INGRIDA POVILAITIENĖ

ASSESSMENT AND MODELLING OF THE IDENTITY OF CITYSCAPE

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ASSESSMENT AND MODELLING OF THE IDENTITY OF CITYSCAPE

Doctoral dissertation
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INGRIDA POVILAITIENĖ

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INTRODUCTION

The relevance of the research

The relevance of the dissertation topic – *assessment and modelling of cityscape identity* – is determined by the following factors:

Urbanisation and search for human place

The world has become predominantly urban. Today, more than a half of the world's population lives in urban areas, and that number is expected to increase even further (UN, 2018). It is virtually impossible to cast doubt on Winston Churchill's phrase that *we shape cities, thereafter they shape us*. The quality of life mainly depends on the quality of the living environment (Kamp, Leidelmeijer, Marsman, & Hollander, 2003). Thus, the need to find the optimal way to develop our cities is becoming increasingly relevant. Sustainable urban planning and design comprise not only environmental, economic but also sociocultural and aesthetic aspects of the urban environment (Commission of the European Communities, 2004; Council of European Union, 2006; *Leipzig Charter*, 2007; *European Urban Charter II*, 2008). In this context, the visual (i.e., spatial, compositional and aesthetic) qualities of the city defining the sense of identity and strengthening sociality should not be underestimated as they are just as important.

Globalisation and search for uniqueness

The term 'globalisation' was coined in the 1980s, but the process of economic integration, exchange of goods, people and ideas is not a recent phenomenon. Religions have long been among the driving forces of globalisation (Herrington, 2013). They have arguably done a lot to shape how we live today. The most obvious example is the houses of prayer: Christian churches, Muslim mosques or Jewish synagogues spreading all over the world. However, the changes were more gradual in the past and thus likely more organic and locally adaptive in comparison with the industrial revolution or even more opposite to the digital one. The pace and intensity of globalisation is that worrying factor today (Naerssen, 2001). It is great to share ideas or solutions easily, but not all of them are suitable everywhere. Due to the reckless adaptation of the global trends, world's cities are facing a real threat of losing their identities (same street grids, same faceless architecture and same lifestyle no matter in which part of the world you are). In a situation like this, people are more than ever driven by something that is unique, different, and is denoted by a more profound value. Therefore, the distinctive character of an area, its exquisite buildings and other unique elements are crucial to a competitive city of today.

Constant change and search for stability

Things change constantly, and cities are not an exception. History abounds with examples when the urban fabric was drastically destroyed and then re-created. The 'reconstruction' of Lisbon following the earthquake of 1755 leading to the destruction of the entire structure of the old Baixa district (Mullin, 1992), the cardinal restoration of Paris in 1852, or the grand development project for the Eixample in Barcelona are just a few examples of many. Certainly, changes do not have to be radical, but they are simply inevitable. From time immemorial, people have been modifying their environment to adapt it to their needs, and it is a never-ending process since the needs

are also changing. Still, despite that permanent change, the inhabited place "has to inform us not only where we are geographically, but it has to inform us where we are in our culture" (Kunstler, 2004). Something has to remain; something has to be stable. Concerns for that were raised as early as in the mid-twentieth century; it was a new stage of European Heritage Protection – the period of intensive assessment and preservation of historic cities. However, as Tung (2001) noted, both the preservation of the present peculiarities, and the further development of the city are equally important issues of the urban design. Not only do we need to protect what already exists, but we also need to know how to create something that will have value in the future. Thus, it is essential to develop a methodology allowing to assess and model such a cityscape that "is sensitively perceived and aesthetically experienced, shapes the public's consciousness, stereotypes of its behaviour, creates topophilia values and maintains the identity of the nation" (Daniulaitis, 2003).

The aim and tasks of research

Keeping all the above-mentioned factors in mind, *the aim of the research* is the enhancement of knowledge and understanding of the cityscape identity (as a complex, interdisciplinary phenomenon, a construct of both subjective and objective facets) and the development of a methodology for its assessment and modelling.

The tasks of the research:

• to overview the related scientific literature, the current legislation base and the practical experience in Lithuania and abroad in order to understand the current knowledge on cityscape identity and to formulate the research approach;

• to define and refine the ambiguous interdisciplinary term of 'cityscape identity' and to determine its characteristic concepts and dimensions/attributes;

• to review theories suitable for the assessment and modelling of the holistic cityscape identity while focusing on its subjective as well as objective facets;

• to formulate a theoretical framework (a hypothetical model) for the assessment and modelling of the holistic cityscape identity;

• to test the validity of the proposed theoretical framework by applying it to a certain case and evaluating the attributes of different concepts of the cityscape identity;

• to summarise and systematically compare the results of analyses of the different concepts of the holistic cityscape identity, to reveal the factors influencing certain results and to draw conclusions;

• to develop proposals/guidelines for urban development concerning the cityscape identity based on the previously derived conclusions.

Research object

The general object of this research is *cityscape identity* – a dynamic collection of an entity's attributes (both subjective and objective) which allows a cityscape to be distinguished from others (uniqueness), and, at the same time, a set of attributes that allows a cityscape to be assigned to a group (sameness). *The particular object of this research* is the *holistic cityscape identity of Kaunas*. In addition to being the second-largest city in Lithuania, an important centre of culture, technology, science and

industry, Kaunas is also characterised by the richness, complexity and diversity of the urban fabric, and, therefore, it is explicitly suitable as a case study for developing and testing the methodology of assessment and modelling of the cityscape identity.

Previous research on the topic

Western architectural theorists, critics and practitioners have been studying the issues of urban aesthetics and originality for at least a half of a century. Thus, there are several fundamental works necessary to mention and consider while moving further on the topic of *cityscape identity*.

A starting point could be the research focused on *place*, more specifically, the separation of the meaningful *place* from an abstract *space* (Buttimer, 1980; Canter, 1977; Meiss, 1990; Norberg-Schulz, 1980; Relph, 1976; Tuan, 1977, 1979). These works are crucial in order to understand that *city* is also much more than a physical settlement or some expression of an area of land. The city always expresses local and specific meanings, and that makes it quite a *place*. Then, it is necessary to delve deeper particularly into the *urban theory* (Alexander, Ishikawa, & Silverstein, 1977; R. Rogers, 1997; Rossi, 1982; Rowe & Koetter, 1978; Salingaros, 2005) and the *historical development of cities* (Jacobs, 1961; Mumford, 1961; Tung, 2001). The latter works provide general understanding of the city as a dynamic system with all the different components and their interrelations. The city is understood as a complex phenomenon comprising people, social, economic, ecological and cultural relations along with the physical expression. Still, as architects and urban planners mainly deal with the physical urban environment and its visual qualities, it is worth mentioning several studies which focused specifically on *cityscape* (i.e., the view or appearance of the city) (Appleyard, Lynch, & Myer, 1964; Cullen, 1961; Lynch, 1960). The influential ideas of those studies have been further developed in subsequent works (Nasar, 1998; Thwaites & Simkins, 2007; R. J. Williams, 2019), and they remain relevant to this day. Yet, it should be noted that even though the emphasis of those studies was on the physical city, the observer's *interaction* with it was as much, if not even more, important there. Certainly, the identification process is just one of the many possible ways how the observer/user perceives the environment and interacts with it. Even a separate field of environmental psychology exists – *environmental behaviour* studies (Altman & Chemers, 1984; Lang, 1987a), which explores issues of perception/cognition, behaviour setting, personal space/privacy, territoriality/defensible space, environmental stress, etc. Keeping in mind *identity* as the focal point of this dissertation, other topics of environmental behaviour cannot be overlooked either because they also contain substantial insights pertaining to the question of the *cityscape identity*. As for the *cityscape identity*, in particular, it is difficult to find direct references for its assessment or modelling, but several more recent studies at least to some extent addressed the issues of *place-based/urban/landscape identity* (Kaymaz, 2013; Osborne, 2001; Sepe, 2013; Stobbelaar & Pedroli, 2011; Wékel, 2016).

As well as foreign researchers, Lithuanian authors have also examined the development and peculiarities of the urban structure, the characteristic features of certain urban elements and their interrelationships. In their works, both Miškinis

(1991) and Šešelgis (1996) analysed in detail the *history of urbanism* and *development* of Lithuanian cities. Miškinis (1974) also described the *characteristics of the urban layout* of Lithuanian settlements, whereas, Jurkštas (1994) studied the problem of *architectural harmonisation in old towns*. Later, the general issues of the *cityscape and its formation* were tackled by Daniulaitis (2003), Zaleckis (2005a), Kamičaitytė-Virbašienė and Leitanaitė (2005). There are also several studies focused more specifically on the *urban (visual) identity* (distinctiveness versus sameness) (Daunora, Kirvaitienė, & Vyšniūnas, 2004; Mačiulis, 2006; Vanagas, 2006; Zaleckis, Kamičaitytė-Virbašienė, & Ramanauskas, 2014). Furthermore, in his book on *urban sociology*, Vanagas (1996) highlighted the significance of the social dimension for the development of cities. Thus, the *sociocultural context* became an important aspect for the revelation of the place identity and its further development (Bardauskienė, 2008; Grunskis, 2003; Jakaitis, 2005; Petrušonis, 2004; Rubavičius, 2005; Zaleckis, 2002). All of these works, although not always directly, have had a great significance for the perception of today's city and for the understanding of the inevitable human-environment relationship.

Although it seems that a lot has already been done, a unified *concept of the phenomenon of cityscape identity is missing* among the works of the above mentioned authors; the terminology largely varies (different notions are used, or the same ones are defined differently). The absence of the universally accepted concept also leads to *methodological difficulties* in assessing the phenomenon itself. There is a lack of clear criteria and indicators that would not only allow to assess the current situation of the cityscape identity but also enable the *search for the means to create a unique environment*.

These are interdisciplinary issues the answers to which lie not only in the fields of architecture, urban design, or planning, but also environmental psychology, culturology, sociology, philosophy, semiotics, ecology, geography, and so on. Therefore, when examining the cityscape identity, it is important to maintain a broader perspective while assessing not only the tangible but also the intangible psychological aspects of the environment which are still quite often insufficiently addressed in architectural and urban planning practices.

Methodology of research

The topic of the dissertation is interdisciplinary, thus, the work combines and interprets information and methods related to the research topic from various scientific fields (architecture, urban design, geography, psychology, philosophy, etc.). Depending on the stage of the research, the following research methods were applied in the dissertation:

• overview, selection and analysis of foreign and Lithuanian literature on the topics of the cityscape, cityscape identity, urban development, heritage conservation, environmental psychology, preferred environment, visual aesthetic evaluation, etc.

• comparative analysis of the current experience and ideas, their synthesis and generalisation into a cohesive, coherent, and hierarchical theoretical framework.

• methodologies of *measuring the sense of the place* by Shamai (1991), Shamai and Ilatov (2005) were used in the research as the basis to design the semi-structured

resident's interview which helped to reveal the *sense of the place* concept of the holistic cityscape identity and its determining factors. Statistical methods were applied to analyse the collected quantitative data (values of the mean, standard deviation, median, etc.). Qualitative content analysis and coding were performed for the answers to the open questions.

• overview of the literature on environmental psychology, landscape geography and other fields (Gibson, 1950, 1966; Hostetter, 2016; Lewis, 1976; Rapoport, 1977; Relph, 1976; Wylie, 2007, etc.) was done in order to define the model reflecting the formation and interpretation of the *meaning of the place.* The identification of symbols of the cultural text in Kaunas based on theories of semiotics (Cole, 1998; Zaleckis *et al*., 2014) and expert evaluation of those symbols was done through the prism of the dimensions of the *meaning of the place*.

• identification of *separate elements* defining Kaunas cityscape identity was based on the methodologies of *experiential landscape* (Thwaites & Simkins, 2007), *image of the city* (Lynch, 1960), while also taking into account the opinion of experts, the results of the semi-structured resident's interview and the current protection status of the urban elements.

• comparative analysis of the available research, systematisation and generalisation of their results, as well as traditional analysis of urban morphology while using the capabilities of *ArcGIS* software (such toolsets as *Spatial Analyst*, *Spatial Statistics*, etc.) was performed in order to reveal the attributes of the concept *systems of elements*.

• fractal theory (Batty & Longley, 1994; Cooper, 2003; Cooper & Oskrochi, 2008; Ostwald, 2013; Ostwald, Vaughan, & Tucker, 2008, etc.) was employed in order to test possibilities so that to reveal the complexity of the streetscape and the panoramic views of Kaunas city. *Fractal Analysis System* (NARO) was used for the analysis.

• all the experimental research data was stored, processed and analysed by using *ArcGIS* software.

Novelty and practical benefits of research

Methodological novelty. In the context of the global and local urban development trends, a multifaceted and interdisciplinary phenomenon of the cityscape identity has been examined while paying special attention to the importance of cultural and psychological aspects. The proposed methodology for holistic cityscape assessment and modelling, in addition to the traditional methods, involves using geographic information systems (GIS) for data collection, processing and display.

The novelty of the research results. The term and definition of the holistic cityscape identity has been formed and justified; this allowed methodical linking of both subjective and objective aspects of the environmental identity and their dimensions into a single, logically defensible system of assessment and modelling. Assessment of Kaunas cityscape identity has been done, and the possible ways of using the results of cityscape identity assessment in the spatial development have been scrutinised.

Applicability. The theoretical results (the concept of the holistic cityscape identity, the methodology for its assessment and modelling, the determination of the holistic cityscape identity in Kaunas, etc.) can be used as a starting point for future research on this topic. Comparative analysis of the research results is possible both by further developing the methodology proposed by the author in this work, or else by choosing another one.

The practical benefit of the research is manifold. Firstly, architects, urban planners and responsible authorities can use the proposed methodology whenever necessary in urban spatial planning processes with the objective to reveal both the identity of the holistic cityscape and its individual concepts in certain urban areas (the methodology is appropriate for areas of different scales). In addition, this methodological approach can be applied to observe and model changes in the cityscape identity over time. Furthermore, this study can be a basis for improving the regulation of urban planning at the legal level in order to ensure sustainable development while taking into account the preservation and improvement of the cityscape identity.

Object of defence

- Definition of holistic cityscape identity;
- Methodology for the assessment and modelling of holistic cityscape identity;
- Clarification of the holistic cityscape identity of Kaunas City and its features;
- Guidelines for urban development concerning cityscape identity.

Key terms and their definitions

City (lt. miestas) is much more than a physical settlement; it is a complex phenomenon also comprising people, social, economic, ecological and cultural relations.

Cityscape (lt. miestovaizdis). There are two common conceptions of cityscape in the literature: geographical (*cityscape as a type of landscape* with all of its natural and anthropogenic components and their interrelationships, energy, material and information flows) and architectural (*cityscape as the view* or the appearance of the city, physical expression which also possesses the power to reflect even the intangible processes going on in the city). Keeping in mind that architects and urban planners usually deal with the problems of the physical urban environment in their activities, the latter architectural definition of *cityscape* was chosen as the most suitable for this research.

Image of the city (lt. miesto įvaizdis) is an individual opinion about the city, which may be influenced not only by the cityscape itself, but also by the representation of the city in books, movies, social media, etc.

Overall mental image of the city (lt. bendras mentalinis miesto įvaizdis) is the consensus of the individual images of the city.

Identity (lt. identitetas) is a set of both permanent and temporary attributes associated with an entity.

Subjective identity (lt. subjektyvus identitetas) is an imaginary essence of an object encompassing interpretations, opinions, feelings about the object.

Objective identity (lt. objektyvus identitetas) is an unbiased essence of an object, a collection of certain real facts about an object.

Cityscape identity (lt. miestovaizdžio identitetas) is a set of attributes that allows a cityscape to be distinguished from others (*uniqueness*) and at the same time a set of attributes that allows a cityscape to be assigned to a group (*sameness*).

Holistic cityscape identity (lt. holistinis miestovaizdžio identitetas) is the synthesis of both subjective and objective cityscape identities.

Subjective cityscape identity (lt. subjektyvus miestovaizdžio identitetas) is a cityscape perceived by observers, thus, determined not only by the physical characteristics of the tangible environment, but also by the psychophysiological and emotional mechanisms of human beings.

Objective cityscape identity is a set of unbiased cityscape features (i.e., the physical characteristics of a tangible environment).

Concepts of cityscape identity (lt. miestovaizdžio identiteto koncepcijos) are a selection of the most common scientific approaches in the literature to some extent revealing one or another feature of some place-based identity.

Sense of the place (lt. vietos jausmas) is a concept addressing subjective aspects of the cityscape identity and thus covering people's feelings (negative, positive and neutral) towards a place.

Meaning of the place (lt. vietos prasmė) is a concept addressing both subjective and objective aspects of the cityscape identity; it is focusing on the cultural meaning reflected in the elements of the tangible environment that have become symbols of the city's cultural text.

Separate elements (lt. pavieniai elementai) is a concept addressing objective aspects of the cityscape identity; it is focusing on the outstanding individual elements of the urban structure (landmarks, open and/or green spaces, etc.).

Systems of elements (lt. elementų sistemos) is a concept addressing objective aspects of the cityscape identity; it is focusing on the underlying structure that organises a certain group of urban elements (e.g., streets, plots, buildings, open spaces, green spaces, water bodies, etc.) consistently.

Overall structure (lt. struktūros visuma) is a concept addressing objective aspects of the cityscape identity; it is focusing on the city's urban structure as the totality (i.e., the whole vs. the sum/system of elements). All different groups of elements, patterns or layers are analysed at the same time.

Assessment of cityscape identity (lt. miestovaizdžio identiteto vertinimas) is the act of judging or deciding the amount, value, quality and importance of the cityscape identity.

Modelling of cityscape identity (lt. miestovaizdžio identiteto modeliavimas) is the act of representing the currently existing identity of the cityscape in order to foresee the most appropriate directions of development as well as the pre-evaluation of the impact of the selected development strategies on the future cityscape identity.

Volume and structure of the thesis

The research consists of an introduction, four major parts (the current knowledge on the cityscape identity, its assessment and regulation (1); theoretical

framework for the assessment and modelling of the holistic cityscape identity (2); application of the suggested methodology in the experimental research (3); guidelines for urban development the considering cityscape identity (4)), general conclusions, references, a list of publications, and appendices.

The first part of the main body of the text is as if a first glimpse grasping the issues of the cityscape identity. It covers the definition of the phenomenon and its ambiguity, the overview of the legal framework as well as the ideological basis of urban development and conservation to some extent also governing the cityscape identity, as well as analysis of Lithuanian and foreign practical experience in researching, assessing and regulating the cityscape identity by different means. The second part includes more profound analysis of the theoretical basis of assessment and modelling of the cityscape identity. It contains the establishment of constituent concepts of the holistic cityscape identity and their dimensions/attributes, a review of the applicable methodologies, and the development of the theoretical framework for the assessment and modelling of the holistic cityscape identity. The third part is devoted to the implementation of the proposed theoretical framework by applying it to the case of Kaunas City and evaluating the attributes of different concepts of the cityscape identity. The fourth part is devoted to the guidelines for urban development so that to ensure the proper preservation and enhancement of the cityscape identity.

The research material which the author has published with co-authors in a series of scientific publications on the topic of the dissertation was used in the text of the dissertation (see *Appendix 7*).

The work contains 52 figures and 22 tables, and 314 sources are cited or referred to. The entire body of work contains 192 pages of the main text and 7 appendices.

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1. CURRENT KNOWLEDGE ON CITYSCAPE IDENTITY, ITS ASSESSMENT AND REGULATION

1.1. Scientific approaches to place-based identity

In this section, we shall discuss the concept of any place-based identity while keeping in mind that a city can be that place.

Concept of place-based identity as a socio-behaviour phenomenon

The theory of the place-based identity has deep roots and has been discussed in different aspects of the topic more than once in academic writings. To begin with, scientific literature distinguishes among four qualities of *socio-behavioural phenomena* which are as follows: *physical environment*, *people*, *psychological processes* and *time with its temporal qualities* (Werner, Brown, & Altman, 2003). As the *place-based identity* possesses all four of them, it can also be defined as a socio-behavioural phenomenon Thus, while tackling the issues of the place-based identity, one also has to consider its sociocultural, psychological, physical and historical dimensions (see *Fig. 1.1.*).

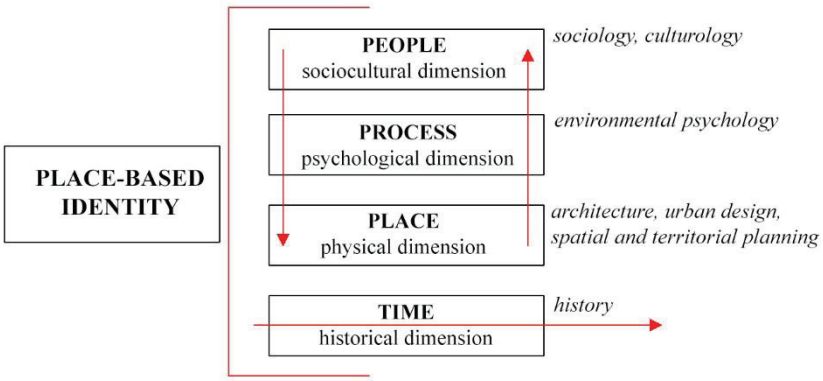


Fig. 1.1. Place-based identity as a socio-behavioural phenomenon. Scheme by the author

Different perspectives regarding place-based identity

Due to such interdisciplinarity and relevance, this phenomenon has already been analysed by scientists, theorists and practitioners from various fields including psychologists, sociologists, anthropologists, urban planners, architects, etc. They all pay attention to the same phenomenon, but each of them is looking through the prism of their specific interest. Environmental psychologists analyse the *influence of the place on self-identity* (Korpela, 1989; Proshansky, 1978; Stokols & Shumaker, 1981, etc.); social psychologists define the *place as a symbol reflecting the identity of the society* (W. James, 1890; Mead, 1934; Tajfel, 1978; Turner, Hogg, Oakes, Reicher, & Wetherell, 1987, etc.); geographers focus on *the experience and perception of the place* (Norberg-Schulz, 1980; Tuan, 1974, 1977, etc.). Meanwhile, architects and urban planners tirelessly try to figure out *the physical characteristics of the recognisable environment* (Alexander *et al*., 1977; Appleyard *et al*., 1964; Cullen,

1961; Jacobs, 1961; Lynch, 1960; Meiss, 1990; Mumford, 1961; Nasar, 1998; Thwaites & Simkins, 2007; Venturi, Scott Brown, & Izenour, 1977, etc.).

Ways of the disclosure of place-based identity

We look through the most prominent currently available research on place-based identity interdisciplinarily and try to group it by the selected ways of assessment. In general, assessment can be *qualitative* and *quantitative*. There are, relatively, a lot of cases of *qualitative* research on the place-based identity. Some authors (e.g., Lalli, 1992; Shamai, 1991) use terms '*non-positivistic view*' or '*phenomenological approach*' for such a kind of research because strong statements have been made about the general concept of the place-based identity; however, empirical guidelines for assessment are still lacking. This qualitative research on the identity can be grouped into: *philosophically oriented*, where the most important aim is the philosophical explanation of the concept of the place (Canter, 1977; Norberg-Schulz, 1980; Relph, 1976; Tuan, 1977, 1979) or identity (Datel & Dingemans, 1984; Lewis, 1979; Peterson & Saarinen, 1986; Proshansky, 1978; Proshansky, Fabian, & Kaminoff, 1983; Smith, Light, & Roberts, 1998, etc.) and *descriptive attempts* to grasp the identity or the sense of the place (Breakwell, 1986; Buttimer, 1980; Feldman, 1990; Godkin, 1980; Hull, Lam, & Vigo, 1994; Kliot, 1982; Korpela, 1989; Krupat, 1983; Lowenthal, 1975; Lynch, 1960; Rivlin, 1987; Sarbin, 1983; Shumaker & Taylor, 1983; Solomon, 1966, etc.) (see *Fig. 1.2.*). Despite the fact that most of these scientists do not provide a comprehensive, systematic methodology for the identity assessment with clear and precise criteria or indicators, their works and studies are none the less significant as they laid the foundations for the *place identity theory* and encouraged further research (both qualitative and quantitative) on this field.

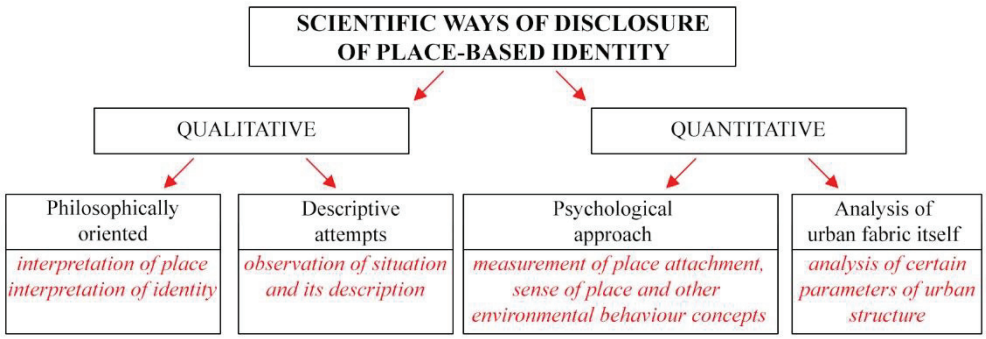


Fig. 1.2. Scientific ways of the disclosure of the place-based identity. Scheme by the author

The attempts to assess the subjective reactions or feelings as objectively as possible can be observed in the field of landscape development since the second half of the previous century. Addition of the numerical values and introduction of ranges to the phenomenological research enabled to quantify the aesthetic, psychological, ergonomic and other fairly biased-looking environmental characteristics. Still, while qualitative analyses of the place-related identity are quite common, quantitative

(positivistic) approaches are rarer. The reason for that might be the debatable validity of the currently applicable criteria as well as indicators, and their significance at the ranking procedure in order to convert the results of empirical observations into mathematical expressions. There are many discussions and doubts about what, how and why to measure, and how to reveal the place-based identity appropriately. Still, it is possible to distinguish two clear directions of quantitative research on the place-based identity: *analysis of psychological processes* (regarding the human-environment relation), and *analysis of the urban fabric itself* (see *Fig. 1.2.*).

Ambiguity of the terms used for place-based identity

Some confusion is manifested because each discipline (or even different authors) use(s) synonymous definitions for the place-based identity, such as *place cognition*, *legibility*, *place dependence*, *spirit of place*, *character of place*, *genius loci*, *image of place*, *place individuality*, *place peculiarity*, or *place uniqueness*, etc. The borders between these terms and their assessment are vague. They share many common features, and the real risk to get lost among those different approaches develops. A great example illustrating such ambiguity could be two widely spread environmental behaviour concepts *place attachment* and *sense of the place*. They both are also relevant for the overall disclosure of the place-based identity. Therefore, in the following text, we shall briefly overview the development of these concepts and the currently existing efforts of their measurement.

Place attachment. According to Jorgensen and Stedman (2001), one of the earliest attempts of quantitative research, reflecting the connection between the individual and his/her residential area, was made by Burdge and Ludtke (1972). They employed the scale of identification with the place in order to measure the affective *place attachment* and *identity*. Fairly soon after that research, Relph (1976) introduced his scale of *identity*. Here, the feelings toward places were ranked by seven levels (starting from the lowest 'existential outsideness', then followed by 'objective outsideness', 'incidental outsideness', 'vicarious insideness', 'behavioural insideness', 'empathetic insideness', and finishing with the highest 'existential insideness'). Goldust and Richmond (1974) used a similar approach evaluating the *sense* of the home. They designed an index to measure the immigrants' identification with the country depending on how they feel about the place where they are currently staying: whether it seems like a 'permanent residence' or if they feel like 'being at home'. All of the presently discussed research actually implicitly analysed the phenomenon of *place attachment*. Later measurement issues of this phenomenon using the exact *place attachment* term were covered by several academicians (Giuliani, 2003; Low & Altman, 1992; Vaske & Kobrin, 2001; D. R. Williams, Anderson, McDonald, & Patterson, 1995; D. R. Williams & Roggenbuck, 1989; D. R. Williams & Vaske, 2003, etc.). They defined *place attachment* as an umbrella term that covers both *place identity* (a concept of emotional attachment developed by Proshansky (1978)) and *place dependence* (a concept of functional attachment employed by Stokols and Shumaker (1981)). Furthermore, not only the identity with the constant environment has been explored. There is a study by Speller and Twigger-Ross (2009) where they analysed how the cultural and social *identity is transforming* depending on the changes in the physical environment and to what extent the place

attachment to the usual conditions influences the process of adaptation to the totally new or to a strongly modified environment. Bernardo and Palma (2005) conducted another closely related case study. There, people's *reaction to relocation* was measured when an old neighbourhood community was moved to another site, and the residents had lived here for a while, whereas, later, some members of this community were allowed to come back to the previous but strongly modified neighbourhood. These two latter studies revealed one interesting and relatively unpredictable point that strong attachment to the place does not always depend on the good quality of the environment. On the other hand, several studies demonstrate that positive evaluation of the local environment by its residents and others creates self-esteem, which is one of the four principles in Breakwell's identity model (Breakwell, 1983). It means that if the general opinion about the certain place is favourable, its residents will be proud of it and more likely to identify themselves to that place. This leads us to another concept which we previously undertook to be discussed.

The sense of the place. In literature, the *sense of the place* is any kind of people's emotions towards a particular place. Thus, this concept is more general than *place attachment* which mostly reflects the positive relation of (some) people with the place. The scale of the sense of the place as developed by Shamai (1991), in its original version, included one neutral and three active phases (*belonging to a place*, *attachment to a place*, and *commitment to a place*). Each of these active phases consisted of two levels, so, in total, there are seven levels of the *sense of the place* varying from 'not having any sense of place' to 'sacrifice to a place'. One year later, Lalli (1992) presented an urban identity scale consisting of five components: *evaluation*, *familiarity*, *attachment*, *continuity*, and *commitment*. The study showed that all these components strongly correlate with each other. This statement makes it unclear if *place attachment*, *place commitment* and other similar feelings reflect different degrees of the *sense of the place* (as in Shamai's research), or they are components of it (as in Lalli's research). Jorgensen and Stedman (2001) published an article where five different *sense of place measurement models* were distinguished. According to this study, if different components of the *sense of the place* correlate perfectly with one another, the single-factor model can be used. On the other hand, the study also revealed that, of all the *sense of the place* components, only the concept of *attachment* was synonymous with the single *sense of the place* factor, while *identity* and *dependence* were not. Therefore, the measurement of the *sense of the place* by using a single-factor model could sufficiently reflect *place attachment* and not so well *place identity* or *place dependence*. These as well as some other methodological aspects of the sense of the place measurement were discussed by Shamai and Ilatov (2005). They classified different methods by polarity, directness, numbers of components, and dimensions. Yet, the main question – namely, what creates the sense of place – remained unanswered.

A brief overview of the research on *place attachment* and the *sense of the place* (two adjacent and, to some extent, synonymous concepts) once again confirmed the complexity of place-based identity relationships, difficulties of their assessment, and possibilities of various interpretations depending on the aim of the research.

Initial insights regarding disclosure of the place-based identity

Place-based identity is a complex socio-cultural phenomenon, and, in order to reveal it comprehensively, the integral approach is necessary. Analysis of the physical properties of the environment could reveal *spatial/territorial identity*; analysis of people's reactions and feelings towards a place could reveal *emotional identity*; analysis of the meanings and significance of the place could reveal *contextual identity*, and only all of them by virtue of being integrated would enable the disclosure of the *holistic place-based identity*.

1.2. Legislation governing cityscape identity

Since the identity of the cityscape directly depends on the changes of the urban environment (both social and physical), it is important to know the governing principles of urban development, the legal framework as well as the ideological basis behind it. *Regulation of cityscape identity* should be understood as a set of protection and development goals for the urban areas of different function(s), their character or quality (including outstanding, typical and degraded cityscapes). The measures of the regulation should also be differentiated accordingly. However, often, the issues of the cityscape identity are not regulated firsthand, but rather become a part of other topics. Thus, only the thorough overview of the documents governing urban development, in general, might reveal whether the existing legislation is sufficient to assure the appropriate protection and development of the cityscape identity as well.

Firstly, in this section, discussion on global trends and strategies for urban development regarding the protection of distinctive urban features shall be done. After that, we shall review the legal documents to some extent regulating the assessment, protection and modelling of the cityscape identity in Lithuania. This review shall reveal the level of the integration of international documents into the national legal base and help to identify the main gaps existing in the regulation of the preservation and enhancement of the cityscape identity in Lithuania.

Global regulatory experience – ideological strategic framework

The international strategic documents produced by widely influential institutions and, to some extent, related to the identity of cityscape shall be analysed here. The chronological list of these documents, their essence and relevant quotes are provided in *Appendix 1*.

The present scene of the city is mainly composed of elements created in the distant and recent past. As Lewis (1976) wrote, "we do what we do, and make what we make because our doings and makings are inherited." Thus, *heritage (H)* cannot be ignored when analysing the cityscape identity, all the more so because the protection of heritage was (and often still is) perceived and applied as the only means for the preservation of the cityscape identity in practice. However, the preservation must be reasonable as, otherwise, 'protected cities' can easily become stagnant dusty museum exhibits, breathless reflections of yesterday's reality. Even though one can long for the past, "the past [itself] teaches us precisely that nothing remains, that everything evolves and that progress constantly advances" (*La Sarraz Declaration*, 1928). Therefore, the strategies and directions of urban *development (D)* are just as important. Yet, the ultimate goal is not just about preserving the past or creating the

future. It is all about finding the balance between the two while also meeting social, economic and ecological goals. Therefore, the guidelines for *sustainable development (S)* are those international instruments with which architects and urban planners (or anyone with interest in the cityscape identity) need to get familiarised.

Approaches to the urban environment and its development have been changing over time. To begin with, "until the advent of modernity, the historic cities were never 'historic' and preserved in the modern sense" (Navickienė & Riaubienė, 2018). Apart from wars, fires or any natural disasters, the urban development had been quite consistent, organic and balanced between the tradition and gradual progress. The Industrial Revolution disturbed the established order and brought to light several issues related to the further development of cities. Hence, a question arose which elements of the city's old fabric are valuable and should remain as the legacy for future generations and what are the best ways to save the heritage and not diminish its current value. Finally, we may wonder what directions should be taken for creating the new architecture in both historical and newly developing parts of the city.

Romanticism was partly a reaction to the Industrial Revolution. It led to the widespread reuse of the building styles of the past, but it also sparked discussions whether imitating (or rebuilding) the glorious history is the right choice. The Society for Protection of Ancient Buildings (SPAB) Manifesto (Morris & Webb, 1877) was the first attempt to establish a logically defensible philosophy for building conservation. It emphasised unjustified restoration. The manifesto claimed that architecture is an expression of the social life of each period and, as the thoughts, religion and lifestyle of the past is gone, the 'living spirit' of buildings cannot be repeated either. Yet, even though Morris (one of the manifesto initiators) insisted that restoration is a force destructing and distorting the historical clues, he also admitted that ancient monuments often become valuable precisely because of all the alterations and additions done "century after century, often beautifully, always historically" (Jokilehto, 2011).

Another internationally influential organisation was CIAM (Congrès Internationaux d'Architecture Moderne). Members of this group also believed that architecture must reflect its time. However, initially, they only emphasised the future development and depreciated or ignored the legacy of the past because traditional methods are "standing in a way of progress" (*La Sarraz Declaration*, 1928). The declaration claimed that architecture must "satisfy the spiritual, intellectual, and material demands of present-day life." The solution to do so was the rationalisation and standardisation of the industrial methods and the embracement of new technologies.

Due to its protective manner, the *Athens Charter of the Restoration of Historic Monuments* (1931) can be perceived as a counterweight to the previous 'progressive' approach. It established the basic principles for the practice of conservation. The Charter expressed the necessity to respect the character in which cities were erected, but, as Navickienė and Riaubienė (2018) aptly noted, showed rather passive attitudes towards architectural creativity in historic surroundings (with its emphasis being on retaining the visual integrity and picturesque perspectives). Nevertheless, the Charter approved judicious use of modern techniques and resources on condition that "new

materials used for this purpose should in all cases be recognisable" (*The Athens Charter*, 1931).

A couple of years later, Athens became a birthplace to another document leading and guiding the international thoughts. Although both charters shared similarity of the name, their contents were quite the opposite. The *Charter of Athens for Urbanism* (Le Corbusier & CIAM, 1933) advocated the modern movement and mainly focused on the city and its fundamental functions (dwelling, recreation, work and transportation). Interestingly, this time, the members of CIAM did recognise the legacy of history and the protection of 'fine architecture' (selected individual buildings or their groups) as representative examples of an 'earlier culture', but only if the preservation is not at the cost of life quality. Furthermore, the charter strictly condemned any attempt to reuse past styles under the pretext of aesthetics.

The *Charter for the Conservation and Restoration of Monuments and Sites* (commonly known as the *Venice Charter*) likewise insisted that any unavoidable interventions "must be distinct from the architectural composition and must bear a contemporary stamp" (*Venice Charter*, 1964). Besides, this charter was the first document clearly imposing limits on the restoration which cannot be accepted if based on conjectures. The document stressed that the value of the heritage is not only the masterpiece of art *per se*, but the value pertains to the historical evidence it holds. Historical evidence thus should not be falsified during the processes of restoration. Authenticity was defined as the essential qualifying factor concerning values. Thirty years later, the *Nara Document* (1994) clarified that it is "not possible to base judgements of values and authenticity within fixed criteria," as these judgements vary among the cultures or even within the same culture through the time. Therefore, authenticity assessments should be constantly updated considering the changing values and circumstances (*Nara Document*, 1994). It is also worth mentioning that the Venice Charter also expanded the notion of the monument from a single architectural work to the setting (both urban and rural). Later, that scope was broadened even more to include entire historic towns and larger urban areas (*Washington Charter*, 1987; *The Resolutions of Bruges*, 1975; *The Resolutions on the Conservation of Smaller Historic Towns*, 1975). Historic gardens (architectural and horticultural compositions possessing artistic value or associated with certain memorable acts) have also been considered as monuments since the later adoption of the Venice Charter's addendum known as the *Florence Charter* (1981). Overall, the Venice Charter established the fundamental principles which are still accepted as appropriate when dealing with the historic environment.

In 1947, UNESCO (the United Nations Educational, Scientific and Cultural Organisation) was founded. Since then, it has contributed to the development of many recommendations and standards regarding cultural heritage (UNESCO, 1962, 1968, 1972, 1976, 2011). Deserving of special mention is the *Convention concerning the Protection of the World Cultural and Natural Heritage* (1972). It aimed to ensure the identification, protection, conservation, and presentation of the cultural and natural heritage and its transmission for future generations. However, most importantly, this Convention embodied a visionary idea that protection of the heritage is not always the

responsibility of a single state or nation. Some places might be so valuable that their preservation becomes the duty of the international community as a whole.

Early manifestations of the concept of the common heritage can be identified in the *European Cultural Convention* (1954) as well. It encouraged safeguarding of national legacy, comprising local languages, history and civilisations, as they are "integral parts of common cultural heritage of Europe." This Convention also formed the basis for later documents declared by the Council of Europe regarding protection, management and planning of the European landscape (2000), architectural (1985; 1975) and archaeological heritage (1969; 1992).

In 1972, by signing the *Resolution of the Symposium on Introduction of Contemporary Architecture into Ancient Groups of Buildings*, ICOMOS took the first step internationally towards the exploration of the acceptable ways of new development in the historic environment. This resolution asserted that the "past, present and future expression must be treated as a whole" (1972). Still, as noted by Navickienė (2012), new developments had "to follow historic urban structure"; and the only defined requirements to achieve the desired visual compatibility were mainly the formal-compositional means (mass, colour, scale, rhythm, and appearance).

A slightly different attitude is observed in the *Resolutions of Bruges* (1975) which focused on the principles of the rehabilitation of historic towns. This document, like many others, stressed the importance of authenticity, but at the same time recognised that "respect for authenticity implies the integration of modern architecture in old town." It also admitted progress made in the evaluation of historic towns by their cultural and aesthetic value, but noted the underestimation of the social function. This document was soon followed by the *Resolutions on the Conservation of Smaller Historic Towns* (1975) which addressed social, economic and political issues specific for the smaller old towns. The latter document noted that, despite the fact that most of smaller historic towns still keep their role as the economic, social and cultural centres of an agriculture area, they are highly sensitive to both the lack and overload of modern activities. As for the question of identity, it stated that "planning must recognize the need to retain and to enhance the specific values of the town" (1975). The respect to the character of the town, its dominant buildings and its relation to the landscape were highlighted here.

The following document also tackling the issues of historic urban areas (large and small ones) was the *Charter for the Conservation of Historic Towns and Urban Areas* (1987). It also identified the qualities to be preserved so that to maintain the expression of the diversity of societies throughout history. These would be the historic character of the town and its reflective material and spiritual elements – urban patterns, relationships between buildings and green and open spaces, formal appearance, the relationship between the town and its surroundings, and, last but not least, various functions which have been developing within the town. The Charter (1987) also noted that conservation in historic towns is a complex issue demanding not only the multidisciplinary approach of experts but also the participation and involvement of the residents (including all age groups).

The promotion to involve all the members of the public into decision-making processes and the assurance of the fundamental human rights within the cities is

especially prominent in the subsequent documents. The *European Urban Charter* (1992) declared twenty urban rights and suggested fundamental principles so that to assure them through urban policies. The most relevant thoughts regarding the cityscape identity were expressed under the themes 'environment and nature in towns', 'the physical form of cities' and 'the urban architectural heritage'. Environment and nature are significant as they "give each town its character, <…> have a decisive and recognisable influence on the overall townscape, without which a city loses parts of its individuality" (1992). The physical form of the cities, i.e., "buildings, urban spaces and street patterns, provide an important link between the past, the present and the future" (1992), and urban heritage is "crucial for the identity of a city and its inhabitants" (1992). Thus, the Charter advocated finding the balance between the modern development and the retention of the heritage and strongly supported sustainable development.

The concept of sustainable development was defined by the United Nations' *World Commission for Environment and Development* (1987). Since then, this concept has increasingly gained importance in many national and international documents. The important landmark in the interpretation of the sustainable development was also the *Rio Declaration on Environment and Development* (1992). It stated that "development must be fulfilled so as to equitably meet developmental and environmental needs of present and future generations." International guidelines for sustainable development were presented as a set of twenty-seven principles here. At the same UN conference, another document, a more comprehensive plan of actions, *Agenda 21* (1992) was adopted as well. It aimed to achieve global sustainable development by implementing specific measures at local, national, and global levels.

The previous documents were the basis to adopt the *European Union Sustainable Development Strategy* (Commission of the European Communities, 2001) which claimed that "economic growth, social cohesion and environmental protection must go hand in hand." The strategy focused on the most threatening problems for the well-being of the European Society. *Climate change*, *health issues*, *poverty*, *ageing*, *loss of biodiversity* and *transport congestion* were recognised as such threats. Five years later, the revised strategy (Council of European Union, 2006) admitted that some threats persisted, and that new issues arose. In the reconsidered version, *climate change* was combined with *clean energy*. *Health issues* were mainly reverted to *public health*. *Poverty* was paraphrased into *global poverty and sustainable development*. The threat of *ageing* was extended to *demography and migration*. *Loss of biodiversity* fell under the issue of *conservation and management of natural resources*. As for the *transport*, the focus shifted from the problems of *congestion* to *sustainable transport* in general. The Renewed EU Strategy also listed *social inclusion* and *sustainable consumption and production* as newly emerged challenges (Council of European Union, 2006). Despite the fact that both strategies did not tackle the issues of urban identity directly, they were catalysts encouraging policy-makers to include the social dimension along with the environmental and economic aspects of the environment into the processes of urban development and to properly scrutinise all of them.

The *European Landscape Convention* (2000) also appeared partly from the concerns about the achievement of sustainable goals. It was the first international agreement entirely devoted to the European landscape. The landscape was understood here to the greatest extent by containing natural, rural, urban, and peri-urban areas. The Convention (2000) also applied to the landscape of any quality, both exclusive and everyday landscape, as well as to completely degraded landscape. Thus, this definition of 'landscape' was broader than the 'cultural landscape' in the *UNESCO World Heritage Convention* (1972) as the latter denoted only the sites of 'outstanding universal value'. As well as many EU documents, this *Landscape Convention* considered both national and regional measures to achieve its objectives. Firstly, each party needed to recognise the *landscape as an expression of the diversity* of shared cultural and natural heritage and a *foundation of people's identity*. That had to be followed by the establishment and implementation of the *landscape policies* (regarding protection, management and planning); encouragement of *participatory development* (including authorities, professionals, members of the public and other interested groups), and the *integration of landscape into policies* with the possible direct and indirect impact on the landscape. In addition to all this, the Convention suggested the following specific measures: awareness-raising, training and education, identification and assessment, landscape quality objectives and implementation.

Tackling environmental problems is one of the keystones to achieve sustainable development and to improve the quality of life. *Thematic Strategy on the Urban Environment* (Commission of the European Communities, 2004) constituted an important step towards realising this aim in the cities while also taking into account the related economic and social issues. This regional treaty is also of fundamental importance in terms of the cityscape identity. It stated that buildings and the built environment, as well as the way of land use, give a city its character, create a sense of place and identity. Thus, sustainable development in the fields of both construction and urban design should be a priority as it approaches the emerging issues comprehensively.

At about that time, a rather significant change in the attitude is noticeable in the field of heritage protection as well. In 2005, UNESCO organised an international conference on the subject of *World Heritage and Contemporary Architecture*, which resulted in the adoption of the *Vienna Memorandum* (2005). This document stressed the importance of understanding the context (the history, culture and architecture of a place) rather than only focus on single objects. It stood out for the definition of the 'historic urban landscape' which went beyond other traditional terms, such as 'historic city', 'historic centre', or 'historic ensemble'. By virtue of focusing on the impact of the contemporary development on the overall urban landscape of heritage significance, the *Vienna Memorandum* aimed to enhance the quality of life and production efficiency without compromising the existing valuable character, historic urban fabric, and form. The later adopted *Recommendations on the Historic Urban Landscape* (UNESCO, 2011) once again consolidated the *historic urban landscape* approach as the one integrated within the larger goals of sustainable development. The latter document also revealed the need for advanced public policies recognising and protecting the historic layering and balance of the cultural and natural values in urban

environments. According to the Recommendations, the following tools should be developed or improved for the suggested approach: *civic engagement tools* – to identify the key values in the urban area; *knowledge and planning tools* – to protect the integrity and authenticity of the urban heritage; *regulatory systems* – to reflect the local conditions while assuring the conservation and management of the urban heritage; *financial tools* – to support innovative but at the same time rooted in traditions development.

Leipzig Charter on Sustainable European Cities (2007) aiming to define the common principles and strategies for the urban development policy promoted the *integrated urban development* as well. The document emphasised the importance of high-quality public places, infrastructure networks including the affordable urban transport, energy efficiency, proactive innovation, and education. Besides, the Charter (2007) asserted that special attention should be paid to the deprived neighbourhoods within the context of the city as a whole. Concerning the urban dimension and all the city-related issues, the integrated approach became the general trend (e.g., the *Toledo Declaration* advocated integrated urban regeneration (2010), the European Commission (2014) suggested an integrated approach to the cultural heritage, etc.).

Certainly, societies, economies and cultures had been undergoing far-reaching changes since the adoption of the earlier discussed *European Urban Charter* (1992). Thus, it was revised, complemented and adopted under the title *Manifesto for New Urbanity or European Urban Charter II* (2008). In the light of the new challenges (globalisation, erosion of the working class, deindustrialisation, social inequality, immigration, ageing, urban sprawl, and the widespread car use), this Manifesto once again aimed to establish the common principles and concepts enabling to deal with the above listed issues. It emphasised the value of city dwellers who should also be responsible, active and informed *citizens*. The vision of the new urbanity was expressed as the development of *sustainable* (respecting environment), *cohesive* (socially and spatially) and *knowledge-based* (culture and innovations) towns and cities. The innovative approach of the Manifesto considered the creation of intelligent spaces and digital cities, but, at the same time, it also acknowledged the weight of the physical environment (the architectural dimension). Concerning the identity of cities and cityscapes, this Manifesto claimed that "towns and cities have their own personalities. They are all different and their diversity is an opportunity for Europe."

To sum up, stemming from largely different organisations and written in different styles, the previously discussed documents reflect several major changes of the international thought (see *Fig. 1.3.* and *Appendix 1*).

Firstly, the shift in the *relevant issues* is noticeable. The initial fear of illegal excavations and illiterate restoration was replaced with the threat of the destruction of heritage due to vast developments enabled by industrialisation and pushed by urbanisation. For better or worse, globalisation also had its tremendous consequences (economic, environmental and social), to which, the international community tried to respond. Homogenisation could be distinguished as the most threatening aspect for the identity. Then, technological advance and reckless search for the 'better quality of life' oppositely brought forward the issues of deindustrialisation and decentralisation. Besides, as the importance of the social dimension was growing, more and more

international strategic papers recognised the increasing inequality (both social and spatial) among the main challenges of the urban development. Certainly, some of these issues had existed previously as well, only they had not been emphasised strongly enough at that time.

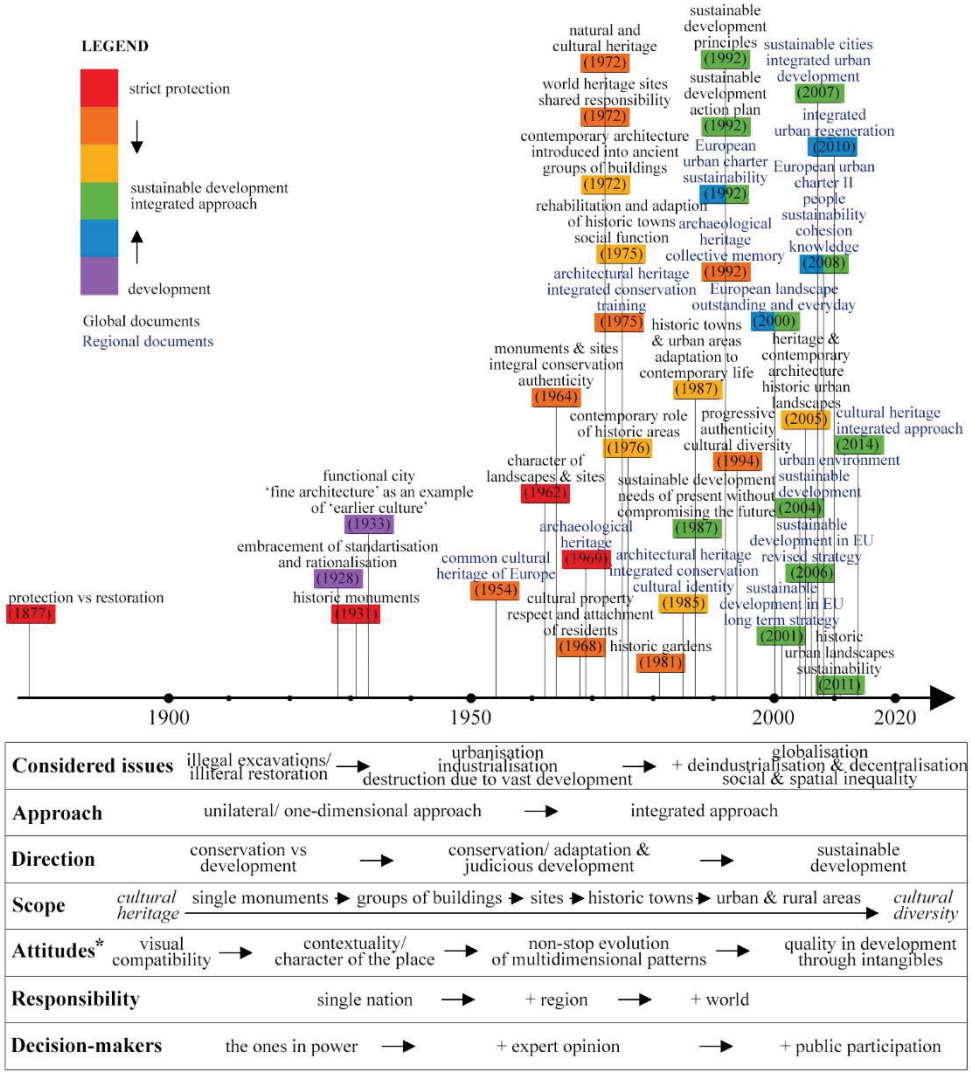


Fig. 1.3. Timeline of the key concepts of selected international strategic documents and the changes reflected by them. (* – attitudes in the conservation of urban heritage (Navickienė, 2012)). Scheme by the author

Secondly, the traditional one-dimensional *approaches* have changed into the integrated, transversal ones. Starting from the opposite points of goals, international strategies have been moving towards an attempt to combine them. The earliest papers either advocated the strict heritage protection from any activities of the daily life, or, on the contrary, focused only on the development without any respect for the past.

The later ones were trying to converge the *directions* and to reach outcomes favourable for all parties involved. Protection of the past only for the sake of protection is not a desirable outcome anymore. Heritage needs a certain function in the contemporary life as much as the contemporary life needs its roots from the past. In general, the purpose of architecture and the urban design is to improve human life, so, today's needs should be met, but by no means at the cost of the needs of the future generations. Therefore, sustainable development is an international *direction* acceptable to this day.

