pirmā vispārējā analizētās ainavas iespaids formulēšana), Detalizēta izpēte (pirmajā posmā formulēto pieņēmumus pārbaude, aizpildot robus esošajās zināšanās par analizēto ainavu), Kontekstualizācija (iegūto datu integrācija un interpretācija, analizētās ainavas salīdzināšana ar citām ainavām un to sociālo kontekstu, rezultātu apspriešana) un Dziļāka izpratne (tendenču prognozēšana, politikas veidošana, pārvaldības virzienu formulēšana, izpratnes veicināšanu, pētījuma fokusa pārskatīšana) - un tā ir pielāgojama dažādu dabisku un antropogēnu ainavu izpētei, tostarp pilsētu-lauku mijiedarbības teritorijās, tā piedāvā pakāpeniskas mācīšanās iespēju, un to var izmantot dažādu citu metožu izmantošanā iegūto esošo zināšanu integrācijā. Lai koordinētu un integrētu subjektīvos un objektīvos aspektus, kultūru un dabu, ainavas izpēti no dažādām cilvēka perspektīvām (individuālā, kultūras, sociālā) un izpratni par cilvēka (individuāla, grupu, biedrību) vietu ainavā, tiek izmantota kultūras ekoloģijas pieeja. Ainavas detalizētā izpētē tiek izmantotas ainavas raksturojuma, ainavas laika-dziļuma analīzes, ainavas struktūras analīzes, vides analīzes/ainavas dabas vērtību analīzes, kultūras nozīmīguma analīzes, socio-ekonomisko aspektu nozīmīguma analīzes un ainavas ilgtspējas analīzes metodes.

Pētījuma rezultātā tika izdalītas četras relatīvi nepazīstamu ainavu kategorijas: jaunās ainavas, kas radušās radikālu politisku, sociālu, lauksaimniecības vai rūpniecības reformu vai inovāciju, radikālu ekonomisko izmaiņu rezultātā; jaunās kompleksās ainavas, kas ir sarežģītas, dinamiskas, mainīgas, un bieži sadrumstalotas ainavas, kas parādās lauku un pilsētu mijiedarbības zonās un saistītas augstu atbilstības spiedienu; ainavas, kas atrodas grūti pieejamās mazapdzīvotās vietās; un diskutablās ainavas, ko raksturo dažādas pretrunīgas vērtības vai konfliktējošus objektus. Veiktais pētījums norādīja, ka kultūras ekoloģijas pieeja, izmantojot iegūto datu integrāciju dinamiskos telpas-laika modeļos, ir piemērota relatīvi nepazīstamu ainavu izpētei.