Thirdly, the above discussed treaties show the broadening of the scope. The heritage-related documents have been increasingly geared towards preserving and enhancing the entire cultural landscape (including the degraded one) rather than an isolated site. Furthermore, the latest treaties were also far more people-centred as they recognised that the most efficient guarantee for the preservation of the cultural property rests in the respect and the attachment felt for it by the people themselves. There manifested a clear shift from the tangible cultural heritage to the intangible heritage-based narratives as well as the change from the pride of one's own cultural heritage to the respect of cultural diversity.

Certainly, the *attitudes* in conservation have also been responding to this evolution of thought. Navickienė (2012) identified four stages of the prevailing trends addressing the new development in the historic fabric. The initial requirements for the visual compatibility with the historic environment were replaced with the idea of contextuality and the identification of the character of the place. Then, the non-stop evolution of the multidimensional patterns was recognised, and, finally, it was understood that high-quality physical interventions could be reached through the intangibles (cultural heritage, the identity of the people, their creativity, the sense of the place, etc.).

Furthermore, the heritage that was once the possession and *responsibility* of a single nation (or even a minor group) today is understood as the collective property. Primarily, the concept of common heritage means the shared commitment to identify, preserve, manage and enhance the existing values at the national, regional and global levels.

Finally, if – earlier – the *decisions* were made by the ones in power and not always aptly, then – later – the importance of competent professionals and experts in various fields was emphasised. Eventually, the people-centred approach led to the greater involvement of the community. Urban development has shifted from single-handed decision-making to the more democratic, multiagency process.

To conclude, our overview of global strategic documents not only reveals the historical development of the international thought but also suggests the direction that should be taken today for a better future. Such aspects as the integrity of opinions of different groups, respect for both tangible and intangible values, and the right balance among the ecological, economical, as well as aesthetic-spatial and social dimensions cannot be ignored and must be duly respected in any (including the one proposed in this research) methodology for assessing and modelling the cityscape identity.

Lithuanian regulatory experience

The Lithuanian legal framework regulating various urban processes is often criticised both in the public space (Benetis, 2019; Tiškus, 2010) and in scientific works (Petrušonis, 2015). Sometimes, it is accused of being not flexible and adaptable for unique situations. Other times, oppositely, it is chastised for being too loose, not strict, or not specific enough. In this section, we shall overview the currently applicable Lithuanian legal base in order to highlight the essential moments related to the concept, protection and further development of the cityscape identity or its elements. The structure of our review is based on the hierarchy of legislation: *strategies*, *laws* and then *bylaws, rules, norms or other documents*. The list of these documents and their main statements relevant to the cityscape identity is provided in *Appendix 2*.

Strategies are high-level plans to achieve one or more goals under the conditions of uncertainty. They usually cover the setting of all the objectives, the course of action, and the mobilisation of the resources. There are three national strategies which are supposed to include the goals of the maintaining and strengthening of the urban identity.

National Long-term Development Strategy (2002) aims to create an environment suitable for the development of the country's material and spiritual well-being which is manifested as the *knowledgeable society*, *safe society* and *competitive economy*. The successfully implemented strategy should allow preserving and strengthening the country's identity in a multilingual and multicultural European Union. As for the protection of the cityscape identity, there are two most relevant directions of the implementation of the priorities: *culture* and *environment protection*. Firstly, *culture* is the expression of the creative powers of the individuals and the nation. Thus, EU consciously avoids developing a common cultural policy. Instead, national cultural management based on the principles of openness and authenticity should assure the continuous formation of the unique culture. Secondly, the directions adopted in the field of *environment protection* certainly influence the cityscape identity. Here, especially relevant strategical directions are the implementation of the principle of the sustainable development and the preservation of the values of the natural heritage, the uniqueness of the landscape and biodiversity. The means suggested in the strategy include the preparation and establishment of policies, programs and plans for the development, management and protection of urban and agrarian landscape areas.

National Sustainable Development Strategy (2003) describes the main priorities and principles of the national sustainable development covering the *quality of the environment* and natural resources, *economic development*, and *social development*. The strategy addresses such topics as the landscape and biological diversity in the *environmental quality* section and the preservation of the cultural identity in the *social development* section. The lack of public understanding of the landscape as a living environment for people, the weaker expression of the Lithuanian cultural identity, only partial disclosure of the cultural heritage and the incompatible policies of the cultural heritage protection are defined as the weak points in existence here. Yet, the ability to preserve the roots of the Baltic culture, peculiar interaction of different

cultural traditions and freedom of their expression, the development of the creative industries are the counterweights maintaining the Lithuanian culture open to the world, and the world culture open to Lithuania.

National Environmental Protection Strategy (2015) was designed to identify the main environmental issues, the priority areas, aims and principles of the environmental protection policy. The strategy mainly focuses on the sustainable use of the natural resources, waste management, the improvement of the environmental quality, and the preservation of the ecosystem stability. The *urban environment* is not omitted here, either, because the general environmental quality depends not only on the actual condition of the water, soil, air, noise levels, the usage of chemical materials, or the radiological state of the environment, but also on the quality of the urban environment. The strategy aims to achieve a high quality of the urban environment while ensuring the harmonious development of the state's territory and favourable conditions for the social and economic development in the urban areas. Territorial planning documents, the identification of the development perspectives, the forethought of the development areas, the improvements of the urban structure, and the quality of the planning work jointly determine the future status of residential areas, their urban, architectural, functional, ecological and aesthetic quality. Therefore, territorial planning processes should promote sustainable planning of cities and their infrastructure, develop urban research, and apply innovative and proven solutions in practice. The protection of the *landscape* is also included in the strategy as a prerequisite of maintaining the stability of ecosystems. The strategy aims at preserving the landscape of various territorial levels and their geo-ecological potential while ensuring their management, use, planning and sustainable development. *Landscapes* should be formed based on the knowledge of the territorial spatial structure, the morphological processes, the historical development and values, the good experience of landscape formation in other countries, as well as the possibilities afforded by the strategic and spatial planning documents.

Other long-term strategic planning documents include descriptions of directions of certain policies, national-level development and management plans and other relevant programmes.

Description of Landscape Policies of the Republic of Lithuania (2004) is significant for both the cityscape identity and the landscape identity in general. It was prepared for the years 2004–2020 and aimed at creating the conditions for the protection of the landscape of different levels and ensuring its management, use, planning and sustainable development. The document reveals the current situation through the SWOT analysis. The *Strengths* are listed as the progress in the preparation of strategic documents as well as the regulatory level of spatial planning. The *Weaknesses* are the lack of a common legal framework regulating the Lithuanian landscape policy and its implementation. The *Opportunities* are the experience of other European countries providing new actions and measures with the objective to secure the cultural landscape. The *Threats* are the cosmopolitan societies losing the landscape as a way of expressing the national consciousness; also, the Lithuanian legal system is not able to regulate the most valuable territories owned by private ownership; the status of private land ownership partially complicates the preservation

of the landscape diversity. Based on the analysis of the current situation, the main directions of the Lithuanian Landscape Policies are indicated. They are: to ensure *sustainability* in the process of the Lithuanian landscape formation; to ensure the protection, usage, management, and planning of the landscape and the *peculiarities of regional self-expression*; to maintain and enhance the existing biodiversity of the country, *the territorial spatial structure of the landscape* and its potential; to optimise the purposeful formation of the *cultural landscape*; to harmonise *the architectural spatial composition* of the landscape. Besides, the document defines not only such terms as the *landscape (natural, rural and urban)*, the *urban landscape (cityscape)*, the *cultural landscape*, the *formation (shaping) of the landscape* but also the *landscape benchmark* (i.e., the desirable goal of the landscape quality). It is *a set of traits and features for the specific territorial unit of the landscape*. That set should be scientifically based and should meet the needs of the society. According to the description, the implementation of the policies should be through strategic planning and territorial planning documents (complex and special). In that regard, *special plans for landscape management* should be one of the most important planning documents as their main purpose is to ensure the development of the landscape benchmarks by planning measures. Yet, the rules governing the preparation of such documents (*Rules for the Preparation of Special Landscape Management Plans*, 2004) have been repealed and thus have been invalid since 2014. Keeping in mind that special landscape management plans can still be prepared and adjusted (e.g., the Revision of the Landscape Special Plan of Area of Vilnius District Municipality, 2018), their developers are left to follow the general rules for the preparation of complex spatial planning documents (2014). Only if the areas are already recognised as protected ones, then, developers are required follow the specific rules (*Rules for the Preparation of Special Territorial Planning Documents of Immovable Cultural Heritage*, 2016; *Rules for the Preparation of Special Plans for the Protected Areas*, 2014). Unfortunately, it shows that the concepts of *landscape* and *cityscape* which have been long-established in the architectural science and already rooted in the strategic guidelines still hardly find their place in the architectural practice and regulation.

Description of Architecture Policies of the Republic of Lithuania (2005) is another important strategic document confirming that, on the one hand, architecture reflects the multifaceted development and evolution of human communities, whereas, on the other hand, the quality of the architecture and urban design directly influences the general cultural, ecological, social and economic climate of the country. This document aims to create the conditions of legal regulation for more consistent, rational, and sustainable management, planning, and implementation of architectural evolution. The description claims that *architecture* spans the street, town, city and *landscape. Urbanism* (lt. urbanistika) is the planning of cities – the design and construction of cities and settlements. The concept of *urbanism* is explained as a *spatially developed architectural entirety*. This document also recognises the increasing efforts (due to globalisation) to preserve and foster the national cultural originality, identity, and the architectural heritage. Furthermore, the description asserts that the *peculiarity of the Lithuanian culture is probably best seen, perceived and appreciated through architecture.* The abundance of well-kept and properly used

architectural monuments and values determines the strength of the state's identity and the political will to preserve and pass it on to the future generations. A critical moment could be the notion that the Lithuanian urban and architectural heritage cannot be defined once and for all. Though the incompleteness of the interpretation of cultural heritage was considered as a shortcoming in the National Sustainable Development Strategy (2003); here, it is explained as continuously developing and growing. The main directions of the Lithuanian Architecture Policy are as follows: to ensure that the *design of new* buildings and landscapes *takes into account the existing* urban and natural environment; to ensure an *effective and publicly accepted solution* to the issues of architecture, urban development and territorial planning; to maintain an ethical and *harmonious relationship between the contemporary architecture and the architectural heritage*; to *reveal their peculiarity* and importance; to uphold, develop and enrich the *traditions and features of the local and regional architectural creation* and construction; to ensure favourable conditions to create *good architecture that provides a sustainable, full-fledged and healthy environment for people* to live and work. According to the document, proper actions and changes in the public administration, education and science, as well as public education and architectural practice could ensure the successful implementation of architectural policies.

Main Directions of the Lithuanian Urban Policy and Recommendations for their Implementation (2019) defines the application of the goals of sustainable development in the processes of planning the urbanised and to-be-urbanised areas. The directions of urban policies need to be integrated into the solutions of the concept of the general plan of the Republic of Lithuania and thus define the priorities of sustainable development in the state. The document designates four directions of urban policies: *climate change mitigation (1)*, *synergy between urban and non-urban areas (2)*, *vitality and equality of local communities (3)*, and *sustainable development of urban areas (4)*. The two final directions could address the issues of the cityscape identity. Indeed, the third direction recognises that the cultural development, respect to the social and cultural diversity, historical memory and identity within the urban structure are substantial parts of social development. Thus, recommendations regarding local communities include such tasks as ensuring the *cultural diversity*, *high quality of urban planning, architecture and environment* so that to foster the *natural and cultural heritage*, as well as preserving buildings and places without the official protection status but which are *significant for the quality of life and historical memory of local communities*. The direction of sustainable development contains recommendations related to the cityscape identity as well. They are: to identify *the potential of low-quality urban areas* and to *develop their character* (both physical and social) as well as the *local identity*; to increase the *aesthetic value* of territories by the development of *unique urban structures and their elements*; to use *advanced tools* in the processes of territorial planning and development; to create *an attractive, aesthetic, people-oriented urban landscape* while preserving and maintaining the *value of urban, architectural and immovable cultural heritage*. The final recommendation sounds slightly ego-centred. Hopefully, 'people-oriented' does not imply neglecting other species or the needs of the future generations, especially in the document aiming for sustainability. The document also states that all the interest

groups (*state and municipal institutions*, *civil society*, *professionals* and *academic community*) have a direct or indirect impact on the urban development of the state's territory. Therefore, their participation and cooperation are essential. In order to ensure the involvement of all the interest groups, the *consistency*, *feedback*, *respect for time and knowledge*, *understandable form of presentation*, *provision of essential knowledge*, *transparency* and *respect for the authors of ideas* are a necessity.

Laws are normative legal acts adopted by following the procedure established by the highest state institutions and having precedence over other normative legal acts. The Lithuanian Law that is significant for the regulation of the cityscape identity involves the *Law on Territorial Planning*, the *Law on Architecture*, the *Law on Protected Areas*, the *Law on Protection of Immovable Cultural Heritage*, the *Law on Construction* and the *Law on Land.* Another relevant document could be the *Law on Fundamentals of Cultural Policy*.

Law on Territorial Planning aims to ensure sustainable territorial development and rational urbanisation. It defines the requirements for the systematisation of spatial planning processes, the compatibility and interaction among the documents of different levels in order to create conditions for the harmonious environment preserving valuable landscapes, biodiversity, natural and cultural heritage values. In general, the Law manages how private and public interests should be balanced, how areas should be developed, what they should be used for, what should be protected, and how the entire spatial structure should evolve. All of these issues inevitably influence the cityscape as well. Dramatic changes in the cityscape identity or its imminent stability strongly depend on the policy and strategy of territorial planning. Thus, its regulation is crucial for the development of cityscape identity. Lithuania has had the *Law on Territorial Planning* since 1995. However, both theoreticians and practitioners have repeatedly criticised its original version (and the later editions as well). The newly adopted version of the Law (2013) came into force in 2014. This Law identifies the types of *territorial planning documents – complex* and *special* – which provide graphical and written solutions for the use, management, protection, territorial development and conditions of territories. According to the Law, *complex territorial planning* determines the directions for the spatial development of different areas, priorities for their use and protection. It consists of *comprehensive* and *detailed planning*. According to the level and objectives of spatial planning, *comprehensive spatial planning documents* define the spatial structure of the area, the mandatory provisions and requirements for its use as well as the principles of protection. *Detailed planning documents* are local-level integrated spatial planning documents of the urbanised area which lay down the regulations for its use. Meanwhile, *special spatial planning* covers the provision of the means for usage, management and protection of areas necessary for specific activities and protected areas (see *Fig. 1.4.*).

As for the place-based identity, it was not mentioned as one of the main planning objectives in the earlier versions of the Law. The only note was that, when setting the planning objectives for a specific territory, *landscape features should also be taken into account* among all other factors. In the current version of the Law (2013), the *preservation, purposeful use and knowledge of the peculiarity of the natural and cultural landscape of the country (i.e., cityscape identity)* are already among the main

planning objectives. That seems to confirm the growing awareness of the importance of uniqueness in our globalised world. Still, this is the only place in the Law that mentions the landscape identity.

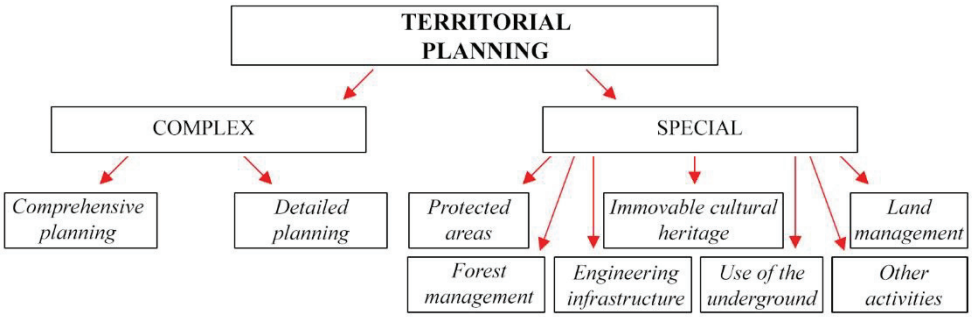


Fig. 1.4. Territorial planning system in Lithuania. Scheme by the author

Law on Architecture (2017) aims to regulate public relations in the field of architecture in order to create an environment of the appropriate quality, harmonious with the *peculiarity of the country and culture*, reflecting the public interest and having a lasting value. The concepts of *architecture*, *urbanism*, *urban space* and *urban structure* are defined here. *Architecture* is understood as the functional, spatial and visually perceived artistic formation of structures, urban complexes and *landscapes*. *Urbanism* is a branch of architecture whose main objects are the spatial environment of urban (urbanised) territories, urban complexes, urban structure, urban space and the building solutions forming it. The *Urban space* is a human-made space with certain cultural, social and economic functions, characterised by artistic principles and parameters of space formation. The *Urban structure* is a set of features of the layout and functioning of the structural elements of residential areas. In the Law, the listed directions of architectural development include not only the pursuits of better architectural quality itself in both public and private sectors but also raising the awareness of its importance among the professionals and the public. In terms of territorial planning, priority shall also be given to the *quality* and *harmony of buildings, natural and urban landscapes*.

Law on Protected Areas (2001) aims to regulate the system of protected areas (establishment, management, activities within them, etc.) and public relations. The Law addresses both *natural* and *cultural landscapes* (i.e., landscapes created by human activity and reflecting its coexistence with the environment) as well as *heritage objects* (valuable landscape elements, for which, the regime of protection and use has been established by legislation) (see *Fig. 1.5.*). As the environment in the city is rather the anthropogenic one than the natural one, in this research, the most essential aspects of the whole system of the protected area are those defined as cultural or complex. Thus, *strict cultural reserves*, *cultural reserves* (archaeological, historic, ethnocultural and urban/architectural), *complex reserves* (landscape), *cultural heritage objects* (archaeological, mythological/historical/memorial, architectural/engineering) as well as *national* and *regional parks* (complex multifunctional areas valuable both from the cultural and the natural points of view) could be defined as protected areas of great

importance for the cityscape identity. Activities in these areas are governed by the general and individual regulations for specific protected areas as well as by the *Law on Protection of Immovable Cultural Heritage* (2004).

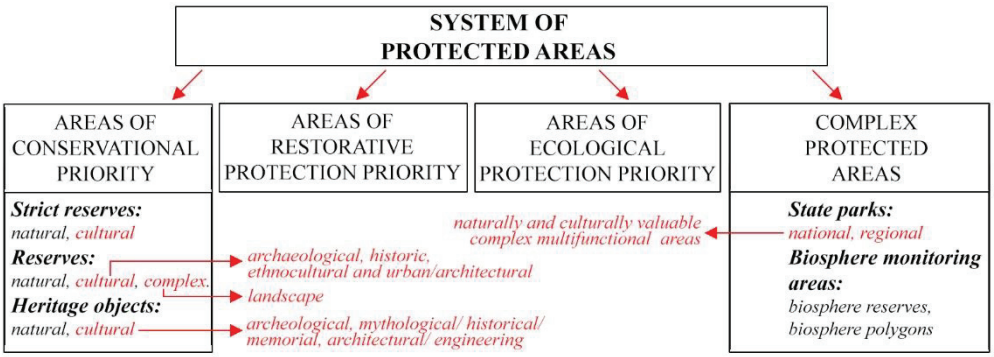


Fig. 1.5. System of protected areas in Lithuania and its components relevant to the topic of cityscape identity. Scheme by the author

Law on Protection of Immovable Cultural Heritage (2004) aims to preserve the immovable cultural heritage of Lithuania in order to pass it on to the future generations and to create conditions for the public to get to know and use it. Besides, the Law addresses *intangible heritage* to the extent of ensuring the protection of its related sites or objects. *Immovable cultural heritage* is defined as a part of the cultural heritage consisting of survived or non-survived material cultural values which were built, equipped and created by the past generations or highlighted by historical events. It can be an *individual object*, a *complex object* or a *site*. *Immovable cultural heritage* is also understood as an integral part of the *cultural landscape*, the concept of which is the same as in the *Law on Protected Areas* (2001). This document distinguishes two essential aspects of the immovable cultural heritage: its authenticity and valuable properties. *Authenticity* means the *surviving properties* including the original or historically formed purpose of the object, its appearance and a peculiar physical shape and form, the materials used, the constructions, the layout, the technique of execution, and the surrounding environment. *Valuable property* means a feature significant from the ethnic, historical, aesthetic or scientific points of view. These aspects should be maintained by applying the most suitable of the safeguarding regimes: *the reserve regime*, *the authentic purpose regime*, or the *sparing use regime*. Furthermore, the protection of the immovable cultural heritage includes registration, declaration of protection, protection via management and use, spreading knowledge of heritage, propagation and revitalisation (rehabilitation). Immovable cultural properties are managed and developed following not only the provisions of this Law, but also the *Law on Protected Areas* (2001) and the *Law on Territorial Planning* (2013) as well as typical and individual protection regulations, management plans, or, in certain cases, planning schemes of protected areas. Based on the previous review of international strategic documents, we believe that the immovable cultural heritage should be one of the factors defining the cityscape identity. However, the only note about it in the entire body of this document is that heritage has to be revitalised so that

the *society would understand* the importance of the heritage for *the national identity*, social and economic welfare, civil society, national security, etc.

Law on Construction (2016) lays down the essential requirements for structures and the procedures for construction-related processes (design, implementation and operation). This Law mentions the *landscape* (together with structures and other territorial planning objects) as the subject of matter of architecture. It indicates that *harmony with the landscape* is one of the essential requirements for the structure's architecture. There are no more specific directions in this Law. However, in addition to this Law, other laws and legal acts of the Republic of Lithuania must be followed in order to ensure proper development considering the *landscape*, protected areas, immovable heritage objects and their sites.

Law on Land (2004) regulates relations of land ownership, management and use as well as land governance and administration. It aims for the *rational use* of land which combines economic activity with the improvement of the natural environment, natural and cultural heritage. This Law states that land must be used by the *main purpose* and *way* assigned to it. The classification of *the main purposes of land use* (agricultural, forestry, water management, conservation and other purposes), the *ways of land use* and the procedure of their determination are also outlined in the document. It is of importance as territorial planning documents are prepared based on this classification and procedure. *Natural and cultural heritage* as well as some non-specified *landscaping measures* are fragmentarily addressed in the document, which should be implemented in rural development projects. However, that is all the content pertaining to the landscape or its identity. There is nothing specific in this Law about the national identity or the significance of the land's peculiarities.

Project of Law on Fundamentals of Cultural Policy (LR Ministry of Culture & Miliutienė, 2019) is proposed in order to establish the principles of the cultural policy and to specify the competence of the institutions forming that policy. Here, *culture* is defined as a historically formed system of meanings, symbols and skills which embodies both individual and communal worldviews and values. The *cultural policy* would be one of the state's policies determining the directions, priorities and ways of achieving cultural development. The project of the Law distinguishes among the following principles of the cultural policy: cooperation and solidarity, sustainability, cultural accessibility, equality, rational management, *national identity* and legal protection. The document recognises the importance of interinstitutional cooperation so that to form a coherent system of different policies which address many various topics including *cultural education*, *social integration*, *territorial planning*, *architecture and urban design*, *construction*, and a *system of protected areas*. Meanwhile, international cooperation is useful both with the objective to spread the Lithuanian culture abroad and to adopt the international experience, increase the openness of the society to *cultural diversity* and to strengthen the international potential and competitiveness of the Lithuanian culture. The project also briefly explains the assessment requirements for the c*ommemoration of historical meaning* (lt. istorinio atminimo įamžinimas) (i.e., representation of past events and personalities significant for the state or communities living in it by public signs) and formally defines the protection of *cultural propertie*s of supreme importance.

According to the document, assurance of the *preservation of the identity and distinctiveness of the ethnographic regions and areas* is one of the aims of the *regional cultural policy*.

Bylaws, rules and norms are normative legal acts adopted based on Laws, concretising them and ensuring their implementation.

Rules for the preparation of complex spatial planning documents (2014) define their structure and content, the order of their preparation, modification and adjustment and the relationships among all the actors of the planning process (see *Table 1.1.*).

Table 1.1. Structure of the process of complex territorial planning in Lithuania (CP* – comprehensive plan). Compiled by the author

COMPLEX TERRITORIAL PLANNING																
		STAGES														
		Preparatory					Development				Final					
LEVEL	DOCUMENT	Designation of planned territory	Programme of planning works	Planning conditions	Complementary research (if necessary)	Public decision on preparation of document	Analysis of the current state	Concept development	Formation of general solutions	Concretisation of solutions	Publicity and coordination of solutions	Coordination of solution in the Territorial planning commission	Inspection by responsible institution	Approval of the plan	Approval and registration in the state's register
State	CP* of state's territory		+	+	+	+	+	+		+	+		+	+	
	CP of part of state's territory		+	+	+	+	+	+		+	+		+	+	
Municipal	CP of municipalities	+	+	+			+		+	+	+	+	+		+
Local	CP of parts of municipalities	+	+	+			+		+	+	+	+	+		+
	Detailed plans	+	+	+			+		+	+	+	+	+		+

The cityscape identity and some of its components could be addressed in the comprehensive plans of municipalities. Indeed, the Rules state that, together with the main planning tasks and mandatory requirements of territorial use, the additional ones can be specified in the program of planning works during the preparatory stage. *Identification of the territories important for landscape identity* of residential areas, the establishment of anthropogenic and natural elements, viewpoints and panoramas representing valuable landscape, and the provision of their visual protection is defined as one of those additional tasks. The Rules claim that the programme might also indicate the necessity to perform research on the *peculiarity of landscape* and its respect as well as research on the *identification of cultural heritage sites significant to the landscape* if the available knowledge is insufficient. Moving on to the development stage, analysis of the current situation includes not only the assessment of landscape, natural and cultural heritage, opportunities for the development of new territories, renewal or conversion of existing territories, etc. *The anthropogenic and natural elements forming the peculiarity of the landscape* have to be indicated on the

drawing of the current situation as well. During the formation of general solutions for the territory, the development directions of the planar and spatial structure, protection and use principles are determined. The subsequent phase of the concretisation of solutions covers the mandatory requirements for the use of the territory including protection requirements for the natural frame, for territories of importance for the landscape identity of residential areas, anthropogenic and natural elements as well as the requirements of the visual protection of panoramas. Public participation in planning processes is sought to be ensured through the public discussion of the document. The prepared territorial planning document is made public. As for the lower level planning documents (comprehensive plans of parts of municipalities and detailed plans), their requirements are more specific and cover the regulation of the height, silhouettes or panoramas, the planar and spatial structure. Solutions of these documents provide not only the *types of land use* or the *main purposes of land use* and the *ways of land use*, but the permissible *height, density*, *intensity*, *volume density*, *types of building up* and other similar indicators are specified as well.

Description of the content of land uses (2013) defines the *main purposes* of the land use, the *ways* of land use and the *content* of the ways of land use. The main *purposes* of the land use are agricultural, forestry, water management, conservation and others. Each of the purposes covers different *ways* of land use, e.g., forestry land consists of ecosystem protection forests, recreational forests, protective forests and commercial forests. The *content* of the ways of land use specifies what kind of plots can be attributed to one or another way of the land use, e.g., recreational forests cover forest parks, urban forests, recreational plots of national parks and other forests used for the recreation of the residents. This description also states that one plot of land may have two and more *ways of land use* if territorial planning documents define that.

Territorial planning norms (2014) establish the mandatory or recommended *quantitative and qualitative territorial planning requirements* and their indicators. The norms apply to municipal and local level complex territorial planning documents, and, in some cases, to special territorial planning documents. The norms state that the functional structure of the use of territories must be a unified integrated system, and it can be achieved through the territorial planning documents. The focus here is on the stage of development of the complex territorial planning document. In the phase of formation of general solutions, *non-urbanised*, *urbanised* and *to-be-urbanised* areas are distinguished, and *directions (regimes) of the development* of urbanised or to-be-urbanised areas are indicated (see *Fig. 1.6.*). In the phase of the concretisation of solutions, *functional zones* with the priorities of the main purposes of the land use and possible activities within them are identified for the municipal level comprehensive plans. Meanwhile, the *types of use* covering the main purposes of the land use, the possible ways of the land use and the predominant uses of structures are identified for the local level comprehensive plans and detailed plans. At the same time, the indicators of the maximum *building up intensity* and *density* are determined (see *Fig. 1.6.*). The systematic relationships defined in the Norms between the *functional zones* and the *types of land use* enable the implementation of a coherent planning strategy at different territorial scales.

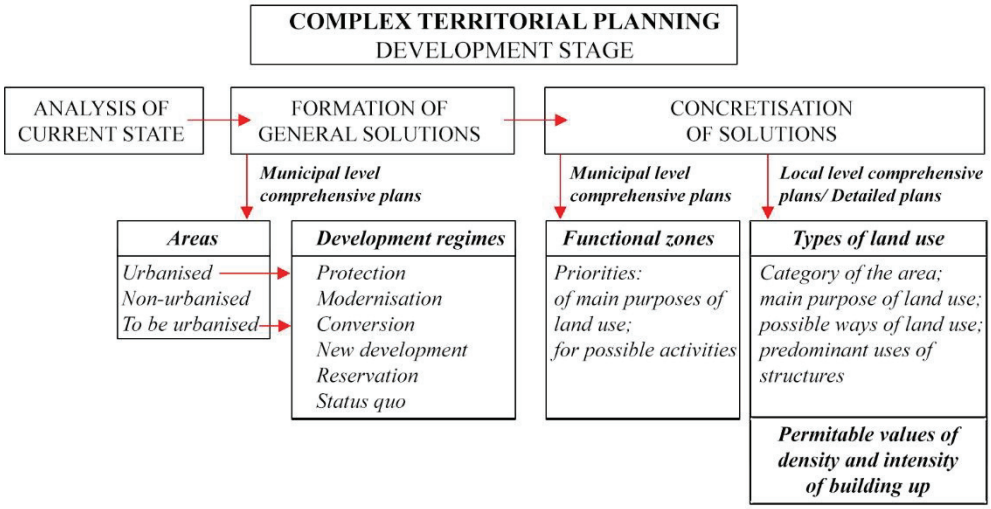


Fig. 1.6. Qualitative and quantitative requirements specified in the municipal and local level complex territorial planning documents. Scheme by the author

Rules for the preparation of special plans for the protected areas (2014) establish the structure of special territorial planning documents (plans of boundaries and management) for protected areas (excluding special territorial planning documents of immovable cultural heritage) and the procedure of their preparation. The standard stages (preparatory, development, and final) are maintained. In the preparatory stage, it is anticipated whether the research, feasibility studies, concept development or independent evaluation are required, as well as the level of the document. The development stage contains the analysis of the current situation (clarification of the potential of the landscape, natural and cultural heritage values and recreation; identification of the development trends and the main problems), the proposal for areas necessary to be protected, the boundaries of functional priority zones, and, if needed, the priorities for the development and management of the possible activities, as well as the system of landscape management zones. The *landscape management zones* and applicable regulations of their protection, management and use have to be depicted both graphically in the drawing and described in writing. However, these Rules do not provide any specifications concerning the *general system of landscape management zones*, whereas the already repealed rules for preparing special landscape management plans (2004) contained explicit classification and description of *purposive groups of landscape management zones*, *groups of landscape management zones*, and *types of the project landscape*. The final stage covers the publication, coordination, verification and approval of the prepared documents.

Rules for the preparation of special territorial planning documents of immovable cultural heritage (2016) define the content and preparation procedures of such documents (i.e., management plans for cultural heritage sites and their protection zones) at the local level. These plans aim to define the preservation, purposeful use

and knowledge of the immovable cultural heritage. Again, the standard planning procedure is maintained. In the preparatory stage, data on the *valuable features* and the *current condition* of the object or the site and on the relevant research is collected. During the development stage, the concept of protection and management along with specific solutions is prepared. The specified solutions establish the *boundaries of the sites or objects*, their *protection zones from physical or visual impact*, and specific *territorial protection measures* (requirements and management measures to maintain valuable features of the object or the site and to preserve the cultural landscape, the harmony of the whole or the relation with the natural environment). The final stage covers the publication, coordination, verification and approval of prepared documents.

Description of criteria for the evaluation, selection and determination of the significance level of cultural property (2016) is a salient document regulating all the processes of the procedure for the inclusion of valuable objects or sites in the *Register of Cultural Heritage* (see *Fig. 1.7.*).

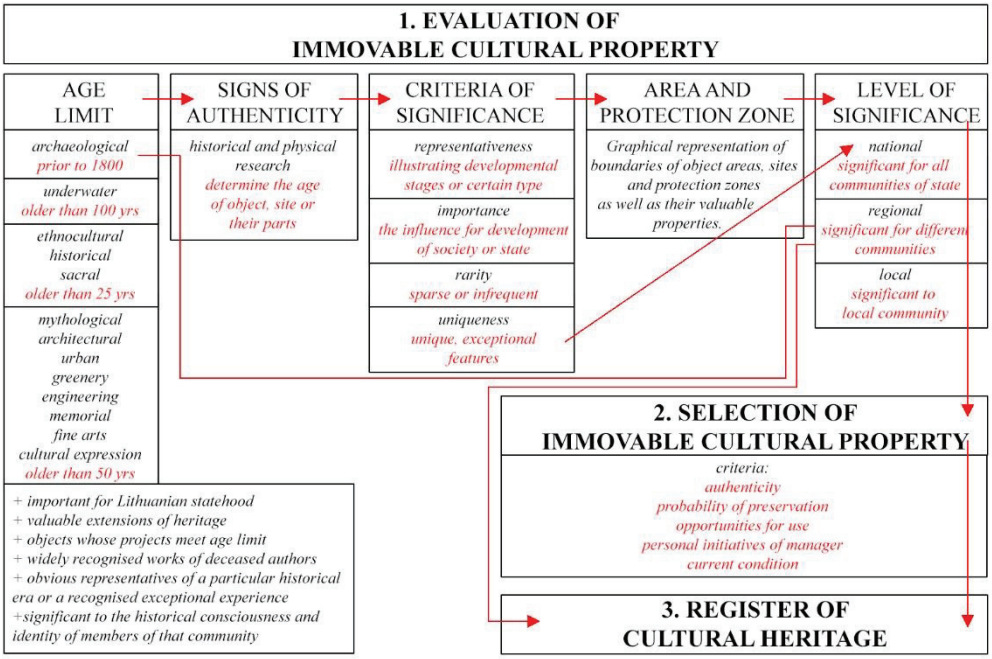


Fig. 1.7. Inclusion of a valuable object, complex or site into the Register of Cultural Heritage. Compiled by the author

The document claims that the evaluation of objects or sites is directly related to the cultural identity of the time. Furthermore, it should be based not on the prevailing beliefs but rather on *respect and tolerance for other forms of cultural identity*. The objects and sites to be assessed must meet the criteria of *age* and *authenticity.* Then their *significance* (representativeness, importance, rarity and uniqueness) is identified, the *area* and the *protection zone* are established, and the *level of significance* is defined. Yet, not all of the evaluated objects get into the *Register of Cultural Heritage*;

they have to go through the selection (comparison based on such criteria as authenticity, probability of preservation, opportunities for use, personal initiatives of managers, and the current condition) previously. The number of the selected objects and sites should ensure that a sufficient amount of certain significance and type samples of valuable features are preserved. The Description contains an appendix with examples of valuable features of objects and sites. The *planar structure*, *volumetric spatial composition* and *features of building up* are listed as potentially valuable features of the sites. The primary and historically established *function*, the features of the surrounding *cultural landscape* as well as the *facts* about culture and the state's history may also be defined as valuable features related to objects or to a site.

All in all, achieving any goals requires a clear overall vision and direction. Only then, one can focus on the individual components that contribute to achieving that common goal. To sum up the overview, a lot has already been done in order to form a coherent, integrated and hierarchically structured legal framework in Lithuania. Firstly, the state's strategic documents recognise the importance of *sustainable development* and emphasise the need to preserve Lithuanian *national distinctiveness*, i.e., both cultural and spatial distinctiveness. There is also common understanding that cultural peculiarities can be perceived through architecture, urban structure and landscape. Thus, there is need for a *legal framework* regulating the relevant activities and quality assurance, particularly in the fields of spatial planning, urban development, architectural design and the identification and protection of valuable heritage. In Lithuania, the laws and bylaws regulating these fields have existed for almost 30 years, and, more than five years ago, a comprehensive reform of the territorial planning and construction law was implemented. However, there still is the feeling that not everything is right. There still are heated debates or waves of outrage that, during one project or another, the distinctiveness of the cityscape is not strengthened, but, on the contrary, diminished although everything – formally – goes according to the letter of the law.

There are some critical moments necessary to address. Firstly, the Lithuanian regulatory documents still lack the *integrity of approaches* which was emphasised in the international documents and national strategic documents. The focus is mainly on the anthropogenic and natural elements, i.e., on the physical dimension. Perhaps – as the legislation seeks to avoid any possible ambiguities – there is always a preference for real facts, while the *intangible environmental aspects* remain on the sidelines. The Lithuanian legislation does not establish the requirement for semantic, cultural, or phenomenological research. Such concepts as the sense of a place, place attachment, or the meaning of a place, while being distinguished in the scientific literature as critical for the identity of the cityscape, are not properly taken into account during the urban development processes. Furthermore, public involvement in these processes is formal, essentially procedural. In many cases, it does not go beyond complaints about private personal interests. Therefore, the *public awareness* of the influence of territorial planning, urban design and architecture on common sustainable welfare must be enhanced at all levels of education for people of all ages. Only a smart society that understands its cultural legacy and the meaning of the surrounding environment will be able to build its future harmoniously. Thus, the formation of a coherent *cultural*

policy is also crucial. Hopefully, the *Law on Fundamentals of Cultural Policy*, which is currently being drafted (2019), and its subsequent bylaws will fill at least some of the existing gaps.

As for the particular topic of the cityscape identity, the assessment, protection and modelling of it are not directly regulated in any Lithuanian legal document. Significant aspects are scattered throughout various documents (laws, strategic documents or rules). In most cases, there are notes that it is important to take into account and to evaluate the peculiarities of the landscape/cityscape, but references to the recommendations on how to do that are missing. Undoubtedly, a unique cityscape identity cannot be managed according to one typical general model just because unique situations require unique solutions. However, a workflow template could be defined; the aspects necessary to consider could be distinguished. In the Lithuanian legal base, the document defining the assessment of the significance of *cultural properties* exists (i.e., the *Description of criteria for the evaluation, selection and determination of significance level of immovable cultural property*, 2016). However, it has also been criticised as one of the main criteria to evaluate the value of architecture becomes the calendar. In general, all the legal acts, not only those relating to the development of the city but also to the protection of its valuable features, should take into consideration the essential feature of the alive city – its constant change. Cultural, social, economic and physical changes in the environment are inevitable. Profound understanding of these changes in contexts is crucial. However, Petrušonis (2012) highlighted that the ignorance of the cultural context of becoming while assessing objects is the biggest shortcoming of the methodology of the cultural heritage assessment.

1.3. Experience in assessing and modelling cityscape identity

Even though the assessment of the cityscape identity is not fully methodologically justified and regulated, it is gradually moving from theoretical and ideological works to real urban projects. Thus, in this section, we shall overview the experience of revealing and developing the cityscape identity in the fields of territorial planning and urban design. The review shall not include how these issues are addressed in the fields of cultural management and marketing.

There are three main aims of the assessment of the cityscape identity in practice:

- to identify the existing cityscape identity (its character);
- to evaluate the visual impact of new objects on the cityscape identity;
- to foresee a possible development strategy and to model the cityscape identity.

Assessing the existing cityscape identity. Urban growth is a catalyst for innovation and regional growth. "Increasingly, efforts are made to create attractive urban spaces and to improve the urban environment in order to attract visitors, workers and companies" (Jansson & Power, 2006). It is a natural struggle for space under the sun, for the influence over a country, a region, a continent, and maybe even the world. Today, the distinctive character of the area, the exquisite buildings and other unique elements not only play an important role for the local communities, but also become basis for urban branding, which is crucial to today's competitive city (see *Fig. 1.8.)*. Thus, research revealing peculiarities of the cities is increasingly appearing, both in

the documents defining urban branding or marketing, and in the territorial planning documents or development strategies.

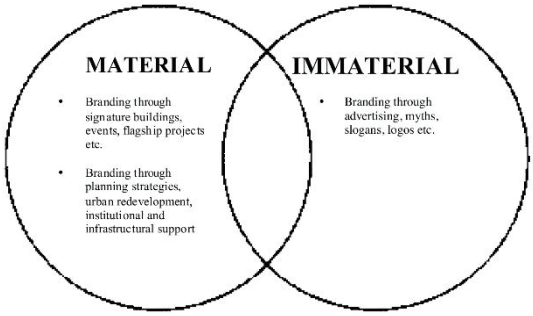


Fig. 1.8. Urban branding strategies (Jansson & Power, 2006)

Evaluation of the visual impact of new objects on the cityscape identity. Evaluation of the impact of new objects on the cityscape is performed when the newly planned objects may have a significant (potentially negative) impact, or when they are located in an extremely valuable, historically formed urban structure. The evaluation aims to minimise the impact, i.e., a new object can be camouflaged, adapted to the environment, or the least impacting location can be selected.

Modelling of the cityscape identity. It is a fairly new, relevant, and, having in mind technological advances, promising approach to the cityscape. Still, it is more commonly encountered in theory than in practice. It has similarities with the evaluation of the impact of new objects on the cityscape, but the situation of a larger area is modelled/simulated.

In order to understand the status of issues of the cityscape identity in the practice of territorial planning, it is necessary to know the basis on which areas have been purposefully developed in general. Several methodological approaches could be distinguished in territorial planning. First, *functional zoning* is a planning method used to divide areas by their function and to foresee the development of the territories based on how the land should be used. This approach is very common, and its problematics are widely analysed (Carmona, Heath, Oc, & Tiesdell, 2003; Jacobs, 1961; Kavaliauskas & Šabanovas, 2011). Briefly, functional zoning is mainly criticised for its tendencies to create isolated monofunctional areas, reduce their vitality just because some of the areas become completely unused for part of the day; it also increases mobility and car dependency. As for the cityscape identity, only functional continuity can be addressed by this approach. Meanwhile, *mixed-used zoning* (based on the ideas of the new urbanism, smart growth, a compact city, urban densification, and urban intensification) aims to blend different but compatible with each other functions into one space (e.g., residential, commercial, cultural, recreational, etc.). Such zoning encourages pedestrian movement, creates vivid places and makes areas more sustainable. Still, it is not enough to ensure the proper development of the cityscape identity, as focus is still very much on the function. The *Design code* (UK) or the *Form-based code* (USA) is another method of regulating territorial development. The history, theory and implementation of this approach is well

documented (Parolek, Parolek, & Crawford, 2008; Walters, 2007; Walters & Brown, 2004). The Form-based code mainly aims to create the high-quality environment whose features are predetermined, i.e., to define a specific physical urban form instead of zones of uses. The main types of form-based control are as follows: *building form standards*, *building type standards*, *building frontage standards, civic space standards*, *block and subdivision standards*, and *regulating plans* (Elliott, Goebel, Meadows, & American Planning Association, 2012). None of these controls is obligatory; a set of them should be tailored to the specific needs of the community. The ideas of New Urbanism and Smart Growth are also incorporated within the form-based codes as they work as templates for plans and regulations promoting mixed use, walkable urban development. There are many variations of Form-based codes. One of them is the *Traditional Neighborhood Development* (TND) model (Ohm, LaGro, & Strawser, 2011) proposed as guidelines or a template for the development of a complete neighbourhood or a town. Development based on the TND model should seek to achieve the following principles: *compact development*, *mixed uses*, *multiple modes of transportation*, and, most importantly, response to the *cultural and environmental context*. The model claims that the important part of the planning process is the analysis of the development patterns and designs of the past so that to provide a context for the specific standards contained in the model. Another probably the most widely applied model of the Form-based code approach is the *SmartCode*. It was originally developed in the late 1990s by Duany and Plater-Zyberk and is now available in Version 9.2 (Duany, Sorlien, & Wright, 2003). This model is based on *Transect* which classifies six zones of different urbanisation (*natural*, *rural*, *sub-urban*, *general urban*, *urban centre*, *urban core*) and *special districts* (areas with buildings that, by their function, disposition or configuration, cannot conform to one of the six Transect zones). The Transect can be interpreted in terms of both space and time: different zones existing as characteristic places within the area or the evolvement of the area over the time. As for the cityscape identity, the idea of the Form-based codes is an attempt to revive the underlying processes of the traditional urbanism and to give a residential environment some of its traditional features back. The supporters of the Form-based codes claim that this method aims not to mimic the past patterns of development, but rather to reinterpret the qualities of the old patterns of building placement, design, public spaces, etc. Yet, Hakim (2008) noted that form-based codes are still very much descriptive programs relying on prescriptive stipulations. Therefore, they do not foster any unpredictable emergent form which could maintain the local spirit but at the same time create a new value. According to Petrušonis (2015, 2018) , the solution for this problem could be the inclusion of the *intelligent bodies* concept developed by Merab Mamardashvili into the legal documents regulating environmental transformation. Petrušonis defined intelligent bodies as authentic lifestyle models explained by the concept of localism or phenomenologically perceived. In such a way, intelligent bodies could be that missing link defining and directing not the necessary to achieve function or form *per se* during the development processes, but how that function and form could coexist with the continuous meaning of the place, or, as Petrušonis puts it, with the *mythological narrative of the place*. Nevertheless, from philosophical, theoretical considerations, let us return to the

practice and look at what can be found in the current territorial planning and urban design documents regarding the cityscape identity abroad and in Lithuania.

Foreign practice

Master development plans are these long-term documents which provide a conceptual layout to guide actions of development and define the possible future of the city. The appreciation and preservation of the cityscape identity are closely related to heritage protection. Thus, the analysis of the outstanding features of the city most likely will be found in the heritage sections of the master plans. For example, in the *Heritage* chapter, the *Kilkenny City and Environs Development Plan* (Ireland) (2008) mentions that the unique character of the city consists of a distinctive plan and the location of elements with distinctive features (see *Fig. 1.9.*). It is in this part that the *urban spatial structure*, the *network of streets and paths*, the *buildings of outstanding visual interest*, the *buildings of historical value* and the significant *natural heritage* are tackled. Professionals do these kinds of analyses and most often highlight bare facts about the city, but not the city perceived by the people.

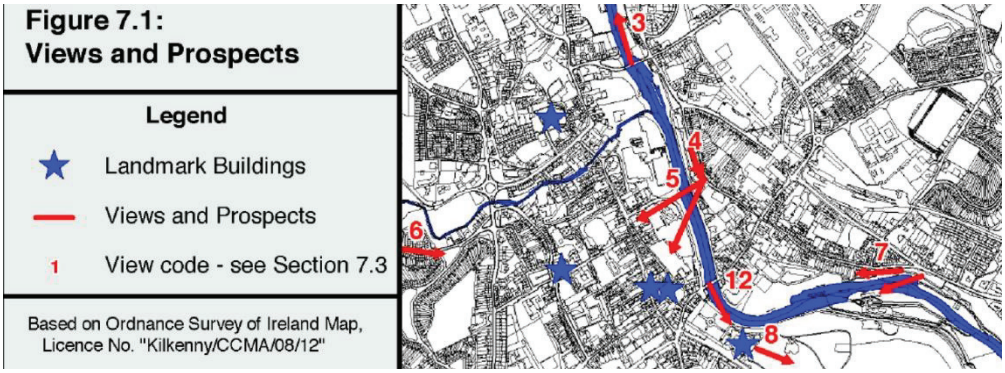


Fig. 1.9. Fragment of map of Kilkenny's Views and Prospects (2008)

However, in the United States (especially in the State of California), master development plans along with mandatory parts (of land use, communication, safety, environment and heritage protection) include the additional part of *Community design*.

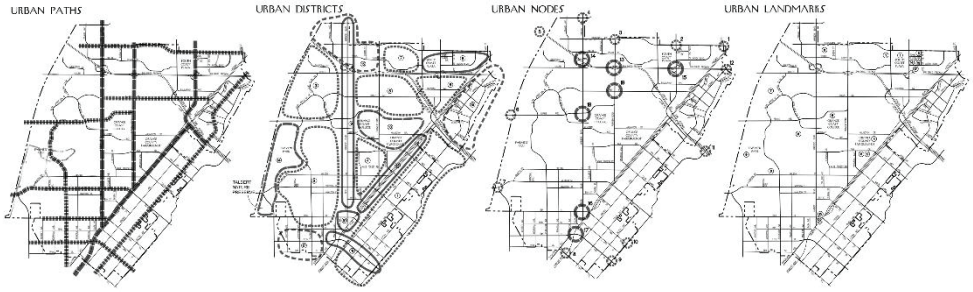


Fig. 1.10. Elements contributing to the form and character of Costa Mesa City (2000)

The focus here is on human beings and their daily environment. The main purpose is to clarify what physical aspects of the living environment contribute to the

image and character of the surrounding environment, and which features of that environment need to be preserved. An overview of master plans with the *Community design* part shows that different methodologies are used for their preparation. Sometimes, the tasks of the *Community design* part are solved by applying the theory developed by K. Lynch (1960). For example, the *Costa Mesa General Plan* (USA) (2000) claims that, in order to understand the current conditions in the city, it is necessary to understand the components of the city's urban design framework first as these elements contribute to the urban form and character. Then, five elements distinguished by K. Lynch (*paths*, *districts*, *nodes*, *landmarks*, and *edges*) are examined (see *Fig. 1.10.*).

Another group of master plans also draws on the methodology and terminology of the *Image of the City* but adds new elements or new concepts to it. For example, the master plans of Santa Ana (1998), Highland (2006), Dublin (2008) and many other US cities, on top of the traditional five elements, include more elements (such as *gateways*, *centres of attraction*, *enhanced/focus intersections*, *neighbourhoods*, etc.). Yet, the principle in itself remains: distinguishing and layering of individual elements to reveal the overall cityscape (see *Fig. 1.11.*).

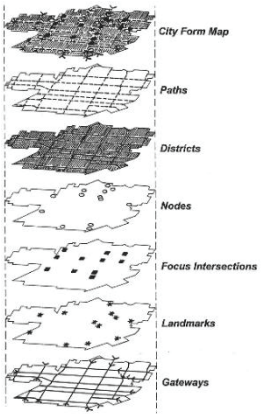


Fig. 1.11. Policy of the general plan of the City of Santa Ana (1998) – layer concept

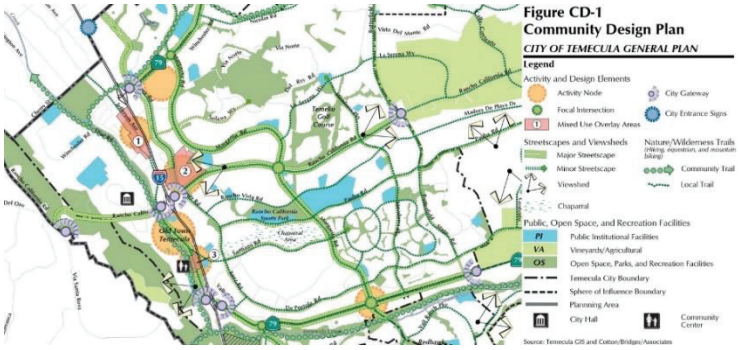


Fig. 1.12. Fragment of Community Design Plan from Temecula General Plan (2005)

The next group is the master plans where the *Community design* part includes in-depth analyses of the *city structure*, *identity* and *image*, as well as feasibility studies

for the preservation of *districts* and *neighbourhoods*, improvement of the *public spaces*, and protection of *natural and urban values* (e.g., master plans of Chubbuck (2002), Rancho Mirage (2017), Arcadia (2010), Temecula (2005) cities). The number of the applied methodologies naturally increases here (see *Fig. 1.12.*).

Community Character Manual (2017) prepared as a part of the General Plan for Nashville and Davidson County is referred to be one of the most successful implementations of the Form-based code ("What Makes a Good Form-Based Code?," 2019). It stands out by thorough characterisation of each neighbourhood with detailed attention to the features shaping these distinct places. The whole Nashville/Davidson County is divided into territorial units based on their belonging to one or another *Transect Category* and *Community Element* (open space, neighbourhood, centre or corridor) (see *Fig. 1.13.*). Then, the *Policy Intent* (to maintain, create, or enhance) is defined, a general overview of the character is provided, and examples of the appropriate *Land Uses*, *Zoning*, *Building Types* and other aspects are proposed. Further, the *Application* describes which features should be present, whereas the *Design Principles* describe the character and form to be achieved through the *building form and site design* (massing, orientation, setbacks, density, building heights along major corridors and intersections, landscaping, parking, signage, open spaces, etc.), *transitioning* (infill, adjacent historic structures, higher intensity), and *connectivity* (access, block length, pedestrian/bicycle, transit, vehicular). There is also a section about *Balancing Conservation and Evolving Policies* for those territorial units which contain any valuable features. The document is designed to be understandable and realisable not only by professionals but also by the community. Still, the *Community Character Manual* is drafted as top-down instructions, and it raises doubts if such a way can reflect the sense of the place as well as the meaning of the place.

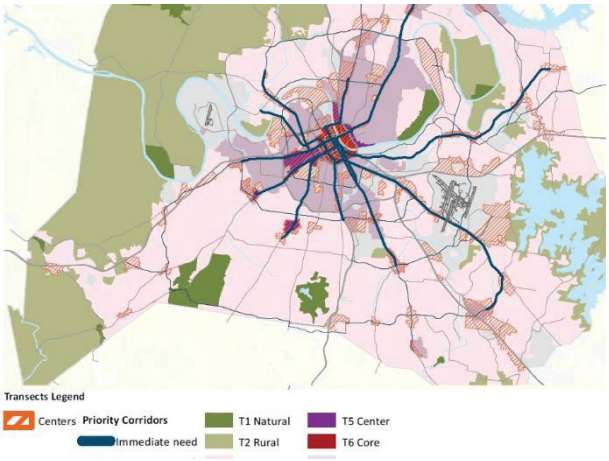


Fig. 1.13. Fragment of the Transect from Community Character Manual of Nashville and Davidson County (2017)

It is necessary to mention that the cityscape identity is assessed not only as an integral part of master plans. Separate studies are also conducted. They provide a much deeper understanding of the character and composition of the environment. Researchers representing the United Kingdom are probably most advanced in this

field. Since 1992, they have been running programs *Landscape Character Assessment* and *Townscape Character Assessment*. These programs are designed to reveal the peculiarities of individual territories. For example, the *Final Report of the Royal Borough of Windsor and Maidenhead Townscape Assessment* (2010) consists of two main parts: *characterisation* and *assessmen*t. The *Characterisation* part covers the *physical influences and landscape setting*, *historical evolution*, *urban structure (i.e., historic gateways, landmarks, nodes and key views)*, *values*, *townscape classification (townscape type* and, within these, *character areas)* (see *Fig. 1.14.*) and *character description*. Whereas, the *assessment* part covers the *guidelines and opportunities for character enhancement* with emphasis on the landscape conditions and the urban structure.

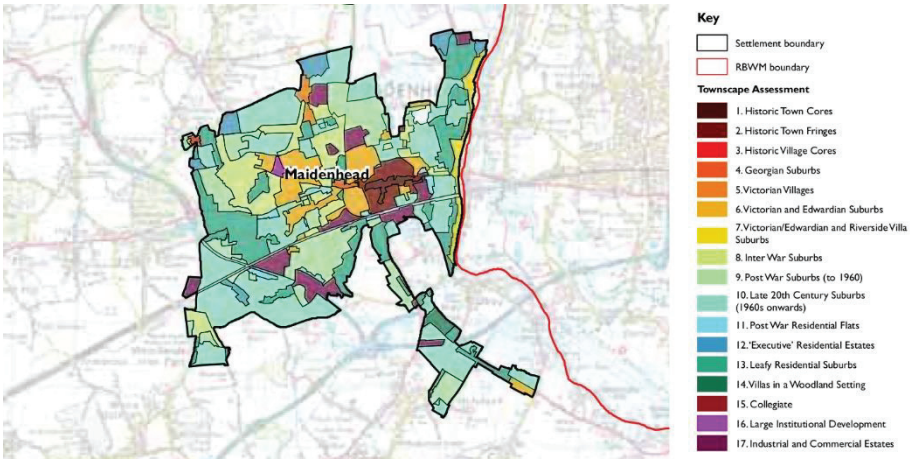


Fig. 1.14. Classification of Maidenhead Townscape. Fragment from the Royal Borough of Windsor and Maidenhead Townscape Assessment Plan (Land Use Consultants, 2010)

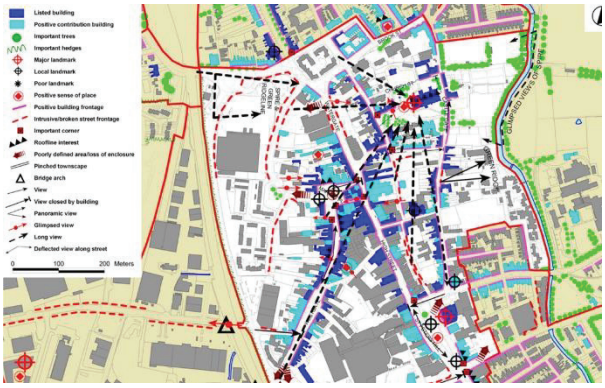


Fig. 1.15. A drawing revealing Townscape in one of distinguished Townscape Character Areas – town centre/historic core in Grantham Town (Forum Heritage Services, Context4D, & Eaton Waygood Associates, 2011)

As another example of Townscape Character Assessment in Grantham shows (see *Fig. 1.15.*), the analysis of particular character areas is fairly detailed. It covers the *listed buildings*, *landmarks*, *evaluation of building frontage*, *interesting rooflines*,

important views (including panoramic, glimpsed and long views), and, last but not the least, the *zones of the positive sense of the place*. However, neither the explanation how those zones were defined nor the criteria of their establishment were provided.

Some things might be learnt by glancing at the situation of the urban development and planning in Germany. As it is well known, many German cities suffered from virtually complete destruction of the industry, infrastructure, residential areas and inner cities after World War Two. Furthermore, the country was divided into two for 45 years, and the processes of reunification have still been ongoing during the last 30 years. Thus, it is interesting to understand how the issues of cityscape identity are addressed here. Our overview of the *Urban Development and Urban Policy in Germany* (Strubelt, Gatzweiler, & Kaltenbrunner, 2000) reveals not only the changes in the urban development and its regulation over the time, the existing hierarchical structure of legislation, and the actors of urban development, but also both formal and informal instruments of urban planning. Briefly, the basis of formal planning in Germany is the *Federal Building Code* (BauGB), according to which, the main concept of urban land-use planning is sustainable spatial and urban development covering all deliberations on the allocation of urban functions without detailed legal regulations. The essential requirements of urban land-use planning are *mixed (if necessary, separate uses) use*, *traffic avoidance and reduction* as well as *economical and considerate use of land*. Despite the fact that an essential element of urban planning is the weighting of the public and private interest, not much is said about the consideration of unique territorial features or the cultural legacy written in the environment. The reason for this may lie in the remark from the overview (Strubelt *et al.*, 2000) that urban policies follow the concepts of contemporary trends, whereas the instruments of the urban policy fundamentally pursue neutral goals. Yet, Wékel (2016) distinguishes two priorities characterising the influence of planning on the design of a cityscape: the integration of new buildings into the existing urban development contexts, and the development of visions and frameworks for new urban areas and quarters as major conversion projects. As for the evaluation and further development of the currently existing building stock, Wékel (2016) points out the necessity of negotiations with the property owners for the specific architectural requirements for every individual case with the remaining possibility to supplement these requirements with design guidelines which can be followed voluntarily, or, if necessary, with the means of obligatory construction regulations to safeguard the existing qualities. The *Preservation statute* is one of the instruments to preserve the physical structures and characteristic features of areas, i.e., the urban character (Strubelt *et al.*, 2000). Certainly, there can be a variety of different outcomes when dealing with the urban structures of the past within today's parameters, for example, the *Reconstruction of Neumarkt Quarter in Dresden*. The initiative of the citizens began the rebuilding movement of Frauenkirchen Church which was destroyed during the bombing of Dresden in WWII. Many historians, architects, and engineers contributed to that movement. The successful rebuilding of the church led to the desire to give the appropriate surrounding for it. The most acceptable way for decision-makers seemed to be the restoration of the old identity of Dresden by giving the quarter an outward appearance as close as possible to that from before 1945. Even

though this controversial decision was being criticised as inviting a historical 'masquerade' or 'Jurassic Park of baroque' in the local press (Simon, 2002 and Holzamer, 2002 cited in J. James, 2015), the re-opened area as a symbolic place attracts a large number of tourists every year and has inspired other revitalisation projects throughout Europe. Very different challenges arise in the processes of the revitalisation and redevelopment of large 'newly-built' (the 1960s–1980s) residential areas. However, the deterioration of the building stock, the poor physical condition of the infrastructure and the surroundings requiring constructional or technical problem solving are important but not the primary questions to be addressed if urban renewal is understood as a democratic and cultural process. According to Schmidt (1994), one of the most important potentials defining the future strategy of the area is the identification and feeling of belonging to the part of residents. Urban renewal in Halle-Neustadt is illustrative of how the place once developed as the 'ideal communist city' has to find its new identity today. The research on the public attitudes towards the Halle-Neustadt area (Schmidt, 1994) showed that the negative perception of the area is characteristic of the outsiders, whereas many residents have a strong identification with the area and see real perspectives for the future in the area. With this in mind, it becomes clear that demolition and new construction (as practised under the large-scale redevelopment measures of the past) is not the right solution. In fact, for a while, such drastic strategies have been replaced by preservative renewal with a stronger focus on the population and the deep-rooted structures in Germany (Strubelt *et al.*, 2000). Even though the renewal project of Halle-Neustadt involved renovation of residential buildings and open spaces as well as installation of some amenities for the community, intense investigations are still ongoing with the aim to develop visions for the future of this urban area. The most crucial aspect is the change of negative attitudes of the nineteen-nineties towards such areas into the highlighting their benefits because the positive features that made Halle-Neustadt special in the past still apply today: it is green, is denoted by good infrastructure, and offers low-cost housing (Lukas, 2014).

To sum up, although cityscape identity issues are relevant, their solutions are often understood not as fundamental but rather as complementary goals in the practice of territorial planning and urban design. Anyway, our overview of examples revealed that place-based identity could be analysed and regulated at different scales, by different types of documents with different levels of detail. Based on the overview of examples, *streets* (paths, routes, corridors, their networks), *buildings* (of outstanding visual interest, of historical value, landmarks, listed buildings), *open spaces* (public spaces, squares, centres of attraction, nodes, enhanced/focus intersections), *nature features* (green spaces, water bodies, terrain), *districts* (neighbourhoods), *gateways and boundaries* (access, entrances, edges), as well as the *urban structure* as a whole (with its panoramic, glimpsed and long view, rooflines and streetscape views) are the *physical formants* of the cityscape identity. Yet, the *sense of the place* (emotions) and the *meaning of the place* (semantic knowledge) add up to it as well, and some of the examples addressed this factor. The overview also showed that cityscape identity can be shaped by regulating different attributes: starting from *height*, *density*, *intensity*, *configuration* and *functional priorities of building up*, *length of blocks*, *configuration of the street network, their width and profile*, the *location* and *proportions of open*

spaces, then, going more in detail with the *massing*, *shapes* and the *orientation of buildings*, *street setbacks, parking*, *landscaping* and *boundary formation*, and, finally, specifying the details such as *materials*, *colours*, *textures*, *shapes* or the *arrangement of particular elements* for façades, roofs, fences, etc. However, the values for the attributes have to be justified not only on economic or short-term fashion criteria. Aesthetics matters, but its value mostly lie in the continuity, in the deep-rooted local traditions. Thus, once again, the consideration of the sense and meaning of the place is salient, as it enables the creation of truly unique places, and, subsequently, the authentic cityscape identity. Keeping in mind that the image of the place is often shaped by the media, when attributing certain features (positive or negative) to the place which do not necessarily reflect the real situation, it is crucial to include into decision-making the local communities and the people having profound knowledge about the place, its historical and current context.

Lithuanian practice

In Lithuania, the issues of place-based identity have also been receiving the attention of researchers and practitioners in many different fields and levels.

Disclosure and formation of place-based identity at the national level

The highest-level territorial planning document in Lithuania is the *Comprehensive Plan of the Territory of the Republic of Lithuania*. It establishes the spatial integration policy, use and protection priorities for the country. Currently, the document is being drafted with solutions valid until 2030 and a concept applicable until 2050. The preparation of Solutions is still in progress, as, just very recently, the Parliament approved the Concept ("Team Urbanistai," 2020). The Concept pays major attention to the *identity* because one of the aims of the *Comprehensive Plan* is to preserve and highlight the identity of the country in the context of Europe, to create the basis for the competitive state. The *identity* is defined here as self-awareness, identification according to certain defined narratives. The concept of the country's spatial development is based on the *values* (economic, social and environmental balance), *ambitions* (high-quality living environment today and tomorrow) and *visions* (vibrant urban structures, a viable ecosystem, and efficient bio-productive territories). According to the concept, *natural recreational places* and *cultural heritage* which have retained their peculiarities are *significant national resources* that not only attract local and foreign tourists but also become the main means to avoid cultural globalisation. In order to protect these resources, it is important to have an *inclusive culture* and *strong proactive local communities*. The Concept also contains a scheme of the development of natural and cultural (recreational) resources of the landscape. It indicates *landscapes of different picturesqueness levels*, cores of *ethnocultural self-consciousness*, and *recreational potential*. As for the protection of specifically the *urban landscape*, the document suggests exploring its features based on the following approaches: determination of the valuable fragments of the urban landscape *on the land-use basis*; determination of panoramic views based on the *semantic landscape concept*; determination of the areas valuable from the *historic-urban* and *natural points of view*. Besides, the Concept discusses the *development of a strong territorial identity* of Lithuania in more detail. There are three levels of identity to be defined: *local* (local signs, local contexts; no external action can be

imposed), *regional* (ethnographic, regional cultural peculiarities), and *national* (history of the country, multicultural Lithuanian identity and traditions). The territorial identity should be fostered through the preservation of the values of the protected areas, the development of the system of the protected areas and the promotion of the cultural landscape of exceptional value. Certainly, the disclosure of the identity and empowerment of the potential of the existing cultural and natural values contribute to the creation of a competitive country. However, in order to ensure the consistent and cohesive preservation of the cultural identity of the landscape, the solutions of the National landscape management plan (2015) need to be integrated.

The *National Landscape Management Plan* (2015) is a national-level special plan – a clearly defined and targeted policy of landscape management with territorially differentiated and scientifically justified strategies for landscape use and protection. The Plan was prepared with the objective to implement the ideas and tasks of the *European Landscape Convention* (2000) and the *Lithuanian Landscape Policy* (2004). It also aims to increase awareness of the value, role and changes of the landscape. The document covers such aspects as *landscape management*, *directions of regulation*, *visual aesthetic potential* and *territorial priorities for the protection of cultural heritage.* In order to form and maintain the optimal landscape structure, the following *landscape management zones* are distinguished: the *intensively used and changing* (urbanised, technogenic) landscape, the intensively *economically used* (agrarian and forestry) landscape; the *sustainably used* (agrarian and forestry) landscape, the *complex and mixed-use* (urban and natural) landscape, and the *conservational use* (aggregates of protected natural and cultural complexes) landscape. The zones can also be classified according to the general character of the landscape (the degree of cultivation), the character of the use of the landscape (the intensity of use), and the natural character of the landscape (natural complexes). The *generalised strategies* and *specified directions* of the management of landscape zones are listed in the Plan. In principle, the Landscape plan defines either the *conservation* or *use* (*intensive* or *sustainable*) as be priorities of certain territories. The *National Landscape Management Plan* also addresses the optimal structure of the landscape. It explains that the *indicators of landscape optimality* show the desired size and proportions of the individual elements of the landscape structure. Judging by the criteria of *completeness*, *informativeness*, *aesthetics*, *social acceptability*, *convenience* and *economy*, the overall structure of the landscape is best represented by the *composition of the land use*. Different types of land use in different proportions create a different character of the landscape. Therefore, once the optimal desired value has been established, it is clear how the areas have to be developed. In terms of the visual structure of the landscape and its information-aesthetic potential, the *vertical division* (the possibilities of different observation levels), the *horizontal division* (opportunities for seeing-through, the visibility and perception of visual spaces), and *visual dominance* in the landscape are the decisive factors. The document concludes that the diversity of the Lithuanian landscape is a set of intertwined natural and cultural elements. Therefore, it must be preserved, managed and planned in an integral way.

In addition to territorial planning documents, research works are also salient for the disclosure and preservation of the Lithuanian national landscape. Such studies as the *Identification of Diversity of Landscape Spatial Structure and its Types in the Lithuanian Republic* (Kavaliauskas, Jankauskaitė, Veteikis, & Šimanauskienė, 2005; Kavaliauskas, Jankauskaitė, Veteikis, Šimanauskienė, & Dumbliauskienė, 2006), *Methodology of Landscape Formation (Desired Landscape Benchmarks)* (Kavaliauskas, Veteikis, Šulcienė, & Rasčius, 2013), or *Methodology of Preparation of Schemes of Landscape Structure in the National Parks* (Valstybės žemės fondas, 2017) lay down the foundations for the national policies and also are crucial for the understanding and fostering of the identity of the Lithuanian land.

Disclosure and formation of place-based identity in Lithuanian cities

Extensive organisation of various urban initiatives, preparation of city branding projects (*Kaunas dalinasi. Kauno miesto prekinio ženklo stiliaus knyga*, 2014; *Šiaulių miesto logotipas. Naudojimo vadovas*, 2019; *Vilniaus miesto įvaizdžio tobulinimo studija*, 2014, etc.) along with the formation of a city image in the media and social networks testify that the issues of identity and uniqueness are relevant in Lithuanian cities. The judicious development of distinguishing the urban environment has become a priority as well, especially in the biggest cities of Lithuania, where there "is a need to protect valuable urban areas due to the harsh and uncompromising high-rise construction with the ambitions of its investors" (Alistratovaitė, 2006).

Vilnius is the capital city of Lithuania, and a number of works have been written about its uniqueness. The *volumetric-spatial composition* of Vilnius Old Town was studied by Jurštas (1977) and Ziberkas (1999). Drėma (1991) wrote about the *history of Vilnius City*, the significance of the *cultural legacy* and the necessity of knowing it. The *evolution of Vilnius City* was also discussed by Grunskis (2005, 2011). The influence of the *peculiarities of the natural morphological structure* of the Neris Valley on the urban composition was considered by Laukaitytė-Malžinskienė and Daujotaitė (2003). Some *peculiarities of Vilnius City* were analysed by Mačiulis (2006) and Vanagas (2006). The role of the *socio-cultural aspects* in the sustainable development of the city by studying the case of Vilnius was explored by Bardauskienė (2008). The *multicultural heritage* of Vilnius City and the *stories* hidden within them were revealed in the collection of articles compiled by Bumblauskas, Liekis and Potašenko (2009). The *compositional peculiarities of Vilnius façades* and their change were analysed by Riaubienė (2010). Individual territories of Vilnius are presented in a concise illustrated publication *Sightseeing in Vilnius: Microrayons of the city* (Tiukšienė, Sisaitė, & Tiukša, 2015). The *landscape identity* of Vilnius was discussed by Laukaitytė-Malžinskienė (2018). The list could go on and on, and that shows the relevance and complexity of the topic. One of the most significant works dedicated to the protection of the *visual identity* of Vilnius City is the large-scale research carried out by the scientists of Vilnius Gediminas Technical University – Daunora, Kirvaitienė and Vyšniūnas (Daunora *et al*., 2004). The boundaries of Vilnius *identity zones* were designated, and the *characteristics of their main formants* were distinguished in this research. The regulatory proposals for these zones (such as the relation of the *height of high-rise buildings* and the *height of the background*, or the management of important *viewpoints*, etc.) were suggested. Based on this study, the

Rules of Regulation of High-rise Construction were adopted (2004). The latter document included the concepts of *cityscape*, *identity*, *visual identity* as well as the defined planning principles and procedures concerning the *visual image of the city*, the *urban composition* and the *artistry of the structure.* Even though these Rules had their starting point not only at the decisions of the allocation of high-rise buildings in Lithuanian cities, but also at the preparation of more in-depth visual identity schemes; yet, the Rules were repealed in 2014. It is of interest to know how the issues of urban identity have been addressed and regulated practically by territorial planning documents covering Vilnius City. As mentioned above, the protection of the characteristic urban views largely depends on the selected strategy for the development of high-rise buildings. Thus, by virtue of recognising the threats of uncontrolled development, Vilnius City Council approved its first document regulating the development of high-rise buildings in the *City Scheme of Additional Restrictions for the Construction of High-rise Buildings in the Central Part of Vilnius* (2004). The central part of the city was divided into zones according to the intended regulatory principle, i.e., by indicating where the construction of high-rise buildings is *permitted*, where it is *possible only after analysis of the consequences*, and where it is *prohibited*, as well as the areas where the height of the buildings is determined by the currently valid territorial planning documents. The scheme also marked the *historical compositional dominants*, the territories of *distinctive character*, and the *main viewpoints*. Then, in 2007, the *General Plan of Vilnius City* (2007) was prepared. The proposed structural model of Vilnius City consisted of three zones: *central*, *middle* and *peripheral*. The functional zones were grouped into *urbanised* and *non-urbanised* territories. The document claimed that the richness of the *natural and cultural heritage*, *the polycentric structure* of the city and its peripheral settlements jointly create the uniqueness of Vilnius City. The essence of the urban identity of Vilnius City is the urban-architectural structure located in the background of the natural morphostructure, thus forming the *multi-layered perspectives* and *panoramas*. The *new architectural hill* on the right riverside of the Neris River was also defined as an element enriching the city identity. The suggested measures for the protection of the city's uniqueness were based on maintaining the *morphological diversity* (the characteristic *typology* of building up, the *scale*, *height* and *intensity* as well as the *specificity of the public spaces*). The image of Vilnius City was also addressed in the document. According to the plan, international competitiveness should be ensured by improving the quality of the environment, building new objects of the representative cultural use that are compatible with the natural and cultural context(s). Certainly, special plans and individual regulations of protection define the management in the central part of the city, and its historical suburbs are protected. In 2008, the new regulations for the construction of high-rise buildings were adopted in a form of the *Special Plan* (2008). This document emphasised the original *visual connections* between natural structures. Thus, the location of new visual dominants should be chosen in a way least affecting them, and, in certain places, the development of high-rise buildings is not allowed at all. The plan also distinguished the following types of the composition of high-rise buildings: *group/hill*, *line*, or *solitary objects* (local or city-level accents). In 2016, the preparation of the change of the General Plan of

Vilnius City started. Currently, the prepared solutions of the *Vilnius City General Plan* (2020) have been submitted for institutional approval. The *General Plan* contains a small section dedicated to *the peculiarity of Vilnius City* under the topic of the *inner structure of the city*. Here, the measures suggested for preserving and nurturing the uniqueness of Vilnius City are similar to those of the previous plan. They include the protection of the *natural and cultural heritage*, *historical buildings*, and *green spaces* and *green slopes* formed by the river; the identification and protection of the city's *planar structure*, *streets*, *squares*, and the *network of public green spaces*; protection and harmonisation of *historic panoramas* from the main viewpoints; protection of the unique features of different areas of Vilnius City by defining the parameters of *density*, *intensity*, *height of background and different buildings*, etc. The general plan discusses the allocation of high-rise buildings, while indicating that the design of such buildings requires more detailed modelling assessing the impact of the planned buildings on the silhouettes and panoramas from the relevant viewpoints. The development and preservation of the natural protected areas as well as cultural heritage objects and sites remain defined by the special plans and specific management regulations. Yet, the General Plan establishes additional restrictions on the *morphological changes* in the Old Town and stresses that *control of visual consequences* should be introduced.

Kaunas. Various aspects of the Kaunas urban structure have also been analysed in many scientific works and researches. Analysis of the *psychological acceptability* of the spatial model of Kaunas City was done by Zaleckis (2002). The possibilities of *forming the cityscape* of the central part of Kaunas in the Nemunas Valley, while *respecting the uniqueness of the cityscape, its visual expressiveness and integrity*, were tackled by Kamičaitytė-Virbašienė and Leitanaitė (2005). The influence of the *contemporary architectural landmarks* on the cityscape was analysed by Bružas (2010). A comparison of *different urban structures* in the central part of the city with the whole city revealing not only their *characteristic features* but also their *potential* was done by Zaleckis and Kamičaitytė-Virbašienė (2011). The *techno-energetic flow relations* in Kaunas City as a *new approach to functional zoning* was analysed by Kavaliauskas and Šabanovas (2011). The significance of *Interwar Modernism* for the identity of Kaunas City was also explored (Migionytė & Petrulis, 2012; Petrulis, 2014). Research on the *legibility* of Kaunas New Town was done by Vaitkevičiūtė (2019). These are just a few recent studies related to the analysis of Kaunas City urban structure; some of them extend to the disclosure of the urban identity. However, it of interest to know to what extent this theoretical basis is applicable in the practice of the preparation of territorial planning documents. In 2013, the *Special Plan of Allocation of High-rise Buildings in the Territory of Kaunas City Municipality* ("Miesto planas," 2013) was prepared based on the previously valid *Special Plan* ("Kauno planas," 2007). Yet, the new document noted that its predecessor had unreasonably strict regulation covering the development of high-rise buildings, thus, it did not meet the social and economic needs of today's society and could even negatively influence the processes of forming an urban identity. According to the *Special Plan* (2013), the urban identity of the city can be revealed by the identification of the valuable elements of the city structure (i.e., *characteristic silhouettes*, *panoramas* and *their dominants*, the *peculiarities of natural elements* and their systems, *cultural heritage objects*, or

valuable territories). These elements form the identity of the city and enhance its attractiveness. The document distinguishes two types of spaces: *active* and *steady*. *The active spaces* include the *main core* (the Old Town and the New Town) surrounded by *nearby centres* (Aleksotas, Šančiai, Vilijampolė, Freda, and Žaliakalnis) and linked to further *local centres* (Kalniečiai, Šilainiai, Dainava, etc.) via *connecting axes* (Savanorių, Žemaičių, Raudondvario, Veiverių and other roads). The remaining areas of Kaunas City are defined as *steady spaces,* but they differ from each other in character. For each distinguished area, there are recommendations on the *background height*, the *permission/ban* to develop *multi-storey* and *high-rise buildings* as well as the *economic payback* from the possible development of multi-storey buildings. In general, the solutions of this special plan aim to create a better environment for both the whole city and its parts. The *Kaunas General Plan* (2014) was adopted for the years 2013–2023 (corrections were made to the plan in 2017 and 2019, but they did not fundamentally change the plan, and are in part related to the city's identity so that it remains intact). The document declares that the model of the city's urban development has to be based on the *revelation and highlighting of the peculiarities of the city*. The model of Kaunas City urban development consists of *urban and natural elements.* The immovable cultural heritage is essential so that to reveal the peculiarities of the place. Still, the general urban structure cannot overshadow the natural elements (such as rivers, their lower terraces and slopes, forests and other green spaces). According to the plan, the urban development of Kaunas City is managed by *functional zoning* (yet, zones are adapted specifically for Kaunas City). The *regulation of the use of the territory* specifies the *function*, possible *purposes and ways of land use*, permissible *intensity and height of building up*. Functional priorities (city centres, urban axes and the network of the main streets) add details to the model. The *General Plan* also emphasises the importance of the *visual viewpoints (static) and routes (dynamic)* for the perception of the city structure as well as for the allocation of public places. The *Immovable Cultural Heritage* section points out that any constructions of 'bigger' (not specified what is meant by this wording) buildings or complexes in the valuable urban sites is possible only after assessing their influence on the inner urban spaces, panoramas and silhouette(s) from the *controlling observation points.* This part also distinguishes a list of certain areas where valuable *characteristic street networks*, *fragments of authentic plots* or *configurations of open spaces* formed in different periods should be preserved. Furthermore, the *General Plan* contains a separate chapter *Formation of Kaunas City Identity*. This part is based on the idea of the *city as a text*, and the objects that determine the uniqueness of the city are distinguished based on symbols (*natural*, *functional*, *iconic*, and *conventional*). The emphasis is on the relationship between man and the environment, the observer's ability to *read* the city, and the city's ability to *be readable* (as Lynch called it, *legibility*). The proposed regulations for the management of the distinguished symbols depend on the nature of the symbol, thus, they vary from the preservation of the function, the morphostructure, or the physical object itself to the improvement of the living conditions of animals (for the case of Kaunas Zoo). It should also be noted that, in 2017, Kaunas City was awarded the title of the *European Capital of Culture* for 2022. That led to the *Kaunas 2022* initiative. It has many goals, including building

the identity of the city and its districts. The main difference from the strategic documents defining the identity is that *Kaunas 2022* is not (or at least should not be) the top-down process, but the bottom-up, involving communities and encouraging to create a unique – if not physical then at least cultural – environment.

Klaipėda is the only seaport city in Lithuania. The *urban structure* of Klaipėda (especially the central part of the city) was analysed in the research of Bučas, Miškinis and Tatoris. Butkus, Safronovas and Petrulis explored the *urban development* of Klaipėda in 1945–1990. Zubovienė, Zubovas, Šliogeris, Šliogerienė and others practically solved the *urban problems* of the city. In 2007, the *General Plan of Klaipėda City* (2007) was prepared. The explanatory text of the document was very brief. Although neither the particular terms *cityscape* nor *identity* were used in the document, it declared the need to preserve and manage the characteristic *network of streets,* the *structure of squares and possessions*, *building complexes* and *ensembles*, the *spatial structure* and *historical materiality*, *relief forms*, *cultural layers* and *public spaces* in the territory of the Old Town. It also noted that, during the renovation of multi-storey houses, the value of the *city image*, *silhouette* and *originality* as well as the characteristic *colour range* should be preserved and highlighted. The *General Plan of Klaipėda* also referred to the *Special Plan of High-rise Buildings* (which was being prepared simultaneously and was adopted a few months later) as the basis to use high-rise buildings for the development of the new image and silhouette of the modern city. The *Scheme of Layout of High-rise Buildings in Klaipėda City – Special Plan* (2007) is a planning document which defines the principles of the height restriction with the objective to preserve the valuable elements of visual identity – the silhouette and panoramas – hence, the important building blocks of the city's cultural identity. Alistratovaitė (2008, 2009) described in detail all the stages of the preparation of this document and the methodologies which were used to justify its solutions. An individual method to Klaipėda was sought, while taking into account the specificity of this city. Analysis of the *mosaic of cityscapes* was selected as the main methodological principle. *Cityscapes* are closely related with *urban structural zones*; thus, the regulation of high-rise urban development was based on the *morphotype of building up*, indicators of building up (*density*, *intensity*, and *height*), the *way of building verticals* and the *verticals' ratio to the background*. It was noted that the characteristics of the same morphotype do not have to be identical, as long as it is determined by the location of the morphotype. This special plan was really special in the sense that the issue of the distribution of high-rise buildings was tackled with respect to the visual identity of the city. On top of that, it should be mentioned that the *General Plan of Klaipėda* (2007) also indicated the necessity to prepare a landscape plan of Klaipėda City. Such a document called *Distribution of Small Architecture and Environmental Management Equipment and Aesthetic Formation of Environment, Urban Landscape Management Special Plan of Klaipėda City* (2015) was prepared eight years later. It defines the *main management directions* (urbanised and non-urbanised zones) and *directions of aesthetic formation of the environment* which are form-based (the implementation of the *Transect* concept from the *SmartCode*). Directions of aesthetic formation of the environment include designation of *landscape management zones* (which depends on the level of urbanisation) and the *character*

types (natural, mixed natural, mixed urban, and urban), the identification of the *desired properties of the dominant objects in the particular zones* and the determination of *the desired ratio of the dominance of the objects' character types in the particular zone.* Furthermore, the *main nodes of the city image* are also marked on the drawing of solutions. In 2015, the decision was made to change the *General Plan of Klaipėda*. The new one had to be prepared prior to 2017, but even though the document (2019) is currently in the final stage of preparation, it has not been officially adopted yet. Anyway, the new *General Plan* (2019) significantly differs from the previous version in its scope and content. The document states that the functional zoning of the city was proposed based on the thorough *assessment of the architectural – urban identity* of Klaipėda City. The urban identity is expressed through the *genetic code* of the area or the so-called hereditary layer which consists of the *natural environment* including the protected areas and other green spaces, the *cultural heritage* and the *valuable urban structure*. The *General Plan* establishes the essential provisions and characteristics of spatial identity. The *morphotypes*, *density*, *intensity*, and the *height of building up*, *verticals*, *silhouette* and *network of visual canals* are defined as the main measures of the composition of the urban model. The document also distinguishes *the protected spatial identity stretch* and *the non-systemic spatial identity stretch* with their respective regulations.

Šiauliai. The urban issues of Šiauliai City were mostly studied in the works of Miškinis, Steponaitytė, Vyšniūnas and Rudokas. Still, the peculiarities of the urban structure of Šiauliai are not widely explored, and even less so the issues of the cityscape identity have been dealt with. However, the *General Plan of Šiauliai City* (2009) contains such concepts as the *cityscape* (i.e., the structural part of the city characterised by the unity of the spatial and planar structure), *identity* (i.e., a set of features that make it possible to identify a site, recognise its unique features and aspects), *visual identity* (i.e., requiring protection, unique, historically formed entirety of the natural and anthropogenic elements of the city), and the *visual identity of the city* (i.e., a proposed system of city viewpoints helping to define the area of visual identity). The main protection measure of the valuable elements of Šiauliai City visual identity (the signs of the city's cultural identity) is the *height restriction*. High-rise buildings are important in Šiauliai City as they could provide panoramic observation decks. The natural viewpoints are lacking due to the relatively flat terrain. Yet, high-rise buildings should be strictly regulated if allowed at all in the central part of the city which is defined as the visual identity zone. The *General Plan* also indicates that *natural elements*, *historic cultural heritage* or *ordinary construction of various periods and values* shape the different *cityscapes* of Šiauliai City. The *morphotype* and the *height of building up* also are determinants of the *cityscape*. The *General Plan of Šiauliai City* recommended performing additional urban and architectural analyses or feasibility studies for the projects that could affect the visual identity zone. Vyšniūnas (2010) stressed that, in order to respect the old part of the city, it is necessary to identify the valuable features of the urban structure while assessing the potential for urban development. In 2010–2011, a detailed plan of the central part of Šiauliai city was being prepared. However, after a double review/expertise of the project's conception, planning works were not continued (Rudokas, 2013).

To sum up, Lithuanian national-level territorial planning documents emphasise the importance of *identity* as one of the factors influencing national competitiveness. The disclosure of Lithuanian *territorial identity* at the national, regional and local levels is part of the general future strategy. Regardless of the level, the understanding of the territorial identity as a set of intertwined natural and cultural elements persists, and it implies the necessity of the integral approach. The overview of selected territorial planning documents of the biggest Lithuanian cities (see *Table 1.2.*) revealed that *green spaces*, *water features*, and *relief* (both protected and not protected), the *planar structure* (the network of streets, the layout of building up), the *spatial structure* (characteristic volumes, the massing of building up) as well as the *individual objects* (both protected and not protected) create the uniqueness. Uniqueness is perceived through the *panoramas*, *silhouettes*, *visual corridors (connections)* and *streetscape views*. Therefore, these characteristic views should be maintained and fostered through the application of *functional zoning*, *height*, *density*, *intensity* regulations, as well as by the establishment of *specific requirements* for individual objects.

Table 1.2. Summary of the selected territorial planning (TP) documents to some extent addressing and regulating the issue of cityscape identity. Compiled by the author

TP document	**Elements distinguished as significant to the identity of the cityscape, its formants**	**Parameters defined as necessary to regulate in order to preserve the cityscape identity**
Vilnius		
Special plan-high-rise buildings (2004)	historical dominants distinctive character main viewpoints	location of high-rise buildings height restrictions
General plan (2007)	natural and cultural heritage polycentric structure multi-layered perspectives panoramas new architectural hill morphological diversity	typology of building up scale height intensity specificity of public spaces
Special plan-high-rise buildings (2008)	visual connections	location of high-rise buildings height restrictions
General plan (2020)	natural and cultural heritage historical buildings without protection status green spaces and river slopes planar structure (streets, squares, network of green places) historic panoramas	density intensity height of background height of individual buildings
Kaunas		
Special plan-high-rise buildings (2013)	characteristic silhouettes panoramas and their dominants peculiarities of natural elements cultural heritage elements other valuable territories	background height possible locations of high-rise buildings

Continuation of Table 1.2.

General plan (2014)	urban (immovable heritage) and natural (rivers, their lower terraces and slopes, forests, other green spaces) elements visual viewpoints (static) and routes (dynamic) symbols of cultural text (natural, functional, iconic and conventional)	functional zoning intensity height characteristic configuration of open spaces morphostructure, morphotypes
Klaipėda		
General plan (2007)	spatial structure characteristic network of streets structure of squares and possessions building complexes and ensembles relief forms silhouette	materials colours
Special plan-high-rise buildings (2007)	silhouette panoramas mosaic of cityscapes urban structural zones	density intensity height way of building verticals verticals' ratio to background
Special plan-urban landscape (2015)	landscape zones character types (Transect concept)	level of urbanisation desired properties of dominant objects desired ratio of certain character types in the particular zones
General plan (2019)	genetic code – hereditary layer natural environment (protected and not natural elements) cultural heritage other valuable urban structure silhouettes	morphotypes density intensity height of building up verticals network of visual canals
Šiauliai		
General plan (2009)	natural elements historic cultural heritage ordinary construction of various periods	height restrictions protection of valuable morphotypes

Table 1.3. Comparison of situation of foreign and Lithuanian practice (*the red font marks the weak points). Compiled by the author

Foreign practice	Comments on situation in Lithuanian practice
Formants of cityscape identity	
Streets (paths, routes, corridors, their networks)	*Streets* are mostly addressed from the viewpoint of the *planar structure.* Planar *configuration* is the dominant attribute of the *network of streets*, while *spatial expression* often plays just a secondary role.
Buildings (of outstanding visual interest, of historical value, landmarks, listed buildings)	*Buildings* are tackled from the viewpoints of both *planar* (the layout of building up) and *spatial structure* (characteristic volumes, the massing of building up). They are also addressed as *individual objects.* Yet, the stronger emphasis is on the *protected objects*, while the *ordinary* ones not always receive the sufficient necessary attention.
Open spaces (public spaces, squares, centres of attraction, nodes, enhanced/focus intersections)	*Open spaces* are addressed from the viewpoints of both *planar* (the layout of building up) and *spatial structure* (massing of building up). The significance of the open spaces as the *centres of attraction* is grasped, but the *intangible aspects* of these spaces are not yet fully considered.

Continuation of Table 1.3.

<table>
<tr><td>Nature features (green spaces, water bodies and terrain)</td><td colspan="2">Nature features (including green spaces, water features and relief) are considered as important formants of the cityscape. The most salient ones are granted protection status. Still, sometimes, the natural features are taken into account only to the extent required by formal regulation.</td></tr>
<tr><td>Districts (neighbourhoods)</td><td colspan="2">The different districts of the city (except for the central part) are usually addressed within the formal administrative boundaries and to the extent that they differ in function. Meanwhile, the unique spatial expression, naturally occurring boundaries and emerging communities of neighbourhoods with their specifics are often underestimated.</td></tr>
<tr><td>Gateways and boundaries (access, entrances, edges)</td><td colspan="2">The importance of shaping gateways is still not fully reflected in urban practice. The boundaries are created formally, mechanically, rather than organically, and, thus, they are not clearly and intuitively felt.</td></tr>
<tr><td>Urban structure as a whole (panoramic, glimpsed and long view, rooflines and streetscape views)</td><td colspan="2">The general agreement is that the cityscape is perceived through panoramas, silhouettes, visual corridors (connections), streetscape views, i.e., the whole of the urban structure. Yet, in practice, the issues related to that are addressed in a fragmented manner, and the interpretation greatly varies methodically.</td></tr>
<tr><td>Sense of the place (emotions)</td><td colspan="2">Sometimes the term the 'sense of the place' itself appears in the practice, but its concept is often abstract. The purposeful research on the sense of the place is seldom done during the processes of territorial planning.</td></tr>
<tr><td>Meaning of the place (semantic knowledge)</td><td colspan="2">The meaning of place is mostly examined to the extent of merely presenting the facts about the culture and historical development. In-depth phenomenological research is not performed.</td></tr>
<tr><td colspan="3">Cityscape identity can by shaped by regulating…</td></tr>
<tr><td colspan="2">…general attributes</td><td rowspan="5">Regulatory attributes are similar in Lithuania and abroad. In general, there are enough of them to ensure the successful development of the cityscape identity.
However, it is the choice of the most appropriate urban development strategy and the justification of specific values for certain attributes that is most questionable.
The reasoning should not be based solely on economic, but also on ecological, aesthetic purposes as well as on the cultural significance and emotional well-being of the city users/dwellers.</td></tr>
<tr><td>• height;
• density;
• intensity;
• functional priorities;
• configuration of plots, blocks, building up, streets, open spaces, etc.</td><td>• regulation of height;
• regulation of density;
• regulation of intensity;
• functional zoning;
• boundaries (administrative, functional, protective, etc.)</td></tr>
<tr><td colspan="2">…detailed attributes</td></tr>
<tr><td>• massing, shapes and orientation of buildings;
• street setbacks;
• parking;
• landscaping;
• boundary formation, etc.</td><td>• building zone, building boundary;
• red lines of streets, building line;
• parking spaces (quantity);
• landscaping;
• boundaries (fences, hedge, etc.)</td></tr>
<tr><td colspan="2">…specific attributes</td></tr>
<tr><td>• specific materials, colours, textures or shapes;
• arrangement of particular elements for façades, roofs, fences, etc.</td><td>• specific requirements for individual objects (usually, for the protected objects)</td></tr>
</table>

How the situation of Lithuanian practice differs from the foreign situation is presented in *Table 1.3*. Probably, the biggest drawback is that most Lithuanian documents lack consideration of the intangible aspects of the place (meaning) and the input of the local communities (feeling). Petrušonis (2015) discussed how the regulatory information of the spatial planning documents should be structured so that to consider the historical peculiarities of the area and to ensure the creation of a new

local identity that is compatible with the existing one. In his opinion, the current problems could be solved in the following ways: by co-existence of both *bottom-up* and *up-down* design processes, *unique quality criteria* for a specific site, and respect for the *authentic patterns of life* (while considering not only the needs of the current community but also by maintaining the transfer of memory, continuity).

1.4. Generalisation

Scientific approaches to place-based identity. Place-based identity is a complex socio-behavioural phenomenon involving socio-cultural, psychological, physical and temporal/historical dimensions. Thus, fields of psychology, sociology, anthropology, geography, architecture, urban design or planning to some extent address some of the issues of the place-based identity. Yet, the integral interdisciplinary approach is essential to understand the phenomenon comprehensively. During the literature review, the following three main components emerge as necessary to address while considering the cityscape identity: the *physical properties* of the place, *people's reactions and feelings* towards the place, and the *meaning* of the place.

Legislation governing cityscape identity. When it comes to the legislature, it is important to talk about the *ideological basis* – the strategy first, and only then about the *implementation* of that strategical vision through the legal documents. Since the beginning of the Industrial Revolution, two essentially opposing visions for the future of our cities have been dominating internationally. One of them emphasises strict protection of the past legacy – the *heritage*. The other one propagates the progress and future *development* regardless of the potentially negative impact on the remaining valuable relics of the past. However, it was fairly soon realised that the balance between those opposite positions is the key. The emergence of the *sustainable* movement encouraged the collective search for integral solutions addressing not only the tangible but also the intangible aspects of the urban environment and involving the representatives of different groups of interests. As Lithuania also pursues the sustainable development strategy and recognises the importance to preserve the cultural and spatial distinctiveness of the country, the national legal base should ensure that those strategic objectives are met. However, the integrity of approaches is still lacking. The focus is on the physical dimension, whereas the intangible environmental aspects remain on the sidelines. The law does not require any semantic, cultural, phenomenological research. As for the particular topic of the cityscape identity, the legal documents recognise the importance to take into account the peculiarities of the landscape/cityscape, but the references to the recommendations on how to do that are missing.

Experience in assessment and modelling of cityscape identity. The cityscape identity can be assessed and modelled purposefully with the objective to *identify the existing character* of the area, to evaluate the *visual impact* of new objects, or to foresee a possible *development strategy*. Yet, in practice, even without the direct focus on the cityscape identity, it is constantly being shaped *through the urban development processes*. The main means of planning the urban development are functional zoning, mixed-use zoning, and the design code (form-based design). Any of these methods determines certain required or desirable values for the attributes of one or another

formant of the cityscape identity. These regulatory attributes are similar in Lithuania and abroad. Overall, they could be sufficient for the successful development of the cityscape identity. It is the reasoning behind the decisions of certain regulations that raises the doubts. Therefore, the focus must be on the reasoning. It has to be well-grounded, based not solely on economic, but also on ecological and aesthetic purposes as well as on the cultural significance and the emotional well-being of the citizens.

2. THEORETICAL FRAMEWORK FOR ASSESSMENT AND MODELLING OF HOLISTIC CITYSCAPE IDENTITY

2.1. Cityscape identity, its concepts and their dimensions

"Everywhere, wherever and however we are related to beings of every kind, identity makes its claim upon us" (Heidegger cited in Relph, 1976, p. 45). Thus, *identity* is a fundamental phenomenon. The basic definition of which could be as follows: *a set of both permanent and temporal attributes associated with an entity*. However, these attributes can be (and usually are) not only objective but also highly subjective. As a result, the identity itself is also always twofold: *objective* and *subjective. Objective identity* (lt. objektyvus identitetas) is an unbiased essence of an object, a collection of real facts about it. In terms of our surroundings, there are certain properties of the physical environment. Yet, if only these properties are provided, the identity is incomplete. In real life, that physical environment is perceived by the observer, and, because of that, it becomes dependent on him/her. Hence, *subjective identity* (lt. subjektyvus identitetas) emerges, which is an imaginary essence of an object encompassing interpretations, opinions, feelings about the object.

Table 2.1. Theoretical structure of the holistic cityscape identity. Compiled by the author

	HOLISTIC IDENTITY OF CITYSCAPE																									
	SUBJECTIVE												OBJECTIVE													
	emotional									contextual				physical												
CONCEPTS	SENSE OF THE PLACE									MEANING OF THE PLACE				SEPARATE ELEMENTS				SYSTEMS OF ELEMENTS					OVERALL STRUCTURE			
	Analysis of people's feelings towards place									Analysis of city as a text, system of signs				Analysis of outstanding elements of the city				Analysis of city as a sum of elements					Analysis of city as totality			
DIMENSIONS/ ATTRIBUTES	NEGATIVE FEELINGS	NEUTRAL PHASE	POSITIVE FEELINGS:	1. BELONGING TO PLACE	2. PLACE ATTACHMENT:	2.1. PLACE IDENTITY	2.2. PLACE DEPENDENCE	3. PLACE COMMITMENT		COGNITION/ MEANING OF SIGNS	CONTINUITY/ HISTORICITY	LEGIBILITY/ INFORMATIVE	IMAGEABILITY	HIERARCHY	UNIQUENESS	SIGNIFICANCE	NATURALNESS	OPENNESS/ ENCLOSURE	DENSITY	INTENSITY	INTEGRATION	CONFIGURATION OF PATTERN	DIVERSITY/ VARIETY/ RICHNESS	HARMONY/ COMFORT/ ORDER	COMPLEXITY	INTEREST
FOCUS ON...	People									People and semantic objects				Landmarks, iconic objects, visual spaces, open spaces				Patterns of streets, plots, buildings, open spaces, green spaces, water bodies, etc.					Streetscape, panoramic views (cityscape), etc.			

Based on the above presented structure and the insights outlined in the previous chapter, it is clear that, in order to reveal the holistic cityscape identity, both *subjective* and *objective* aspects need to be addressed. Thus, we suggested research directions logically fitting into the scheme and describing people's reactions towards the cityscape – *emotional identity* (subjective), the semantics of the cityscape – *contextual identity* (somewhere between subjective and objective), and the physical properties of the cityscape – *physical identity* (objective). Then, we identified the concepts that best describe the suggested directions and reflect the most common approaches suggested in the scientific literature. They are as follows: the *sense of the place* for the emotional identity, the *meaning of the place* for the contextual identity, and *separate elements*, *systems of elements* and the *overall structure* for the physical identity (see *Table 2.1.*). The main difference between the concepts is the different points of focus.

Sense of the place concept brings people in the limelight. The entire palette of their feelings towards the place is analysed. There are plenty of similar terms defining people's reaction to the environment in the scientific literature. However, the *sense of the place* was adopted as the umbrella term which covers all other notions. It reflects not only the positive relation of the people with the place (such as, for example, place attachment), but also any kind of emotions. Various moods, attitudes and opinions of individuals have a significant influence on such research. Thus, the concept of the *sense of the place* reveals the subjective component of the holistic identity. According to the analysed literature, several levels of the *sense of the place* can be defined as its dimensions or attributes:

• *Negative feelings* – most of the overviewed studies ignore this dimension. However, some places can certainly evoke negative emotions, and sometimes these feelings are too important to be ignored (Shamai & Ilatov, 2005).

• *Neutral phase* is manifested when the place does not cause any feelings. Some authors define this phase as "not having any sense of the place" (Shamai, 1991; Shamai & Ilatov, 2005), others as "homelessness" or "not belonging to place" (Relph, 1976). However, the latter terms feature a slightly negative implication. Therefore, we choose the more neutral one here.

• *Positive feelings* – the content and the hierarchical structure of this dimension vary among the theories. Different authors suggest different methodological systems. Therefore, the same attribute might not have the same meaning in different methodological models. For example, Relph (1976) described the positive feelings towards the place as "insideness," "belonging to place," or "deep identity with the place"; Proshansky (1978) used the term of "place identity" to define the emotional attachment to the place; while Stokols and Shumaker (1981) defined functional attachment to the place as "place dependence." Later on, several academicians used "place attachment" as a more general term that covers both "place identity" and "place dependence" (Low & Altman, 1992; Vaske & Kobrin, 2001; D. R. Williams *et al*., 1995; D. R. Williams & Roggenbuck, 1989; D. R. Williams & Vaske, 2003, etc.). However, this term might also be confusing because we can find the attribute of 'attachment' as one of the five components of Lalli's Urban Identity Scale (1992). It becomes unclear if place attachment is a component of the place identity or vice versa. Therefore, as a foundation for the distinguishing attributes of positive feelings, we

choose Shamai's (1991) model of "sense of the place" which integrates all the attributes into one coherent hierarchical system:

1. *Belonging to place* – the lowest level of positive feelings towards the place. There is no strong or intense affection manifested yet. However, according to Shamai (1991), there is knowledge of being located in the place and the feeling of belonging.

2. *Place attachment* is a higher level of positive feelings because emotions intensify, and the place starts to influence people's behaviour in certain ways. People feel attached to the place and identify themselves with the place goals (Shamai, 1991). The author also outlines that this dimension consists of:

2.1. *Place identity* – emotional attachment (Proshansky, 1978)

2.2. *Place dependence* – functional attachment (Stokols & Shumaker, 1981)

3. *Place commitment* – the highest level of positive feelings towards the place. The full involvement in the place and even sacrifice for the place (Shamai, 1991).

The ***Meaning of the place*** is another concept of the holistic cityscape identity. This concept is mainly based on the urban semioticians' notion that urban structures become recognisable because, despite their functional significance, they contain another important feature – symbolical meaning (Cole, 1998; Eco, 1973; Lewis, 1976). Therefore, not only people but also semantic objects of the urban structure are in the centre of attention. The city is analysed as a text or a system of signs (denotative and connotative meanings). However, the text, and, even more, its interpretation can be both objective and subjective. It depends on the observers' level of grammar knowledge and their familiarity with the context. The same is with the *meaning of the place* concept. It can reflect some subjective facets, as well as some objective facets of the holistic cityscape identity. Based on the related literature review, we distinguish four dimensions for the *meaning of the place* concept. They are as follows:

• *Cognition/Meaning of signs* – it reflects the mental abilities related to people's expertise or knowledge of the place. Some authors use "the degree of familiarity" term (Lalli, 1992) to describe how well people know the environment around them. Human beings develop their cognition during the processes of socialisation, and the higher degree of familiarity quite often determines the stronger self-identification with the place. Cognition provides people with the knowledge on how to behave within the towns because they can interpret the physical environment. Besides, elements of the material culture conform to a grammar (O'Keeffe, 1999). Cognition can also be explained as the semantic load carried by the environment (Petrušonis, 2004).

• *Continuity/Historicity* – several academicians highlighted the significance of this dimension. Social psychologist G. M. Breakwell (1986) distinguished two types of continuity over time and situation: place-referent continuity (maintenance of places with specific characteristics which can evoke positive emotions), and place-congruent continuity (places allowing continuity of the self as a specific type of a person). Lalli (1992) claimed that the extent to which the environment provides people with continuity of their personal experiences was related to the general identification with a place. Meanwhile, landscape architects, urban designers and planners describe continuity as the degree of historical continuity and richness (Ode, Tveit, & Fry, 2008). The historical significance and the content influence that degree (Nasar, 1998). The theories of semiotics and cultural-historical artefacts (Cole, 1998; Zaleckis *et al*.,

2014) suggest that cultural symbols formed through the history of the city which are still readable should remain active in the future. Therefore, the preservation of the cultural and natural heritage is crucial for continuity.

• *Legibility/Informative* – it is the quality of being clear. K. Lynch (1960) distinguished the attribute as essential for high-quality environment. He claimed: "a legible city would be one whose districts or landmarks or pathways are easily identifiable and are easily grouped into an over-all pattern." There are similarities noticed with the Gestalt psychology which claims that people unconsciously combine all the visually perceived separate objects into certain groups or patterns. N. A. Salingaros (2006) developed the methodology of the assessment of information optimality of visually perceived structures. Information optimality means that there is a sufficient amount of information; the environment is homogenous and sufficiently variable to catch the interest of the observer. The dimension of legibility/informative also seems to be closely related to the physiological comfort of the observer (Filin, 1998). Literature review shows that the legibility or the amount of information can be analysed in different scales (streetscape views, panoramic views, etc.).

• *Imageability* – it reflects the ability to create a strong visual image for the observer, to cause a powerful impression and to make the place memorable. According to K. Lynch (1960), such a strong impact, when some objects become not only simply visible but are displayed sharply and intensively, can occur due to their distinguishing shape, colour or volume. The *Landscape Aesthetic Theory* (Ode *et al*., 2008) distinguishes two aspects of imageability. These are the analysis of the viewpoints and the analysis of the spectacular, unique or iconic elements. The latter approach is a connecting link to the further concept of cityscape identity.

The following concept is referred to as ***Separate elements***. As previously noted, the cityscape identity is often explored throughout the analysis of single outstanding elements of the city. These elements can be landmarks (towers, churches, city halls, etc.), iconic objects (manors, theatres, shops, etc.), or any other significant elements of the urban structure (e.g., rivers, lakes, hills, etc.). Such objects considerably influence the physical expression of the city, and the analysis of these *separate elements* can help us reveal the objective identity of the cityscape. The overview of the related research led us to distinguish four main dimensions of *separate elements*:

• *Hierarchy* – it shows the hierarchical relation and order among the elements. The types of the rhythm and the number of hierarchical levels determine it. Different authors suggest different classifications and give different definitions. The landmark was one of urban elements analysed by Lynch (1960), and he defined two types of landmarks: distant (which can be visible from far away and from various places) and local (which are visible only in the particular area or from the particular viewpoint). Bučas (2001) indicated three types of exhibitors: dominants (single exhibitors, visual impact zones of such elements do not join), accents (exhibitors with connected visual impact zones), and subdominants (exhibitors with overlapping visual impact zones). Bružas (2014) pointed out the hierarchical structure of the contemporary landmarks: iconic buildings or local icons (an exclusive architectural object), the dominants of the spatial structure of the city (buildings distinguished by the height and massiveness of their volume) and the distinguishing signs (various architectural structures which

are exceptional by the shape, colour, style, etc.). The three-level hierarchy is also found in the field of semiotics (Chandler, 2007): symbol, icon, and index. In general, the number of hierarchical levels depends on the research scale and particularity, the type of the analysed object and the complexity of the environment.

• *Uniqueness* – it is the embodiment of unique characteristics. The frequency counts are quite common in the urban research as they reflect the typical features (Bučas, 2001; Daunora *et al*., 2004; Purvinas, 1983; Rice & Urban, 2007, etc.). Meanwhile, Petrušonis (2004) noted that the frequency or stability coefficient can be reversed in order to reveal the level of uniqueness. This dimension is closely related to the dimension of Imageability because it is easier to memorise the unique elements. Starting with Lynch (1960), the importance of unique elements for identity has been stressed by several researchers (Daunora *et al*., 2004; Hull *et al*., 1994, etc.).

• *Significance* – it is the quality of having notable worth or influence. Separate elements might be significant due to the maturity of their form or authenticity (Daunora *et al*., 2004). The fulfilling of the functional needs might increase the level of significance as well.

• *Naturalness* – it describes the closeness to nature. Alexander (1977) wrote that "the need that people have for the water is vital and profound." Based on the review of more research, it seems that this need is essential not only for water, but man has a biological need to affiliate with the nature in general (Ode *et al*., 2008). Such a level of naturalness where nature dominates against the anthropogenic elements is defined as a positive indicator of the environmental quality (Hull *et al*., 1994; Madureira, Nunes, Oliveira, & Madureira, 2018; Nasar, 1998; Purvinas, 1983, etc.). The percentage of naturalness and the level of its quality allow more precise evaluation of the general character of a place.

The following ***Systems of elements*** concept also focuses on the elements of the urban structure. However, in such a type of research, elements are not analysed as single point objects, the way it was done in the previous concept. The *systems of elements* concept means that a certain group of elements is analysed as a network (i.e., the sum/system of elements vs. individual elements). There are many cases when patterns of streets, plots, buildings, open/green spaces, water bodies, etc. are explored to determine the objective identity of the cityscape. Based on the results of our literature analysis, we determined five dimensions for the *systems of elements*:

• *Openness/Enclosure* – building up or vegetation has a quality to form spaces which can be simple, complex or continuous, and either open or closed. Traditional analysis of the urban morphology is usually focused on the calculations of the proportions and sizes of open spaces. Purvinas (1983) introduced the degree of enclosure and also distinguished the types of vertical and horizontal enclosures. Nasar (1998) emphasised the importance of a well-defined place. It is important to mention that this dimension of openness/enclosure highly influences people's emotions towards a particular place. There is the prospect-refuge theory (Appleton, 1975) which highlights people's need for the environment which provides the ability to get an overview without being noticed. Therefore, the openness/enclosure is not left aside in other theories related with people's experience in the city, either (Carmona *et al.*, 2003; Lynch, 1960; Thwaites & Simkins, 2007, etc.).

• *Density* is the amount of certain elements (e.g., building up, vegetation, water bodies and so on) in a given area. This dimension comes from the traditional analysis of the urban morphology. In the scientific literature where the spatial issues are analysed, density is often considered to be an important component of the character of the urban structure (Daunora *et al*., 2004; Thwaites & Simkins, 2007, etc.). The density of certain elements can be calculated not only from the planar sources but also from streetscape views, panoramas or silhouettes. Bučas (2001) employed the term of compactness which reflects the intensity of the concentration of compositional elements in the conciseness of the background surface (the visible area).

• *Intensity* is the characteristic of building up. The intensity of building up reflects the relation of the gross floor area (of the aboveground levels) with the area of the plot. Therefore, this dimension allows evaluating not only the coverage of the area but the height of the buildings as well. Intensity is a widely spread dimension in the theory and practice of the urban design or planning (Daunora *et al.*, 2004; Parolek *et al.*, 2008, etc. *Territorial Planning Norms*, 2014).

• *Integration* is the dimension of something being combined into the integral whole. When the author talks about *systems of elements*, primarily, she has in mind the integration of transitional networks (motorways, roads, paths and other channels for movement) because, here, integration is essential to ensure uninterrupted and convenient flows. However, designing integral networks requires many complicated calculations and time, especially if more complex cases are analysed. Therefore, for a while, the design was rather based on intuition. It has changed since the innovations of computer sciences. The possibilities to store and calculate huge amounts of data led to the development of such theories as Space syntax (where integration, connectivity or choice are analysed) or Fractal analysis (where integration describes vitality as well). Moreover, the software developed based on those theories allows performing very accurate calculations fast and easily.

• *Configuration of patterns* reflects the geometrical shape of the pattern. This dimension comes from the traditional urban morphology. Purvinas (1983) indicated that the character of a spatial structure depends on its size and configuration. The Lithuanian territorial planning norms (2014) distinguish the following types of building up: homesteads, single-family attached houses, building up of perimetrical layout, unrestrained planning, high-rise, stand-alone objects, and industrial areas. The configuration of a pattern also covers the types of a street grid. For example, there are certain types of street networks found in Lithuanian settlements: scattered, linear, radial, rectangular, and mixed (Dringelis, Ramanauskas, Povilaitienė, & Mačiukėnaitė, 2015; Miškinis, 1974; Povilaitienė & Mačiukėnaitė, 2014).

The final concept of holistic cityscape identity is the ***Overall structure***. The main difference from the previous concept is that the analysis of the *overall structure* is the analysis of the city's urban structure as the totality (i.e., the whole vs. the sum/system of elements). There is no need to separate the elements into different layers. All groups of elements and systems are analysed at the same time. Usually, streetscape or panoramic views, air photos or orthophotos are used as research sources in order to reveal the *overall structure*. Based on the analysed literature, the author revealed four characteristics as dimensions of the *overall structure*. They are:

• *Diversity/Variety/Richness* – it is the number of different elements and their configuration (Purvinas, 1983). Bučas (2001) defined diversity of the special structure's elements as an indicator of complexity. Besides, several studies revealed that diversity influences how people feel in a certain environment. According to Breakwell's identity process theory (1983), the first principle of identity is the desire to maintain personal distinctiveness. Lalli (1992) points out that people differentiate themselves from the residents of other parts of a town by the urban environment. Other researchers revealed not only the psychological but also the biological importance of diversity. For example, Filin with his theory of videoecology (1998) proved that the amount of diversity influences the observer's comfort. Salingaros (1997, 2006) established the indicator of 'temperature' which refers to the level of variety and influences psychological-informative acceptability.

• *Harmony/Comfort/Order* – in general, it is the aesthetic and biological quality of the view, or the "sense of order and care <…> reflecting active and careful management" (Ode *et al*., 2008). Nasar (1998) named this dimension 'upkeep/civilities' as it reflects good maintenance of the environment. However, some authors analyse the harmony of composition, and, in such a case, harmony shows the correlation between compositional objects and the level of symmetrical expression (Klinger & Salingaros, 2000; Salingaros, 1997, 2006). Bučas (2001) formulated a similar definition of harmony as the optimality of the relation of compositional elements, i.e., when the size of the visual activity zone corresponds to the geometrical parameters of the background elements. Environment psychologists use a synonymous term 'coherence'. They describe it as the sense that all parts of a perceived environment make up one unit; it is easy to organise or structure such an environment. According to Filin (1998), a comfortable visual environment is in the middle between homogenous visual fields and aggressive visual fields. Homogenous visual environment is characterised by the lack of visual elements, while aggressive visual fields consist of a large number of repetitive elements.

• *Complexity* means a high level of complication and connections. Bučas (2001) defined complexity as the abundant variety of compositional elements linked together with complicated relationships. The complexity of a landscape is explained as the diversity and richness of the landscape elements and features and the interspersion of patterns in the landscape (Ode *et al*., 2008). According to the theories of the 'preferred environment' and urban semiotics, an environment is complex if it contains sufficient variety to make it worth to learn about and keep one occupied. *Fractal analysis* is one of the methods allowing mathematical calculation of complexity. Several studies employed the *Fractal method* in the analysis of complexity for various purposes. Some scholars compare the morphology of urban patterns (Frankhauser, 2004), whereas others analyse the potential of the urban fabric (Zaleckis & Kamičaitytė-Virbašienė, 2011), while others apply fractal analysis in the design of urban patterns (Jevrić, Knežević, Kalezić, Kopitović-Vuković, & Ćipranić, 2014) or assess and suggest improvements for environmental quality (Wang, Su, Wang, & Dong, 2011). Moreover, the *Fractal method* is not only used for planar analysis, but also for the analysis of streetscapes/ panoramic views (Cooper, 2003; Cooper & Oskrochi, 2008).

• *Interest* – it is the quality of the environment which evokes the desire to explore it. Mysteriousness is one of the basic qualities of the 'preferred environment'. It is described as the prospect of gaining more information about the environment. The existence of *terra incognita* and specific symbols (e.g., mythological, sacral, etc.) can increase the mysteriousness of the urban environment. As Cullen (1961) wrote, a city is successful only when its elements can create drama in the environment. Thus, he analysed concepts of Serial Vision (change of existing and emerging views), Place (here and there) and Content (this and that). Analysis of these elements could help urban designers avoid the creation of dull, uninteresting and soulless cities.

All the dimensions and attributes distinguished above are crucial because they specifically indicate what/which particular needs are to be taken into account in order to comprehensively assess and model the holistic identity of the cityscape.

2.2. Some applicable theories and methods

Having clearly defined five concepts with their dimensions and attributes, the next step was the identification of methods which could be applied to assess each of the distinguished dimensions. Thus, again, we are required to go over scientific literature and research where various methodological systems for the measurement of identity (both objective and subjective) have been created, tested, and/or applied.

Identification with Place Scale. One of the earliest attempts to quantitatively reveal the connections between individuals and their residential area was made by Burdge and Ludtke (1972). They employed the scale for the questionnaire survey with the objective to measure the affective place attachment and identity. This scale may be used to evaluate some of the distinguished dimensions of the *sense of the place.*

Scale of Identity. Relph (1976) introduced a scale whereby feelings toward places were ranked at seven levels (starting from the lowest one which is 'existential outsideness' – 'not belonging to place', or 'homelessness' and going up to the highest which is 'existential insideness' – 'belonging to place, or 'deep identity with the place'). This approach is important because the neutral phase is also included.

Measurement of Place Attachment. As mentioned above, place attachment is a widely analysed phenomenon (Low & Altman, 1992; Vaske & Kobrin, 2001; D. R. Williams *et al*., 1995; D. R. Williams & Roggenbuck, 1989; D. R. Williams & Vaske, 2003; etc.). Such sociological methods as interviews, questionnaire surveys or behaviour observations are usually employed to measure place attachment. Besides, not only the attachment to a constant environment can be explored. Here is an example of a study by Speller and Twigger-Ross (2009), where they explored how the cultural and social identity is transforming depending on the changes in the physical environment and to what extent the place attachment to the usual conditions influences the process of adaptation to the totally new or strongly modified environment. Another nearly related case study was done by Bernardo and Palma (2005). These latter two studies revealed one interesting and quite unpredictable notice that strong attachment to the place does not always depend on the good quality of the environment.

Scale of Sense of the Place. Shamai (1991) developed a scale which consists of one neutral and three active phases. Each of the active phases has two levels; thus, totally, there are seven levels of the sense of place. They are as follows: the neutral

phase – not having any sense of place (1), belonging to a place: knowledge of being located in place (2) and belonging to a place (3), place attachment: attachment to a place (4) and identifying with the place goals (5), place commitment: involvement to a place (6) and sacrifice for a place (7). Based on this scale, the majority of the distinguished dimensions of the *sense of the place* can be evaluated quantitatively.

Measuring Sense of the Place. The previous approach skipped one important dimension of the *sense of the place*, i.e., negative emotions. Therefore, it seems logical that the same authors (Shamai & Ilatov, 2005) included the analysis of negative attitudes in the further research. The research emphasised that "negative feelings may be more important, particularly when dealing with immigrants." Since today more and more people are leading a mobile and international lifestyle (some of them are even becoming global nomads), we believe that the possible negative reaction to a certain place cannot be ignored.

Breakwell's Identity Model. Breakwell (1986) was not satisfied with the existing social identity theory. Thus, she developed a model of the identity process. It is based on four principles. They are *distinctiveness* (an individual strives to be not the same as others; however, just slightly, rather than totally different), *continuity* (people seek the continuity of the self-concept over time and situation), *self-esteem* (human beings seek to achieve and maintain the positive evaluation of themselves or the group to which they belong), and *self-efficacy* (individuals need to believe that they can function in a certain environment). The model has been used in the research on the place-based identity (Bernardo & Palma, 2005; Speller & Twigger-Ross, 2009, etc.).

Urban Identity Scale. Lalli (1992) presented this scale as a measuring instrument with the objective to evaluate the urban-related identity. Here, the urban identity consists of five dimensions: *external evaluation*, *continuity* with the personal past, *general attachment*, *perception of familiarity*, and *commitment*. The academic community has successfully accepted this approach. Several cases of quantitative research were carried out based on the *Urban Identity Scale* (e.g., Iossifova, 2010; B. S. Jorgensen & Stedman, 2001, etc.). It is important for us as a tool to measure some dimensions of the concepts of the *sense of the place* and the *meaning of the place*.

Preferred Environment/Landscape Perception Theories. Many researchers are working on issues related to the creation of the 'preferred environment' (Herzog, Herbert, Kaplan, & Crooks, 2000; R. Kaplan & Kaplan, 1989; S. Kaplan, 1983; Moore & Golledge, 1976, etc.). They distinguish different characteristics of the cityscape which could evoke the positive psychological reaction. Furthermore, due to the complexity of the topic under consideration, such concepts as 'behaviour setting' (Caplan, 1987; R. Kaplan, 2001; Lang, 1987b; Rapoport & Watson, 1968), 'personal space and privacy' (Lang, 1987c; Sommer, 2003; Stokols & Montero, 2003), 'territoriality and defensible space' (Altman & Chemers, 1984; Korpela, 2003), or 'environmental stress' (Rapoport, 1978) can reveal one or another aspect of the preferred environment and, thus, be incorporated into our research. However, we shall not examine all of them separately, and, only whenever necessary, the relevant insights offered by our research on these concepts shall be taken into account. Anyway, the most common characteristics of the preferred environment are the absence of the visual stress, legibility, complexity, coherence and mysteriousness

(Carmona *et al*., 2003; Rosenbaum, 2017; Zaleckis, 2005b, etc.). Both qualitative and quantitative methods can be applied to reveal these characteristics.

Urban Semiotics. Cities are as if plural 'texts' from the perspective of urban semioticians. Therefore, cognition, legibility, complexity and interest are the main dimensions in the Urban Semiotics analyses. The place is recognised, interpreted and perceived not only as a physical construct, but also as a semantic mirror reflecting the deeper symbolical meaning (Eco, 1973, 1997).

Cultural-Historic Artefacts Theory (CHAT). This theory helps to understand the relationship between people's actions and their thoughts and feelings. According to Cole (1998), the cityscape is the totality of immaterial and material artefacts. Therefore, the dimensions of cognition, continuity and legibility could be better revealed during behaviour observations regarding CHAT.

Experiential Landscape. It is a technique developed by Thwaites and Simkins (2007) to evaluate people's daily life experiences in the usual environment. Based on observations, they distinguished four elements of Experiential Landscape: centre, direction, transition, and area. This theoretical model is important here as an attempt to reveal the relation between experiences (sense of home, preferred locations, or orientation) and spatial aspects (openness/enclosures, density, integration, etc.).

Image of the City. Lynch (1960) introduced this highly innovative (at that time) approach to the urban environment that the concept of a city should be analysed not as a separate physical object, but in relation with its observers instead. He defined four characteristics which determine the quality of the environment: legibility, building the image, identity, and imageability. The analysis of the elements of the Image of the City (paths, edges, districts, nodes and landmarks) can reflect some of the significant aspects of city view (e.g. concentration or lack of certain elements).

Evaluative Image of the City. In principle, this theoretical framework (Nasar, 1998) continues the theory of Lynch. The main difference is that, instead of the analysis of separate elements, Nasar suggests the overall qualitative assessment of the cityscape. The high-quality cityscape, defined as 'likable', should possess certain attributes (naturalness, upkeep/civilities, openness and defined space, historical significance/content, and orders). These attributes are also very important in the evaluation of the holistic cityscape identity.

Model of Locus' Cultural Identity. Petrušonis (2004) claimed that cultural identity is usually reflected via the physical environment, and the common language is needed in order to understand and to maintain that local identity. The *Dynamic Thesaurus* semantic dictionary has been chosen as an analogy of the model of the cultural identity. There are two elements of the Thesaurus – the concept and the sign. It is possible to evaluate changes in the locus' cultural identity by calculating frequency counts, stability or uniqueness coefficients for the concepts and signs.

Space Syntax. It is a set of theories and techniques conceived by Hillier and Hanson (1984) and based on the graph theory. Usually, open urban spaces are the research object. The main idea of the method is that spaces can be broken down into separate components which are later analysed as the networks of choices. The control, integration and connectivity of the networks and the depth distance of the space are estimated by employing analysis of the space syntax.

Fractal Analysis. The fractal structure often found in the natural environment is characteristic of the city as well. Just like natural structures, all the cities have a certain level of irregularity and chaos; they can be characterised by an abundance of scales and the self-similarity in different scales, and, no matter how thick they become, they cannot fill the allocated space completely (the porosity). Thus, the urban structure is analysed as a fractal (Batty & Longley, 1994; Salingaros, 2005, etc.). The display of fractal characteristics in the city structure can reveal such dimensions as naturalness, complexity and vitality (the level of integration). Well-developed software of Fractal Analysis allows precise quantitative evaluation of very complex data.

Assessment of Landscape Spatial Structures. Purvinas (1983) developed both qualitative and quantitative methodology with the objective to assess visual spaces. Originally, it was created as the basis for the evaluation of the environmental quality and the overall psychological and aesthetical potential. However, it can also reveal fairly well some dimensions of the cityscape identity because such issues as the character of the spatial structure, naturalness and variety are considered.

Analysis of Landscape Visual Characteristics. Bučas (2001) created this theoretical model in order to evaluate the composition of the landscape. The optimal landscape composition should possess compactness, hierarchy, proportions and complexity characteristics. All of these are important when one seeks to define the objective character of the place. Therefore, the methods of this theory (such as graphical analysis, geometry calculations, or frequency counts) can be applied in the assessment of the holistic identity of the cityscape.

Videoecology. The interest of the environment lies in its complexity. However, too neat a cityscape can become too boring for the observer. Therefore, Filin (1998) developed ecological assessment of the visual environment in order to find out homogenous, comfortable, and aggressive environments. This theory could also be applied in order to define the relationships between people's attachment to the place and the amount of information that the place provides.

Attractiveness and Cognition of Aesthetic-Informational-Emotional Patterns. This methodology was formulated by Salingaros (2006) and is closely related to the previous one. The main similarities are that the environmental impact on humans is also explored by the estimation of the amount of visual information and by defining how that information is organised. Salingaros distinguished two characteristics of complex structures: temperature (T) – it shows the level of complexity, diversity and information, and harmony (H) – it reflects the correlation among compositional objects. These characteristics allow calculating the indicators for the comparison of the optimality of visually perceived objects: the interest of the structure (L) and the inner complexity (C). That can reveal some relations between the legibility dimension and dimensions of the *overall structure* (diversity, harmony, complexity, and interest).

Visual Identity of the City. This methodology is based on a case study of Vilnius City (Daunora *et al*., 2004). The research suggested a system of indicators which should be regulated in order to preserve the visual identity of the city. The system includes social, economic, cultural, political, juridical, proprietary indicators (the morphotype of building up), the physical indicators of building up (the projected height of the background), and creative-artistic criteria (the territorial distribution of

high-rise buildings, and the character of building up). This methodology combines analysis of graphical sources, mapping techniques, geometry calculations and other qualitative and quantitative methods.

Traditional Analysis of Urban Morphology. The urban structure consists of natural determinants and human-made elements. They are the research objects of the traditional urban morphology. Analysis of street, plot and building systems is done by identifying their density, intensity, height, character and configuration of the layout.

The system how all of the above discussed theories interact with the previously distinguished concepts and their dimensions is shown in *Table 2.2*.

Table 2.2. Theories related to the established dimensions of holistic cityscape identity. Compiled by the author

HOLISTIC IDENTITY OF CITYSCAPE																										
CONCEPTS	SENSE OF PLACE								MEANING OF PLACE				SEPARATE ELEMENTS				SYSTEMS OF ELEMENTS					OVERALL STRUC.			
DIMENSIONS/ ATTRIBUTES / THEORIES	Negative feelings	Neutral phase	Positive feelings:	1. Belonging to place	2. Place attachment:	2.1. Place identity	2.2. Place dependence	3. Place commitment	Cognition	Continuity	Legibility	Imageability	Hierarchy	Uniqueness	Significance	Naturalness	Openness	Density	Intensity	Integration	Configuration	Diversity	Harmony	Complexity	Interest
Identific.with place scale					■	■																				
Scale of identity		■		■		■																				
Measurement of place attachment					■	■	■																			
Scale of sense of place		■		■	■	■	■	■																		
Measuring of Sense of Place	■	■	■																							
Breakwell's Identity Model						■	■			■												■				
Urban Identity Scale					■			■	■	■	■															
Preferred Environment											■												■	■	■	
Urban Semiotics									■		■													■	■	
CHAT									■	■	■															
Experiential Landscape				■	■				■		■						■	■		■						
Image of the City											■	■	■	■	■											
Evaluative Image of the City									■	■						■	■						■			
Model of Locus' Cultural Identity									■		■			■												
Space Syntax																				■	■					
Fractal Analysis																■				■				■		
Assessment of Landscape Spatial Struc.																■	■				■	■				
Landscape Visual Char.													■					■				■	■	■		
Videoecology											■											■	■			
Aesthetic-Info.-Emot. Patterns											■											■	■	■	■	
Visual Identity of City														■	■			■	■		■	■				
Visual Char. of Landscape										■		■		■		■	■						■	■		
Trad. Urb. Morphology																	■	■	■		■					

It is also useful to find out types of research methods employed to assess the objective or subjective cityscape identity and to check the possibilities to combine them. In general, methods are classified into *qualitative* (descriptive analysis or qualitative comparative analysis), and *quantitative* (structural comparative analysis and structural computational analysis). *Descriptive analysis* is a simple collection of information without any clear structure, the description of the main features. *Qualitative comparative analysis* is the listing and counting of all the combinations of the variables observed in the collected data. *Structural comparative analysis* is performed whenever data is collected and analysed according to a pre-planned procedure. *Structural computation analysis* is carried out based on numerical values. The types of the methods of previously discussed theories are displayed in *Table 2.3.*

Table 2.3. Analysed theories and research methods. Compiled by the author

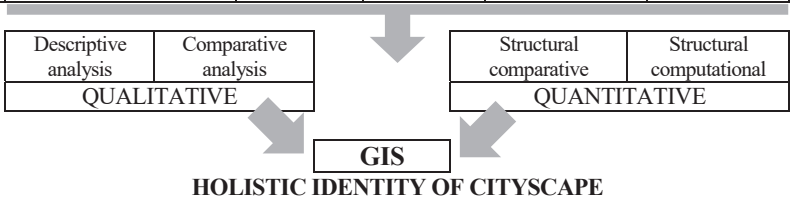
RESEARCH METHODS / **THEORIES**		DESCRIPTION OF SITUATION	INTERVIEW: *1. EXPERT OPINION; 2. PUBLIC OPINION*	QUESTIONNAIRE SURVEY	BEHAVIOUR OBSERVATION: *1. NATURALISTIC; 2. CONTROLLED*	INTROSPECTION	GRAPHICAL ANALYSIS	MAPPING	NETWORK ANALYSIS: *GRAPH THEORY*	GEOMETRY CALCULATIONS	FREQUENCY COUNTS
Identification with Place Scale				4							
Scale of Identity			3	4							
Measurement of Place Attachment			3	4	3, 4						
Scale of Sense of the Place			3	4							
Measuring of Sense of Place			3	4							
Breakwell's Identity Model			2, 3	4	2, 3, 4						
Urban Identity Scale			2, 3	4	2, 3, 4						
Preferred Envir./ Landscape Perception		1	2, 3	4	2, 3, 4	2, 3, 4	2				
Urban Semiotics		1	1, 2, 3			1, 2, 3					
Cultural-Historic Artefacts Theory		1	1, 2, 3		1, 2, 3	1, 2, 3					
Experiential Landscape			2, 3		2, 3	2, 3	2	2			
Image of the City		1	1, 2, 3		1, 2, 3	1, 2, 3		2, 3			
Evaluative Image of the City			2, 3			2, 3		2, 3			
Model of Locus' Cultural Identity			3				2	2, 3			4
Space Syntax								3	4		
Fractal Analysis										3, 4	
Assessment of Landscape Spatial Struc.							2	3		3, 4	4
Analysis of Landscape Visual Char.							2	3		3, 4	4
Videoecology							2			3, 4	4
Aesthetic-Informal-Emotional Patterns							2			3, 4	4
Visual Identity of City							1, 2	2, 3		3, 4	4
Visual Character of Landscape							1, 2			3, 4	4
Trad.Analysis of Urban Morphology		1	2, 3				1, 2	2, 3		3, 4	
QUALITATIVE	1 – Descriptive										
	2 – Comparative										
QUANTITATIVE	3 – Structural comparative										
	4 – Structural computational										

2.3. Hypothetical model

After the overview of the related theories and methods, we selected only the most relevant, comprehensive and clearest of them, covering all the established dimensions and attributes, as the basis for the hypothetical model of the assessment of the holistic cityscape identity (see *Table 2.4.*).

Table 2.4. Hypothetical model of assessment of holistic cityscape identity. Prepared by the author

HOLISTIC IDENTITY OF CITYSCAPE																										
	SUBJECTIVE											**OBJECTIVE**														
	emotional								**contextual**				**physical**													
Concepts	**Sense of the place**								**Meaning of the place**				**Separate elements**				**Systems of elements**					**Overall structure**				
	People's feelings towards place								*City as a text, system of signs*				*Outstanding elements*				*City as a sum of elements*					*City as totality*				
Dimensions/attributes	Negative feelings	Neutral phase	Positive feelings:	1. Belonging to a place	2. Place attachment:	2.1. Place identity	2.2. Place dependence	3. Place commitment	Cognition/ Meaning of signs	Continuity/ Historicity	Legibility/ Informative	Imageability	Hierarchy	Uniqueness	Significance	Naturalness	Openness/ Enclosure	Density	Intensity	Integration	Configuration of Pattern	Diversity/ Variety/ Richness	Harmony/ Comfort/ Order	Complexity	Interest	
Theories		■		■	■	■	■	■																		*Scale of Sense of Place*
	■	■	■																							*Measuring of Sense of Place*
									■	■	■															*Cult.-Hist. Artefacts Theory*
				■	■				■		■						■	■		■						*Experiential Landscape*
											■	■	■	■	■											*Image of the City*
																■				■				■		*Fractal Analysis*
											■											■	■	■	■	*Aesthetic-Info.-Emot. Patterns*
																	■	■	■		■					*Trad. Analysis of Urban Morph.*
Focus on:	*People*								*People and semantic objects*				*Landmarks, iconic objects, visual spaces, open spaces*				*Patterns of streets, plots, buildings, open green spaces, water bodies*					*Streetscape, panoramic views*				



The methodological approaches of the *Scale of Sense of the Place* (Shamai, 1991) and the *Measuring of Sense of the Place* (Shamai & Ilatov, 2005) were chosen because all the dimensions of the *sense of the place* concept can be revealed quantitatively by integrating these two scales in questionnaire surveys. The methodology of *Experiential Landscape* (Thwaites & Simkins, 2007) was chosen as a complementary approach as it tackles dimensions of both the objective identity and the subjective identity. In addition, the methods used here are complex: sociological surveys and mapping. Meanwhile, the *Cultural-Historic Artefacts Theory* (Cole, 1998) was selected as the main theory concerning the *meaning of the place* concept and having the clearest substantiation for both qualitative and quantitative assessment. The theory which is sufficiently profound for the assessment of the concept of *separate elements* is the *Image of the City* theory (Lynch, 1960). Therefore, it was selected as well. *Fractal Analysis* was chosen for the model so that to reveal the dimensions of complexity and naturalness quantitatively. Feasible quantitative assessment of the dimensions of the *overall structure* concept led to the selection of the methodology of *Aesthetic-Informational-Emotional Patterns* (Salingaros, 2006). Finally, we decided to apply the *Traditional Analysis of Urban Morphology* in order to reveal the physical characteristics of the *systems of elements* concept.

The results of the analyses based on the selected theories can be stored as values of attributes in GIS. Thus, later on, it is possible to perform different types of analyses with them (e.g., spatial distribution studies, statistical analysis, data overlay, etc.).

2.4. Experimental research design

The experimental research aims to test the validity of the proposed theoretical framework for the assessment of the holistic cityscape identity which covers both objective and subjective facets.

Research tasks:

• to evaluate the attributes of the *sense of the place* (1) in the particular urban environment and to reveal the factors influencing certain results;

• to assess the identity of the particular urban environment by viewing through the prism of the attributes of the *meaning of the place* (2);

• to determine the most salient *separate elements* (3) in the particular cityscape and to evaluate their attributes;

• to distinguish the most significant *systems of urban structure elements*, to overview the currently available literature and research on the attributes of those systems and to summarise their results (4);

• to evaluate some of the attributes of the *overall urban structure* (5);

• to summarise and systematically compare the results of the analysis of the different concepts of holistic cityscape identity and to draw conclusions;

• to develop proposals for the protection and modelling of the cityscape identity based on the derived conclusions.

Research subject. Concepts of the holistic cityscape identity are as follows: the sense of the place (1), the meaning of the place (2), separate elements (3), systems of elements (4), and the overall structure (5). Each concept has certain attributes which can be assessed by employing the already existing theories and methods.

Research object. Kaunas City has been chosen for the case study. It is the second-largest city in Lithuania, an important centre of culture, technology, science and industry. Thus, the issues of identity are significant here. Kaunas has also been chosen for the research because its cityscape quite clearly reflects five different historical periods: times of the Grand Duchy of Lithuania (13th century – 1795), the Tsarist period (1795 – 1918), the Interwar period of Independent Lithuania (1918 – 1940), the Soviet years (1940 – 1990), and the period after the Restoration of Independence (since 1990) (*General Plan of Kaunas*, 2011). This richness and complexity of the urban fabric is extremely relevant for conducting the analysis of the holistic identity of the cityscape.

Methodology. Qualitative and quantitative research is mainly based on the following theories: *Scale of Sense of the Place* (Shamai, 1991), *Measuring of the Sense of the Place* (Shamai & Ilatov, 2005), *Cultural-Historic Artefacts Theory* (Cole, 1998), *Experiential Landscape* (Thwaites & Simkins, 2007), *Image of the City* (Lynch, 1960), *Fractal Analysis*, and *Traditional Analysis of Urban Morphology.*

The research includes several separate studies whose results are overlapped, and the general insights and conclusions are provided at the end.

3. APPLICATION OF THE SUGGESTED METHODOLOGY IN THE EXPERIMENTAL RESEARCH (CASE OF KAUNAS CITY)

3.1. Residents' sense of the place in Kaunas City

Introduction

This section presents the research on the residents' sense of the place in Kaunas City. *The research aims* to assess one component of the holistic cityscape identity – the phenomenon of the *sense of the place* in the specific urban environments and to identify factors that determine certain results. In order to achieve this objective, much attention has to be paid to environmental behaviour theories and components of the social behaviour. As mentioned above, scientific literature distinguishes four qualities of socio-behavioural phenomena which are *physical environment*, *people*, *psychological processes*, and *time with its temporal qualities* (Werner *et al*., 2003). In this research, Kaunas City and its neighbourhoods were chosen as the *physical environment*. The study was targeted at a certain group of people – *social participants* which are the residents of Kaunas City. The targeted *psychological process* was the sense of the place at the present time (without retrospective assessment). Actually, the nature of the sense of the place phenomenon is the reason why our focus is particularly on the residents. It is a complex psychological process which encompasses the meanings and the attachment(s) which people develop for a certain place. Thus, the level of the sense of the place may depend on the familiarity with the place and the time spent here.

The main tasks of this research are:

- to assess the sense of the place in the entire Kaunas City and its separate neighbourhoods;
- to evaluate the eligibility of factors which are distinguished as predictors of the sense of the place in the related scientific literature;
- to find out what/which factors, according to the residents themselves, determine their place attachment;
- to reveal positive environmental elements and negative aspects in different neighbourhoods of Kaunas City;
- to find out the most attractive neighbourhoods for Kaunas residents and the reasons why it is so;
- having considered the obtained results, to identify the factors and causes that enhance the sense of the place, and thus, the overall cityscape identity.

Methodology

The following methods were employed in this research: an overview of the related scientific literature, a semi-structured interview of Kaunas residents, systematisation, comparison, and generalisation of all the collected data.

The hierarchical *sense of the place* concept, as described in *Subsection 2.1.*, was the basis to create a semi-structured interview (see questionnaire in *Appendix 3*) revealing the residents' feelings towards Kaunas City. At the first glance, the applied methodology may seem to be outdated. However, the overview of the recent literature (Hay, 1998; B. S. Jorgensen & Stedman, 2001; Kaltenborn, 1998; Lewicka, 2011; Raymond, Brown, & Weber, 2010) showed that the model suggested by Shamai

(1991) was the breaking point and the inspiration source for the further quantitative research tackling the phenomenon of the sense of the place. Therefore, Shamai scale does not lose its relevance even today, considering the sense of the place as a construct of different levels.

While tackling the phenomenon of the *sense of the place*, it is also necessary to revise the *place* itself. It is probably not worth to expatiate the very definition of the *place* because geographers already drew the boundary between the abstract *space* and the meaningful *place* 40 years ago (Buttimer, 1980; Relph, 1976; Tuan, 1974, etc.). However, our literature analysis revealed that the *sense of the place* might be analysed at different spatial scales and for different territorial units. Researchers commonly focus on the following territorial units: *home*, *neighbourhoods*, *cities*, *regions*, *states* and *continents* (Lewicka, 2011). For example, one of the first studies (Fried, 1963) highlighting the relocated residents' attachments to their previous residence focused on the *neighbourhood* level. Jorgensen and Stedman chose the smaller scale areas (lakeshore *plots*) for their study on the sense of the place (B. S. Jorgensen & Stedman, 2001). There is some research considering attachment even to the smaller places, such as the *house* (Ahrentzen, 1992), or even to *objects* (Belk, 1992). All the previously mentioned studies focus on one level, but the comparison among them could also be interesting as different communities emerge based on the scale of the place. In his study of urban sociology, Vanagas (1996) identified three types of such territorial communities: a *macro community* – the *society*, a *mezzo community* – the *neighbourhood*, and a *micro community* – the *household*. It might be that the relevance of the sense of the place also varies depending on the spatial scales. Yet, there are only a few studies considering the different levels of the spatial environment. Hidalgo and Hernández (2001) measured place attachment within three spatial ranges (the *house*, the *neighbourhood*, and the *city*). Shamai and Ilatov (2005) also split the *place* into different scales (the *city*, the *region*, and the *state*) when they studied similarities and differences of place attachment between Israeli-born and immigrant groups.

In this research, the residents' sense of the place was measured for the entire Kaunas *City* and its separate *neighbourhoods (microdistricts)* [1]. According to Vanagas (1996), the latter are "one of the most viable forms of residential complex." The survey only provided a list of neighbourhoods, and residents themselves could decide where their residential place belongs to. Thus, the boundaries of the neighbourhoods do not necessarily correspond to the current administrative subdivision.

The research also sought to identify whether any factors determine one or another level of the sense of the place, and, consequently, the overall identity of the place. Therefore, the survey collected socioeconomic data that several scientific sources indicate as potential predictors of the sense of the place. They are as follows:

Time of residence – it is considered as one of the best predictors of the positive sense of the place (Brown, Perkins, & Brown, 2003; Hay, 1998; Lalli, 1992; Lewicka,

[1] *Microdistricts* or *microrayons* are residential complexes – primary self-consistent structural elements of residential areas. This term is known and used in post-Soviet and former Socialist states, but the concept itself is essentially equivalent to Clarence Perry's *neighbourhood* unit. Thus, the *neighbourhood* term was chosen to use here as more common around the world.

2010; Shamai & Ilatov, 2005). That means that the one living longer in a certain place also feels more attached to it.

Place of birth – if the time of residence influences certain place attachment, then, it is very likely that the people who were born in that particular place should also possess stronger positive feelings to it than the 'non-natives'. Moreover, traditional researchers (Hay, 1998; Relph, 1976; Tuan, 1977, etc.) mostly claimed that only those people who had lived in a certain area for several generations, or at least those who had lived there for a very long time are able to comprehend the territory in full and experience the real sense of the place.

Respondent's age – it is another highly important factor influencing not only the sense of the place but also the scale of the place. Processes of children's socialisation start at home, then, they move to the neighbourhood, and, subsequently, they expand further, which means that, in the early stages of life, the strongest attachment is to the smallest scale nearest territories, and, later on, it varies depending on the person's mobility (Mesch & Manor, 1998). As people are aging, their mobility decreases, and the nearest territories – neighbourhoods – regain their importance (Schwirian & Schwirian, 1993).

Respondent's gender – there are divergent results in the studies evaluating differences between men and women in relation to the place attachment. Some studies indicate that the gender does not affect the sense of the place significantly (Brown *et al*., 2003; Lewicka, 2005). Other researchers claim that women feel stronger place attachment (Hidalgo & Hernández, 2001; Mesch & Manor, 1998) and establish closer social relationships, mainly because of their social role (Tartaglia, 2006).

Respondent's education and occupation – there are conflicting views on the impact of education on the sense of the place in the literature. Some researchers (e.g., Lewicka, 2005) claim that more educated people are geographically more mobile, thus, they feel less attached to a certain place. Other researchers (e.g., Mesch and Manor (1998)) oppositely believe that more educated people are even more proud of their neighbourhoods and are more attached to their dwelling places. Of course, it might also be a consequence of a higher social status since more educated respondents likely live in better quality and more prestigious areas.

Despite the previously mentioned socioeconomic predictors, there should be more factors influencing the residents' sense of the place. *Social connections and friendships*, *culture and lifestyle*, *geographical/strategic location*, *physical environment* and *prices of the real estate* were distinguished as possible influential factors. Residents were asked to rate each of the following five factors according to their significance for the attachment to a place (a five-point scale was applied where *1* represents 'not important', and *5* stands for 'very important'). Respondents could complement the answer if there were other factors influencing their place attachment.

More thorough analysis was done for the neighbourhood's level because there are plenty of references in the literature that people maintain a stronger sense of the place especially for their neighbourhoods. They experience and use these spaces every day. Meanwhile, the sense of the whole city is a more alien and fragmented idea (Lynch, 1960; Thwaites & Simkins, 2007). This also explains the data from Lewicka's review that about 75% of the research that relates to place attachment concerns

attachment to the neighbourhood (Lewicka, 2011). This study aimed to find out what evokes positive and negative emotions in the neighbourhood as Vanagas (1996) claimed that "the most valued and the most blameworthy features of separate parts within the city highlight the reasons of people's identification with their residential place." Open-ended questions were used in the interview to find out which elements of the physical environment are the most important for the residents and what they do not like about their neighbourhoods. In order to find out what attracts people to some places even if they live somewhere else, residents were also asked about the centres of attraction. Keeping in mind that not all respondents can afford to choose the place of residence and – maybe – the current one is not sweet to their heart, the question was asked which neighbourhood in Kaunas would be most attractive to them.

An online survey was prepared on www.manoapklausa.lt website. The search for respondents was not only conducted in the virtual space by sharing the survey link via social networks or e-mails, but also by live communication with the residents of Kaunas City.

Research results

General data

175 residents of Kaunas City were interviewed for this research. The majority of the participants were women (71%). 74% of all the respondents belonged to the age group between 26 and 40 years old, 19% were between 18 and 25 years old, 6% of the respondents were older than 40 years, and only 1% were under 18. In the future research on the sense of the place, more attention should certainly be paid to children, the youth and the elderly because, according to literature, these age groups are characterised by the different dynamic of place attachment.

The distribution of the respondents by education was as follows: 3% of the respondents said that they had completed secondary education, 5% had higher non-university education, and 92% had higher university education. The respondents' occupation was the following: 51% were employed, 32% worked while studying, 13% were students, 2% were on maternity leave, and the remaining 2% were high school students, retired or unemployed people.

More than a half of the respondents (59%) were born in Kaunas. The average time of the respondents' residence in Kaunas was 21 years (the value ranged from 1 year to 67 years). Meanwhile, the average time of residence in particular neighbourhoods was 11 years (the value ranged from 1 month to 36 years).

Assessment of the sense of the place for Kaunas City and for its neighbourhoods

As mentioned above, the residents were asked to evaluate their *sense of the place* both for the entire Kaunas city and for the neighbourhood they live in. Based on the scale of the Sense of the Place (Shamai, 1991), nine statements were formulated and submitted in the survey. They varied from the lowest level of the sense of the place (*I do not want to live in the current place* – 1 point) up to the highest level *(I would make (have made) personal sacrifices to save/ protect/ preserve/ maintain this place* – 9 points). The respondents had to choose one most suitable statement for the city and one for their neighbourhood.

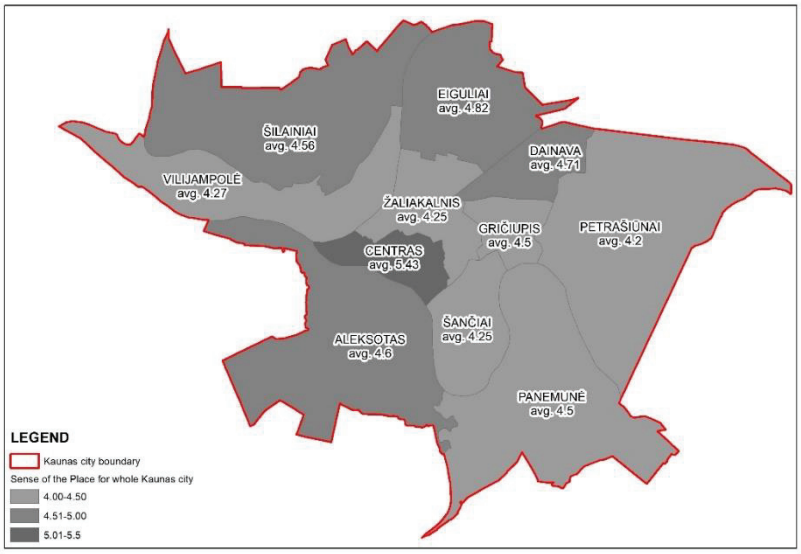


Fig. 3.1. Map reflecting the residents' assessment of the sense of the place for entire Kaunas City (average values are indicated). Prepared by the author

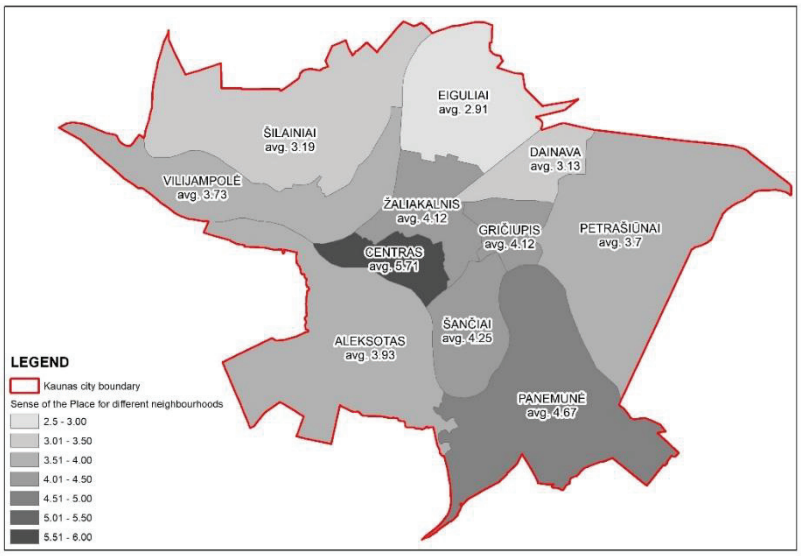


Fig. 3.2. Map reflecting the residents' assessment of the sense of the place for different neighbourhoods (average values are indicated). Prepared by the author

While talking about Kaunas City, most respondents said that they *were emotionally attached to Kaunas City* (42%) and *always feel like they belong here* (24%). Despite 13% claiming that they *have no particular feeling for this city*, the situation of the city still was more favourable in comparison with neighbourhoods

where the majority of respondents (as high as 35%) *have no particular feeling for their neighbourhood* (35%), only a quarter of the respondents (25%) *are emotionally attached to them*, and only 13% *feel like they belong to their neighbourhood* (13%).

The results revealed that the residents are more attached to the entire city of Kaunas than to its separate neighbourhoods (see *Table 3.1.*, *Fig. 3.1.* and *Fig. 3.2.*). It can be explained that Kaunas is a relatively small city with a reasonably good transport system. Thus, residents do not feel constrained even if some of their favourite (or somewhat important to them) places are not in their nearest residential environment.

Still, it was noted that the residents living in the areas valued from the urban cultural point of view (Centre, Žaliakalnis, Panemunė, Vilijampolė, Šančiai) feel a much stronger Sense of the place in comparison with the ones who live in the residential areas built during the Soviet period (1940–1990) (Dainava, Eiguliai, Šilainiai). It is important to note that here and further in the research the respondents were asked to assess their feelings for individual *neighbourhoods*, and the level of elderships only emerges when summarising the results.

Table 3.1. Results of the sense of the place summarised for Kaunas City and for its elderships. Compiled by the author

	Sense of the place for Kaunas City	**Sense of the place for neighbourhoods**	**Sense of the place for neighbourhoods sorted by elderships**										
			Aleksotas	Centre	Dainava	Eiguliai	Gričiupis	Panemunė	Petrašiūnai	Šančiai	Šilainiai	Vilijampolė	Žaliakalnis
Average values	4.57	3.69	3.93	5.69	3.09	2.95	4.13	4.67	3.7	4.25	3.19	3.75	4.06
Standard deviation (σ)	1.64	1.84	1.98	1.55	1.64	1.25	1.96	1.51	2.79	0.89	1.64	1.86	1.95
Median	5	4	4	5	2	2	4.5	5	2	4.5	3	4.5	5

The results of the survey also revealed a weak positive linear relationship between the residents' *assessment of the sense of the place for Kaunas City* and *assessment of the sense of the place for the neighbourhood* (Pearson's correlation coefficient $\rho = 0.4$). It means that those residents who foster stronger positive feelings for the entire city of Kaunas are likely to be more attached to their neighbourhoods as well and *vice versa*.

Evaluation of predictors of the sense of the place

Not all of the sense of the place predictors mentioned in the analysed literature proved to be completely reliable in this research. For example, the survey results did not support the hypothetical claim that the *time of residence* in a particular place leads to stronger attachment to that place. A very weak positive correlation was also found between the time of residence in Kaunas City and the values of the sense of the place in Kaunas ($\rho = 0.1$). The linear relationship between the time of residence in the neighbourhoods and the values of the sense of the place in the neighbourhoods was even weaker ($\rho = 0.09$). It could be explained that, over time, people get to know not only the advantages of the place but also its disadvantages (most of them were reflected in the respondents' answers and shall be discussed below). The respondents'

place of birth also had just minor influence on the sense of the place. It can be seen that the respondents for whom Kaunas is the hometown showed slightly better appreciation of the sense of the place of Kaunas City ($\bar{x}$ = 4.7; σ = 1.65)[2], but the values were very close to those respondents who came to live in Kaunas from elsewhere ($\bar{x}$ = 4.4; σ = 1.62). Regarding the assessment of the sense of the place in the neighbourhoods, the results are similar: the average values of those born in Kaunas were $\bar{x}$ = 3.8; σ = 1.84, and the average values of those born elsewhere were $\bar{x}$ = 3.5; σ = 1.84. Thus, the claim that the residents born in the city possess stronger feelings for their childhood environment than those who came here later did not prove to be true, either. A plausible explanation could be that people who came to live in Kaunas from another place consciously chose to live in this city beforehand. This city seemed to be attractive in one way or another, met their needs and desires (e.g., more opportunities, more like-minded people, etc.), and, because of that, their assessment of the sense of the place is fairly high. There were no significant differences observed in the evaluation of the sense of the place regarding the *respondents' age* (see *Table 3.2.*), except for the children and youth age group (0–17 years old). Unfortunately, too few respondents were interviewed from this age group in this study, hence, hasty conclusions should be refrained from, and, as mentioned above, future research should focus more on not only children and young people, but on the elderly as well.

Table 3.2. Results of the sense of the place assessment sorted by the age groups (* – the sample is too small). Compiled by the author

Age group	0–17*	18–25	26–40	more than 40
Sense of the place for Kaunas city	2	$\bar{x}$ = 4.59 (σ = 1.6)	$\bar{x}$ = 4.57 (σ = 1.7)	$\bar{x}$ = 4.73 (σ = 1.3)
Sense of the place for neighbourhoods	1	3.9 (σ = 2.0)	3.65 (σ = 1.8)	3.64 (σ = 1.9)

The *respondents' gender* did not lead to any noteworthy differences in the assessment of the sense of the place. The average value for the men's sense of the place is only slightly higher (Kaunas City – 4.73; neighbourhood – 3.8) in comparison with that of women's (Kaunas City – 4.51; neighbourhood – 3.65). The distribution of scores is also only slightly different (see *Fig. 3.3.*).

For the sake of curiosity, we take a closer look at the socioeconomic indicators of those respondents who gave Kaunas City the highest (9 points – *I am ready to give up even some of my personal privileges if it is needed for the wealth of this city*) and the lowest (1 point – *I do not want to live here*) scores in the assessment of the sense of the place. There were only a few such respondents. Still, the lowest scores were given by women born in Kaunas who were over the age of 30. They also rated their neighbourhoods poorly. Meanwhile, the highest scores were given by respondents who were also born in Kaunas and who also were about 30 years old, but these were men. By the way, they also appreciated their neighbourhoods much more. This should

[2] Here and further not only the mean $\bar{x}$ values, but also standard deviation σ values are provided for the comparison, as they reflect if obtained data are concentrated around a single value, or are highly dispersed.

not be surprising since literature suggests that men tend to be more nationalistic than women (Bonaiuto, Breakwell, & Cano, 1996).

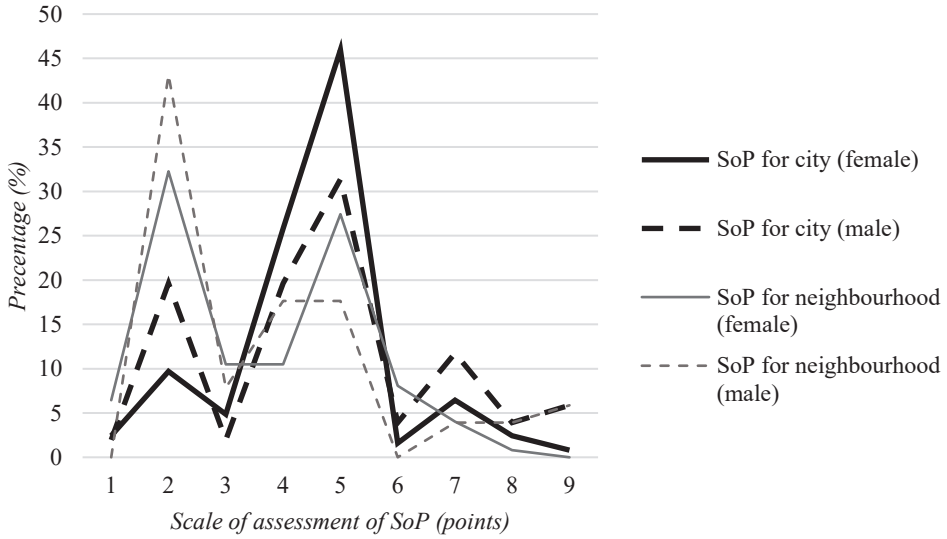


Fig. 3.3. Assessment of the sense of the place (SoP) considering the gender of the respondents. Compiled by the author

Factors influencing the residents' sense of the place

During the survey, the respondents were asked to evaluate various factors influencing the residents' sense of the place. A five-point Likert scale was used, where *5* means *very important*, and *1* means *not important*. The majority of the respondents identified *geographical/strategic location* ($\bar{x}$ = 4.17; σ = 1.03) as the most important factor. *Physical environment* (bearing in mind not only the quality but also the aesthetics, the beauty of the environment) also scored fairly high ($\bar{x}$ = 3.97; σ = 1.13), and architects and urban planners should keep that in mind. Next in the order of influence was the *rental and sales prices* of the real estate ($\bar{x}$ = 3.57; σ = 1.23). Meanwhile, the *cultural environment* ($\bar{x}$ = 3.33; σ = 1.24) and the *social connections and friendships* ($\bar{x}$ = 3.13; σ = 1.34) were rated as negligible factors (see *Fig. 3.4.*).

By the way, the results slightly varied depending on the territories; these differences between neighbourhoods are depicted in *Fig. 3.5.* The influence of the *time of residence* was not significant here. Besides, the respondents had a possibility to identify other factors which were not included in the survey but could still be considered as important. When summarising the answers, they are as follows: *safety* (the crime rate and the social contingent), the *level of the social service infrastructure* (the network of institutions, the transportation system and communication), *ecology* (environmental factors, the noise level or air pollution), *ownership* (the possession of one's own real estate), *past links* (nostalgia, habits, memories or sentiments) and *future perspectives* (further development of the area). Some of the respondents also made a clear division between *natural* (greenery, green spaces) and *human-made* (architecture) elements of the physical environment.

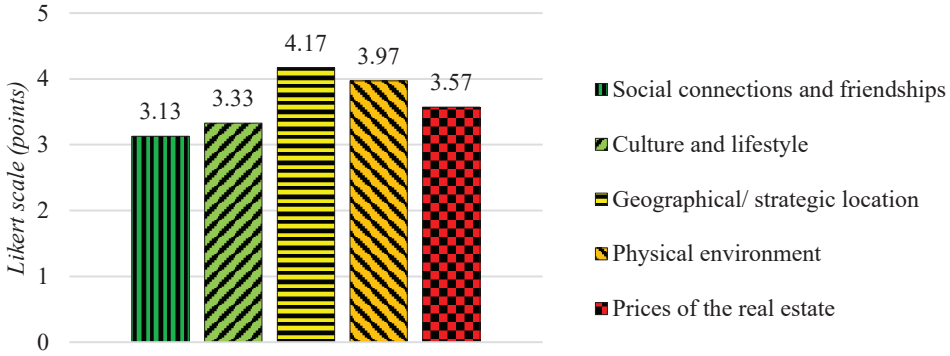


Fig. 3.4. Average ranking values of the significance of aspects influencing the sense of the place in the neighbourhoods. Prepared by the author

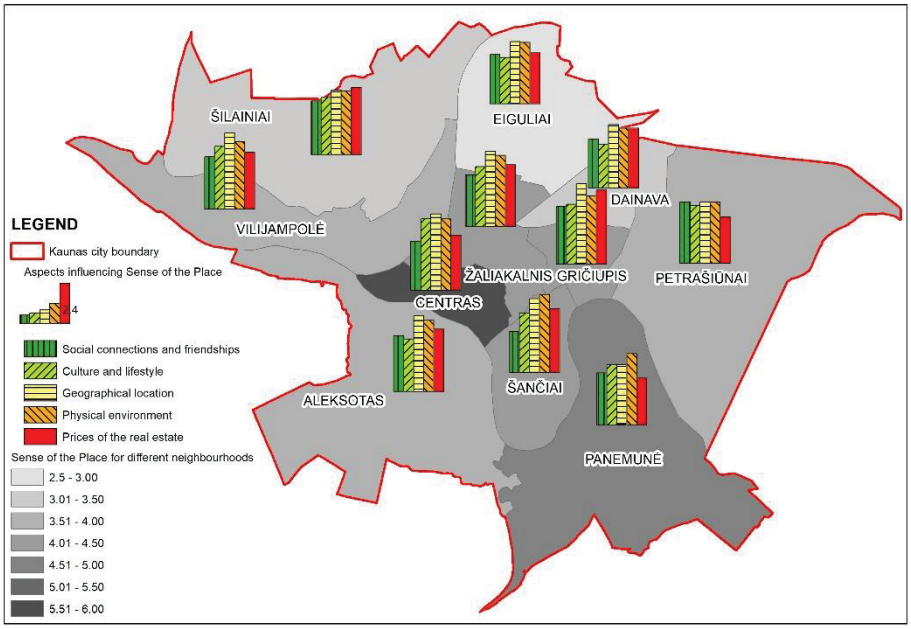


Fig. 3.5. Differences of the aspects influencing the sense of the place among different elderships. Prepared by the author

Different neighbourhoods of Kaunas: positive elements of the physical environment and negative aspects

Since this research also aimed to find out what evokes positive and negative emotions for the residents in certain parts of Kaunas City, the interview contained a couple of open questions about that. These are: *1 – to identify three of the most important elements of the physical environment in their neighbourhood*; *2 – to indicate if there is something that people do not like in their neighbourhood*. As for

the first question, content analysis was performed, and keywords from the answers were grouped into the emerging topics. These are:

- *green spaces* (parks, forests, green squares, etc.);
- *open spaces* (plazas, pedestrian streets, boulevards, squares, etc.);
- *water bodies* (rivers, lakes, lagoons, etc.);
- *transport infrastructure* (both public and private transport segments);
- *commercial bodies* (shops, malls, markets, etc.);
- *social infrastructure* (healthcare, educational institutions, fire stations, police);
- *catering facilities* (restaurants, cafes, bars, etc.);
- *architectural complexes* (exceptional buildings, heritage objects, etc.).

Table 3.3. shows the summarised data on how the significance of these topics varies among different elderships. Relative frequencies of mentioning were calculated within the elderships, and lower values could occur due to the greater variety of functions (see the case of Centre Eldership). The overview of the negative aspects of neighbourhoods for Kaunas City indicates that residents mostly complained about the underdeveloped system of the public transport, poor lighting and neglected environment. Still, there were quite a few complaints about the social context of the neighbourhoods (somewhere the neighbours are not cooperative enough; elsewhere, there are many antisocial/homeless people). The disadvantages of the neighbourhoods identified by their inhabitants and sorted by the elderships are shown in *Table 3.3*.

Table 3.3. Most important elements of the physical environment and negative aspects of neighbourhoods sorted by elderships. Compiled by the author

Eldership	The most important elements of the physical environment and their relative frequencies of mentioning		Negative aspects
Aleksotas	1. Commercial bodies	0.28	underdeveloped public transportation system (especially at weekends and nights), lack of cultural/entertainment facilities, messy industrial areas and side streets, some streets are still unpaved, some unsafe places, more beautiful and better-organised environment would be appreciated
	2. Green spaces	0.19	
	3. Transport infrastructure	0.19	
Centre	1. Open spaces	0.18	higher levels of noise and pollution, lack of parking spaces, lack of communities (apathetic residents and neighbours), neglected public spaces, some places are unlit and unsafe, abandoned buildings spoil the aesthetic image, homeless people in the streets
	2. Green spaces	0.16	
	3. Commercial bodies	0.14	
Dainava	1. Green spaces	0.32	grey, ugly and neglected apartment blocks, high crime rate, lack of lighting and equipped green spaces, monotonous environment, poor contingent of the population, their reluctance to contribute to shared environment, lack of cultural institutions and events
	2. Commercial bodies	0.27	
	3. Transport infrastructure	0.16	
Eiguliai	1. Commercial bodies	0.35	poor public transport links, stiff residents' attitude and mentality, a lot of homeless people, lack of parking spaces, lack of playgrounds, messy, dirty and non-aesthetic yards with poor lighting, high crime rate
	2. Green spaces	0.27	
	3. Social infrastructure institutions	0.15	
Gričiupis	1. Social infrastructure institutions	0.33	lack of parking spaces, poor physical condition of the streets and pavements
	2. Green spaces	0.30	
	3. Commercial bodies	0.22	

Continuation of Table 3.3.

Panemunė	1. Green spaces	0.29	far from the city centre, lack of infrastructure (especially recreational as lanes for bicycles and pedestrians, playgrounds for kids, etc.), poor public transport links, some areas and buildings are abandoned, chaos in the inner parts of the quarters, chaotic building up
	2. Social infrastructure institutions	0.24	
	3. Commercial bodies	0.18	
Petrašiūnai	1. Water bodies	0.27	poor connection to the city centre, homeless and dysfunctional people, high crime rate, abandoned industrial areas, higher pollution, negative status of the industrial district, a large flow of cars, traffic jams at Amaliai railway crossing
	2. Green spaces	0.23	
	3. Architectural complexes	0.23	
Šančiai	1. Green spaces	0.38	underdeveloped transport system, chaotic building up in some places, sometimes bad contingent, unfriendly neighbours lacking social skills and culture, air pollution due to solid fuel combustion, lack of safety, poor lighting
	2. Social infrastructure institutions	0.15	
	3. Water bodies	0.12	
Šilainiai	1. Social infrastructure institutions	0.38	grey, dull and ugly apartment blocks, neglected environment, non-cooperative neighbours, lack of greenery, not all places are reachable by public transport, lack of parking spaces, lack of recreational infrastructure, air pollution due to solid fuel combustion, high crime rate
	2. Commercial bodies	0.28	
	3. Green spaces	0.13	
Vilijampolė	1. Green spaces	0.31	poor neglected physical environment, dysfunctional residents of social housing threatening others, persistently poor reputation of the neighbourhood, lack of lighting, feeling of insecurity, quite a lot of abandoned buildings, inconvenient connection with public transport
	2. Transport infrastructure	0.17	
	3. Water bodies	0.17	
Žaliakalnis	1. Green spaces	0.30	lack of parking spaces, poor lighting, plenty of old and abandoned buildings, insufficient maintenance of the environment, homeless causing the sense of insecurity, lack of dog walking sites, social housing and their inhabitants, deteriorating general situation
	2. Social infrastructure institutions	0.17	
	3. Commercial bodies	0.15	

The most preferred elderships in Kaunas City

In the survey, a further open question was "Which neighbourhood of Kaunas City seems to be the most attractive to live in and why?" Žaliakalnis became a clear leader after counting the most common variants of the answers (see *Table 3.4.*). The main reason for this choice was the ideal balance between the intensive city life and the calm life of a historical suburb. Undoubtedly, the distinctive history, cultural environment and prestigious status of the district were also important in this context. The central part of the city placed second on the list (see *Table 3.4.*). In fact, 27 out of 57 respondents chose specifically the Old Town, 7 respondents selected the New Town, and the remaining participants simply indicated the Centre. The respondents found the Centre fascinating due to its distinctive aura, bohemian culture, city life and the constant buzz. Interestingly, Dainava and Šilainiai (neighbourhoods built in the Soviet times) also scored high (see *Table 3.4.*). However, if Žaliakalnis and Centras were referred to as cultural centres, then, neighbourhoods of Dainava (1963 – the beginning of the construction) and Šilainiai (1980 – the beginning of the construction) are primarily attractive for economic reasons (a relatively low cost of housing) which was followed by the abundance of the social infrastructure facilities (educational, healthcare institutions and so on) and by the relatively well-developed public transport system. It was noted that other neighbourhoods were listed as the most attractive ones, they have abundance of greenery, are relatively close to the city centre, and low-rise detached houses prevail in most of them.

Table 3.4. Top 10 most preferred neighbourhoods in Kaunas City based on the opinion of residents. Compiled by the author

No.	Eldership	Mention frequency	Relative frequency	Most common reasons
1	Žaliakalnis	70	0.32	convenient geographical location, not far away from the city centre, walkable, greenery, Oak Grove, Interwar period architecture, cozy, quiet, nice, well maintained, safe, distinctive, good atmosphere, has a unique history and culture, well balanced privacy and open city life, prestige
2	Centre *Old Town* *New Town*	57 *27* *7*	0.26 0.12 0.03	culture, city life, bustle, centre of events, heart of the city, action, entertainment, well maintained physical environment, architecture, history, distinctiveness, genius loci, coziness, bohemian, greenery, rivers, pleasant residents, plenty of various institutions, functionality
3	Dainava	14	0.06	good connection, economical housing (inexpensive, good prices), quiet, safe, near educational institutions
4	Šilainiai	12	0.05	living quarters district, calm, no noise, greenery, enough parking space, all the necessary institutions nearby, good connection
5	Aleksotas	9	0.04	almost city centre, greenery, nice views to the river
6	Panemunė	8	0.04	quiet, recreational zones, nature, greenery, Nemunas River, pinewood
7	Freda	5	0.02	calm like in a countryside, almost city centre, greenery, reviving neighbourhood community
	Lampėdžiai			small communities, everyone knows each other, quiet, recreational zones, greenery
	Romainiai			younger communities, option of new housing
	Eiguliai			cleanest drinking water, safety, good connection, greenery, plenty of institutions
	Kaunas district municipality			quiet, attractive, privacy, own yard, less noise, less pollution
8	Gričiupis	4	0.02	greenery, strategic location, plenty of institutions, high demand in the housing market
9	Šančiai *Aukštieji Šančiai* *Žemieji Šančiai*	4 *1* *1*	0.02 *0.005* *0.005*	good connection with the city centre, pleasant environment, nice and responsible residents, nature, greenery
10	Vičiūnai	3	0.01	nature, low population density, peace, close to city centre

To sum up, the residents of Kaunas City find the central, historical urban areas most attractive. Yet, they also choose (probably due to limited financial capabilities) other, less prestigious areas. Still, it is important to ensure a good communication system and easy access to the essential services there. Besides, most Kaunas dwellers are not 'real enthusiasts of the big city life' and, whoever can afford it, would prefer to live in individual houses or at least in semi-detached houses instead of multi-storey apartment buildings.

Research conclusions

1. Research of the sense of the place is analysis of people's feelings and emotions towards a place. Any place can evoke both negative and positive emotions or be neutral, or not evoke any feelings at all. In order to determine the level of the sense of a certain place, sociological surveys (such as interviews, semi-structured interviews or questionnaires) are used.

2. Research of the sense of the place in Kaunas City revealed that residents are more attached to the whole city than to their neighbourhoods. Such results could be due to the relatively small size of the city and the possibility to access any part of Kaunas easily. Still, it was noticed that residents from culturally and urbanly valuable areas feel much stronger place attachment in comparison with those residents who live in the residential quarters built during the Soviet times (1940–1990).

3. The analysed scientific literature distinguishes the following socioeconomic predictors of the sense of the place: *time of residence*, *place of birth*, *residents' age*, *residents' gender*, or *education*. However, the majority were only partially justified or not justified at all during this research. Then, there should be other more essential factors defining the sense of the place in Kaunas City. According to the city residents themselves, the main factors determining their sense of the place are the *geographical location*, *physical environment* and the *prices of the real estate*. Meanwhile, the *cultural environment* and the *social connections* are not so influential. In the future research of the sense of the place, the influence of such factors as *safety*, the *level of social service infrastructure*, *ecology*, *ownership of the property*, *past links* and *future perspectives* should be taken into account

4. In order to strengthen the sense of the place and at the same time to foster the holistic cityscape identity, attention should be paid to those elements of the physical environment that are important to the city dwellers. Based on the survey results, these would be *green spaces*, *commercial bodies* and *social infrastructure*. Therefore, the high-quality design of these objects and their cohesive integration into the existing urban fabric should be ensured during the processes of urban design and planning. Also, it is necessary to tackle such issues as the underdeveloped system of public transportation, bad lighting, brownfields, lack of maintenance, poor (both aesthetically and in terms of quality) architecture as these have the greatest negative impact on the sense of the place.

5. The central parts of Kaunas City retain the prestigious status due to their distinctive architecture, more attention being paid to the maintenance and the active city life. Still, some residents (and mainly because of the limited financial possibilities) tend to choose other areas as well. However, these areas should fit the following criteria: good connection, a rational network of service institutions and the overall quality of the housing environment. It should also be noted that a large number of Kaunas City residents, if possible, would prefer individual houses instead of apartments. Therefore, in terms of strengthening the sense of the place in Kaunas City, the balance between the intensive open city life and a quiet private 'suburban' life should be found.

6. In general, architects and urbanists should remember that their work is meant for human beings. And since "architecture and urban design are often described as the only truly inescapable, and therefore public, art forms" (Carmona *et al.*, 2003), specialists developing a city should feel responsible for the fact that their decisions determine how a person feels in a particular environment. Thus, in terms of the cityscape identity and its enhancement, the subjective but inseparable part of it – the sense of the place – should never be forgotten.

3.2. Meaning of the place – reading Kaunas cityscape

Introduction

This section presents research on the meaning of the place in Kaunas City.

The concept of the *meaning of the place* is based on the notion that the landscape (equally to the cityscape) is not only physical, but it also contains embedded meaning. It applies to all human landscape, no matter how ordinary it might seem, as it still has the cultural meaning (Lewis, 1976). Every day, people pass by urban structures and objects which were built for mainly functional purposes. Most of them were not designed to reveal the message about the culture, but they still do so unintentionally. Thus, these objects can be considered as signs or symbols of the culture, and the landscape itself can be treated as the *spatial cultural text* (Cole, 1998; Eco, 1973; Lewis, 1976; Zaleckis *et al.*, 2014). This idea is not that new. Watts (1957) pioneered it by showing how to read the stories written in the land, interpret the clues laid down by history, culture and natural forces. However, the main breaking point was around the 1970s – 1980s, and it resulted in a few essential shifts in several disciplines. First, a new paradigm in the study of the city emerged around the mid-1980s. These 'new urban studies' were concerned not only with the physical city as material reality but with the interplay of all the hidden relations within the actual city. "Urban processes <…> had to be understood in terms of their structural bases, or how they are conditioned by the larger economic, political and socio-cultural milieu" (King, 1996). At around the same time, a cultural or semiotic turning point occurred in human geography (Barnett, 1998; Bellentani, 2016). Here, the landscape also became less considered as a tangible, physical object and more as a system conveying the meanings. Finally, semioticians extended the concept of the text and, since then, the text in the broadest sense covers all other cultural products (including the cityscape).

The parallel between the cityscape and a text sounds very convincing, and, as Wylie (2007) noted, they both have common features: *instability of meaning*, *fragmentation* or *absence of integrity*, *lack of authorial control*, *polyvocality*, and *irresolvable social contradictions*. Likewise, Eco (1973) aptly noted that architecture (including urban design) displays all the six communicative functions listed by Jakobson (1960): *connotative*, *poetic*, *emotive*, *phatic*, *metalingual*, and *referential*. Furthermore, considering landscape as a text is not only a nice metaphor, but it actually means that the environment and its objects become "repositories of coded information that can be retrieved" (Hostetter, 2016). Lewis (1976) wrote that the landscape can be compared to 'unwitted autobiography' – all the tastes, values and ideas are reflected there in the tangible form, and even all those gaps between the declared values and the things done in reality cannot be overlooked here. Still, the text, and, even more, its interpretation may possess infinite meanings. Some of those meanings might form individually; whereas, others might be collectively shared, disseminated and deployed. The way landscape/cityscape is read mainly depends on the language it is written in and even more on the readers' knowledge of that language and the familiarity of the context. Some researchers and educators (Braid & Long, 2000; Hostetter, 2016) claim that there is no standard way or predetermined structure to read the landscape. One has just to immerse oneself into the environment and explore it. Not only do we see what is around us, but we also feel it with all the senses.

Others explore the possibilities of learning languages and developing techniques for reading and interpreting the landscape/cityscape (Eco, 1973; Lewis, 1976; Lynch, 1960; R. J. Williams, 2019; Wylie, 2007; Zaleckis *et al.*, 2014). Actually, the first approach does not contradict the second one, the one that the reader does need to be out there, but most of the readers need some help to make cultural sense from the things that are seen, especially the ordinary things which are as important as the extraordinary ones, because, as Lewis (1976) wrote, 'common landscapes' reflect how people behave most of the time. Therefore, *the research aims* to define the characteristics of another component of the holistic cityscape identity – the meaning of the place – by reading both ordinary and unique parts of Kaunas cityscape.

The main tasks of this research are:

• to overview the related literature and to conclude it with a model reflecting the formation and interpretation of cityscape meaning;

• to distinguish the *signifiers* of Kaunas cityscape and its separate elderships;

• to deliver brief descriptions of the information which could be *signified* through these symbols;

• to assess the *quality* and *quantity* of the meaning of the place possible to retrieve in the particular urban environment (Kaunas City).

Methodology

The following methods were employed in this research: overview of the related scientific literature; identification of the symbols of the cultural text based on theories of semiotics; retrospective review of the research area; expert evaluation of previously distinguished symbols conveying the meaning of the place; systematisation, comparison and generalisation of all the collected data.

As semiotics is a study of signs and as Ferdinand de Saussure (1966) divided the sign into the *signifier* (the form which the sign takes, the *sign vehicle* (Eco, 1973): the sound, the image, or, in the case of the landscape, the physical existence), and the *signified* (the concept behind the sign), it is important to know what types of *signifiers* and *signifieds* exist in general and how they are identifiable in the landscape/cityscape.

Charles S. Peirce developed many classifications of signs, but the simplest one was the most important of them (Burks, 1949) – the *icon* (physical resemblance between the signifier and the signified), the *index* (it contains the evidence of the signified), and the *symbol* (no direct resemblance, the connection is learned) (*see Table 3.5.*). This classification contains the essence of the more complicated ones and is still relevant today. Later, while tackling semiotics in the landscape design, Jorgensen (1997) emphasised the difference between the unintentional *indicators* and the consciously sent *signals* (covering both *symbols* – representation by convention – and *icons* – representation by depiction or imitation). However, in real-life situations, the boundaries between the indicators and the signals become more vague as the meaning behind the sign is constantly changing. Environmental psychologists suggested that it evolves from the *concrete object* through the *use object*, the *value object* to the *symbolic object* (Gibson, 1950, 1966; Rapoport, 1977) (*see Table 3.5.*). The hierarchy of the levels of meaning in an interesting way relates to the development processes of graphical representation. Usually, the icon design also starts with something very explicit and direct and evolves to something much more complex,

implicit and symbolic (Y. Rogers, 1989) (*see Table 3.5.*). Considering landscape elements as the signs means that they should go through the same process. Something very *natural* adapted by people turns to something *functional*, then it gains the *iconic* value, and, finally, that something becomes *conventional* (see *Table 3.5.*). Even though it may look like the rest, it already contains that deeper latent meaning. As the landscapes "are always in the process of 'becoming' " (Schein, 1997) and grow inconsistently, the level of the development of the symbols of the cultural text also varies. Therefore, one of the tasks of this research is to designate *natural*, *functional*, *iconic*, and *conventional* symbols as signifiers of the meaning of Kaunas City cultural text (*see Fig. 3.6.*). Similar research was already carried out in 2013 by a team of Kaunas University of Technology researchers (Zaleckis *et al*., 2014), but only the most important and qualitatively valuable symbols of Kaunas City were revealed. Hence, it might seem that the residential areas developed in the Soviet times lack any kind of signifiers, yet that is not true. Moreover, seven years is a relatively significant time gap even for a slowly developing city. During that time, new symbols may have formed, and the old ones may have evolved or disappeared.

Table 3.5. Classifications based on the relationship between the signifier and the signified existing in various disciplines. Compiled by the author

System	**Classification of signs (by Peirce)**	**Levels of meaning (Gibson, 1950, 1966; Rapoport, 1977)**	**Iconic representation (Y. Rogers, 1989)**	**Architectural code (Eco, 1973)**	**Symbols of cultural text (Cole, 1998; Zaleckis *et al.*, 2014)**
Discipline	*Semiotics*	*Psychology/ Environment - behaviourism*	*Graphical design*	*Semiotics*	*Culturology*
Variability of meanings increases, more difficult to understand ↓	Icon (physical resemblance between the signifier and the signified)	Concrete object (function of activity itself)	Resemblance icon (direct likenesses)	Technical codes (structural elements)	Natural (created by nature)
	Index (contains evidence of the signified)	Use object (how it is done)	Exemplar icon (depiction of a common example)	Syntactic codes (spatial typologies, rules)	Functional (reflects present or former function(s) clearly
		Value object (how it is associated into systems)	Symbolic icon (a higher level of abstraction)	Semantic codes (denotative and connotative functions, ideologies of inhabitation, sociological types)	Iconic (related to the iconic signs inherent in the culture)
	Symbol (no direct resemblance, the connection is learned)	Symbolic object (meaning of the system – latent function)	Arbitrary icon (the association must be learned)		Conventional (formed on the basis of public agreement)

As mentioned above, symbols may have infinite meanings or concepts that are *signified*. However, the architectural codes suggested by Eco (1973) imply that the urban design is not a field of absolute freedom; it is rather a collection of *already*

worked-out solutions and *standardised messages*. Therefore, when talking about the information hidden beneath the surface of the physical environment, certain groups emerge. Every landscape/cityscape is a purposeful investment of *thought*, *time*, *energy*, *resources*, and *money* (Hostetter, 2016; R. J. Williams, 2019). *Thoughts* are highly influenced by the culture, political power, and the necessity of certain functionality. *Time* and *energy* depend on the available technologies, the amount of human labour, as well as the skills and knowledge in possession. *Resources* vary among different regions, and the choice of materials often reflects the local traditions. *Money* itself would mean nothing without comparison, but, as the purchasing power is the number of goods and services that can be bought/exchanged, then the amount of money represents the wealth and status of the area and its population (see *Fig. 3.6.*).

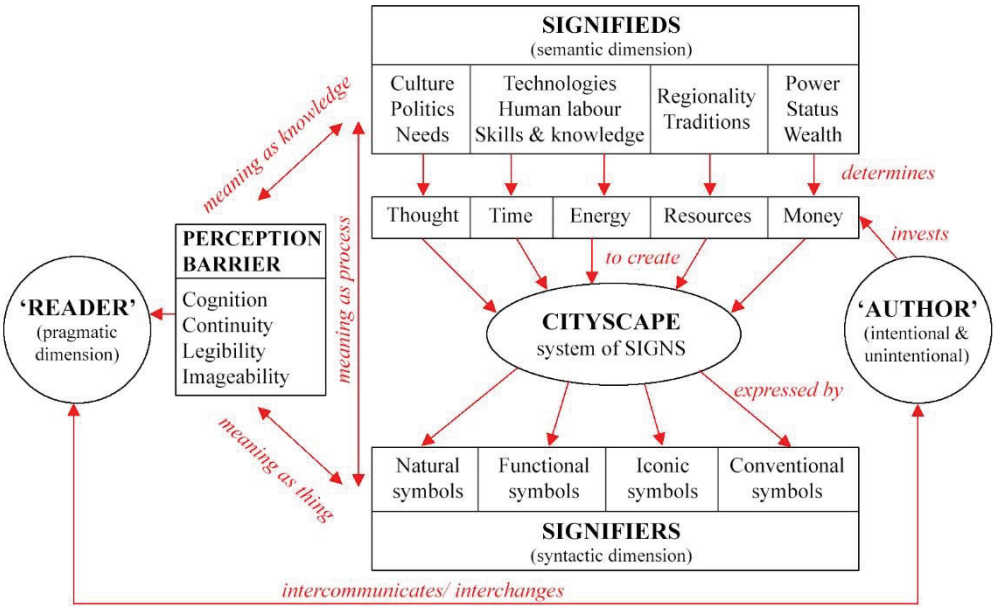


Fig. 3.6. Model of formation and interpretation of cityscape meaning developed based on Peirce-Morris semiotic triangle. Scheme by the author

All of that can be read from the physical landscape/cityscape, all of that is *signifieds*. Yet, literature suggests more things to contemplate when trying to understand the content behind the landscape. *History* is one of them (Hostetter, 2016; Lewis, 1976; Mitchell, 2008). Today's environment is always inherited from the distant and recent past. Thus, historical inertia, historical leaps, and even erasure of history have to be kept in mind. Then, attention should also be paid to the inner and outer *connections* among the cultural, political, legal and financial networks (Hostetter, 2016; Mitchell, 2008). Finally, once again, it is important to emphasise the significance of the landscape *functionality* as landscapes are always functional by default. They either realise the value (make money) directly, or else they establish the conditions under which value can be realised (Eco, 1973; Mitchell, 2008).

It could seem that the previously described theoretical basis is sufficient to reveal the meaning of the place, but it is not quite so. There is another 'actor' in the interplay briefly outlined above – the Reader (see *Fig. 3.6.*). All the meanings which should/could be read by the Reader are always filtered by the cognition/perception barrier. Therefore, it is important to know the quality and the quantity of the meaning that can actually be retrieved from the signifiers.

Based on our literature review, we have already distinguished four dimensions (see *Subsection 2.1.*) which are decisive in the process of understanding the meaning. They are as follows: *cognition*, *continuity*, *legibility*, and *imageability* (see *Fig. 3.6.*). Expert evaluation of signifiers done through the prism of these dimensions should not only reveal the territorial distribution of the symbols of the meaning within the city but should also give insights into the re-readability of the semantic load and its possible development in the future.

Research results

Signifiers (symbols) of Kaunas cityscape cultural text

We selected certain elements of Kaunas City urban structure which have potential to be defined as signifiers of the meaning of Kaunas City cultural text, i.e., *natural*, *functional*, *iconic*, and *conventional symbols* (see *Fig. 3.7.*). This selection was based on the object's compliance with a particular group of symbols, the object's relation with the surrounding environment, representation of different periods, and, in some cases, the protection status of the object (see *Appendix 4*).

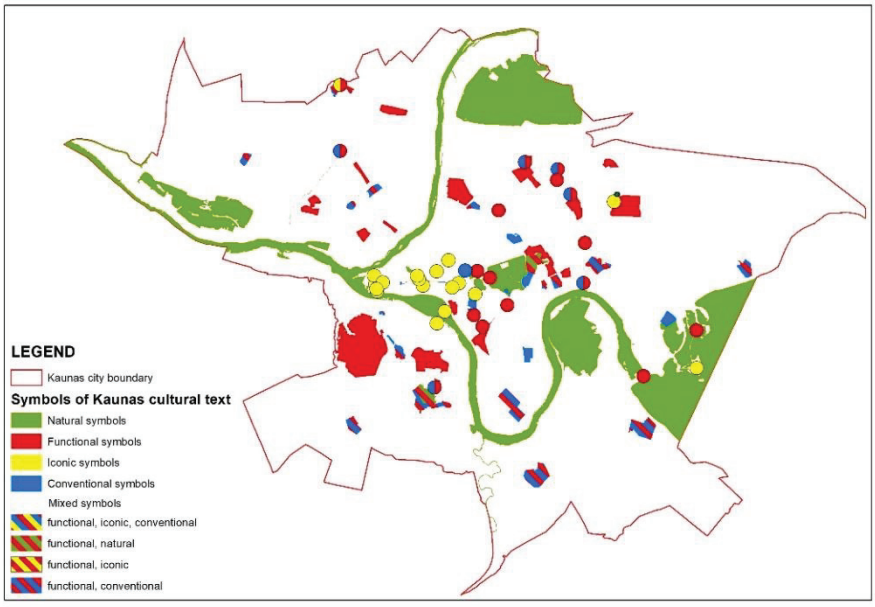


Fig. 3.7. Map of the symbols of Kaunas City cultural text. Prepared by the author

Natural symbols are those with a shape created by nature and the content formed by a community by using and adjusting natural objects for its needs in the course of history. Any sufficiently large and concentrated green massif used for specific public

purposes can turn into such a symbol if it becomes a functional compositional accent of an area (Zaleckis *et al*., 2014). Natural elements are the basis of the expression of the cityscape, as claimed by Mačiulis (2006), and, in the case of Kaunas City, the Nemunas River is the main natural compositional axis of Kaunas City centre (Kamičaitytė-Virbašienė & Leitanaitė, 2005). Yet, looking beyond the central part to the whole of the city, there are other significant natural elements as well. The *main natural symbols in Kaunas could be* the Oak Grove, Vytautas Park, Pažaislis Pinewood, Panemunė Pinewood, Lampėdis Forest Park, Santaka Park, Klebonіškis Forest, Napoleonas Hill, Owls Hill, Nemunas Island, the Nemunas River, the Neris River, the Nevėžis River, the Jiesia River, the Veršvas Creek, Lampėdis Lake, and Kaunas Lagoon.

Functional symbols are those with an external shape reflecting a present-day function or a former function clearly. Their content is formed due to the associations raised by the specifically mentioned function (Zaleckis *et al*., 2014). The denotative function is dominant. Keeping in mind that architecture as well as the urban design is always functional, almost all the elements of the urban structure could be defined as functional symbols. Yet, only those elements which stand out from the surrounding environment were selected as functional symbols in our research. For example, there is a house in a block of typical residential houses. Obviously, it has a function – to provide a shelter; it might also contain certain meanings. Yet, after mentioning the function – to provide the shelter – probably only the ones living in that house would think about it. For the rest of the community, that particular house means nothing. Another example could be the only store in the same residential area. Almost all the residents of that block probably remember that store when thinking about buying goods, but if there are many similar stores, the significance of the particular one of them diminishes. *The main functional symbols in Kaunas City could be* Draugystė Park, Kalniečiai Park, Dainava Park, Santarvė Park, Sąjungos Square, Čečėnijos Square, KTU Campus, LSMU Hospital Kaunas Clinics, Kaunas Clinical (2nd) Hospital, LSMU Veterinary Academy, S. Darius and S. Girėnas Airport, Military Aviation Factory, Complex of Kaunas Depot Buildings, Kaunas Bus Station, Kaunas Railway Station, Kaunas Railway Tunnel, Kaunas Hydroelectric Power Plant, *Urmas* shopping area, shopping centres *Akropolis*, *Mega*, *Molas*, *Savas*, *Hyper Maxima* and *Maxima Bazė*, Kaunas Sports Hall, Kaunas County Public Library, Cultural Centre *Girstutis* and the Yacht Club.

Iconic symbols are those symbols which, by their shape, are related to the iconic signs inherent in the culture of the city; they are marking some specific content and are comprehensible virtually to all the representatives of one or another culture (Zaleckis *et al*., 2014). They can be historically continuing, almost constant landmarks or very dominant objects in the cityscape. Thus, they are widely known. Furthermore, we believe that collapsed structures, abandoned or unfinished buildings might be as iconic as (if not even more iconic than) the well-kept and managed buildings. One example could be *Centro Financiero Confinanzas*, also known as the *Tower of David*, the unfinished and abandoned skyscraper in Caracas, the third-highest in the country of Venezuela. Squatters have been living in that building for a while, and they have even established a network of illegal stores, beauty salons and unlicensed medical

facilities within the building. Thus, the *Tower of David* became the iconic symbol of informal settlements in Venezuela. Another strong example is the *Hiroshima Peace Memorial* (*Genbaku Dome*), the only structure that 'survived' in the area when the atomic bomb exploded. It became a powerful iconic symbol of the most destructive force ever created by humankind and the expression of the hope for world peace. The *main iconic symbols in Kaunas City could be* Christ's Resurrection Church, Kaunas City Hall, Vytautas the Great War Museum, Kaunas Castle, House of Thunder, Kaunas State Musical Theatre, Kaunas Cathedral Basilica, Church of Vytautas the Great (Assumption of the Blessed Virgin Mary), Kaunas Central Post Office, St. Michael the Archangel's (the Garrison) Church, Pažaislis Monastery and the Church of the Visitation, Kaunas Synagogue, Kaunas Mosque, Kaunas Historic Mill Elevator, *1000 litų* Business Centre, Žalgiris Arena and the abandoned Hotel *Britanika*.

Conventional symbols are formed based on public agreement. Since both language and other semantic systems are formed on the basis of the so-called social agreement and cannot be replaced by the one-off act of the will, in the cityscape, such a form of agreement can be historical events fixed in the memory of the public, legends or myths, specific traditions of the use of some areas or spaces. Thus, conventional symbols might be without a distinctive visual form or visual identity (Zaleckis *et al.*, 2014). For example, there is public agreement that the place where the dead are buried is the place to remember them, the place of silence, peace and respect. The connotative function is usually stronger than the denotative function of these objects. *The main conventional symbols in Kaunas could be* Ramybės Park (Kaunas Old Cemetery), Petrašiūnai Cemetery, Aukštieji Šančiai Military Cemetery, Žaliakalnis Jewish Cemetery, Garden of the Historical Presidential Palace, Valley of Songs, Mickevičius Valley, Kaukas Stairs.

Mixed symbols are those elements of the city which can be assigned to several groups at the same time. They possess both denotative and connotative meaning. They might be the visual dominants of the cityscape or indistinguishable conventional places. The *main mixed symbols in Kaunas City could be* Laisvės Avenue (functional, iconic, conventional), Lithuanian Zoological Garden (functional, natural), VDU Botanical Garden (functional, natural), 9th Fort (functional, iconic, conventional), elements of Kaunas Fortress (functional, conventional), Žemieji Šančiai Military Campus (functional, conventional), Linkuva Manor (functional, conventional), Freda Manor (functional, conventional), former Shop *Rėda* (functional, conventional), former Shop *Kalniečiai* (functional, conventional), former Shop *Vitebskas* (functional, conventional), former Restaurant *Pasimatymas* (functional, conventional) and former Restaurant *Trys mergelės* (functional, conventional).

Opinions of experts on the selection of the objects

We asked experienced architects, theorists and practitioners, architectural historians and heritage professionals familiar with the situation of Kaunas City (Gintaras Balčytis, Gražina Janulytė-Bernotienė, Gintautas Natkevičius, Vidmantas Minkevičius, Vaidas Petrulis, Evaldas Ramanauskas, Nerijus Stanionis and Nijolė Steponaitytė) to evaluate the previously outlined symbols of Kaunas City cultural text (see questionnaire in *Appendix 5*). The majority of the experts thought that the shopping centres in the residential neighbourhoods (such as *Savas*, *Hyper Maxima* or

Maxima bazė), redesigned shops or cafés from the Soviet times (such as *Vitebskas* or *Pasimatymas*), abandoned buildings (such as hotel *Britanika*), closed areas used only by a small group of people (such as Kaunas Clinical (2nd) Hospital or Kaunas Military Factory) as well as minor elements of nature (such as Veršvas Creek) are not important symbols of the cultural text of Kaunas City. Meanwhile, historical visual landmarks (such as Christ's Resurrection Church, Kaunas City Hall, Kaunas Castle, etc.), massive natural elements (such as the Nemunas River, the Neris River, Kaunas Lagoon, Oak Grove, etc.) or integral large-area urban complexes (such as KTU Campus, LSMU Hospital Kaunas Clinics, etc.) are recognised as unmistakable symbols of the cultural text (see Expert opinion in *Appendix 4*).

The fraction of experts agreeing that an element is a symbol of Kaunas cultural text becomes a coefficient of the average meaning of the object. See Equation *(1)*:

$$M_{ob} = C_{ex} * (\overline{D_{cg}} + \overline{D_{co}} + \overline{D_{le}} + \overline{D_{\imath m}})/4; \quad (1)$$

here M_{ob} – the weight of the meaning of a particular object taking into account the approval of the experts, C_{ex} – the fraction of the experts agreeing that the object is a symbol of Kaunas City cultural text, $\overline{D_{cg}}$ – the average value of the experts' assessment of the object's *cognition* dimension, $\overline{D_{co}}$ – the average value of the experts' assessment of the object's *continuity* dimension, $\overline{D_{le}}$ – the average value of the experts' assessment of the object's *legibility* dimension, $\overline{D_{\imath m}}$ – the average value of the experts' assessment of the object's *imageability* dimension.

It is also of interest to find out which objects would not evoke discussions, and on which objects the opinions of the experts differed. The experts assessed the following objects unanimously by all four criteria: Christ's Resurrection Church, Kaunas City Hall, Vytautas the Great War Museum, Vytautas the Great Church and Pažaislis Monastery. Attention should be paid that all these objects belong to the group of iconic symbols, and they scored the highest evaluation (5 points) for each criterion. Whereas, very different opinions were obtained about the shopping centres *Mega* (standard deviations of different criteria: σ_{cg}=1.92; σ_{co}=1.58; σ_{le}=1.87; σ_{im}=1.98), *Akropolis* (σ_{cg}=1.67; σ_{co}=1.76; σ_{le}=1.68; σ_{im}=1.64), *Maxima Bazė* (σ_{cg}=1.56; σ_{co}=1.80; σ_{le}=2.09; σ_{im}=1.27), *Molas* (σ_{cg}=1.64; σ_{co}=1.76; σ_{le}=1.98; σ_{im}=0.99) and business centre *1000 litų* (σ_{cg}=1.41; σ_{co}=2; σ_{le}=1.96; σ_{im}=1.65).

The study also revealed that the average values of individual criteria (cognition (cg), continuity (co), legibility (le) and imageability (im)) strongly correlate with each other. However, there are some symbols with larger differences between the criteria. For example, based on the assessment, *Žalgiris Arena* is well known ($\overline{D_{cg}}$=4.16), moderately legible ($\overline{D_{le}}$=3.61) and mediocre in terms of evoking impressions ($\overline{D_{\imath m}}$=3.28), but it does not express strong continuity ($\overline{D_{co}}$=2.40). Similarly, Nemunas Island is known ($\overline{D_{cg}}$=3.94), but it lacks continuity ($\overline{D_{co}}$=2.63) and does not evoke impressions easily ($\overline{D_{\imath m}}$=2.95). Although other criteria are rated very high, Kaunas Lagoon's lowest score is for continuity ($\overline{D_{co}}$=3.75) as well. The majority of the criteria were scored fairly low for shopping centre *Mega*, but, again, its continuity is even lower ($\overline{D_{co}}$=0.75). However, continuity is not always the weakest spot. For example,

S. Darius and S. Girėnas Airport does not possess strong ability to create a powerful impression ($\overline{D_{cg}}$=4.75, $\overline{D_{co}}$=4.25, $\overline{D_{le}}$=4, $\overline{D_{im}}$=3.75).

Furthermore, the experts also suggested other objects which could be considered as symbols of Kaunas City cultural text. These are *historical buildings* – Kaunas Garrison Officers' Club Building, *Romuva* Cinema, Kaunas Artists' House, Funiculars, the Office of the Bank of Lithuania, M. K. Čiurlionis National Art Museum, M. Žilinskas Art Gallery, Kaunas Picture Gallery; *contemporary buildings* – Business Centres *Kauno dokas*, *Sqveras* and *Arka*; some *places which are alive only in memories* – Café *Tulpė*; *infrastructure objects* – Railway Bridge *Žaliasis tiltas*, Pedestrian Bridge to Nemunas Island, *shapes of relief* – Valley of the Nemunas River, Parodos Hill as well as *street furniture elements* – sculptures of the city (e.g., the Owls in Žaliakalnis), the Fountain in Laisvės Avenue. All of these objects should be included in the assessment of the Meaning of the place in Kaunas City. However, as they were not pre-selected in the list, not all of the experts assessed them through the prism of the dimensions of *cognition*, *continuity*, *legibility*, and *imageability*. Thus, they shall not be included in the calculations of the meaning of the place in this research, but they are still marked on the map. This gap should be fulfilled in the future research on the meaning of the place in Kaunas City.

Moreover, it seems that some places in Kaunas City cannot be divided into separate symbols, but are rather perceived as an integral cultural text, a solid chapter. For example, the Old Town, the New Town, or Žaliakalnis are distinguishable not only because of the abundance of individual symbols but also because of their coherence. The residential districts developed in the Soviet times, as it was noted by Minkevičius, had to be designed according to norms and to feature parks and shopping centres, kindergartens, schools, etc. Thus, the context is also very important.

Meaning of place density within different elderships of Kaunas City

Having obtained the weights of the meaning of separate symbols, it is possible to calculate their load of meaning for the territorial unit by summing the values of all the symbols which are located in the area. It works if territorial units are of the same size; otherwise, that number has to be divided by the area of the unit. Hereby, the density of the meaning of the place of a particular eldership can be calculated according to the following Equation *(2)*:

$$M_{el} = \left(M_{ob_1} + M_{ob_2} + \cdots + M_{ob_n}\right)/S_{el}; \quad (2)$$

Here, M_{el} – the density of the meaning of the place in a particular eldership, M_{ob_1}, M_{ob_2} and M_{ob_n} – weights of the meaning of individual symbols existing within that eldership, S_{el} – the area of the eldership.

The values calculated for Kaunas elderships are provided in *Table 3.6*. The data shows that *Centras* eldership stands out in comparison with all other territories in terms of its semantic load. It means that it contains the highest concentration of objects rated as strongly valuable by the criteria of the meaning of the place. These are natural elements (the Nemunas and the Neris rivers, their banks, etc.), iconic historical buildings (Kaunas Castle, City Hall, all the churches), as well as conventional symbols (Ramybė Park, Historical Presidential Palace and its Garden, etc.). The second place is taken by *Gričiupis* eldership. Its value is significantly lower in comparison with

Centras. Yet, Gričiupis is the smallest eldership of Kaunas, and the meaning here is defined mainly by large territorial units, such as KTU Campus, Lithuanian National Zoo, Mickevičius Valley, etc. Only a slightly lower value of meaning was calculated for *Žaliakalnis* eldership. Here, the main determinants of the meaning are natural (Oak Grove, Vytautas Park) or functional symbols (LSMU Hospital, Kaunas Sports Hall and Kaunas County Library). One of the most iconic landmarks of Kaunas, Christ's Resurrection Church, is also located here. *Šančiai* eldership takes the fourth position. The majority of the symbols here are or were functional (Kaunas Depot Building, Kaunas Railway Station, Kaunas Tunnel, Military Campus, etc.). Certainly, access to the Nemunas River is meaningful as well. *Vilijampolė* eldership takes the fifth place in terms of the semantic load. The meaning of this eldership mainly lies in the natural elements (the Nemunas River, the Neris River and a section of the Nevėžis River, Lampėdis Lake and Park). The following is *Petrašiūnai* eldership, where, again, major influence is derived from natural symbols (i.e., the Nemunas River, Kaunas Lagoon, Pažaislis Park), yet, this area includes not only Petrašiūnai neighbourhood, but also Amaliai, Naujasodis and Palemonas. Therefore, the meanings of the eldership vary territorially (a mix of natural and industrial areas). *Aleksotas* eldership has a very similar total value of meaning to that of Petrašiūnai. Likewise, if only Aleksotas neighbourhood was analysed, the area would take a much higher position in the overall ranking as there are many significant symbols (Napoleonas Hill, the Nemunas River, the Jiesia River, S. Darius and S. Girėnas Airport, Freda Manor and Botanical Garden, etc.), but the suburban areas, such as Kazliškiai or Birutė, are also part of Aleksotas eldership. The latter neighbourhoods occupy relatively large areas but lack valuable symbols of the cultural text, and, thus, the overall evaluation of the eldership is lower. A slightly lower value was calculated for *Eiguliai* eldership. The main symbols of the cultural text here are objects developed in the Soviet times (shopping centres *Vitebskas* and *Kalniečiai*, Kalnečiai Park, Čečėnijos Square), and they were not rated high based on the distinguished criteria. Evaluation of the meaning of the place is quite low in *Panemun*ė eldership. Despite the fact that this eldership has significant natural symbols (the Nemunas River, Kaunas Lagoon or Panemunė Pinewood), just as in the case of Aleksotas, Panemunė includes such areas as Vaišvydava and Rokai which are the outskirts of the city lacking the semantic load. The second-lowest value of the meaning of the place was calculated for *Dainava* eldership. The potential symbols of the meaning of this eldership were green spaces (Dainava and Draugystė Parks), and the former or current shopping centres (*Rėda*, *Savas* or *Pasimatymas*), but they scored relatively poor rating from the experts. Then, *Šilainiai* eldership obtained the lowest value of the meaning of the place. The largest part of this eldership consists of multi-storey residential areas developed in the Soviet times. As mentioned above, the general idea of residential development in the Soviet times was to provide all the conditions necessary for daily life (including the social and cultural infrastructure). Yet, Šilainiai started to develop at the end of the Soviet times, thus, not all of the required elements were finished to build. Currently, the main symbols of the cultural text of Šilainiai are the Neris River and Elements of Kaunas Fortress, but they are not very predominant symbols in the everyday life. Whereas, shopping centre *Mega* is relatively dominant, but it did not get high marks on the

meaning of the place from the experts. Therefore, it seems understandable why Šilainiai takes the final position.

Table 3.6. Meaning of place density within different elderships. Compiled by the author

Eldership	Sum of weights of the eldership's symbols	Area of eldership (km^2)	Density of the meaning of place	Rank
Aleksotas	27.9320	24.2661	1.1511	7
Centras	96.4228	4.5793	21.0563	1
Dainava	4.6685	5.2680	0.8862	10
Eiguliai	14.3901	13.3666	1.0766	8
Gričiupis	25.2252	3.8107	6.6196	2
Panemunė	22.9395	24.7671	0.9262	9
Petrašiūnai	33.9665	28.4535	1.1938	6
Šančiai	21.9651	7.4037	2.9668	4
Šilainiai	16.0936	23.3555	0.6891	11
Vilijampolė	22.8669	14.3725	1.5910	5
Žaliakalnis	44.7905	7.3504	6.0936	3

The values of the density of meaning of the place calculated for different elderships of Kaunas City are displayed in *Fig. 3.8.* This scheme also shows the elements which were suggested by the experts as additional symbols of the cultural text of Kaunas City. It is visible from the scheme that their inclusion in the research would raise the value of the meaning of the place in Centras eldership even further.

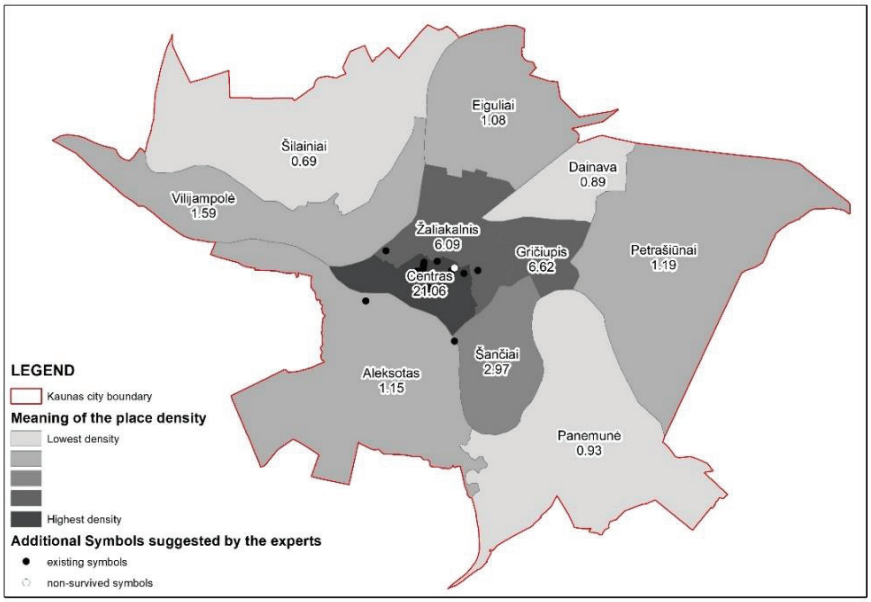


Fig. 3.8. Meaning of the place density within different elderships of Kaunas City. Assessment by the experts. Prepared by the author

Research conclusions

1. The overview of the literature revealed that every cityscape (both outstanding and ordinary) possesses meaning. Such aspects as *culture*, *politics*, *technological advance*, *regional location*, or the *status of power* determine the *thoughts*, *time*, *energy*, *resources* and *money* invested in the environment. These investments create the cityscape as a system of *natural*, *functional*, *iconic* and *conventional* symbols.

2. The meanings reflected by the symbols of the cultural text are filtered by the perception barrier where the qualities of symbols themselves to convey the meaning or evoke certain images are as important as their continuity with the context and the observer's knowledge about them. Thus, *cognition*, *continuity*, *legibility* and *imageability* are aspects necessary to consider in order to understand the quality and quantity of the Meaning of the place conveyed by different symbols.

3. The selection of the symbols of the cultural text in the particular environment, in the case of Kaunas City, indicated that there is not always unanimous consensus even among the experts if one or another object can be defined as a symbol. The biggest differences of opinion were on the contemporary shopping and business centres (i.e., *Mega*, *Akropolis*, *Molas*, etc.) which clearly dominate in the cityscape. Opinions also differed regarding the objects that were important in the Soviet times but are in dilapidated condition today and remain significant only as location references. The difficulties of the assessment of the recent objects might lie in the lack of the time perspective.

4. Unanimous consensus of the assessment was achieved on the historically established objects which have retained their significance over time (time-tested), and, thus, even today they are perceived as iconic (Christ's Resurrection Church, Kaunas City Hall, Vytautas the Great Church, etc.). This necessity for continuity partly justifies the *age census* indicated in the Description of criteria for the selection of immovable cultural property (2016).

5. Our research also showed that indistinguishable elements (not perceived as symbols individually) might form meaningful systems (i.e., the spatial structure in the Old Town or in the New Town, the characteristic street network in Žaliakalnis and Žemieji Šančiai, the functional zoning in the residential areas developed in the Soviet times). Thus, some places cannot be divided into separate symbols and should be analysed as integral units.

6. Experts' approval of the symbols of the cultural text of Kaunas City and their assessment allowed understanding how much and how easily the meaning of a place is perceivable in different parts of the city. The research confirmed the idea that human beings gradually saturate their environment with meanings. Therefore, organically, the city centre is the most multi-layered, multifaceted historical nucleus of different meanings, the core of the city, and the subsequent areas have grown around the original core of the city and have eventually acquired their own meanings as well.

7. The assessment of Kaunas cityscape through the prism of the meaning of the place has a double benefit. On the one hand, the areas with the highest density of the meaning of the place have been revealed. These are the zones that are particularly important for *preserving* the identity of the city. On the other hand, zones are emerging where symbols of the meaning of the place are missing or not fully understood. Thus,

strategies for those zones could be either to *delve into the symbols* that exist there and try to understand whether they have the potential to become significant in the future or to accept that the fundamental changes and the *creation of a new meaning* is needed. Anyway, it is always useful to remember G. M. Breakwell's Model of Identity (1983) claiming that even though individuals strive to be not the same as others, they still seek for the continuity of the self-concept over time and space, and, therefore, they truly aim for being slightly, but not totally, different. This observation certainly applies to the human environment as well.

3.3. Separate urban elements defining Kaunas cityscape

Introduction

This section presents research on separate outstanding urban elements acting as the main formants of Kaunas cityscape identity. They can be landmarks, iconic objects as well as other significant elements of the urban structure. There may seem a bit of overlay with the previous chapter. Yet, the main difference is that, above, the focus was on the meaning contained in the elements, whereas, presently, it is on their visual properties. The dominance and contrast with the surrounding environment are crucial here. Therefore, the *research aims* to find out which separate urban elements act as the main visual formants of Kaunas cityscape identity, what their characteristics are, and how these elements are distributed territorially.

The main tasks of the research are:

• to identify separate urban elements distinguished in Kaunas cityscape;

• to assess the qualities of separate urban elements (such as their hierarchy, uniqueness, significance, or naturalness);

• to reveal how separate urban elements jointly influence and define Kaunas cityscape identity.

Methodology

The analysis is mainly based on the Image of the City (Lynch, 1960) and the Experiential Landscape (Thwaites & Simkins, 2007) theories. The results are sought through a systematic study of the environment by the author who is familiar with the theory and who is well acquainted with the city of Kaunas. Lynch wrote "consider not just the city as a thing in itself, but the city being perceived by its inhabitants" (Lynch, 1960, p. 3). Therefore, the research also relies on some data collected during the semi-structural interview of the residents described in *Subsection 3.1*. In the cases of doubt, we refer to Kaunas City Master Plan for 2013–2023 (2014) and other sources covering the formants of Kaunas identity to some extent.

Research results

First, analysis of the elements making up the urban form and character of Kaunas City is conducted. According to Lynch (1960), these elements are *paths*, *edges*, *districts*, *nodes*, and *landmarks*.

Paths are the channels along which the observer moves (e.g., streets, pedestrian avenues, rivers, canals, railroads and routes of cable cars and so on). Paths are categorised by their frequency of travel, which can lead to very different results when it comes to the individuals' cityscape. Mostly, people's choice of the route depends on where they live, where they work, what they do in their spare time (i.e., their daily

trips). All paths connect 'here' and 'there', and, in that sense, the direction appears. Thwaites and Simkins (2007) conceptualised direction by three interconnecting categories of experience – the *linear containment* (awareness of the possibility of continuity), the *route* (the actual act of getting from 'here' to 'there'), and the *anticipation* (motivation for moving from 'here' to 'there'). Even though the reasons behind the movement might not always be explicit, the traffic counts give insight into which streets and paths are the most used ones. Therefore, in Kaunas City, the paths were distinguished based on the data about the traffic intensity in the streets (*General Plan of Kaunas*, 2014). The main pedestrian avenues were also included (see *Fig. 3.9.*). The list of all the selected paths is presented in *Appendix 6.*

• The *most significant paths* (more than 2000 cars/h) are the main streets used by many people constantly.

• *Moderate significance paths* (from 800 up to 2000 cars/h) are serving streets used by people sometimes.

• *Low significance paths* (less than 800 cars/h) are local, auxiliary streets used by some people daily, but very rarely by others. Thus, they may be one of the most significant on a specific individual's mental map, but, at the same time, be of little significance to the overall mental image of the entire city population.

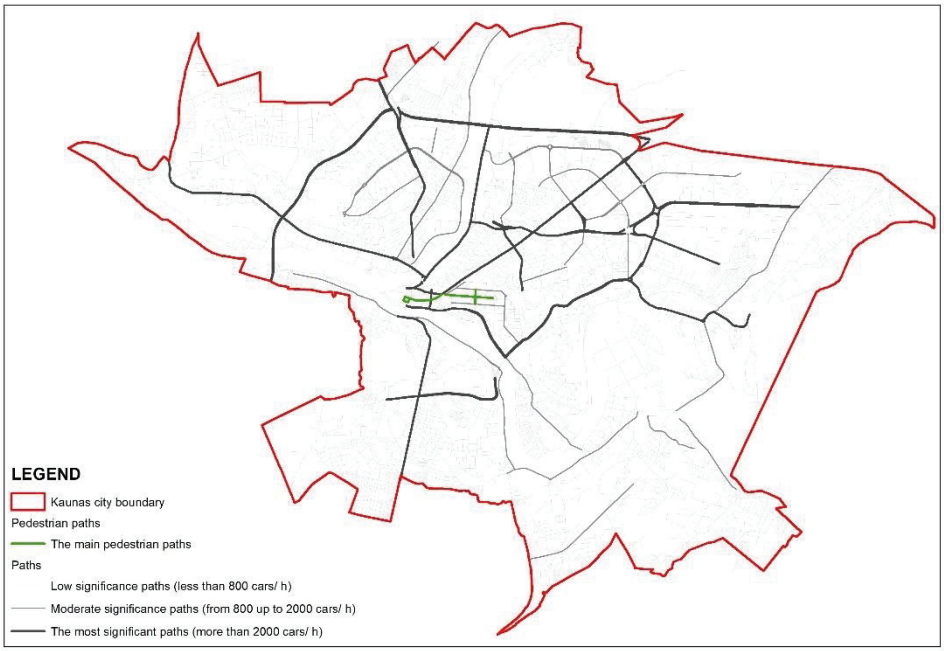


Fig. 3.9. *Paths* urban element in Kaunas City. Scheme by the author

Considering the importance of the identification of the paths and their hierarchy, Lynch (1960) claimed that, for many people, "these are the predominant elements in their image." Relph (1976) also agreed that "the present-day landscapes we know best are the view *of* the road <…> and the view *from* the road." In general, the urban design

is a specific art that is practically impossible to avoid. Daily, ordinary people criss-cross and experience the city. Thus, the city form and appearance must satisfy the broader public (Nasar, 1998). People are observing the city as they are moving through it. Thus, by knowing which trajectories are used the most (the dynamic axis of viewing/visual sequences (lt. dinaminės apžvalgos ašys)), we can figure out which parts of the city should be of the highest visual quality, what segments should be sought to create, as Cullen (1961) puts it, the "drama in the city."

Edges are linear elements, boundaries between different zones, regimes or systems, fractures in continuation. Batty and Longley (1994) wrote about the edge of the city, the boundary of the city, marking the transition between different epochs, between the older agricultural society and the newer industrial one. However, many edges exist even within the city. They "close one region off from another; or they may be seams, lines along which two regions are related and joined together" (Lynch, 1960). The Experiential Landscape theory (Thwaites & Simkins, 2007) uses the term *transition* to define the edge and specifies its types: *threshold* (instant contrast on either side), *corridor* (due to the directional qualities, it gradually connects two different areas), *segment* (a space of a different character emerging from the overlap of the adjacent spaces), and *ephemeral* (the sense of transition defined by temporal qualities of the environment). The physical edges may but need not always coincide with the official administrative boundaries as some of them are determined by the existing natural barriers. That should be an aspiration because boundaries defined in the sense of organically occurring barriers tend to make good neighbourhoods and ultimately good cities. Still, some edges may be perceived negatively. If they emerge abruptly and/or artificially and break the former integral entity (e.g., an intensive traffic street in the middle of a residential neighbourhood, a high wall or a building blocking not only the access but also the view, etc.).

In Kaunas City, the main edges would be the water bodies, changes of the terrain and the axes of heavy traffic and railroads as they can be perceived not only as paths leading somewhere but also as barriers preventing access to places (see *Fig. 3.10*.).

• *Edges defined by the water bodies* – rivers the Nemunas and the Neris, Kaunas Lagoon and Lampėdis Lake.

• *Edges defined by the changes in terrain* – the slope between Lower Kaniūkai and Romainiai, the slope between Vilijampolė and Šilainiai, the slope between Centras and Žaliakalnis, the slope between Žemieji Šančiai and Aukštieji Šančiai, Nemunas River slopes along Gričiupis and along Aleksotas, the slope between Žemoji Freda and Aukštoji Freda.

• *Edges defined by axes of intensive traffic* – more than 2500 cars/h.

• *Edges defined by railroads*.

The revelation of the edges may seem not as significant as the paths. Still, according to Lynch (1960), the edges are "important organizing features, particularly in the role of holding together generalized areas." Similar thoughts were expressed by Jacobs (1961) as well: "physical barriers, such as huge traffic arteries, too large parks, big institutional groupings, are functionally destructive because they block cross-use." Furthermore, the emergence of edges may be conditioned not only by the physical characteristics of the environment but also, largely, by how one interprets them.

Alexander (1977) wrote that boundaries come alive in people's minds as they mark the end of one area and the beginning of another, separating 'our' territory from 'theirs'. Yet, the focus here is on the visual edges.

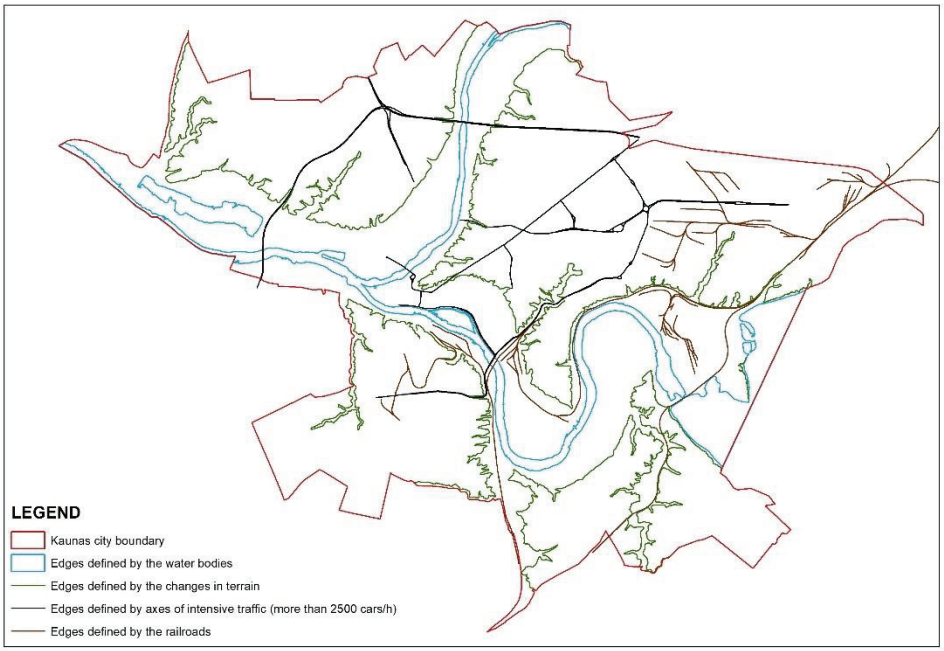


Fig. 3.10. *Edges* urban element in Kaunas City. Scheme by the author

Districts are planar parts of the city accessed by the observer and perceived as having a common recognisable character. Thwaites and Simkins (2007) used the term *area* to define territories engendering a sense of coherence and containment, whereas the term *cityscape zone* is used to define the same concept in some of the territorial planning documents in Lithuania. No matter how they are named, districts can be distinguished by certain attributes: *functional use* (residential, commercial, reactional, industrial, etc.), the *predominant height of building up* (construction of one-storey houses, two-storey houses, multi-storey buildings, etc.), a *particular morphotype of building up* (homestead, perimeter, free planning, etc.) or *other thematic continuity* as well as *topography*, *degree of maintenance*, or *degree of privacy*.

In the case of Kaunas City, the perception of the districts is influenced by the natural positioning of the city and its created edges. Therefore, the initial stage of determination of the districts should be based on the topography (see *Fig. 3.11.*). The clear height difference between the lower and the upper terraces of the Nemunas and the Neris rivers creates a two-level structure. The districts (Centras, Vilijampolė, Žemieji Šančiai, Panemunė, Petrašiūnai and Žemoji Freda) are withheld by the natural boundaries which create the sense of containment. Moreover, the edges defined by the rivers and the main paths form separate districts even though they are on the same level. Yet, not all the districts defined in such a topographical way possess a sense of

coherence within them. Thus, the next stage is the determination of districts based on the specifics of building up. We thus distinguish the following types of districts: *multifunctional* – compact building up of mixed uses; *residential (multi-storey building up)* – free planned building up of mainly apartment buildings, *residential (low-rise building up)* – building up of single-family residential houses; *industrial or infrastructural* – building up of large-volume structures/areas necessary for the infrastructure, *agrarian* (agrarian areas with fragmented intervening individual houses), and *green spaces* (forests, river slopes, parks, other green areas) (see *Fig. 3.12.*).

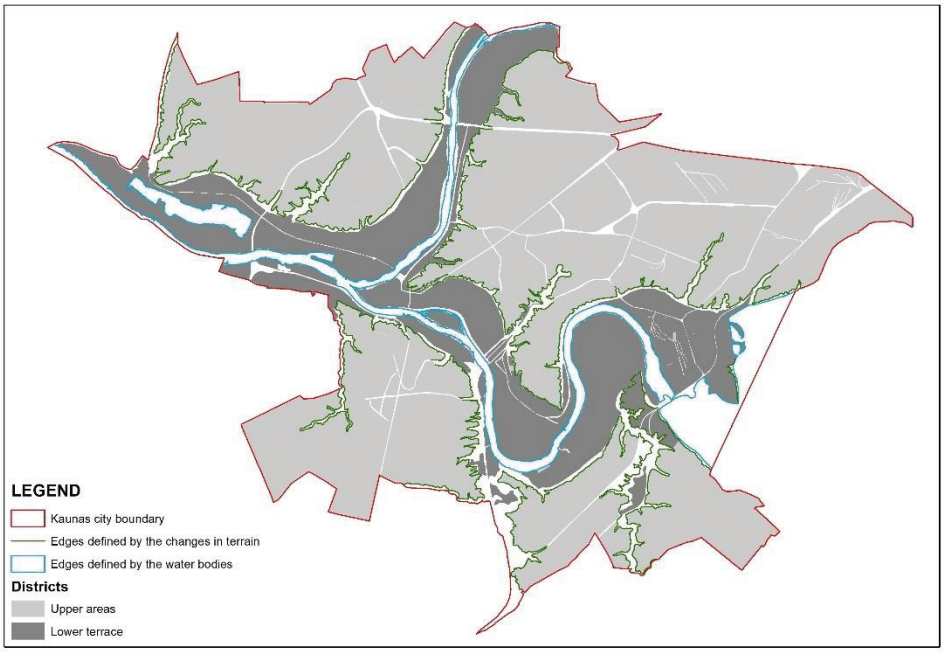


Fig. 3.11. *Districts* urban element in Kaunas regarding the topography. Scheme by the author

After systematising the data, the main features of individual Kaunas elderships and their neighbourhoods become apparent (see *Table 3.7.*). Based on the character of building up, districts of Kaunas could be described in the following way:

• *Multifunctional districts*: Old Town and New Town;

• *Residential (multi-storey building up) districts*: Gričiupis, Dainava, Milikoniai and Eiguliai (G – here and further, the second most characteristic type of a district is indicated in parentheses);

• *Residential (low-rise building up) districts*: Panerys, Rokai, Birutė, Romainiai, Sargėnai, Aukštieji Šančiai (RM), Panemunė (RM), Žaliakalnis (G), Žemieji Šančiai (I), Amaliai (I), Palemonas (I, G) and Kazliškiai (A);

• *Industrial and infrastructural districts*: Naujasodis, Veršvai (RL), Aleksotas (RL) and Freda (RL, G);

• *Green districts*: Kleboniškis, Vičiūnai, Lampėdžiai (RL) and Marvelė (RL, I);

• *Mixed districts*: Kalniečiai (RM and RL), Smėliai (RM and RL), Vilijampolė (RL and I), Linkuva (RL and G), Petrašiūnai (I and G) and Vaišvydava (RL and A).

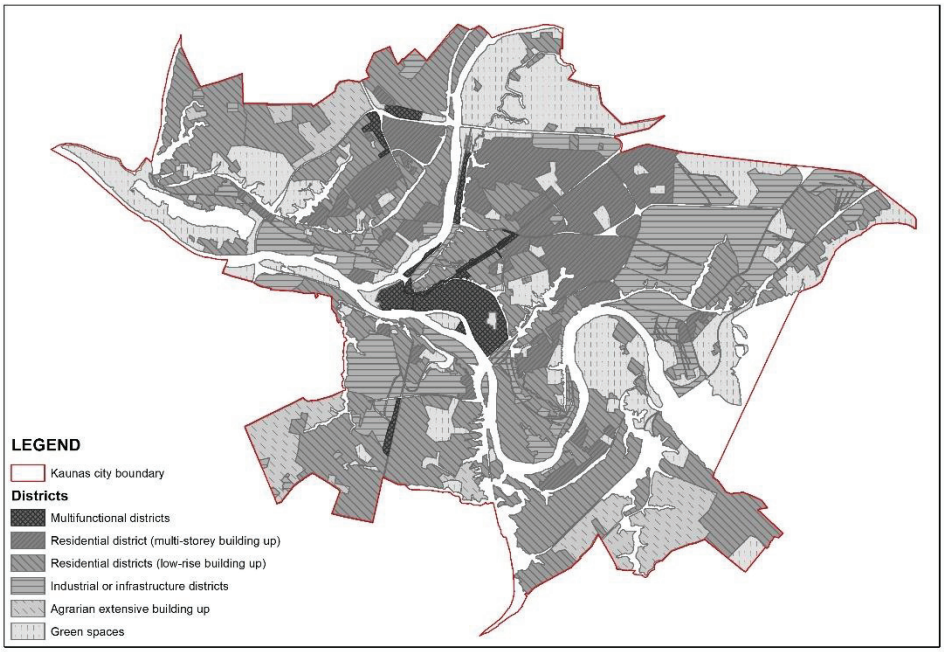


Fig. 3.12. *Districts* in Kaunas regarding building up. Scheme by the author

Table 3.7. Importance of districts with a different character of building up for elderships and neighbourhoods of Kaunas. Compiled by the author

No.	Neighbourhoods	Character of building up defined by certain functions					
		M	RM	RL	I	A	G
Centras		+++	-	-	-	-	+
1.1	Old Town	+++	-	-	-	-	+
1.2	New Town	+++	-	-	-	-	+
Žaliakalnis		+	++	+++	-	-	++
2.1	Žaliakalnis	+	+	+++	-	-	++
2.2	Kalniečiai	-	+++	+++	-	-	+
Gričiupis		-	+++	-	-	-	+
3.1	Gričiupis	-	+++	-	-	-	+
Šančiai		-	+	+++	+	-	+
4.1	Aukštieji Šančiai	-	++	+++	-	-	+
4.2	Žemieji Šančiai	-	-	+++	++	-	-
Aleksotas		-	-	++	++	+	++
5.1	Aleksotas	-	+	++	+++	-	+
5.2	Freda	-	+	++	+++	-	++
5.3	Marvelė	-	-	++	++	-	+++
5.4	Birutė	-	-	+++	-	+	+
5.5	Kazliškiai	+	-	+++	+	++	+

Continuation of Table 3.7.

Vilijampolė		-	+	++	++	-	+
6.1	Vilijampolė	-	++	++	++	-	+
6.2	Veršvai	-	-	++	+++	-	+
6.3	Panerys	-	+	+++	-	-	-
6.4	Lampėdžiai	-	+	++	+	-	+++
Eiguliai		+	++	+	+	-	+++
7.1	Eiguliai	+	+++	+	+	-	++
7.2	Kleboniškis	-	-	+	-	-	+++
Dainava		-	+++	-	+	-	+
8.	Dainava	-	+++	-	+	-	+
Petrašiūnai		-	-	++	+++	-	++
9.1	Petrašiūnai	-	+	+	+++	-	+++
9.2	Amaliai	-	-	+++	++	-	-
9.3	Naujasodis	-	-	-	+++	-	+
9.4	Palemonas	-	-	+++	++	-	++
Panemunė		-	+	+++	-	+	+
10.1	Panemunė	-	++	+++	-	-	+
10.2	Vičiūnai	-	-	+	-	-	+++
10.3	Rokai	-	-	+++	-	+	-
10.4	Vaišvydava	-	-	+++	-	+++	+
Šilainiai		-	+	++	-	+	+
11.1	Linkuva	-	-	++	-	++	++
11.2	Milikoniai	-	+++	+	-	-	-
11.3	Romainiai	-	-	+++	+	+	+
11.4	Sargėnai	+	+	+++	+	-	+
11.5	Smėliai	-	+++	+++	-	-	+

Note: M – multifunctional districts; **RM** – residential (multi-storey building up) districts; **RL** – residential (low-rise building up) districts; **I** – industrial and infrastructural districts; **A** – agrarian extensive building up districts; **G** – green zones

<u>*Nodes*</u> – these are the point elements, strategic centres. Nodes are usually distinguished with the sense of 'here-ness', and they perform the functions of the district centre (Thwaites & Simkins, 2007). Lynch (1960) claimed that there might be two types of them: the nodes where one structure is replaced by another, or centres of concentration that become more important as a result of a particular action or the concentration of a physical character. Meanwhile, the literature of the Experiential Landscape distinguishes three types: *places with high social imageability* (memorable locations), *places with strong potential for social interactions* (meetings), and *places providing restorative benefits* (relaxation and recreation).

When analysing the case of Kaunas City, the biggest centres of attraction of people are *open spaces (O)* – nodes of social interactions; *recreational areas (R)* – nodes for relaxation and restoration; *functional magnets (F)* – places which are attractive due to their specific function, and *places hosting events (E)* – attracting people in the form of various events (see *Fig. 3.13.*). They can be ranked due to their territorial influence.

• *First rank nodes*:

O – Rotušės Square, Vilniaus Pedestrian Street, Laisvės Avenue;

R – Santakos Park, Nemunas Island, Oak Grove, Lithuanian National Zoo, VDU Botanical Garden, Kleboniškis Forest, Panemunė Pinewood, Pažaislis Pinewood, Lampėdžiai Beach, Old Lampėdžiai Beach, Waterfront of Kaunas Lagoon;

F – LSMU Clinics;

E – Žalgiris Arena.

• *Second rank nodes:*

O – Courtyard of the Historical Presidential Palace, Garden of Kaunas State Musical Theater, Garden of Vytautas the Great War Museum, Nepriklausomybės Square, Vienybės Square, Aleksotas viewpoint, Milikoniai Hill viewpoint;

R – Aukštieji Šančiai Oak Grove, Kalniečiai Park and Panemunė Beach;

F – Aleksotas Market, *Urmas* Shopping Area, shopping centres *Akropolis* and *Mega*, Petrašiūnai and Seniava Cemeteries;

E – Daugirdas Amphitheatre (the Old Pier), Kaunas Castle Amphitheatre, Valley of Songs, Kaunas Sports Hall, S. Darius and S. Girėnas Stadium.

• *Third rank nodes:*

O – Municipality Square, Constituent Assembly Square, Fountain of the City;

R – Ramybė Park (the Old Cemetery), Draugystė Park, Neris Riverside Park;

F – Stotis (station) Market, Vilijampolė Market, Romainiai cemetery.

There are more nodes of the lower level, but their significance is only local.

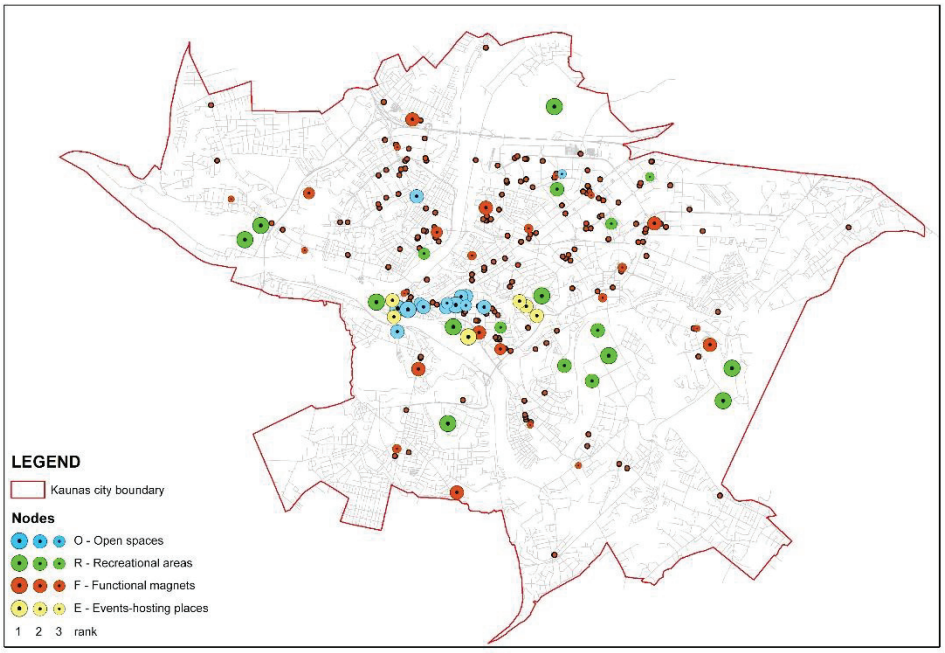


Fig. 3.13. *Nodes* urban element in Kaunas city. Scheme by the author

Landmarks are point objects as well, just the observer is not inside of them, but sees them from the outside. Landmarks can be classified by their significance into *main* – well visible from afar and from many places (buildings, monuments,

mountains, etc.) and *local* – visible only in a certain area, from a certain angle of observation (façades, trees and other urban details). They can also vary in function: *religious*, *public*, *commercial*, *business*, *residential*, *infrastructural* and *industrial* landmarks. Besides, landmarks can have either a positive or a negative visual impact.

Kaunas is a fairly large city – there is an infinite number of local landmarks, so only the main visual landmarks are distinguished in this research (see *Fig. 3.14*., and the full list of the distinguished landmarks is also presented in *Appendix 6*).

• *Main and most unique landmarks:* Christ's Resurrection Church, St. Francis Xavier Church and Jesuit Monastery, Kaunas Cathedral Basilica, Pažaislis Monastery and the Church of the Visitation, St. George the Martyr Church, St. Michael (Benedictine) Church, Church of Vytautas the Great (the Assumption of the Blessed Virgin Mary), St. Michael the Archangel's (the Garrison) Church, Kaunas Evangelical Lutheran Church, Holy Cross (Carmelite) Church, Kaunas Evangelical Reformed Church, Aleksotas St. Casimir Church, Kaunas Corpus Christi (Blessed Sacrament) Church, Kaunas City Hall, Kaunas Castle, House of Thunder, Kaunas Central Post Office, Fire Station (Palace of Firefighters), Palace of Aukštoji Freda Manor, Kaunas Ninth Fort Museum, Vytautas the Great War Museum, Kaunas State Musical Theatre, Žalgiris Arena, KTU *Slėnis* 8-storey building, shopping centre *Akropolis*, business centre *1000 litų*, office building *Sqveras*, business centre *Magnus*, 15-storey multi-functional complex *Žaliakalnio terasos*, complex of *Kaunas grūdai* Factory, Complex of *Pieno centras* buildings.

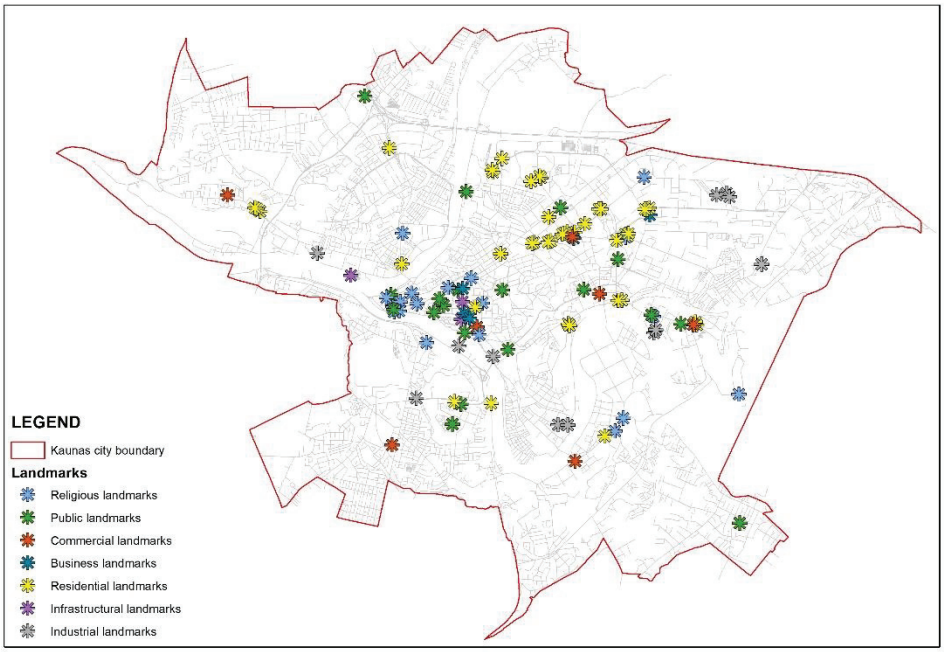


Fig. 3.14. *Landmarks* urban element in Kaunas City. Scheme by the author

As it can be seen, the main landmarks of Kaunas City are located in the central part of the city. Religious and public landmarks are predominant there. Meanwhile, moving further from the centre, not only the number of landmarks changes, but so does their type. Commercial or residential landmarks become more prominent in the cityscape. Yet, the research showed that their appearance is not so unique, and their significance is lower in comparison with the landmarks of the city centre.

The overall influence of the separate urban elements on the identity of Kaunas cityscape. The overlapping of all the separate urban elements reveals how their distribution creates different situations and forms the unique characters of the areas (see *Fig. 3.15.*). It shows where the concentration of separate elements is the most abundant, and which parts of the city might be lacking elements of visual interest or their variety.

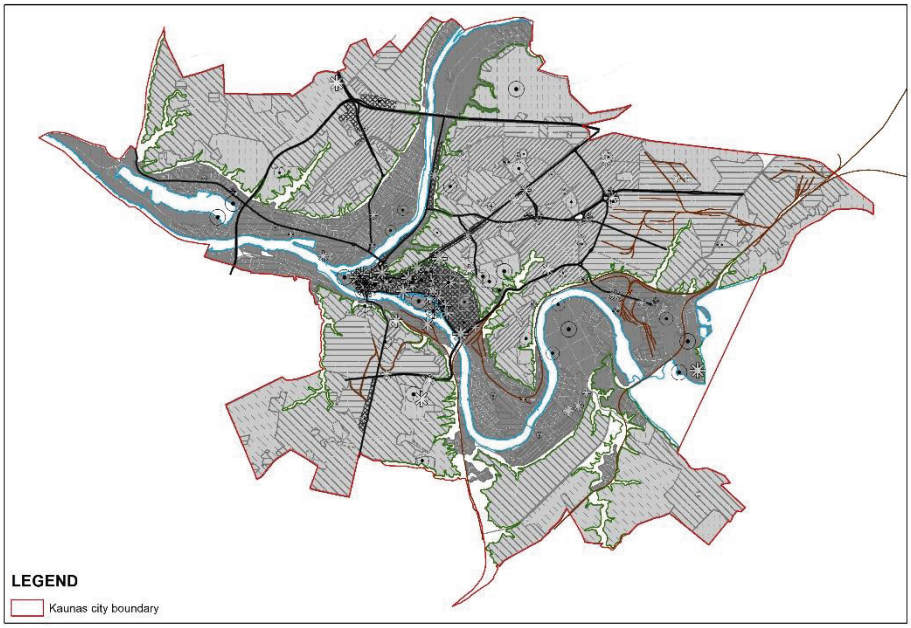


Fig. 3.15. Overlay of different urban elements in order to reveal their overall influence for the cityscape identity. Scheme by the author

Centras eldership. The main paths surround the eldership, thus making it possible to grasp at least some of its features from the outside (see *Fig. 3.16.*). Furthermore, the major pedestrian path of the city goes through the eldership thus assuring the perception of the inner part. The edges also create a feeling of visual containment inside the eldership. However, even though Karaliaus Mindaugo Avenue does not visually block the connection to the Nemunas River, the Island and the slopes of the other riverbank, the psychological disconnection still exists. The heavy-traffic street (in some sections, even 8-lane wide) destroys the integrity of the territory. Currently, attempts are being made to restore it by developing new links to Nemunas Island and functions/attraction centres on it (Science Island, Multifunctional Water

Sports Centre). As for the districts, the green spaces are those few rather monofunctional, larger areas existing in otherwise a fairly multifunctional eldership (residential, commercial, cultural and recreational functions intertwine here). Unsurprisingly, the central part of the city contains the highest number of nodes – the majority of them are open spaces (squares, avenues), then, functional, recreational and events-hosting places. The main landmarks of the eldership are public and religious buildings, then, commercial or business buildings, and, finally, industrial and/or infrastructural objects.

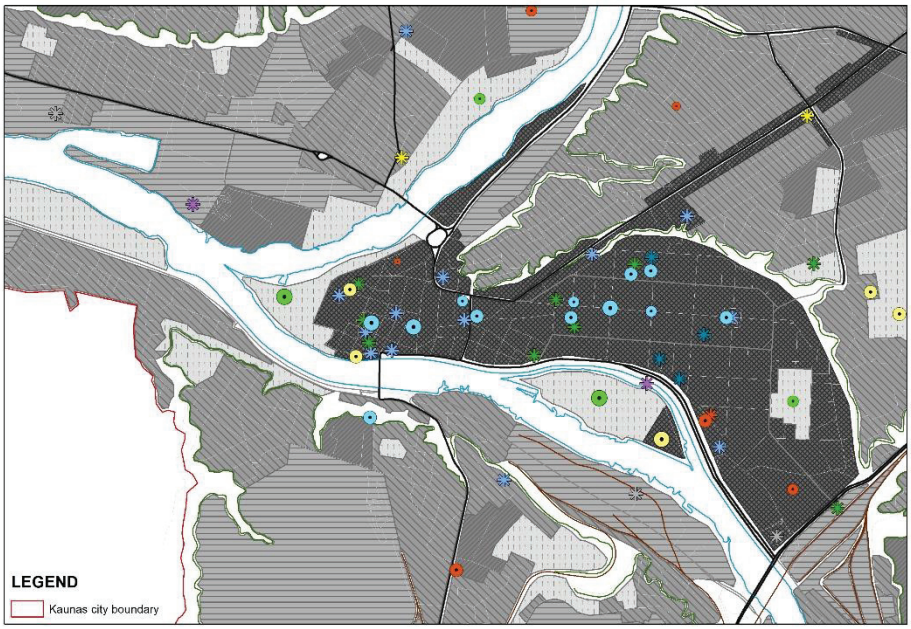


Fig. 3.16. Overlay of different urban elements. Fragment of the central part of the city. Scheme by the author

Žaliakalnis eldership. Here, the main paths not always ensure the integrity of the eldership. Most of them act like edges. However, if Jonavos St. or Tunelio St. form the outer boundary of the eldership, then, Savanorių Pr. divides the territory into the north-eastern and south-western parts. The north-eastern area is divided even more by Nuokalnės St., Tvirtovės Av. and Utenos St. thus forming three territorial units (Pėlėdų kalnas, Zanavykai and Kalniečiai). Meanwhile, Petrausko St., maybe not so explicitly, but still divides the southwestern part into two territorial units (the block of Aušros St. and Ąžuolynas (the Oak Grove)). Despite that, all of these parts are relatively seamless internally (they possess a similar visual character within). Thus, they can be defined as fairly sustained separate districts of the eldership. Functional and events-hosting nodes predominate here. Ąžuolynas (the Oak Grove) is also a strong recreational attraction centre in the eldership. There are not many landmarks which contrast with the environment and stand out from it. Though, the importance of the landmarks is not equal. Christ's Resurrection Church or Kaunas County Library

are significant landmarks of entire Kaunas City. Others are high-rise residential buildings (often of questionable quality) simply distinguishing themselves from the surroundings by their sheer height or volume.

Gričiupis eldership. The major paths (Taikos Pr. and Pramonės Pr.) go mainly along the administrative boundaries enclosing Gričiupis eldership, except for Baršausko St. which separates the so-called 6th Fort neighbourhood from the remaining part of the eldership. Still, the character of building up is similar in both parts – these are mainly free-standing multi-apartment buildings, among which, elements of the social infrastructure, such as schools and kindergartens, are intervened. The area was developed in the Soviet times, and, back then, it was the typical planning practice. The functionally different KTU campus is also not too distinct from the rest by its layout of building up. The most important nodes of the eldership are functional. As for the landmarks, despite several commercial or business facilities and one slightly more outstanding public building, multi-storey apartment buildings are the main visual accents here.

Šančiai eldership. The main path (Tunelio St.) goes along the northern administrative boundary of the eldership. The second street in terms of the traffic intensity is Juozapavičiaus Pr., but it falls into the category of moderate significance paths and is not perceived as the edge dividing the area. Still, inner edges exist. The railway line and the high slope are clear partitions between Žemieji Šančiai and Aukštieji Šančiai. Furthermore, these two parts are also not homogeneous internally. Žemieji Šančiai consists mainly of areas of low-rise individual residential houses concentrated in compact small plots. However, there are also some buildings of larger volumes, including the complex of the former military barracks along A. Juozapavičiaus Pr. as well as the industrial structures located in the south-eastern part of the eldership. Yet, if the buildings along A. Juozapavičiaus Pr. are rarely taller than 3-storey high, then the industrial structures are much larger both in terms of volume and height. Aukštieji Šančiai roughly consists of low-rise individual residential housing in the south and north, building up of multi-apartment and public facilities in the middle, and a green area in the eastern part. Apart from several commercial nodes of local significance, Aukštieji Šančiai Oak Grove (recreational) and Kaunas Railway Station (functional) are the main nodes (points of attraction) of the eldership. Kaunas Railway Station is one of the few more distinctive buildings in the eldership, and, therefore, it can be defined as its landmark. Other landmarks here are either typical high-rise residential buildings or industrial/infrastructural objects, such as chimneys of factories or *Pūkas TV* tower (particularly, by virtue of being lavishly decorated in winter).

Aleksotas eldership. The Nemunas River (with the Jiesia River) is the main edge separating Aleksotas from the rest of the city. Moreover, not only the slopes of the Nemunas River enclose Marvelė and Žemoji Freda as separate districts of the eldership, but also Veiveirių St. and Europos Pr. divide the rest of it into four more parts. The parts in the south of the eldership are homogeneous (and even monotonous). The low-rise suburban character of building up prevails, which is intermittently diluted with agrarian/underdeveloped/to be developed plots towards the outskirts of the city. Meanwhile, in the north of the eldership, large industrial or infrastructure

objects occupying vast territories intervene just next to the compact building up of low-rise homesteads. Nodes of attraction compared to other parts of the city are few here. These are basically objects of very specific functions, such as Aleksotas Market, Seniava Cemetery, or VDU Botanical Garden. The main streetscapes of Aleksotas (in the northern part) are mostly marked by industrial landmarks (less often by higher apartment buildings), while the existing public buildings are more blended into the general background. The southern part lacks any landmarks.

Vilijampolė eldership. Similarly to Aleksotas, the rivers and their slopes separate Vilijampolė eldership from the rest of the city. Lampėdžiai, Veršvai, Vilijampolė and Paneriai are the districts within the eldership defined either by the more intensive paths or by the peculiarity of their building up character. Lampėdžiai is distinguished with the coexistence of residential and recreational areas. In Veršvai, the industrial areas and low-rise individual housing are separated by Raudondvario Road. In Paneriai, the clear block of free-standing multi-apartment buildings is located next to the building up of low-rise individual housing. Whereas, in Vilijampolė, different functions (residential (individual and apartment buildings), industrial and recreational (green spaces)) are more mixed. The main nodes of attraction here are recreational (next to the water bodies) and functional (to specify – commercial). The main landmarks that stand out in the visual spaces of the eldership are residential buildings (9–12 storeys high). Structures of other functions (religious buildings, commercial entities or industrial/infrastructural objects) are less dominant in the surrounding.

Eiguliai eldership is commonly seen as an administrative unit. Some of the main paths (i.e., Jonavos St. and Savanorių Pr.) enclose the eldership. Still, the eldership is not an integral whole due to the high-intensity path (Islandijos Rd./Highway A1) crossing it. This path acts like the edge forming two separate districts of Kleboniškis and Eiguliai. Not only the highway but also the spatial character separate these two areas. Kleboniškis is dominated by green spaces, forest massifs with fragmented low-rise homestead building up. Whereas, excluding the industrial/infrastructural facilities located between Islandijos Rd. and Šiaurės Pr., Eiguliai is mainly characterised by the areas of multi-apartment buildings with open spaces purposefully planned for the residents' use. The latter open spaces (Kalniečiai Park, Čečėnijos Square or *Vitebskas* Market) are the main nodes of attraction in Eiguliai district. Meanwhile, the forest and the recreational opportunities it provides gravitate people to Kleboniškis district. The main landmarks of the eldership are 12–13-storey high residential buildings.

Dainava eldership. Savanorių Pr. and Taikos Pr. are the high-traffic paths serving as the edges of Dainava eldership. Meanwhile, Birželio 23-iosios St. and Pramonės Pr. are other intensive paths which divide the entity. Furthermore, Taikos Pr. also cuts off one more small area which the locals call the *Bermuda Triangle* due to its form (a triangle framed by three broad streets) and the complexity of the internal structure. Still, even though the eldership is divided into four parts, the character and the layout of building up are very similar in three of them (excluding the *Bermuda Triangle* where the layout of buildings is more unusual). The main nodes of attraction in Dainava are purposefully planned green spaces (Draugystė and Dainava parks) and commercial objects (such as *Savas* shopping centre). Despite the typical multistorey

(9–16-storey high) residential buildings and the multifunctional complex *Žaliakalnio terasos*, other landmarks of the eldership are public ones (Kaunas Church of the Good Shepherd, Church of Jesus Christ of Latter-day Saints, and clinic *Ortopedijos technika*).

Petrašiūnai eldership. The high-intensity paths Partizanų/Garažų St. – Taikos Pr. – Pramonės Pr. – Baršausko St. are the edges separating the eldership from the rest of the city. It is the largest eldership in Kaunas in terms of its area, and the territories it covers are very different both functionally and spatially. To begin with, the significant change of relief – a slope – divides the eldership into the upper northern part and the lower southern part (known as Petrašiūnai district) near the Nemunas River and Kaunas Lagoon. The northern part is further divided by Ateities Rd. separating Palemonas district. Then, Chemijos St., Technikos St., Biruliškių St. as well as the changes of the relief delimit Amaliai district from the remaining part which is known as Naujasodis. All of those districts are different in their character. Palemonas is a former village that grew into an urban-type residential area and was later connected to Kaunas. Here, the railway is the main axis, along which, both industrial and residential areas have been developed. Naujasodis is an entirely industrial district with a dense network of industrial railway tracks. Meanwhile, Amaliai is dominated by low-rise homesteads, as it is an area of former collective gardens. As for Petrašiūnai district (the southern part of the eldership), the industry dominates in the west, Pažaislis Pinewood (a massif of greenery) occupies the areas in the east, and a residential quarter is squeezed in the middle. Apart from the commercial areas in Naujasodis (including the shopping area *Urmas*), other nodes of attraction are located in the southern Petrašiūnai district, and they are either recreational (woods and waterfront) or functional areas (such as Pažaislis Cemetery). As the eldership is diverse, the landmarks in it are also denoted by their variety. The most outstanding landmark is the complex of Pažaislis Monastery, but there are two other churches (St. Vincent Pauline Church and Church of St. Mary the Queen of the Rosary) which are significant visual accents in their settings. Similarly, such local reference points are the former Cultural Centre of the Paper Factory and the former Pažaislis Municipal House. Meanwhile, due to its shape and the decorativeness of the façades, business centre *1000 litų* is an important landmark of the entire eldership. Other landmarks are either chimneys/other high-rise structures in the industrial areas, or multistorey apartment buildings in the residential areas of the eldership.

Panemunė eldership. In comparison with the entire city, the paths of the eldership are not of high-intensity (with Marijampolės Rd. being the most intensive). Therefore, the main edges are natural barriers. The Nemunas River encloses the eldership from the rest of the city, and significant changes in the relief split it internally. The lower part consists of Panemunė residential district and Vičiūnai district – a massif of Panemunė Pinewood with small fragments of single-family homes. The upper part is divided by the railway going to Vaišvydava and Rokai. Both of these are settlements with the predominance of low-rise individual houses, and they include agrarian areas within their boundaries. In the whole eldership, the main nodes of attraction are recreational – Panemunė Pinewood and beaches along the Nemunas River. The landmarks in the eldership are not very outstanding in the surroundings.

Still, Aukštoji Panemunė Church, Chapel of Virgin Mary Mother of Mercy of the Gate of Dawn, Vaišvydava Basic School and grocery store *Maxima* can be mentioned as the local accents of the eldership. Furthermore, the mural *Tires in the sky* on the 3-storey apartment house (Vaidoto St. 36) turns otherwise regular building into a referential point as well.

Šilainiai eldership. The main paths, i.e., the Western Bypass, Islandijos Rd., Automagistralės Rd. and Žemaičių Rd. serve like the edges and divide the eldership into four districts: Sargėnai, Milikoniai, Smėliai and Linkuva/Romainiai. In Sargėnai, the commercial area is located along Islandijos Rd. There are also some industrial zones, but the residential building up (mostly low-rise) is predominant in that part of the eldership. The residential function also dominates in Milikoniai, but, here, building up mainly consists of multistorey apartments developed in the Soviet times. Such a type of residential building up also occupies a part of Smėliai district. However, there are also green spaces, blocks of low-rise homesteads, and even a multifunctional area going along Žemaičių Rd. Whereas, the structure of Linkuva/Romainiai district is more similar to a rural than to an urban one. The low-rise individual housing areas are fragmented among the green and agrarian areas. In Šilainiai eldership, the main nodes of attraction are functional (e.g., the shopping mall *Mega*). The cityscape of Šilainiai eldership lacks outstanding landmarks. The one which could be important even for the entire city as marking the entrance to the city is Kaunas Ninth Fort Museum. Still, partly due to the surrounding landscaping, it visually blends more with the environment than stands out from it and can be easily missed by the observers passing by.

Research conclusions

1. Paths are important urban elements as they reveal where the people flow and from where the cityscape is perceived and understood most commonly. In the case of Kaunas City, the main paths either *lead to the heart of the city* (like Raudondvario Rd., Žemaičių Rd./ Linkuvos St./ Jurbarko St., Jonavos St., Savanorių Pr., Taikos Pr./Draugystės St., Karaliaus Mindaugo Pr., Garliavos Rd./ Veiverių St) or *surround it* (like the Western Bypass, Islandijos Rd., Pramonės Pr./ K. Baršausko St./ Tunelio St./M. K. Čiurlionio St., Europos Pr.). All the nearby areas visible from those paths are of great importance visually. Thus, the development of the areas and the protection of the current values there should be especially prudent.

2. Edges are urban elements which can define areas in the sense of the occurring barriers. The areas confined within the organically emerged edges make good neighbourhoods and ultimately good cities. Yet, if the edges emerge abruptly and break the former integral entity, they can be perceived negatively. In the case of Kaunas City, *water bodies*, *changes in terrain*, *railroads* and *axes of intensive motor traffic* define the main edges. If the first two are natural and the solutions of the urban development should be adapted to them, then, the latter two should be designed in the way of rather strengthening the existing urban nuclei than breaking them down. The unreasonably wide Karaliaus Mindaugo Pr. in the city centre is one example of the destructive edge.

3. Districts should be well-defined zones maintaining thematic integrity and the compatibility of functions because unclear zones with fragmented and incompatible

functions indicate an underdeveloped urban structure. In the case of Kaunas City, the districts are *multifunctional* (in the city centre), *residential with low-rise building up* (both historical suburbs and newly-developed areas in the city outskirts), *residential with multi-storey building up* (neighbourhoods developed in the Soviet times), *green* (city forests and other greenery arrays), *industrial* (areas of factories and large infrastructure), and *mixed* (bearing in mind not multifunctionality or interconnectivity, but rather the chunks of different types/functions just co-existing separately/independently in one area). Due to the monotony and monofunctionality of its structure, residential areas developed during the Soviet times have received a lot of criticism. However, the situation of the urban structure is even worse in the new residential areas on the outskirts of the city where the exclusively residential function is being developed, but the most basic infrastructure is not taken care of.

4. Nodes are stimulators of various activities and social interaction. Rational distribution of the nodes of different types promotes local vitality, and, at the same time, it strengthens the positive formation of the cityscape identity. In Kaunas City, the main nodes are *open spaces*, *events-hosting places*, *functional magnets* and *recreational areas*. The open spaces – nodes of *social interaction* – are mainly distributed in the central part of the city. The venues attracting people to *various events* are also located not too far from the centre. Meanwhile, the places that are attractive due to their *specific function* are scattered a little more widely in the city. Still, they are lacking in the newly developed areas on the outskirts of the city. As for recreation, despite a few green areas in the central part of the city, the larger places for *relaxation and restoration* are located in the periphery further away from the hustle and bustle of the city.

5. Landmarks can stand out for their unique appearance, dominance in the overall visual environment of the city. While keeping in mind the note by Bružas (2011) that human beings can perceive only a small part of the urban environment with its elements and that this part represents the whole city, landmarks become of great importance in terms of revealing and developing the visual character of the place. In the case of Kaunas City, *religious* and *public* landmarks are predominant in the central part. Further away from the centre, the number of landmarks decreases, and their type changes. *Commercial* and *residential* landmarks become more prominent. However, their appearance is not so unique, and their significance is lower in comparison with the landmarks of the city centre. Certainly, there are also *industrial* and *infrastructural* landmarks, but they mainly dominate in the usually isolated areas of the specific function, and just a few of them (e.g., *Kauno Grūdai* Mill) are more significant for the identity of Kaunas cityscape.

6. The assessment of Kaunas cityscape identity through the analysis of separate outstanding elements of the urban structure allows understanding *what kind/function/visual expression those elements perform*; *how they are distributed*; and *how that distribution creates unique situations* which either foster the positive identity of Kaunas cityscape or fail to do so. The concentric arrangement of separate elements is clearly visible in Kaunas City. The paths lead to the centre where various functions intertwine most closely, and where the highest density of nodes and landmarks is also observed. Further from the centre, the areas become more monofunctional,

homogeneous, sometimes chaotically fragmented, lacking centres of attraction and recognisable landmarks.

3.4. Systems of elements

Introduction

This section presents an analysis of systems of urban elements acting as the main formants of Kaunas cityscape identity. Systems of elements mean that certain groups of urban elements are analysed as a network. They can be systems of streets, plots, buildings, open spaces, green spaces, water bodies, etc. This type of analysis is fairly common in the urban practice. Thus, some calculations shall be carried out in our paper, and some summarised data from the research previously done on Kaunas shall be provided. In general, *this research aims* to analyse the systems of elements in Kaunas City in order to reveal some of the objective aspects of Kaunas cityscape identity.

The main tasks of this research are:

• to distinguish relevant systems of elements in Kaunas City;

• to overview the available previous research and analysis on those systems in Kaunas City;

• to systematise the available results by highlighting or calculating some of the attributes important for the cityscape identity;

• based on the totality of the collected results, to determine the possible influence of the elements' systems on the identity of the cityscape in Kaunas City.

Methodology

Comparative analysis of the currently available research, systematisation and generalisation of their results as well as the traditional analysis of urban morphology using the capabilities of *ArcGIS* software (such toolsets as *Spatial Analyst*, *Spatial Statistics*, *Network Analyst*, etc.) was done in this research.

The research started with the identification of the most relevant systems of elements. The planar structure (layout) of the systems of urban elements necessary for the analysis was distinguished based on the *National Georeferential Spatial Data Set – GDR10LT*. After distinguishing the systems, their characteristics were analysed. The attributes important for the cityscape identity were either calculated for separate elderships or overviewed from the existing research. Furthermore, while keeping in mind that systems of elements are used by people, the relation between the population and the particular system is important. For that reason, the *Location-Allocation* analysis was employed on the existing network of streets to reveal the accessibility of certain systems within the 1.5 km walkable distance from the residents' homes. The author used LR residents' census data of 2011 provided in the 100x100m grid by *HNITBaltic_Data on ArcGIS Online* platform.

Research results

Relevant systems of elements in Kaunas City

As mentioned above, the natural structure is an integral part of the urban structure. The natural structure includes the relief, water bodies, and vegetation. In a given urban situation, water bodies (excluding the artificial ones) or landforms are pre-determined conditions, to which, the developers of the city adapt more or less.

However, the system of green areas, although also historically taken over, is much easier to change. Therefore, the situation of the greenery system in the particular city usually depends not only on the 'will of nature', but also to a large extent on the attitude and needs of the 'city managers', the existing traditions of greenery formation, and on the functions of the city or its parts. While keeping in mind that Kaunas is situated on the confluence of the two biggest rivers in Lithuania, and that one of them is dammed near Kaunas thus forming the largest artificial lake of Lithuania Kaunas Lagoon, and, while also remembering that rivers are important symbols of the city's cultural text, it is necessary to assess the objective (quantitative) aspects of the *system of water bodies* for the identity of Kaunas cityscape. As for *relief*, Kaunas is located on a plain, and the height differences in the city would be small but for the valleys of the Nemunas and the Neris rivers dividing that plain. The slopes formed by the rivers are particularly important in the perception of visual spaces. Their role as the urban edges forming different districts was discussed in the previous section. *Greenery* also plays an important role in Kaunas, and it should be evaluated as not only parks but also recreational forests and ecosystem protection forests (landscape reserve territories) form the overall system of greenery in the city. In terms of the planar structure of cities, the *street network* is one of the most important urban elements. The characteristics of the street network are significant in terms of their functionality and the architectural-artistic point of view as they influence the peculiarity and individuality of the entire layout of the city. Last but not least is, *building up* should be considered.

Overview of available research and analysis of systems of elements in Kaunas City

System of water bodies. Kaunas hydrological network consists of rivers, creeks and artificial lakes. There are no natural lakes in Kaunas City. The density of the hydrological network in Kaunas is moderately dense, at 0.35 km/km^2 (*General Plan of Kaunas*, 2011). The most important river is the *Nemunas*. The length of the river within the city limits of Kaunas is about 25 km. Expressive loops formed by the riverbed frame separate districts of Kaunas City. The *Neris* is also an important water element. Its length within the city limits is 5.4 km, and the riverbed is relatively straight. Thus, the Neris is less integrated than the Nemunas within the whole city structure. The *Nevėžis* does not flow through the city, but merely borders its west side. Other bigger rivers/streams in Kaunas are the *Jiesia*, the *Veršvas*, the *Marvelė*, the *Gristupis*, the *Sąnaša*, the *Sėmena*, the *Amalė*. Besides, many artificial water bodies are present in Kaunas City. *Kaunas Lagoon* is the biggest artificial inner water body in Lithuania occupying an area of about 64 km^2, of which, 4.5 km^2 falls within the administrative boundaries of Kaunas City. *Lampėdis Lake* is also artificial; it was formed by excavating a gravel quarry. It occupies an area of 1.3 km^2. Other artificial water bodies in Kaunas are significantly smaller (various ponds, reservoirs of dammed small streams, etc.).

The densest network of water bodies is observed in *Vilijampolė* eldership (see *Table 3.8.* and *Fig. 3.17.*). It consists of segments of the Nemunas, the Neris and the Nevėžis rivers, Veršvas Creek, Lampėdis Lake and other small streams, canals or drainage ditches. *Petrašiūnai* features a fairly dense system of water bodies as well.

It consists of Kaunas Lagoon, the Nemunas River and the Amalė River as well as other minor water features. The hydrological network is also dense in the eldership of *Centras*, as the Nemunas, the Neris and the Girstupis rivers flow through the area. The system of water bodies is less dense in *Šančiai* because only the Nemunas River is very dominant here. The territory of *Panemunė* eldership is fairly large, and the distribution of the hydrological network in it is prominently uneven. This determines its relatively low total density, even though the area includes Kaunas Lagoon, the Nemunas and the Jiesia rivers, the Sėmena and the Garšvė creeks. A similar situation is observed in *Aleksotas* eldership, through which, the Nemunas and the Jiesia rivers, the Marvelė, the Sąnaša and the Vėžpievis creeks are flowing. *Eiguliai* has a low density of the hydrological network; the main elements here are the Neris River, and the small creeks the Žiobrikis and the Duburis in Kleboniškis forest. *Gričiupis* eldership is bordered by a short section of the Nemunas River, but the majority of sections of other creeks (the Gričiupis and the Girstupis) in the territory are canalised underground. The main water feature in *Žaliakalnis* is the Neris forming the edge of the eldership. *Šilainiai* eldership is also bordered by a short section of the Neris River. It also contains the Veršvas, the Saliai and the Plytupis creeks. The lowest hydrological density is observed in *Dainava* as, here, there are just a few nameless canals and drainage ditches.

Table 3.8. Densities of different systems of elements. The green colour indicates the top 3 values, whereas the red colour indicates the bottom 3 values. Calculated by the author based on data from *GDR10LT*

Eldership		Water Bodies		Green Spaces		Streets					Building up	
Name	S (km^2)	S (km^2)	D	S (km^2)	D	S (km^2)	D	L (km)	D(L) (km/km2)	W (m)	S (km^2)	D
Aleksotas	24.2661	1.2549	0.052	3.7741	0.156	1.5206	0.063	179.3394	0.007	8.5	1.8002	0.074
Centras	4.5793	0.5175	0.113	0.7500	0.164	0.5182	0.113	46.6450	0.010	11.1	0.9655	0.211
Dainava	5.26799	0.0051	0.001	0.5227	0.099	0.3724	0.071	38.3228	0.007	9.7	0.7204	0.137
Eiguliai	13.3666	0.5256	0.039	7.2619	0.543	0.6816	0.051	66.9784	0.005	10.2	0.6703	0.050
Gričiupis	3.8107	0.1295	0.034	0.5645	0.148	0.2937	0.077	36.8139	0.010	8.0	0.5411	0.142
Panemunė	24.7671	1.8669	0.075	7.5130	0.303	1.1321	0.046	133.5966	0.005	8.5	1.0118	0.041
Petrašiūnai	28.4535	4.5646	0.160	6.6264	0.233	1.2396	0.044	133.0140	0.005	9.3	2.5969	0.091
Šančiai	7.4037	0.7815	0.106	1.1444	0.155	0.5045	0.068	66.4760	0.009	7.6	1.0130	0.137
Šilainiai	23.3555	0.3640	0.016	5.1528	0.221	1.7638	0.076	206.9326	0.009	8.5	1.6456	0.070
Vilijampolė	14.3725	2.9685	0.207	2.3007	0.160	0.9246	0.064	99.9711	0.007	9.2	1.3264	0.092
Žaliakalnis	7.35040	0.2256	0.031	1.1549	0.157	0.7241	0.099	84.4375	0.011	8.6	1.2818	0.174

System of greenery. Kaunas network of green spaces consists of forests, parks, squares, green links as well as the greenery of cemetery areas or vegetation belonging to plots of other functions. The density of greenery is about 0.24 in Kaunas City. The biggest green massifs are parts of *Kleboniškis Forest* and *Davalgoniai Forest*, *Panemunė Pinewood*, *Pažaislis Pinewood*, *Lampėdžiai Forest Park*, *Oak Grove*, *Romainiai Oak Grove* and the *protective greenery of river slopes*.

The densest network of green spaces is observed in *Eiguliai* eldership (see *Table 3.8.* and *Fig. 3.17.*). The most important of them are Kleboniškis Forest (making up 80% of all the greenery in the area), Kalniečiai Park, Eiguliai (Kleboniškis) Cemetery and a few other green spaces. The density of greenery in *Panemunė* is high as well mainly due to Panemunė Pinewood, Panemunė Cemetery, protective areas of greenery and the abundance of greenery belonging to plots of other functions. *Petrašiūnai* is also denoted by many green areas, such as fragments of Davalgoniai Forest, Pažaislis Pinewood, Petrašiūnai Cemetery, Lakštingalų Park in Palemonas, etc. The density of green spaces in the eldership of *Šilainiai* is also high due to the existing reserves (Romainiai Oak Grove Botanical-zoological, Veršva Landscape and Milikoniai Mammalogical reserves), Romainiai Oak Grove, Romainiai Cemetery and other green plots. The elderships of *Centras* (with Santaka Park, Nemunas Island Park, Ramybė Park (Kaunas Old Cemetery) and the slopes greenery), *Vilijampolė* (with Lampėdis Forest Park, the Nemunas and the Nevėžis Confluence Park, Neris Waterfront Park, Vilijampolė Jewish Cemetery), *Žaliakalnis* (with Oak Grove, Vytautas Park and the protective greenery of the river slopes), *Aleksotas* (with Botanical Garden, Seniava Cemetery, and extensive plots of protective greenery), *Šančiai* (with Aukštieji Šančiai Oak Grove, Aukštieji Šančiai Military Cemetery, Šančiai Cemetery, the green banks of the Nemunas River and the greenery belonging to other plots) and *Gričiupis* (with the Zoological Garden, Žaliakalnis Jewish Cemetery, Kovo 11-osios Park, Gričiupis Park and other green plots) feature a very similar density of green areas. Draugystė Park, Dainava Park and green areas belonging mostly to educational facilities create the green structure of *Dainava* eldership. Yet, its density is the lowest in the city.

When looking at the whole city, the density of greenery is important, but it is not sufficient to understand the system. The configuration of the layout, the integrity in the overall fabric of the city and the connections between different parts are crucial as well. Those issues were to some extent addressed by Kamičaitytė-Virbašienė and Zaleckis (2014). They assessed the potential of the greenery system in Kaunas and concluded that, although the greenery system is well developed and compact (compared to the systems of streets, buildings or public spaces), it could be improved even further by increasing the system integrity and the diversity of its structural parts. They suggested implementing the model of the strip-wedge greenery system to Kaunas City, and, in such a way, to transform the separate-island type of greenery into an integrated network of greenery.

System of streets. The network of streets consists of the main streets, service streets and auxiliary streets. As separate elements, streets were partly discussed in the previous chapter by distinguishing paths along which people move in Kaunas City. Here, the focus is not on the individual elements (which may be more or less significant), but on the system which they all form together and on the features of this system. As for the system of streets, the density of the network in a given area can be calculated in two ways (D and D(L)). In the first case, the surface area (m^2, km^2 or other area units) occupied by the streets is divided by the total area of the analysed area. In the second strategy, the total length of the axes of the streets (m, km, or other arbitrary units of length) existing in the analysed territory is divided by the total area of that territory. Besides, having determined both the area occupied by the streets (S)

and their total length (L), the average width (W) can be calculated as well. The densities of the streets and the average widths of the streets calculated for different neighbourhoods of Kaunas City are displayed in *Table 3.8.*

In order to rank the elderships according to the density of their street network, both the density by the occupied area and the length are taken into account (the generic density – d=D*D(L)*1000; see *Fig. 3.17.*). Hereby, the densest network of streets is found in *Centras* eldership. This eldership is distinguished not only by the abundance of streets, but also by their average width which is the largest in the city. The widest streets are Karaliaus Mindaugo Pr., Savanorių Pr., Jonavos St., Birštono St., Gimnazijos St. Savanorių Pr., etc. Very close generic density (d) was calculated for the street network in *Žaliakalni*s. However, it consists of fewer wide streets (Savanorių Pr., Jonavos St., Tvirtovės Av., Utenos St., Sukilėlių Pr.) and many more narrow streets, which means that the total length of the streets is higher. In *Gričiupis* eldership, the density of the streets is also virtually the same as in the first two elderships, yet, narrower streets (K. Baršausko St., Kovo 11-osios St. as well as half-width of Taikos Pr. and Pramonės Pr. are the widest streets of the eldership); this results in a lower coverage of the area and in a much lower generic density. Slightly lower generic densities are found in *Šilainiai* and *Šančiai*. In the latter eldership, compared to *Šilainiai*, the streets are narrower, and the total network is longer. A. Juozapavičiaus Pr. is the widest street in *Šančiai*, meanwhile *Šilainiai*, together with its highways (Western Bypass and Islandijos Rd.) features other wide streets (Žemaičių Rd., Linkuvos Rd., Baltijos St. and Baltų Pr.). Then, by the generic density, *Dainava* eldership follows; it is also characterised by the network of wide main streets (Pramonės Pr., Savanorių Pr., Taikos Pr., V. Krėvės Pr., Kovo 11-osios St., Birželio 23-iosios St., etc.). In *Aleksotas* and *Vilijampolė*, the length density (D(L)) is almost the same as in *Dainava*, but the generic density (d) is lower due to the narrower streets. In *Aleksotas*, the widest streets are Veiverių St., Europos Pr. and Seniavos Rd., whereas, in *Vilijampolė*, a short segment of the Western Bypass, Raudondvario Rd. and Panerių St. can be found. The generic density of the three remaining elderships is fairly close to each other (*Eiguliai*, *Panemunė*, *Petrašiūnai* – in the descending order), but it is significantly lower compared to the other elderships in the sequence. This is caused by the fact that large areas of these elderships are occupied by natural objects, where the network of the streets is not/cannot be developed. In *Eiguliai*, as well as in *Dainava*, the streets forming the blocks are wide – Islandijos Rd., Jonavos St., Sukilėlių Pr., S. Žukausko St., P. Lukšio St. Whereas, in *Panemunė*, the streets are narrower, of which, Marijampolės Rd. is the widest one. Finally, in Petrašiūnai eldership, the large grid of the main streets dominates, and the network of smaller secondary streets is developed only in Amaliai neighbourhood. The widest streets of the eldership are Ateities Rd., Taikos Pr., T. Masiulio St. and R. Kalantos St.

Streets are vital to the city. They are the arteries of the city's body. By analysing the streets as a network structure and by calculating its different metrics, significant insights are gained not only for the development of the transport structure itself but also for the formation of the surrounding areas. Therefore, when preparing Kaunas City General Plan (2011), the complexity of the street network was calculated by using Fractal Analysis. The results revealed that the whole area of the city is easily

accessible, and the network of streets is fairly evenly distributed throughout the city. The lower fractal dimensions (indicating a lower complexity) were calculated where large natural areas (i.e., Lampėdžiai, Jiesia, Kleboniškis) or a single linear street structure (i.e., Aleksotas, Valley of the Neris River, Jonavos St.) dominate. The higher fractal dimensions were calculated not in the central part of the city but around it (i.e., in Žaliakalnis, Žemieji Šančiai). Even more in-depth analysis can be carried out by using the *Space Syntax* methodology. When examining the aspects of the method itself, spatial syntax calculations were also performed for the streets of Kaunas City (Zaleckis, 2013, 2018; Zaleckis & Matijošaitienė, 2013). Without expanding to a broader discussion of a multitude of metrics enabled by *Space Syntax*, the *intelligibility* dimension should be mentioned. This dimension reveals how a part of the network is related to the whole and is calculated as the correlation coefficient between the local and the global properties of the graph (Haq & Girotto, 2003; Hillier, 2007). In the case of Kaunas City, Zaleckis (2018) generated the intelligibility map by multiplying the values of the global and local integration of the street network, from which, the areas important for the legibility of the city can be grasped. Highlighted as having the highest values of intelligibility were Veiverių Rd., Savanorių Pr., Islandijos Rd., Partizanų St., Draugystės St./Taikos Pr./Tvirtovės Av./Varnių St., Raudondvario Rd., Žemaičių Rd., Kęstučio St. and some of their intersecting streets.

System of building up. The area covered by clearly identifiable buildings and structures (along with regular buildings including garages, greenhouses, tower-type structure, windmills, etc.) is used for the analysis of the system of building up.

The eldership of *Centras* is distinguished with the highest density of building up (see *Table 3.8.* and *Fig. 3.17.*), which is determined by the historically established compact perimetric (regular or based on possessions) layout. The dense building up is a characteristic of *Žaliakalnis* eldership as well. However, the morphotype here is different – it is also compact, but individual homesteads and city villas within plots of up to 10 ares are predominant. There are some large-volume structures as well. The density of building up in *Gričiupis* eldership is lower, but, here, areas of freestanding larger buildings (KTU Campus, zones of multi-apartment houses) intervene between the building up of individual houses. It is of special interest that the same density of building up is observed in *Dainava* and *Šančiai* as quite different morphotypes are predominant in these elderships. Freestanding multi-apartment houses with very small inclusions of individual dwellings or large-volume buildings are forming the building up in *Dainava*. Whereas, in *Šančiai*, oppositely, individual houses and large-volume buildings dominate versus freestanding multi-apartment houses. *Eiguliai* and *Panemunė* elderships feature the lowest density of building up because forests or parks occupy great parts of areas in both elderships. However, their morphotype of building up differs. In Eiguliai, freestanding multi-apartment houses predominate, while, in Panemunė, individual homesteads and city villas are mostly found.

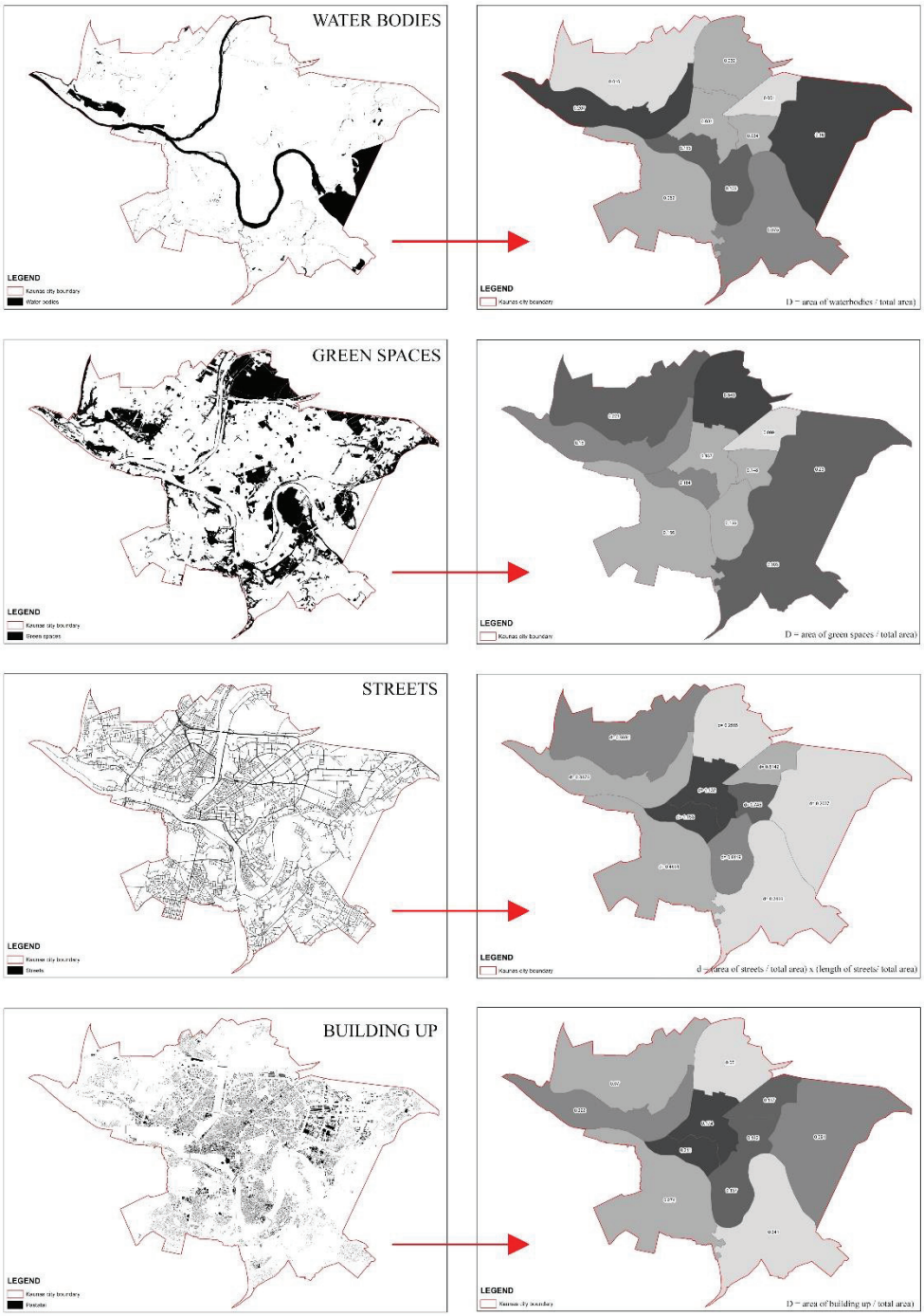


Fig. 3.17. Different systems of urban elements (water bodies, green spaces, streets and building up) and their densities calculated for different elderships. Schemes by the author

In Kaunas, just similarly to the systems of greenery or streets, the system of building up has been analysed by using Fractal Analysis (the *General Plan of Kaunas*, 2011). The obtained results revealed that the city is extensively urbanised, and the full potential of a well-functioning urban system has not been reached yet. The highest complexity values were calculated for the Old Town, the New Town, Žaliakalnis and Žemieji Šančiai. Furthermore, by comparing the values of a certain area with the values of its dominant morphotype, it was observed that the complexity could be increased without losing the characteristic and valuable features. The lower fractal dimensions were calculated for the areas suitable to develop the natural framework.

Access of population to the systems of elements

In order to grasp the identity of the cityscape through the prism of systems of elements, not only the configuration of them or their metrics are important, but also their position/location concerning their (potential) users. Therefore, the accessibility to the main water bodies, green areas and the open spaces of Kaunas was analysed. The main conditions were set as follows – the reach of the nearest element of the system from the residence place within walkable distance (1.5 km) by using the currently existing network of the streets. The *Location-Allocation* analysis from the *ArcGIS Network Analyst* toolset was carried out. LR residents' census data of 2011 provided in the 100x100m grid by *HNITBaltic_Data* on *ArcGIS Online* platform as well as the *National Georeferential Spatial Data Set – GDR10LT* were used.

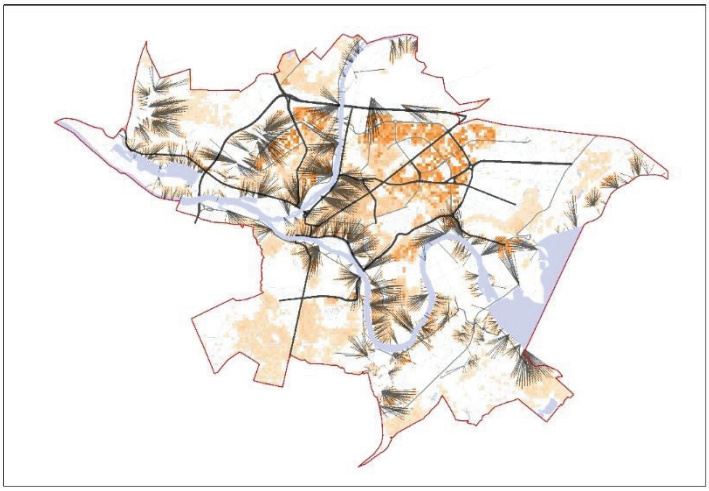


Fig. 3.18. Access to the water features (the beige colour scale indicates the density of population). Scheme by the author

For the *accessibility to water* analysis, the main water features (i.e., Kaunas Lagoon, Lampėdis Lake, the Nemunas River, the Neris River, the Jiesia River, the Veršvas Creek, the Sėmena Creek, the Žiobrikis Creek) were selected. The results (see *Fig. 3.18.*) show that water bodies are relatively easily accessible by walking from many residential areas of the city. Water is certainly a formant of Kaunas cityscape identity. *Dainava* and *Eiguliai* are elderships high in population but located

further away from the main water features. Thus, accessibility by walking is more difficult here. A different situation is observed in Aleksotas. Although the eldership is located along the river, the areas closest to the water are non-residential, or else direct access is not possible due to a sudden change of the terrain or other physical obstacles (e.g., the railway line).

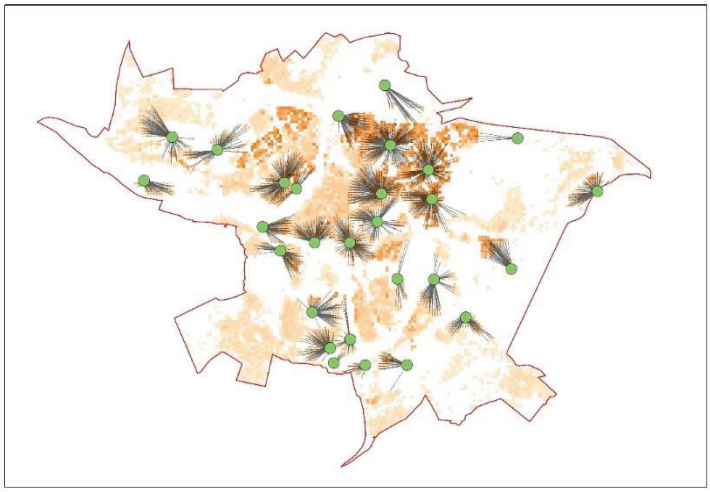


Fig. 3.19. Access to the green spaces (the beige colour scale indicates the density of population). Scheme by the author

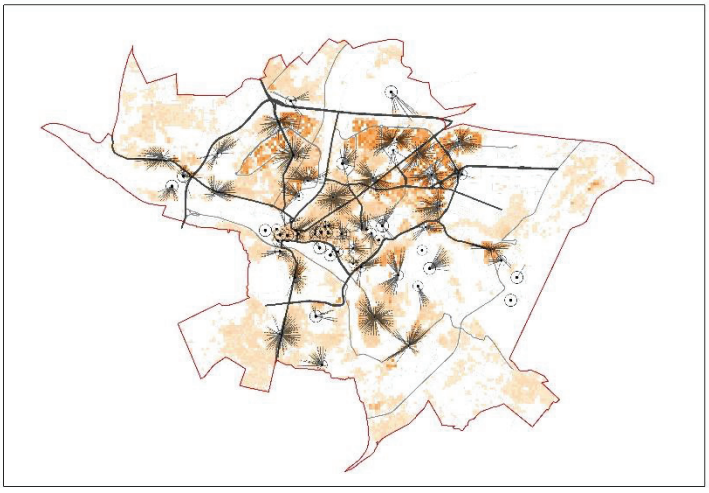


Fig. 3.20. Access to the nodes of interaction (the beige colour scale indicates the density of population). Scheme by the author

What concerns the *accessibility to greenery* analysis, the main parks and city forests of Kaunas City were selected. The results show (see *Fig. 3.19.*) that some Kaunas City residents do not have a possibility to walk to the established green spaces.

This indicates that even though greenery is an important formant of Kaunas cityscape, the system itself needs improvements. The green spaces need to be developed together with the development of building up in Šilainiai and in the southern part of Aleksotas. Meanwhile, in the northern part of Žaliakalnis and in Žemieji Šančiai, it is necessary to find the ways to introduce more greenery into the existing structure.

For the analysis of the *accessibility to public spaces*, the nodes distinguished in the previous chapter (see p. 110) were used. The results show (see *Fig. 3.20.*) that the existing network of the interaction places nearly covers the most populated areas. The nodes are mostly lacking in the outskirts of the city (i.e., Romainiai, Vijūkai, Giraitė, Kazliškiai, Birutė, Rokai, Vaišvydava, Amaliai, Palemonas), where, mainly, the residential function is being developed.

Conclusions

1. Assessment of systems of elements reveals how a certain group of elements forms a network, which, by itself and by its metrics, to some extent determines the cityscape identity. In Kaunas, the most important systems of elements for the perception and assessment of the identity of the cityscape are the systems of *water bodies*, the system of *green spaces*, the *network of streets*, and the system of *building up*.

2. Kaunas City hydrological network consists of rivers, creeks and artificial lakes. The Nemunas and the Neris rivers as well as Kaunas Lagoon are the main elements of the system of water bodies in the city. Logically, it would seem that the significance of water should be felt most prominently in the areas which involve water bodies or which are bordering with water bodies. However, in the case of Kaunas City, it was observed that if the residential function is located further away from water bodies or if the access is difficult, their significance as a formant of the entire cityscape identity decreases (e.g., Aleksotas, Žaliakalnis, Eiguliai, etc.).

3. Kaunas City network of green spaces consists of forests, parks, squares, green links as well as the greenery of cemetery areas or the vegetation belonging to plots of other functions. This network is one of the formants of the cityscape identity. The density, as well as the complexity, of the system of greenery is important for the preservation of the natural framework. Yet, access to the greenery is also an indicator of a high-quality living environment increasing the sense of the place as well. Thus, densely populated areas should be provided with such access. In Kaunas City, more green areas should be developed by the model of the strip-wedge greenery system in Šilainiai, Žemieji Šančiai, the southern part of Aleksotas and in the northern part of Žaliakalnis.

4. In Kaunas City, the network of streets consists of main streets, service streets, and auxiliary streets. Analysis of streets as a network provides insights not only for the development of the transport infrastructure itself but also for the formation of the surrounding areas while taking into account the cityscape identity as well. In Kaunas City, the most complex and dense network of streets is found in the central part of the city. The lowest density and complexity is in the areas dominated by the abundance of greenery (i.e., Eiguliai – Kleboniškis Forest, Panemunė – Panemunė Pinewood). Here, the development of a denser street network is not possible and is not intended.

Still, in some areas of the city, the street network is underdeveloped, and, in order to reach the full potential, the street network should be improved (e.g., in Aleksotas).

5. In Kaunas City, the system of building up consists of clearly identifiable buildings and structures (along with the regular buildings including garages, greenhouses, tower-type structures, windmills, etc.). The densest and the highest complexity building up is in the central part of Kaunas. However, when looking at the whole city, building up is not developed enough to create a well-functioning urban system. It could be compacted. The most chaotic situation is observed in the outskirts of the city.

3.5. Overall structure

Introduction

This section focuses on the overall structure of Kaunas cityscape which is mainly perceived by the panoramic and streetscape views. In our opinion, the following dimensions define the overall structure: *diversity (variety/richness)*, *harmony (comfort/order)*, *complexity*, and *interest*. As it was discussed in *Section 2.1.*, there are many ways how to assess these dimensions. The methods of *Aesthetic-Informational-Emotional Patterns* (Klinger & Salingaros, 2000; Salingaros, 2006) and *Fractal Analysis* were distinguished as the most suitable to reveal all the four dimensions of the overall structure most thoroughly. However, we decided to focus only on the *complexity* dimension within the scope of the case study in Kaunas City as the main important one. Although some authors (Ode *et al*., 2008) explain landscape complexity as the diversity and richness, our position regarding this issue coincides with that of Bučas (2001) – i.e., that diversity can be an indicator of complexity, but they are not the same.

This *research aimed* to find out if Fractal Analysis could be used as a method to reveal the differences of complexity in the panoramic and streetscape views taken from the zones with the different semantic load.

The main tasks of the research were:

• to designate zones of the urban environment with a different semantic load (the results of the previously done research on the Meaning of the place in Kaunas City (see *Subsection 3.2.*) were used for the establishment of these zones);

• to calculate the fractal indexes of panoramic and streetscape views of different zones of Kaunas City;

• to compare these two approaches in order to reveal a possible correlation.

Methodology

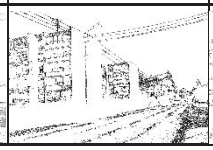
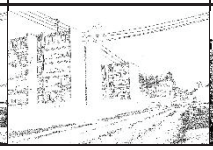
Computer Science and Mathematics are advancing rapidly; the achievements and innovations of these fields are being more and more commonly applied in interdisciplinary research (including the field of urban planning). That is what happened with the Fractal Theory as well. The objects which display features of fractals were noticed in nature a long time ago, and ancient cultures used these patterns quite frequently for decoration. Still, even though the principles of such patterns were understood, and mathematicians had even described them by the end of the 19th century, this phenomenon for a while was being considered pathological and not applicable. Therefore, it was not being analysed more thoroughly. This position

changed in 1977 when Mandelbrot observed that the patterns he called 'fractals' actually are very similar to the forms of nature. At the same time, while Mandelbrot was working on his *set* and *fractal dimension*, another mathematician, Barnsley, was analysing and comparing images of nature and patterns created by living organisms. Undoubtedly, these pioneering studies had nothing in common with the urban design and planning yet, but the finding of similarities between natural and man-made objects eventually led to the application of the Fractal Theory in urban processes. In his paper *A New Theory of Urban Design*, Robertson (1995) wrote that urban planners and designers tend to rationalise the existing situation as much as possible and to create "simplicity from complexity." However, according to Robertson, it is not the solution as the simplicity of the effect does not guarantee the simplicity of the cause. The alternative could be the implementation of the concepts of *deterministic chaos*, *complexity* and *fractals* in the processes of urban design. In this way, *fractal geometry* could be the potential tool to describe or even to simulate such a complex structure as an urban form, especially due to the fact that the fractal structure is characteristic to the city as well. All the cities, as well as natural structures, feature certain irregularity and chaos. Like the fractal, the city is characterised by an abundance of scales and self-similarity in different scales. Urban structures or their parts, as well as a fractal, no matter how thick they become, cannot completely fill the allocated space (which is the porosity feature). Taking into account the above mentioned underlying characteristics, it is noticeable (particularly after the significant work *Fractal Cities* by Batty and Longley (1994)) that, more and more commonly, architects and urban planners choose this method for their research on the urban structure. Several studies have been done in which the *fractal method* was employed in the analysis of the planar structure of the city for different purposes: to compare the *morphology of urban patterns* (Frankhauser, 2004), to analyse the *potential of the urban fabric* (Zaleckis & Kamičaitytė-Virbašienė, 2011); to apply fractal analysis in the *urban patterns design* (Jevrić *et al.*, 2014), to assess and suggest the improvements for the *environmental quality* (Wang *et al.*, 2011) and so on. Moreover, the *fractal method* is used not only for planar analysis, but for the *analysis of streetscapes or panoramic views* as well. Such studies usually aim to reveal the correlation between the preference of the environment (the visual landscape perception) and the certain values of the *fractal dimension* of that environment. There was a study done by Hagerhall, Purcell, and Taylor (2004) exploring possibilities if the *fractal dimension* could be a predictor of the *landscape preference*, and the results of the analysis confirmed a significant relationship. Fractal analyses were also used for the assessment of the *street skylines character* (Cooper, 2003), the *urban character* (Cooper, 2005), the *visual variety* and the *cityscape complexity* (Cooper & Oskrochi, 2008), etc. Certainly, planners should not be tempted into implementing *Fractal Analysis* at random because this method does not always provide the desired outcomes. For example, Stamps (2002) analysed if equal values of the *fractal dimensions* of buildings and their surrounding landscape influence observers in the preference of the entirety of the skyline. Although, the results of the research were opposite as the most preferred skylines were without the fractal structure, and the contextual fractal fit was not found to be a significant factor in the preference. Anyway, the *Fractal Theory* could be used as a tool for the analysis

of the qualitative characteristics. Therefore, we hypothetically state that establishing fractal dimensions of different identity zones in Kaunas City could be helpful for the further development of the cityscape identity, especially in the zones where the formants of identity are lacking.

Fractal Analysis System software was used in this research. It is software created at the *Incorporated Administrative Agency National Agriculture and Food Research Organisation* in Japan. The *box-counting* method was employed to calculate the fractal dimensions of panoramic and streetscape images taken from the zones of Kaunas City with a different load of the meaning of the place (the selection of the photo fixation points was based on the results of the initial stage, and it will be described more in detail in the following sections). However, pre-processing of the images was done before starting calculations so that to find out how certain modifications might influence the final result. Original digital colour images (*.bmp format files, 1772x1178 pixel size) were modified in five different ways by using raster graphics editor *Adobe Photoshop* or the *Fractal Analysis System* (see *Table 3.9.*). Thus, five fractal dimensions (D1, D2, D3, D4 and D5) were calculated for each image.

Table 3.9. Pre-processing of original digital colour images. Compiled by the author

D1	**D2**	**D3**	**D4**	**D5**
				
1 step. Procedure in Adobe Photoshop				
Nothing	Filter > Stylise > Trace contour *> Unsaturation > Elimination of any traces in the sky	Same as D2 + Converting from grey scale to black and white	Same as D3	Nothing
2 step. Procedure in Fractal Analysis System				
Image processing > To grey scale > Fractal Dimension of Grey Scale	Thinning** > Fractal Dimension of Black	Fractal Dimension of Black	Thinning** > Fractal Dimension of Black	Image processing > Extract green*** > Reverse> Fractal dimension of Black
Intervals of possible values of Fractal Dimensions				
2< **D1**<3	1<**D2**<2	1<**D3**<2	1<**D4**<2	1<**D5**<2
* Trace contour was done by using the mean value (by level 128); **Thinning is used to be 1-pixel thickness when analysing the wave image; *** Mean value of the threshold (0) was used				

Later on, the calculated fractal dimensions of panoramic and streetscape views were compared to each other. The key factors which mostly determined certain values of fractal dimensions were revealed. Then, the differences between images from various Kaunas City semantic zones were distinguished and interpreted. Moreover, the fractal dimensions obtained in this research were compared with the results of previous analysis, i.e., the fractal indexes of Kaunas urban sub-structures: buildings and greenery (Zaleckis & Kamičaitytė-Virbašienė, 2011). Finally, general insights

were gained about the correlation between the zones of the urban environment with a different semantic load and the fractal dimensions of their panoramic and streetscape views.

Research results

Kaunas City zones with a different semantic load

As it was mentioned above, the results of the research on the Meaning of the Place in Kaunas City were used to designate the zones of the different semantic load. Having determined the distribution of the cultural text symbols (see *Fig. 3.7.* p. *95*) and the density of the Meaning of the Place in different elderships of Kaunas City (see *Fig. 3.8.,* p. *101*), it is clear that the *Old Town* and the *New Town* (see *Fig. 3.21.* marked in green) are the zones with the highest density of cultural text symbols. The second rank of the zones with a lower semantic load could be defined as the historic suburbs: *Žaliakalnis*, *Žemieji Šančiai*, a part of Gričiupis – which surround the historic centre of Kaunas City (see *Fig. 3.21.*, marked in yellow). The third rank of the zones with a very low semantic load is the residential areas developed in the Soviet times, the eastern industrial district, and the newly developed single-family housing areas on the city outskirts (see *Fig. 3.21.*, marked in red).

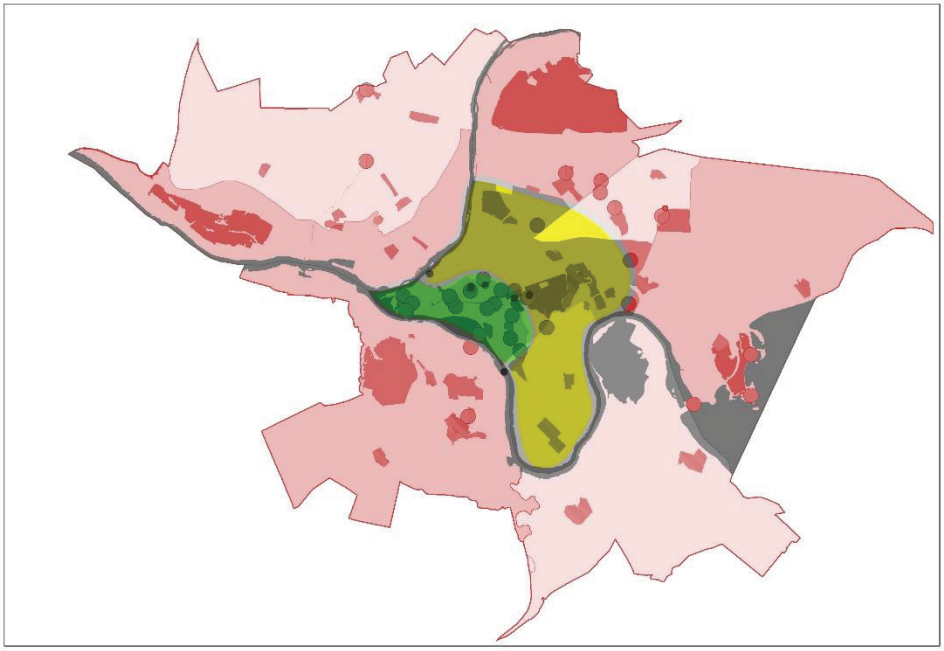


Fig. 3.21. Ranking of Kaunas City zones with a different semantic load (the first rank – the green colour, the second rank – the yellow colour, the third rank – the red colour). Scheme by the author

Selection of particular areas for Fractal Analysis

The next stage, after having distinguished the zones with the different semantic load, was the photo fixation of these zones. As the research was rather a pilot

experiment than actually an in-depth study conducted by using an already tested and validated methodology, the points of photo fixation did not cover all the territory fully and were not evenly distributed. Only the most typical and specific images were captured. It was taken into account how often the residents of Kaunas City see and experience these views in their everyday life.

The *Central part* of Kaunas City (the districts of the *Old Town* and the *New Town*) is located in the Nemunas River valley and is surrounded by its slopes. For this reason, the panoramic views of these districts are very well perceived. Moreover, there are a few well-equipped viewpoints, which also offer amazing vistas of the city centre. Therefore, the panoramic views of the *Old Town* and the *New Town* are particularly significant in the perception and modelling of the identity of Kaunas cityscape. The streetscape views of these districts are as important as the panoramic views. Due to that, both of them were analysed in this research by counting their fractal dimension. Meanwhile, the *historic suburbs* (*Žaliakalnis*, *Žemieji Šančiai*) virtually always are experienced from the human eye level. It is quite difficult to find the spots opening into panoramic views of these districts; hence, we decided that the assessment of the panoramic views of the historic *suburbs* would not be included in the current research. Only the evaluation of streetscape views shall be done for this aspect. A similar situation is observed in the *newly developed single-family housing areas* on the city outskirts (the districts of *Vaišvydava*, *Rokai*, *Birutė*, *Kazliškiai*, *Romainiai*, *Linkuva*, and *Sargėnai*), so, again, only the views from the human eye level shall be analysed. The decision not to evaluate the panoramic views of some areas is open to discussion, and this gap should be filled in the future studies. The situation is slightly different in the *residential areas developed in the Soviet times* (the districts of *Dainava*, *Eiguliai*, *Kalniečiai*, *Šilainiai* and *Aukštieji Šančiai*). Although natural conditions (the relatively plain relief) do not provide any possibility to see slightly wider horizons of these districts, either, yet there are some multi-storey (9, 12, 13 or even 16-storey) buildings, which changes the situation. The residents of these multi-storey buildings quite often see far-reaching vistas. Thus, both panoramic and streetscape views shall be evaluated here. Finally, one zone, the *eastern industrial district*, was excluded from the assessment. It is a very specific and a clearly monofunctional district, which, with no doubt, possesses a very strong and recognisable character and identity of the industrial area; however, the regular dwellers, and, the more so, the guests of Kaunas City hardly ever visit this place. Therefore, this concentrated industrial district shall be left outside of the frame of the research.

Fractal analysis of panoramic views

Fractal analysis of panoramic views in the *Old Town* revealed that the highest level of the fractal dimension (D1=2.4100) was calculated in the images where trees were captured in the foreground or where green spaces were visible in the vista (e.g., the views with Santaka Park). And, vice versa, the images where a lack of vegetation was observed and only buildings dominated, as well as the images where a major part of the view was occupied by the Nemunas River stood out with the lowest fractal dimension (D1=2.3124).

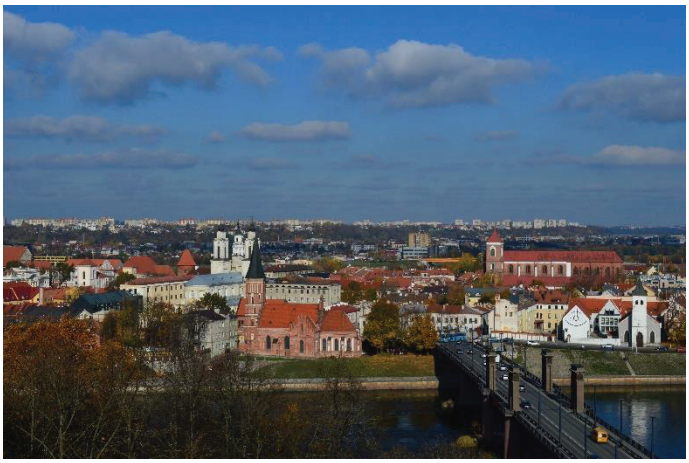


Fig. 3.22. Typical panoramic view of the *Old Town* area (D1=2.3331; D1average=2.3464). Here and further, *D1* is the fractal dimension of the certain view captured in the photo above; *D1average* is the average value of the fractal dimensions in a certain district. Photo by the author

The most typical panoramic view of the *Old Town* district (see *Fig. 3.22.*) distinguishes with the towers of the churches, a bit of greenery, and some of the Nemunas River surface is visible as well. The most typical view here is defined as the one whose fractal dimension is the closest to the average value of the fractal dimensions in this district.

Fig. 3.23. Typical panoramic view of the *New Town* area (D1=2.2412; D1average=2.2566). Photo by the author

The fractal dimensions calculated in the *New Town* were slightly lower in comparison with the *Old Town* district. It could happen due to the narrower vision angle, the shallower depth of the visual scenes, the simpler architecture of the buildings and the smaller quantities of the greenery in the foreground. The results could also be influenced by the weather conditions as it was a relatively foggy day. The lowest values of the fractal dimensions (D1=2.2328) in the district of the *New*

Town were obtained where extensive building up types dominate and where arrays of greenery occupy considerably large areas in the background because they merge into solid zones, and the simplicity of these zones significantly decreases the value of the fractal dimension. The highest values of the district (D1=2.3579) were calculated for the images where repetitive typical buildings are more abundant and where individual trees fragmentarily emerge from the urban fabric in the foreground. The most common panoramic view of the *New Town* district (see *Fig. 3.23.*) displays mixed building up (both unique and typical architectural objects) with unevenly distributed green areas.

The assessment of the panoramic views of *Untypical spaces in the City Centre* was made as well during the stages of photo fixation and fractal analysis. Karaliaus Mindaugo Pr. and the Nemunas River embankment are the most discordant and alien open spaces in the general context of Kaunas City centre (see *Fig. 3.24.*). As it is a hypertrophied space, it is not surprising that the fractal dimension of the panoramic view of this zone is significantly lower than in any other analysed area.

Fig. 3.24. *Untypical Spaces in the City Centre* (D1=2.1953; D1average=2.1920). Photo by the author

Quite unpredictable results of the fractal analysis were obtained in *Dainava* district which is one of the residential areas developed in the Soviet times. The fractal dimension was the highest here compared with the results of all the other analysed districts (see *Fig. 3.25.*). An especially high index level (D1=2.4320) was obtained for the images where the typical Soviet time apartments were abundant and richly planted yards were captured in the foreground. The lowest fractal dimension (D1=2.2837) was registered in the images where open spaces of wide streets were captured (e.g., V. Krėvės Pr.).

Fig. 3.25. Typical panoramic view of the *Dainava* district (D1=2.3719; D1average=2.3713). Photo by the author

As mentioned above, each image was pre-processed in five different ways. Therefore, there are five values of the fractal dimension for each of the images. The average values of fractal dimensions calculated for the panoramic views within different districts are shown in *Table 3.10.*

Table 3.10. Average values and ranking positions of the fractal dimension of panoramic views in different areas. Compiled by the author

Fractal analysis of panoramic views													
	D1|r1		**D2|r2**		**D3|r3**		**D4|r4**		**D5|r5**		**P**	**R**
First Rank													
City Centre (Old Town)	2.3464	2	1.3851	2	1.6628	2	1.6320	2	1.8359	1	1.8	**2**
City Centre (New Town)	2.2566	3	1.3046	3	1.5618	3	1.5303	3	1.7706	3	3	**3**
City Centre (Untypical spaces in City Centre)	2.1920	4	1.2138	4	1.5043	4	1.4736	4	1.7398	4	4	**4**
Second Rank													
Historic suburbs	not assessed												
Third Rank													
Residential areas developed in the Soviet times (Dainava)	2.3713	1	1.3865	1	1.7147	1	1.6820	1	1.8323	2	1.2	**1**
Single-family housing areas	not assessed												
Eastern industrial district	not assessed												
The green colour marks the maximum values. The red colour marks the minimum values. **D** – the average value of the Fractal dimension in a certain area; **r** – the ranking position of a certain Fractal Dimension; **P** – the average value of the ranking position (P=(r1+r2+r3+r4+r5)/5); **R** – the general ranking position													

Based on the obtained results, it was determined that the values of fractal dimensions D1–D4 perfectly correlate with one another, except for fractal dimension D5. This can be explained by the fact that the images for the four initial dimensions were modified in different ways, but all of them actually allow us analysing the complexity of the entire image, while the situation with the final dimension is slightly different. Fractal dimension D5 was calculated by extracting the green colour, and then, the derived black and white image was reversed. It means that just the areas without the green colour were measured instead of the complexity of the whole image. Thus, the higher the fractal Dimension D5 is, the lower is the complexity of the green colour it contains.

To sum up this section, the results of the fractal analysis of panoramic views showed that the calculated values of the fractal dimensions vary among the zones of a different urban identity (see *Table 3.10.*) depending on certain key factors. Firstly, *Dainava* district is denoted by the highest fractal dimension due to its fairly regular building up and the abundant vegetation. The second position is taken by the *Old Town* district because here there is slightly less vegetation, but the historical architecture increases the complexity of the panoramic view. The *New Town* takes an even lower place because it lacks greenery, and the architecture of the buildings is simpler. Finally, the lowest fractal dimension is calculated for the *Untypical spaces in the city centre* where empty open spaces dominate. It should be noted that the higher fractal dimensions of the panoramic views are determined by rich landscaping, further-reaching visibility, more heterogenic, various or consistently repetitive architecture, and, *vice versa*, the zones with poor landscaping, plainer architecture, or empty open spaces are distinguished with much lower fractal dimensions.

Fractal analysis of streetscape views

The fractal dimensions of the streetscape views calculated in the *Old Town* area showed that the images where the old stone pavement and decorative façades with abundant ornamental details and fine partition were captured, as well as the images containing deciduous trees, are distinguished by the highest fractal dimension (D1=2.4542). The lowest fractal dimension (D1=2.3069) was calculated for the views where building façades were plainer and more monotonous; the pavement was also very smooth and simple; no trees were captured. The characteristics of the most typical streetscape view of the *Old Town* district (see *Fig. 3.26.*) are quite decorative building façades, stone pavement, and the lack of greenery.

During the fractal analysis in the *New Town* area, the highest fractal indexes (D1=2.4929) were calculated for the images where at least two lines of trees are visible along the street. The dense partition of the façades and the regular pattern of the pavement are also important factors in raising the value of the fractal dimension. The views of the *New Town* where the landscaping is lacking, or where the greenery has not reached its maturity yet, and the views where the open spaces are dominant, are conversely distinguished by the lowest fractal dimensions (D1=2.2886). Since the *New Town* is much more landscaped than the *Old Town* (usually by the alleys of the trees), the predominant streetscape view here would be a pedestrian street lined with deciduous trees on the one side and the perimetric building up on the other side (see

Fig. 3.27.). The partition of the façades is quite regular, still, it is rhythmic enough so that not to become monotonous.

Fig. 3.26. Typical streetscape view in the *Old Town* area (D1=2.3691; D1average=2.3736). Photo by the author

Fig. 3.27. Typical streetscape view in the *New Town* area (D1=2.4401; D1average=2.4301). Photo by the author

Especially low fractal dimensions were calculated for all the images taken in the *Untypical Spaces of City Centre* (see *Fig. 3.28.*). The key factors which have caused such low fractal dimensions are the unusually wide 8-lane Karaliaus Mindaugo Pr., the massive industrial buildings with plain façades along the street, and the lack of simple street landscaping.

Fig. 3.28. *Untypical streetscape view in the City Centre* (D1=2.1953; D1 average=2.2891). Photo by the author

Fig. 3.29. Typical streetscape view in *Žemieji Šančiai*. (D1=2.3771; D1average=2.3879). Photo by the author

During the assessment of the streetscape views in the historical suburbs in the district of *Žemieji Šančiai*, the highest fractal dimensions (D1=2.4594) were derived from the images where the narrow streets lined with trees and low-rise buildings with wooden façades along these streets were caught in the pictures. Meanwhile, the lowest fractal dimension (D1=2.2802) was calculated for the images where the wider streets with poor landscaping (such transit corridors as Juozapavičiaus Pr.) are seen, or the residential plots are isolated from the street with high plain fences. The analysis revealed that the most typical view of the street in the *Žemieji Šančiai* area (see *Fig. 3.29.*) would display an alley with narrow pavements which is directly adjoined with the wooden façades of one or two-storey dwelling houses. There is no greenery along the street, but some trees belonging to the residential plots are visible. Distant perspectives are not perceived in this district as the streets are usually not straight but curvy here.

Fig. 3.30. Typical streetscape view in *Dainava* area (D1=2.3660; D1average=2.3842). Photo by the author

A very similar (to that of *Žemieji Šančiai* district) average value of the fractal dimension was calculated for the *Dainava* area. Interestingly, this area certainly has a different character from *Žemieji Šančiai* historical suburb. As *Dainava* is one of the Soviet times-developed residential districts, the predominant morphological type of building up consists of apartment houses designed by typical projects. The highest value of the fractal dimension (D1=2.4612) was computed for the views of narrow streets bordering parks or other green spaces. There are multi-storey apartment buildings seen in these views as well, though, the fractal dimension is mainly increased by the deciduous trees in the foreground. Whereas, the lowest fractal dimensions (D1=2.3069) were calculated for the images where a sizable part of the view is occupied by a wide street, and a distant setback causes an exposition of a broad open space (e.g., the roundabout intersection in Taikos Pr.). Such areas are very extensive and look more like urban barrens than the regular urban fabric. The most common streetscape view in *Dainava* district (see *Fig. 3.30.*) would be a wide street with a green median strip and some landscaping. The typical façades with the regular partition of multi-storey apartment houses shape the space of the common street.

Aukštieji Šančiai is another residential area of Kaunas City designed and developed in the Soviet times. However, despite the multi-storey apartment buildings, there are many low-rise individual houses here as well. As the morphological urban structure is slightly different here in comparison with *Dainava*, the streetscape views of these two districts also differ from each other. The highest fractal dimension (D1=2.4310) was determined in the areas where the view of the street was the most chaotic: bushes were growing along the street, and, in general, the plots were overcrowded with greenery, a lot of different objects were visible (such as bus stops, power poles, various kiosks and containers), and the arrangement of the dwelling houses was quite scattered. The lowest values of the fractal dimension (D1=2.668) were calculated for the image shots in the major streets (such as Breslaujos St.). The buildings of a large volume dominate in these streetscape views. The representative image of the *Aukštieji Šančiai* area (see *Fig. 3.31.*) is a relatively narrow, low traffic

street, commonly without pavements. Low-rise residential houses are lined up along it, and multi-storey apartment houses can be seen in the distance.

Fig. 3.31. Typical streetscape view in *Aukštieji Šančiai* (D1=2.3449; D1average=2.3461). Photo by the author

Fig. 3.32. Typical streetscape view in *Rokai* district (D1=2.3057; D1average=2.3057). Photo by the author

Rokai represents recently developed residential areas in Kaunas City outskirts. The fractal dimensions calculated here were low. Particularly low results (D1=2.2445) were obtained from the images where a relatively narrow street was captured, but distant grassed front setbacks were left to the 2-storey detached dwelling houses which were almost identical to each other. As neither trees nor bushes were growing along the street, there is a feeling of a vast empty open space. To the contrary, the highest fractal dimension (D1=2.4067) was that of the images where the distance of the front setback was shorter and higher (2–3 storeys), and the residential houses with more various and more decorative façades were located closer to the street. The prevalent streetscape view of *Rokai* (see *Fig. 3.32.*) displays more diversity in the architectural

form of the dwelling houses which are slightly set back from the not-too-wide street without pavements. The sparse landscaping of residential plots is visible as well.

Table 3.11. Average values and ranking positions of the fractal dimension of streetscape views in different areas. Compiled by the author

Fractal analysis of Streetscape Views												
	D1|r1		**D2|r2**		**D3|r3**		**D4|r4**		**D5|r5**		**P**	**R**
First Rank												
City Centre (Old Town)	2.3736	4	1.3445	5	1.6006	6	1.5627	6	1.8549	2	4.6	**5**
City Centre (New Town)	2.4301	1	1.4767	1	1.6309	4	1.5915	4	1.8812	1	2.2	**1**
City Centre (Untypical spaces in City Centre)	2.2851	7	1.2699	7	1.5303	7	1.4906	7	1.7824	7	7	**7**
Second Rank												
Historic suburbs (Žemieji Šančiai)	2.3879	2	1.3852	3	1.6660	1	1.6240	1	1.8272	5	2.4	**2**
Third Rank												
Residential areas developed in the Soviet times (Dainava)	2.3842	3	1.3981	2	1.6658	2	1.6213	2	1.8263	6	2.6	**3**
Residential areas developed in the Soviet times (Aukštieji Šančiai)	2.3461	5	1.3762	4	1.6494	3	1.6091	3	1.8307	4	3.8	**4**
Single-family housing areas (Rokai)	2.3057	6	1.2863	6	1.6180	5	1.5765	5	1.8342	3	5	**6**
Eastern industrial district	not assessed											

The green colour marks the maximum values. The red colour marks the minimum values.
D – the average value of the Fractal dimension in a certain area; **r** – the ranking position of a certain Fractal Dimension; **P** – the average value of the ranking position (P=(r1+r2+r3+r4+r5)/5); **R** – the general ranking position

A comparison of the results from the different zones of Kaunas City (see *Table 3.11.*) shows that the streetscape views of the *New Town* district feature the highest fractal dimension. Such a high position is definitely determined by the predominant linear landscaping along the majority of the district's streets, and, due to that, the greenery is visible in any streetscape view within the area. The historical suburb *Žemieji Šančiai* is not far behind the *New Town* in terms of the average value of its fractal dimensions. The key factors of that high level of the fractal dimension are the small urban scale of the territory, a relatively high amount of vegetation, and the prevalent buildings with wooden façades which create certain textures or patterns, and, in this way, they enhance the decorativeness and the complexity of the view. It is definitely unexpected that the streetscape views of the residential districts developed in the Soviet times (specifically, *Dainava* and *Aukštieji Šančiai*) follow the *New Town* and *Žemieji Šančiai* by the calculated average values of the fractal dimensions. As mentioned above, the urban morphotype is very different from the historical suburbs here. The free planning (unconstrained to the street grid) building up of the multi-storey apartment houses is predominant, and, due to that, there are plenty of open spaces between the single buildings. Since these spaces are rich in

vegetation (trees, bushes, grass, etc.), the fractal dimension is significantly increased. The streetscape views in *Dainava* district have higher values of the fractal dimension than the views in *Aukštieji Šančiai* because the territories of the latter district lack greenery. Due to a significant lack of vegetation, the streetscape views of the *Old Town* obtain the rank which is only the fifth by the average value of the calculated fractal dimension. Actually, only the very decorative historical architecture as well as other heterogeneous surfaces (such as the stone pavement) and the narrow streets allow keeping up with the three top positions with a (still) relatively high level of the fractal dimension. Meanwhile, the recently developed residential district *Rokai* occupies an even lower position because of the particularly extensive low-rise building up. Finally, the last place is taken by the hypertrophied spaces of the *New Town* (the streetscape view of Karaliaus Mindaugo Pr.) which is untypical for the urban structure of the whole Kaunas City and especially for the central part of the city.

Having considered all the obtained results, the general patterns of the certain value of the fractal dimensions of streetscape views are noticeable. Firstly, higher fractal dimensions are calculated from the images where the greenery (especially, the deciduous trees) is in the foreground of the streetscape view. Secondly, the smaller partition of planes, the more detailed decorative surfaces (such as façades, pavement, fences, etc.) and the larger variety of them increase the value of the fractal dimension. Moreover, the width of the streets is significant as well. The narrower a street is, the higher fractal dimension is calculated and *vice versa*. Therefore, the lowest values of fractal dimensions are determined for big open spaces, monotonous and homogenous surfaces – plain façades, high fences, big scale or smooth pavements and the lack of greenery. Finally, all these general findings lead to the notion that the fractal dimension of streetscape views allows revealing the zones with a different urban character and with a different identity as well.

Comparison of the analysis of panoramic and streetscape views

When comparing the results of the fractal analysis of panoramic and streetscape views against each other, it was determined that the obtained values of panoramic and streetscape views do not always correlate between themselves (see *Table 3.12.*, columns *3* and *5*).

Mismatches occur because some formants of the urban structure which are visible in panoramic views are not perceived in streetscape views and *vice versa*. For example, *Dainava* district is very rich in vegetation, but the majority of it is found in the inner yards of the blocks, and it is thus not so visible in the streetscape views. Another example could be the *Old Town* situation. With Santaka Park being visible in the panoramic views, it increases the value of the fractal dimension, but it essentially has no influence on the streetscape views in the whole *Old Town* district. Anyway, based on the assumption that the 'common' residents of the city observe the urban environment from the human eye level, the streetscape views could be considered as more significant. Under these conditions, it can be stated that the *New Town* district provides the most complex and heterogenic views (see *Table 3.12.*). It is mostly because of the local district's streets lined with deciduous trees which evoke the sense of nature all the time. Mosaic views of historical suburbs (*Žemieji Šančiai*) follow the *New Town*, however, here, the complexity is determined not only by the

quantity of the greenery but also by the variety of the architectural forms of building up. Naturally, the views of these areas can also give an impression of chaos. The third position is taken by one of the residential areas developed in the Soviet times (*Dainava*) where the values of the fractal dimensions of both panoramic and streetscape views are increased due to the plentiful landscaping and the repetitive uniform partition of the façades of apartment houses. The *Old Town* follows the typical residential areas as its decorative architecture and Santaka Park influence the higher fractal dimensions. Recently developed extensive residential districts (*Rokai*) are found to take second lowest position in the general ranking list. Finally, the last position is occupied by the *Untypical spaces of the City Centre* (both panoramic and streetscape).

Table 3.12. Average values and ranges of D1 (Grey scale image) fractal dimension in different areas. Compiled by the author

Analysed territories	Panoramic views		Streetscape views		Key factors and their influence on the value of fractal dimension
	D1	R	D1	R	
1	*2*	*3*	*4*	*5*	*6*
First Rank					
City Centre (Old Town)	2.3464 (2.3124-2.4100)	2	2.3736 (2.3069-2.4542)	4	+ decorative architecture + the majority of the space is quite narrow, open spaces have good proportions - lack of greenery
City Centre (New Town)	2.2566 (2.2328-2.3579)	3	2.4301 (2.2886-2.4929	1	+ rhythmic and regular pattern of façades + open spaces are of rational size + greenery along the majority of the streets
City Centre (Untypical spaces in New Town)	2.1920 (2.1407-2.2311)	4	2.2851 (2.2647-2.3063)	7	- broad-sized buildings (Žalgiris Arena, Akropolis) - hypertrophied open spaces - greenery is not very rich
Second Rank					
Historic suburbs (Žemieji Šančiai)	not assessed		2.3879 (2.2802-2.4594)	2	+ small pattern of façades + narrow streets + rich and evenly distributed vegetation
Third Rank					
Residential areas developed in the Soviet times (Dainava)	2.3713 (2.2837-2.4320)	1	2,3842 (2,3069-2,4612)	3	+ repetitive partition of façades - wide streets, big open spaces + very abundant landscaping
Residential areas developed in the Soviet times (Aukštieji Šančiai)	not assessed		2.3461 (2.2668-2.4310)	5	- smaller buildings, simpler architecture +/- there are both wide and very open spaces as well as quite narrow and closed spaces + rich vegetation
Single-family housing areas (Rokai)	not assessed		2.3057 (2.2445-2.4067)	6	- monotonous architecture - especially extensive building up - lack of vegetation (mostly just internal plots of landscaping)

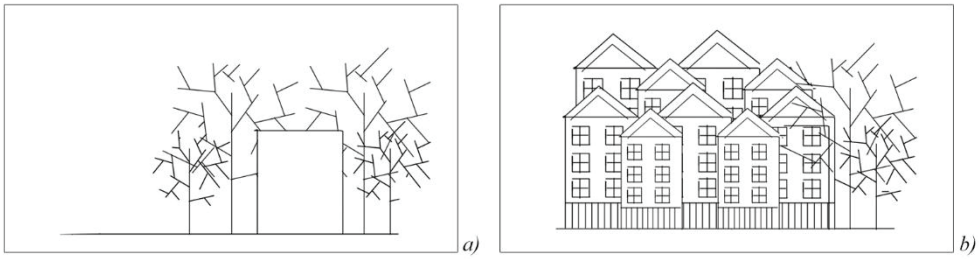


Fig. 3.33. Graphical models of two different views with the same fractal dimension (D=1.1132). Schemes by the author

When comparing the results of the Fractal Analysis of different views, it is noticeable that different values of the fractal dimension can be calculated for the zones with the same semantic load (see *Table 3.12.*). The reasons why it is so are the various factors of the urban environment or, in other words, the formants of the city urban structure and its urban identity. Researchers could very roughly distinguish three types of urban structure formants which seem to have the highest influence here. They are *buildings*, *spaces*, and *greenery*. Fractal dimensions vary depending on the shape and size of these formants and on their position in relation to each other. In the course of Fractal Analysis of the planar structure of the city, it is possible to single out these formants, to extract them from the whole urban structure and to calculate the fractal dimensions for each of them individually. Such a type of research shall be discussed later. However, during the Fractal Analysis of panoramic or streetscape views, the separation of formants would be quite difficult and hardly expedient. It means that all the three factors and their characteristics determine the value of the fractal dimension of a certain view. With such multifactorial influence, it might be that the same or very close fractal dimension shall be calculated for two views even if the urban morphotype is quite different here. For example, there is a streetscape view where greenery dominates, but its building up is not dense, and the architecture is quite plain (see *Fig. 3.33a.*). However, the calculated fractal dimension of this view is equal to the fractal dimension of a view where the landscaping is quite poor, but building up is more intense, and the architectural expression is rich (see *Fig. 3.33b.*).

Therefore, when taken alone, one or another calculated value of the fractal dimension does not allow coming to the final conclusions without comparing these results with the analysed views. Definitely, a higher value of the fractal dimension means a higher complexity of the view, but only the comparison of the obtained values with the certain panoramic or streetscape views reveals the significance of each of the three formants of the urban structure, their features as well as their influence on the identity of the cityscape. Based on the previously expressed consideration, the influence of the key factors (architecture, spaces, and greenery) on the value of the fractal dimension was determined to each of the analysed territories (see *Table 3.12.*, column *6*). These key factors explain why different fractal dimensions were calculated for territories with the same rank of the semantic load. It confirms the dependence of the fractal dimension on the character of the identity formants of the city.

To sum up, the calculated results showed that the obtained values of the panoramic and streetscape views correlate to one another if all the key factors (the

formants of the urban structure) are visible in both panoramic and streetscape views. The character of the cityscape identity formants also influences certain values of the fractal dimension. However, these conclusions should still be treated with considerable caution because the assessment of panoramic views was not done for all the analysed zones.

Comparison of the results of the fractal analysis with other researches

During the analysis of the planar structure of the city, it is possible to extract separate formants of the urban structure (*buildings*, *spaces*, and *greenery*) from the whole and to calculate the fractal dimensions for each of them individually. Such a research for Kaunas City was done by Zaleckis and Kamičaitytė-Virbašienė (2011), and the results are summarised in *Table 3.13.*

Table 3.13. Results of the fractal analysis of the planar structure of Kaunas City. Data from the research by Zaleckis and Kamičaitytė-Virbašienė **(2011)**

Analysed territories	Fractal dimensions			
	Buildings		Greenery	
1	*2*		*3*	
City Centre (Old Town)	1.501	**2**	1.498	**3**
City Centre (New Town)	1.567	**1**	1.494	**4**
Historic suburbs	1.334–1.539	**3**	1.442–1.695	**1**
Residential areas developed in the Soviet times	1.449–1.521	**5**	1.326–1.424	**5**
Single-family housing areas	1.040–1.479	**6**	1.084–1.637	**6**
Eastern industrial district	1.516	**4**	1.569	**2**
The green colour marks the maximum values. The red colour marks the minimum values				

In that research, the calculated fractal indexes showed that in the *Old Town* and the *New Town*, buildings possess a higher complexity level than the greenery. Thus, the presence of the built environment may be more obvious and more keenly felt than the greenery in most places of that zone and, therefore, it may be understood as more important to the identity of the cityscape of that zone. In *historic suburbs*, oppositely, the greenery plays a more important role when forming the identity of the zone (except for *Žemieji Šančiai*). In the remaining areas, the ratio of the fractal dimensions of buildings and greenery shows that, when approaching the outskirts of the city, the greenery forms more complex patterns and plays a more important role in the formation of the cityscape identity.

The results from the fractal analysis of panoramic and streetscape views in zones carrying different semantic loads were compared with the results from the fractal analysis of the buildings and greenery in the same zones. This comparison showed that the majority of the highest fractal dimensions were calculated for the *New Town* during different analysis (of the views and planar structure). Only the fractal dimension of the greenery was lower here. The lowest fractal dimensions were also derived for the *recently developed single-family housing areas* during both types of research, and there were some minor differences between the intermediate values. These differences could occur because it is not possible to perceive the overall urban structure completely via the streetscape or panoramic views. Only some fragments of the whole system are visible. Moreover, such green areas as meadows, grass fields or

lawns, which can play a relatively important role in the planar structure, are much less significant in streetscape or panoramic views (they actually decrease the fractal dimension). Therefore, the greenery did not dominate in the analysis of panoramic and streetscape views of the *Old Town* district. The architectural expression and decoration of façades was much more significant than the greenery here. In general, the comparison shows that different methods can reveal different aspects of the urban structure, and, still, if the highest values of fractal dimension are calculated for the same zone in different ways, it means that this zone has the highest complexity and variety of both the planar structure and the spatial structure and *vice versa*.

Research conclusions

1. The fractal dimensions calculated for different districts of Kaunas City revealed that districts with a different character have different values of the fractal dimension. However, a higher fractal dimension not always meant a higher semantic load. Yet, it clearly represented the nature of the formants of the city identity.

2. The greenery plays a very significant role in increasing the fractal dimension. The environment which is rich in vegetation is more similar to the natural environment and, thus, it is more appreciated and preferred by observers than the one without it. However, the abundance of greenery hides the character of the man-created urban structure. Thus, if there is no vegetation in the view, there is a possibility to evaluate the character and the architectural expression of buildings themselves and the spaces around them. In such a case, low fractal dimensions indicate monotonous buildings with plain façades, smooth pavements, fences or other surfaces and vast open empty spaces. *Vice versa*, the high value shows a variety of buildings with decorative façades, strongly textured pavements, filigree fences and narrow or very fragmented spaces.

3. These findings should still be treated with considerable caution as it was noticed that there are differences in the fractal dimensions of the views depending on the weather conditions, the lighting angle, the view depth, or the season of the year. In the ideal case, all of these above outlined conditions should be the same for the assessment; however, it is hard to achieve in the real world.

4. The results of the comparison of this research with another research where the planar urban structure was analysed by using fractal analysis showed that different methods could reveal different aspects of the urban structure.

5. All in all, the research confirmed that fractal analysis can be one of the tools for the quantitative assessment of the cityscape identity, and that the fractal analysis of different views and scales (e.g., analysis of streetscape views, analysis of panoramic views, analysis of the planar structure, etc.) should be combined in order to reach the most precise and most comprehensive results.

4. GUIDELINES FOR URBAN DEVELOPMENT CONSIDERING CITYSCAPE IDENTITY

4.1. From assessment towards modelling

We have already defined the *modelling of the cityscape identity* as the act of representing the existing identity of the cityscape in order to foresee the most appropriate directions of development. This modelling could also be useful to pre-evaluate the consequences of the selected development strategies on the future cityscape identity. Yet, this section shall focus on the first aspect – the development of the proposals fostering the cityscape identity.

Comparison of the quantitative results sourced from the research of different concepts of the cityscape identity revealed that the *residents' sense of the place* has a strong positive correlation with the experts' assessment of the *meaning of the place* (see *Table 4.1.*). It indicates that the residents of Kaunas City understand the contextuality of the environment fairly well and that they tend to develop a stronger sense of belonging to the places of cultural and historical significance. At the same time, it also implies that those valuable areas meet the needs of the population quite well. The residents' *sense of the place* also showed a moderate positive correlation with the *density of building up* and the *density of the street network*. If the density of the structure of these systems could be equated with the maturity of the urban structure, this would mean that the more developed urban structures better meet the needs of the population, and, therefore, this leads to a stronger sense of the place. The *Meaning of the place* had an even stronger correlation with the *density of the street network* and the *density of building up*. This also allows the assumption that a more concentrated urban structure also carries a greater semantic load.

Table 4.1. Pearson's correlation coefficients of quantitative data sets of different concepts of the cityscape identity. Compiled by the author

	Sense of the place	**Meaning of the place**	**Density of water bodies**	**Density of greenery**	**Density of street network**	**Density of building up**
Sense of the place		0.79	0.30	-0.32	0.53	0.55
Meaning of the place	0.79		0.12	-0.23	0.76	0.79

The general insight would be that the areas of stronger contextual significance and with a more mature level of the development of the urban structure are more likely to promote a stronger and positive sense of the place. Still, we should analyse a specific situation of how the representation of the existing cityscape identity of a certain area allows foreseeing the most appropriate directions for further development.

In order to find out which development directions would be the most suitable for Kaunas City, it is necessary to take into account both the individual concepts of the cityscape identity and their interrelations, as well as the general evolution trends of the city and its parts (i.e., the population change).

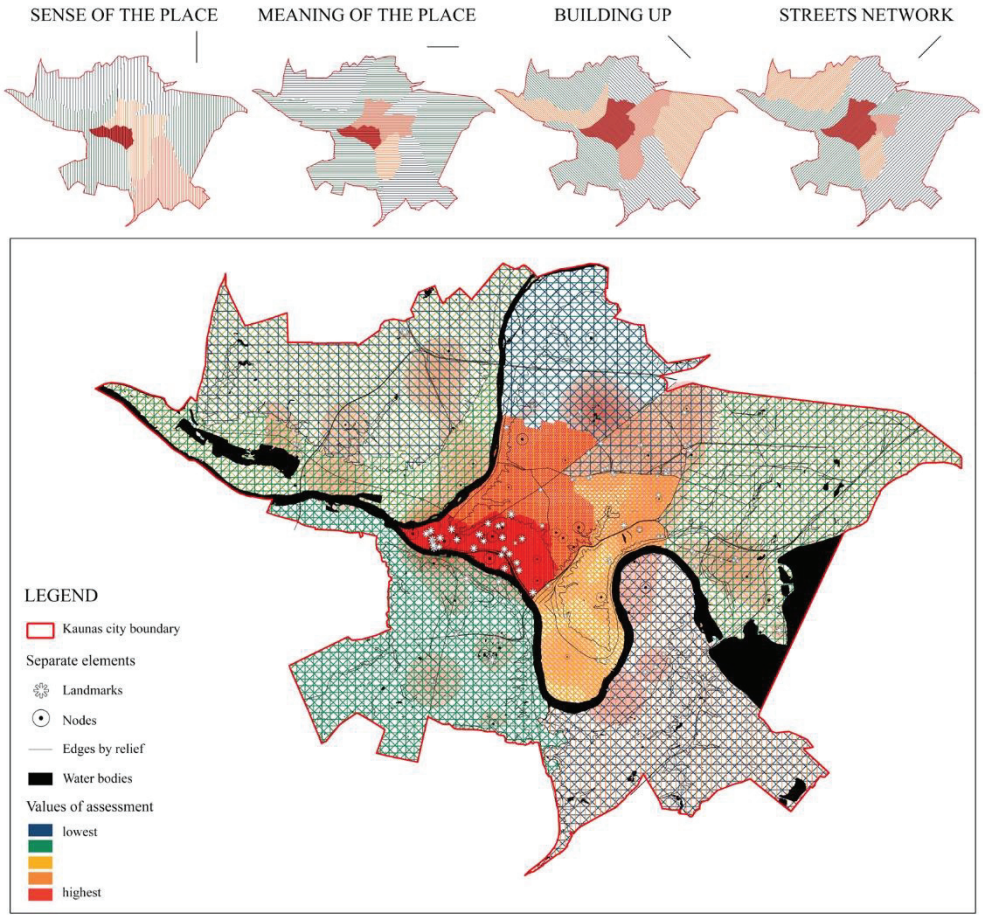


Fig. 4.1. Results of the assessment of Kaunas cityscape identity. As in the heatmaps, the red colour here indicates the highest values and the blue colour indicates the lowest value. Scheme by the author

The results of the assessment of the identity of Kaunas cityscape are visualised in *Fig. 4.1.* The central part of the city (*Centras* eldership) is distinguished by the highest results of the assessment of the cityscape identity as well as by the highest concentration of the separate elements defining the identity. Then, *Žaliakalnis* eldership follows, where even though the meaning of the place and the sense of the place is slightly lower, the level of the development of the urban structure (planar) is very high. Moderate values of the assessment of the cityscape identity are visible in *Gričiupis* and *Šančiai*, even though the morphology of those two elderships is quite different. While *Žemieji Šančiai* is a historical suburb with access to the water, the scores of *Gričiupis*, a residential district mainly developed in the Soviet times, are influenced by the presence of objects which are significant in several aspects (such as Kaunas Zoo or KTU Campus). The situation of the cityscape identity is similar in *Vilijampolė* and *Petrašiūnai*. Both elderships have access to the water features; both

of them contain massifs of greenery. Industrial districts also occupy significant areas here. Even though the structure of building up is developed, the general assessment of the cityscape identity is quite low. It is of interest to consider the status of *Panemunė* eldership which was rated highly by the residents, but which can be characterised neither by the quantity of meaning of the place nor by the complexity of the urban structure. However, even though the presence of the greenery and water bodies was not found as correlating with the assessment of the sense of the place, in this particular case, they are decisive. In *Dainava*, despite the high density of building up, the general assessment of the cityscape identity is quite low. In *Šilainiai*, the street network is quite dense, but building up is still not optimal, not many objects carry any semantic load or create a positive sense of the place; thus, the general assessment of the cityscape identity is quite poor. An even worse situation is observed in *Aleksotas* eldership where the street network is less developed. The lowest place of the assessment of the cityscape identity is taken by *Eiguliai* as almost a half of the territory is occupied by Kleboniškis Forest, where the development of the urban structure is impossible, and, in the remaining segment, the meaning and the sense of the place are not yet conveyed.

From this general overview, it seems as if it is clear where the identity of the cityscape should be preserved, where it should be strengthened, and where it should be started to form almost from scratch. Yet, the identity of the cityscape does not exist without the people perceiving it. Therefore, it is important to find out the most densely populated places in Kaunas as well as to know what the population trends (growth or shrinking) are in different parts of the city.

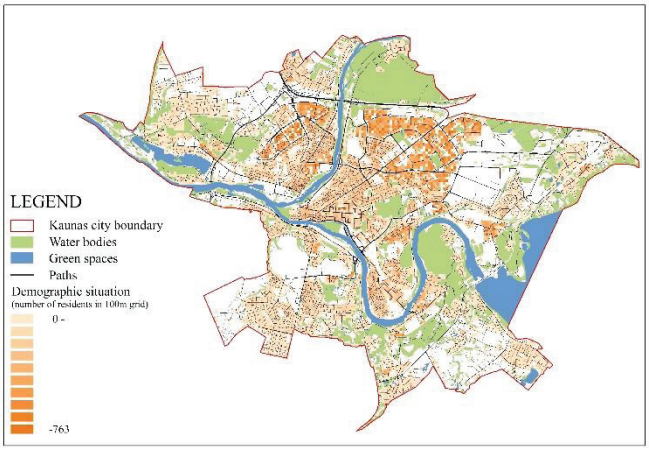


Fig. 4.2. Demographic situation in Kaunas City (data from 2011). Scheme by the author by using data set provided by *HNITBaltic_Data* in *ArcGIS Online Platform*

Looking at the demographic situation in Kaunas City (see *Fig. 4.2.*), it is clear that the highest population density is in the neighbourhoods of *Milikoniai* and *Smėliai* (in *Šilainiai* eldership), *Eiguliai* (in *Eiguliai* eldership) as well as in the eldership of *Dainava*. Unfortunately, the previous analysis showed a very low assessment of the cityscape identity there. This means that those places require special attention.

Furthermore, the change in the number of individuals who declared their place of residence in separate parts of Kaunas reveals the tendencies of these parts of the city (*General Plan of Kaunas*, 2011). Although trends of decrease are being observed in Kaunas City in general (based on data from 2006–2010), the population growth is typical for the peripheral neighbourhoods of the city (i.e., *Birutė*, *Freda*, *Kazliškiai*, *Vaišvydava*, *Rokai*, *Vičiūnai*, *Romainiai*, *Sargėnai* and *Lampėdžiai*). Also, the number of residents is growing in *Panemunė* neighbourhood as well as in the entire *Šančiai* eldership. As for the identity of the cityscape in these areas, if the situation in *Šančiai* is mediocre and *Panemunė* is mostly characterised by natural rather than urban identity, then the situation on the outskirts of the city is the most complicated. Again, special attention is needed.

In order to reveal the situation in the individual elderships and to identify the specific directions of development which would take into account the identity of the cityscape as well, it is necessary to delve more deeply into the results of the analysis in that particular place. As an example of the process, *Aleksotas* eldership shall be discussed.

Cityscape identity in Aleksotas, directions for future development

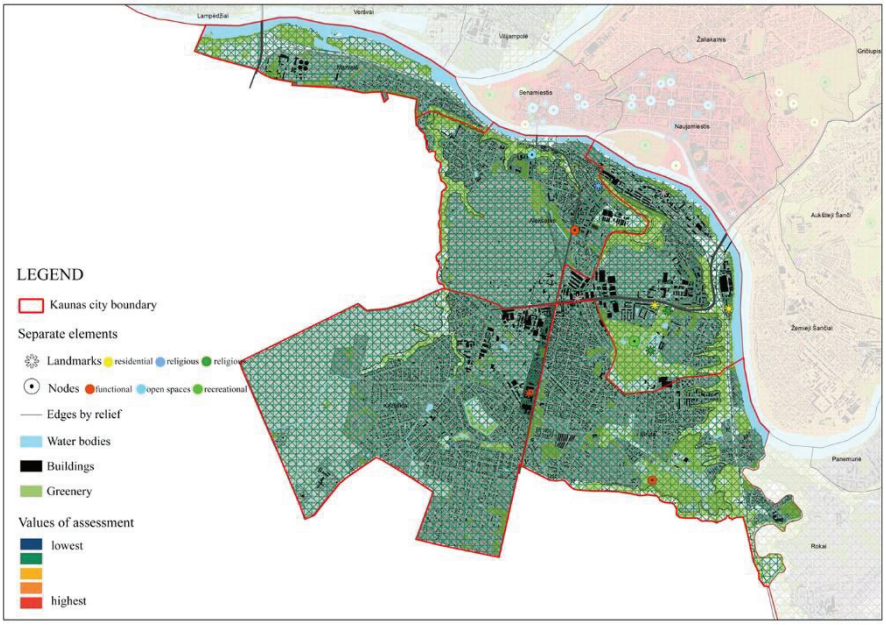


Fig. 4.3. Aleksotas eldership. Fragment from map of Kaunas cityscape identity assessment. Scheme by the author

Sense of the place. The average value of the sense of the place was 3.93 for *Aleksotas* eldership (corresponding to 4 – "I always feel like I belong here" in the assessment scale). This means that the people's emotions towards the place are mediocre. The factors defining these emotions are the *geographical location*, the *physical environment* and the *prices of the real estate*. The *commercial bodies*, *green spaces* and *transport infrastructure* are the most important elements of the eldership.

However, the underdeveloped public transportation system, the lack of cultural/entertainment facilities, messy industrial areas and side streets, the feeling of insecurity and the fear of crimes are the main problems here.

Meaning of the place. This eldership scores a relatively low density of the meaning of the place – 1.15 (it takes the 7th position among the 11 elderships of Kaunas City). The main symbols of the cultural text are not visually outstanding objects or objects which are easily distinguishable from the surrounding environment (i.e., elements of Kaunas Fortress, S. Darius and S. Girėnas Airport, VDU Botanical Garden). Thus, understanding their significance also requires certain knowledge of the context.

Separate elements. The main *paths* and the main dynamic axes of observation are Veiverių St. and Europos Pr. Meanwhile, the Nemunas River (with the Jiesia River) slopes are *edges* clearly defining the boundaries of *Aleksotas* eldership separating it from the central part of the city. Europos Pr. serves not only as the main visual observation route, but it also separates *Freda* residential area from the industrial zone. There are also industrial railways in the eldership, but their significance as boundaries is low because they mainly go through enclosed industrial areas. It would be possible to perceive *Aleksotas* eldership as a *district* defined by the main edges. However, this eldership is not integral in terms of functional zoning (industrial+low-rise residential+greenery), and, therefore, spatial fragmentation occurs here as well. While going along Veiverių St. from the city centre towards Garliava, the compact low-rise residential area is abruptly replaced by the area that visually looks like an abandoned industrial wasteland, and then, a little further, again, low-rise residential areas emerge. Such a lack of integrity indicates the incompleteness of the structure and creates the impression of a messy and unsafe environment. As for the *nodes* of attraction, there are several of them, but they might be even more important for Kaunas citizens in general than to the locals of the eldership – *Aleksotas* viewpoint, *Aleksotas Market*, VDU Botanical Garden and Seniava Cemetery. Few *landmarks* in the eldership are perceived from the outside – *Kaunas Grūdai* mill elevator, and, less contrasting with the environment but still dominant, Aleksotas St. Casimir Church. The landmarks within the eldership are perceived from the main paths going through *Aleksotas* (i.e., the building of *Kauno stiklas* factory, or the 9-storey apartment building in Europos Pr.). They help to orientate oneself in the environment, but they are not of exceptional architectural aesthetic value.

Systems of elements. The significance of water bodies is low in *Aleksotas*. Although the Nemunas River frames the border of the eldership, the access to the river itself is complicated by the steep slopes, intense streets and the industrial function along the riverfront. There are other small creeks in the area, but their accessibility is also limited. The situation of the green spaces is also quite complicated in terms of the community needs of recreational space. The main green public space (VDU Botanical Garden) is of limited attendance; other important green elements are the slopes of the rivers. They improve the bioecological situation, but, once again, they do not provide for recreational purposes. The street network is also one of the most sparse in Kaunas City, and the reasons for this is that a huge area (~200 ha) of the eldership is occupied by S. Darius and S. Girėnas Airport. Furthermore, the

southwestern part of the eldership is still an underdeveloped area of Kaunas City outskirts having more features of rural rather than of urban landscape. The density of building up is average in comparison with the other elderships of Kaunas City. Yet, the morphotypes of the urban structure contrast very strongly: small-scale compact low-rise residential buildings are just next to either large volume industrial buildings or in the vicinity of visually empty wastelands.

Overall structure. The streetscape views of specifically *Aleksotas* eldership were not studied by the method of fractal analysis. However, given the existing characteristics of the cityscape here and the results of the research done for similar areas, the complexity of the streetscape views is likely to be relatively low. The lack of vegetation, the wide main streets and the predominant plain industrial architecture determine the uninviting, unattractive and boring streetscape views.

All the separate concepts reveal the existing cityscape identity of *Aleksotas* eldership, yet, during the further development of the area, it is necessary to take into account the situation of this eldership (its territorial location, functional purpose, etc.) in relation to other elderships of Kaunas City. The city is known to be a complex entity that has to perform many different functions to maintain its viability, so not all parts of the city can be the same. "Human beings also thrive in different places. There are those who could never live in an urban centre; there are those who would wither in a rural hamlet" (Duany *et al.*, 2003), Therefore, it is necessary to preserve and develop the meaningful possibilities for choice.

In the context of the whole Kaunas City, Aleksotas could be defined as an eldership consisting of three different types of identity zones: a historical suburban zone, an industrial zone, and a city peripheral zone. The directions of the further development should be adapted to the specificities of each of those areas.

Directions for the development of Aleksotas eldership:

• to maintain the qualities of compact low-rise residential areas in the historical suburban area;

• to provide more recreational green spaces;

• to create a system of green connections;

• to improve access to the water features and develop the territories along them with the recreational priority;

• to adapt the existing cultural heritage for the wider use of the community;

• to consider the conversion of the abandoned industrial areas;

• to regulate the landscaping along the streets where the industry still operates in order to create a more human-friendly environment;

• to develop a rational (walkable or bicycle-friendly) distribution of new functions and places which would encourage cultural and entertainment activities, especially in the peripheral zones;

• to soften the clash between the small scale and large volume building up;

• to improve the public and sustainable transportation system;

• to avoid the development of dead-end (cul-de-sac) streets in the newly developed areas as they create the sense of segregation.

By following these directions, the creation of a more cohesive, more preferable and healthier environment would be ensured in *Aleksotas* eldership. At the same time,

the sense of the place would increase. By actualising the existing heritage, converting the defunct complexes and adapting them to the current and future needs of the community, the old meanings of the place would be better conveyed, and new meanings would start to form. The emergence of a more coherent urban structure would contribute to the overall quality of the environment. Finally, taking everything together, these changes would improve the situation of the holistic cityscape identity.

4.2. Urban development fostering cityscape identity

Cityscape identity issue and processes of design

The analysed literature showed that revealing the identity of the cityscape and understanding our relationship with the environment we live in is important for each of us, but it is especially significant in the processes of the regional, urban and architectural development because, then, the environment is changed. The following scheme (see *Fig. 4.4.*) shows how the issues of the identity of the cityscape (or any other placescape) could be integrated into the general processes of various scale design activities.

The environment consists of different scale units and, thus, the decisions are respectively of different levels and made by different groups. In order to achieve coherent results, it is necessary to maintain the hierarchy of decisions, i.e., the lower-level decisions cannot contradict the higher-level requirements, but the higher-level solutions need to take into account and target the lower-level needs and issues. Top-down and bottom-up processes should run in parallel. Certainly, depending on the level, different activities of environmental development exist starting from policy-making, regional planning and proceeding with spatial planning, landscape architecture, urban design, and finishing with the design of the interior or the product. Yet, all of these tasks are carried out by the same conceptual procedure: analysis of the current state, the formation of the concept, concretisation of solutions, the implementation and the final is the operational stage, which does not end the activity, but turns the linear procedure into the constant cycle. Here, the issues of the cityscape (placescape) identity can be put on the agenda as well. During the analysis of the current state, the assessment to clarify the situation of the cityscape identity (i.e., positive, neutral, or negative) can be done; and not only the developers but also the public and the experts should be involved. During the formation of conceptual directions, the endeavours respective to the results of the previous assessment are necessary (to maintain, to improve, or to remake). When the solutions are being specified, the actions which are the most suitable to achieve the previously set objectives should be selected. Finally, during the implementation and operational phases, quality management and monitoring are essential so that to assure successful implementation and foresee unintended consequences. Furthermore, the existing legal framework, the adopted strategies, organisational and active actors as well as the data are the integral parts of the whole process. Thus, it is crucial that they would support and/or enable the ways to consider and solve certain issues, in this particular case, the issues of the cityscape identity.

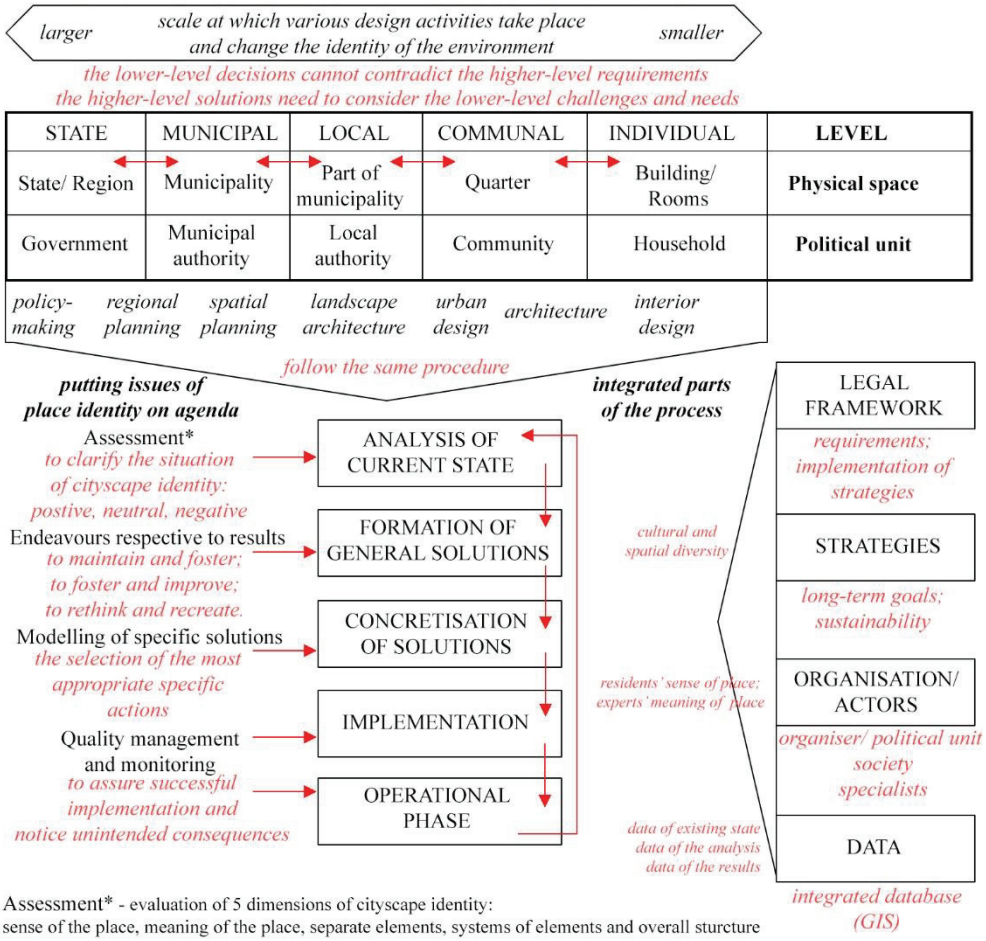


Fig. 4.4. Processes of various scale design activities and possible integration of issues of cityscape identity into those processes. Scheme by the author

Besides, it is also necessary to reaffirm that any development (including urban development) should first and foremost aim for the sustainability goals. Thus, the cityscape identity should be tackled not as an isolated issue, but as an integral part of the overall sustainable development.

Cityscape identity of the particular place

If you really want to know a person, you personally have to interact with him/her, talk to him/her, hear out and sincerely try to consciously understand or unconsciously feel his/her essence. The description or the opinion that others provide about that person is not the real answer. There are no simple answers about one's identity. The same is true with the identity of the cityscape. When wishing to grasp the cityscape identity, one needs to immerse him/herself into the city and its spaces, one needs to interact with the city directly. The identity arises from the relationship, and, as it is known, each of us can create a different kind of relationships with the same person as well as with the particular city. However, the author strongly believes

that, by following the methodology described in this dissertation (see *Chapter 2*), there is a better chance to understand the cityscape identity more profoundly than while just blindly wandering and not knowing where to start.

Conceptual principles for the urban development considering the cityscape identity

Insights from the overview of scientific literature, strategic documents, the existing legislation and the practical experience as well as the results of the empirical research (carried out in Kaunas City) were applied to formulate the conceptual principles for urban development with respect to cityscape identity (*Table 4.2.*). It is assumed that the research methodology proposed in the dissertation (or at least a part of that methodology) was applied during the initial stages of the process of urban development. Thus, now the guidelines indicate what should be done and to what we should pay our attention after obtaining certain research results as we seek to develop urban areas fostering cityscape identity.

Residents' sense of the place. Research and focus on the residents' sense of the particular place reveal the initial insights about the area, indicates the hopes and needs of the population for the future development of that area (for more details, check *Subsection 3.1.*). If those hopes and needs are met, the residents more likely are satisfied with the place and identify themselves with it. Moreover, including different scale places into the research makes it possible to compare which scale is important to the residents and for what reasons. Based on the results of the research, the directions for the further urban development of the place can be chosen respectively. Where the sense of the place is assessed *positively*, it needs to be *maintained and fostered*. Where the sense of the place is *neutral*, it needs to be *fostered and improved*, and where the sense is *negative*, it should be *rethought and remade*. The research also enables the assessment of different factors determining the values of the sense of the place. The author selected *social connections and friendships*, *culture and lifestyle*, *location*, *prices of the real estate* and *physical environment* as the key factors but the list can be extended (e.g., by including safety, ecology, the level of the necessary infrastructure, ownerships, etc.). The opinion about the status and the quality of those factors as well as their importance in assigning a certain score for the sense of the place directs what actions through the processes of urban development should be done so that to improve the situation at the specific place. If it were noticed that *social ties and friendships are weak*, members of the local community, and, in the absence of communities, even more so, individuals should be encouraged to engage in a variety of activities which shape their living environment in one way or another. The community has not only to participate, but also to have a voice in decision-making. Then, the development of functions and places which would accommodate and encourage social interactions is necessary as well. However, people need not only common public spaces but also the reason to be there. By noticing that the *culture and lifestyle are weak*, the development of new functions and places which would encourage certain activities should be considered. Certainly, those activities that improve the public health, promote cultural and scientific cognition, conscious and responsible consumption as well as those activities which reflect the locality or regionality are most desirable. Still, there should be a variety of options provided for

the residents to choose from. Moreover, it is important to ensure not only the existence of activities themselves but also their compatibility. Ideally, the provision of the active cultural life and the lifestyle requires that "life would be verdant" in the same places from the early morning to the late evening. This does not work if the block is vibrant in the evening, but it becomes the abandoned ghost town for the rest of the time. When the residents complain that their score for the sense of the place is lower due to the *remote and inconvenient location*, there are two improvements possible through urban development. First, the strengthening links with the other parts of the city primarily by developing the public and sustainable transportation system (the infrastructure for the individual cars is not the priority). Secondly, the development of the necessary functions within the area should be under consideration. The principles of New Urbanism, as well as the transit-oriented development, support that idea as the positive urban design practice. Furthermore, recently, Carlos Moreno (2021) developed a 15-minute city concept in pursuit of the attachment to a place. This concept rapidly gained relevance for not only the enhancement of attachment but also as the great urban response for the current pandemic situation. If we notice that the *prices of the real estate* are significantly different from the general market value, it might be seen as a sign of emerging segregated areas. The development of the more affordable housing (including social housing) needs to be encouraged in the areas of the expensive estates. Meanwhile, more housing that is luxurious should be developed in the poor(er) areas, or new attractive functions could be introduced. However, that needs to be done very prudently in order to avoid gentrification, i.e., the displacement of the old inhabitants and the total loss of the local character in the process. The *quality of the physical environment* is a challenge directly addressed to architecture and urbanism. Therefore, of course, if this environment is unsatisfactory, architectural/urban solutions are expected. However, a long-term vision and strategy for the development of the territory are needed before any specific changes can be made. After ensuring that long-term needs are met through the taken actions, the actions themselves should be prioritised based on the elements listed by the residents as the most important ones. The residents' satisfaction and, at the same time, the sense of the place grow if the problems that are relevant and sensitive to the residents at that moment are addressed first. The dissatisfaction of the physical environment also occurs if the place is underdeveloped and lacks the essentials. Therefore, the balanced and comprehensive development of the territory is a must. Furthermore, the physical environment can be created also to be safe by the implementation of *CPTED* (i.e., *Crime Prevention Through Environmental Design*) principles. Finally, yet importantly, the quality of the physical environment highly depends on the management of the place. Constant maintenance is essential so that to retain the attractiveness and distinctiveness of the existing environment. The research on the residents' sense of the place also reveals what specific elements of the urban structure are relevant for the residents. The elements defined as *positive* should be *preserved and improved*. The elements distinguished as *negative* should be *investigated and, if possible, eliminated*. What is more, learning from the research what areas are *preferred* by the residents, and the reasons behind that choice help to indicate the *characteristics which can be used as the guidelines* to create places attractive to the locals.

Meaning of the place. Research and focus on the meaning of the place captured by the experts provide insights about the context (cultural, political, historical, etc.) of the area and its symbols, the legacy of the areas necessary to preserve (for more details, check *Subsection 3.2.*). The research includes the identification of the symbols of the cultural text, and, even at this initial stage, guidelines for future development can be envisioned. When there is a *unanimous agreement* of the experts that a symbol is a significant part of a cultural text, *special attention needs to be paid* during the urban development processes to preserve and, if necessary, to improve, but in any way not to diminish the existing value of that symbol. When each and every expert agrees that an *object is not an important symbol* of the cultural text, *special attention is not required* for that particular object. A different situation occurs when the *opinions of experts on the same object radically differ.* Such controversial symbols surely *require additional investigation* to find out how those differences occur; what needs to be done to reach the consensus and establish a clear position of the object in the disclosure of the meaning of the place. During the research, symbols are not only identified, they are assessed based on the attributes of cognition, continuity, legibility, and imageability. The results of that assessment reveal the quality and quantity of the meaning of the place conveyed by the different symbols. By noticing that some *attributes of the significant symbols are evaluated poorly*, if possible, *efforts should be made to improve those attributes*, thus strengthening the meaning of the symbol itself. The density of the meaning of the place calculated from the research data reveals how much and how easily the meaning is conveyed and perceived in different parts of the city. It is important to *preserve, maintain and foster* places where there is the *high density of the meaning of the place*. Moreover, the dissemination of knowledge about those places, their symbols and their significance is crucial for actualising those places among the general public as well. The directions for the places with the *low density of the meaning of the place* are first to delve into the symbols that exist so that to understand *whether they possess the potential* to become significant in the future, if not – to accept the necessity of the *fundamental changes* and maybe even the *creation of new meanings*.

Residents' sense of the place and Meaning of the place. The results obtained from the research on the residents' sense of the place and the experts' meaning of the place should be compared. The elements and the places which are *important for the residents and are defined as significant symbols of the city's cultural text* according to the experts *must be preserved*. However, a gap between the assessments of the sense and the meaning of the place can sometimes be noticed. If it occurs because of the *lack of knowledge* on the values of the place, the *awareness of the context of the place* needs to be increased. If disagreement exists due to *non-compliance with the essential needs*, it is important reasonably and *with the least possible harm to the existing value to adapt* places for the community needs.

Separate elements. Research and focus on the separate elements of the city reveal their significance for the cityscape identity as well as provide insights on how they should be treated during the urban development processes (for more details, check *Subsection 3.3.*). We choose urban elements distinguished by Lynch (1960) as the main types of separate elements. They are *paths*, *edges*, *districts*, *nodes* and

landmarks. *Paths* are the main visual routes. They indicate the places from which the city is most often perceived by the masses of people. Thus, the areas along the main paths should be developed respectively. If there are *valuable elements of the cityscape*, they need to be *revealed and visible* from the main paths. If the *elements cause negative visual impact*, that impact needs to be *mitigated or eliminated*. *Edges* are important in separating the distinct areas and creating the sense of containment within them. Thus, the *edges occurring organically* and making well-defined places should *remain*. Yet, the *barriers abruptly breaking* the otherwise integral entities, if possible, need to be *eliminated, or their effect needs to be minimised*. *Districts* are perceived by observers as separate urban elements if they have a common recognisable character. Districts can be defined by the functional use, the predominant height of building up, the particular morphotype of building up, or by other thematic continuity. Thus, if districts are *well-defined zones* maintaining the thematic integrity and the compatibility of functions, it is important *to keep and strengthen* the established coherence as a sign of a mature urban structure. However, if, instead of clear districts, there are only *vague areas/zones* with fragmented and incompatible functions, it is necessary to address the incompleteness of the structure and the lack of integrity by the *relocation of the clashing functions* and the *development of more cohesive structures*. *Nodes* are the centres of attraction and their presence and diversity ensure the viability of the place. Therefore, the reasonable distribution of the different types of nodes (social interaction, relaxation and restoration, providing certain services and hosting events) should be ensured during the development processes. Furthermore, it is critical to take into account the insights from the research on the Sense of the place as local residents usually indicate what is missing in the particular case. *Landmarks* are distinguishing elements, they stand out from the environment, thus, they are recognisable and memorable. Keeping in mind that people can perceive just a limited amount of information or very specifically organised information, landmarks can define the identity of the general urban structure. Therefore, the *quality of the existing landmarks* as well as their coherence with the surrounding environment *needs to be assured*. Likewise, the *possible impact of new landmarks*, especially in the areas sensitive to the change, *has to be assessed*. Besides, they help to orientate in the area, thus, they should be distributed in a way of avoiding the development of confusing, mazy places. Moreover, the function of the landmarks defines the priorities of the society and the governing power. Therefore, the *replacement or obscuration of the old landmarks with the new ones* should be *responsibly justified* not only through the prism of some short-term benefit, but by considering the importance of the cultural and historical legacy today and for the generations to come. The insights from the research on the Meaning of the place can help in making such decisions.

Residents' sense of the place, *Meaning of the place* and *Separate elements*. It is important to pay attention to which objects of the separate elements and for what reasons are mentioned in the residents' survey. This shows the significance of their role in shaping the sense of the place. It is also useful to compare what separate elements are located in the most attractive places and whatever is missing in the most unattractive places. Furthermore, some of the separate elements might possess and

convey the significant meanings of the place, and the experts' assessment of the spatial cultural text helps to identify them, and later, to treat them respectively.

Systems of elements. The research on the systems of elements provides insights on how a certain group of elements exists together, what connections between the elements develop, what are the characteristics of the emerging networks and how they could be modified so that to achieve the optimal structure. The *system of water bodies* is an important natural resource which adds functional, social, ecological and visual value to the neighbouring areas, and, if the system of water bodies is well integrated, it highly influences the cityscape identity. Thus, if the existing water features are *not an integral part of the area*, it is necessary to ensure *the optimal use of the existing potential by improving the access* (i.e., public transportation, the development of new connections) and the development of *new compatible functions nearby*. The *system of greenery* assures the quality of the environment, provides shelter for natural habitats as well as satisfies the healthy lifestyle and recreation of the society. The characteristics of a high-quality system of the greenery are systematicity, regionality, urban and social validity, historical continuity, accessibility, integrity, ecological sustainability, cost-effectiveness, distinctiveness and aesthetics (Jakovlevas-Mateckis, 2008). The greenery has to be *provided in the densely populated areas* as a factor of the preferable environment. Meanwhile, the greenery in the *extensively populated areas* is necessary to form *the natural framework*; it *provides natural habitats*. The *system of streets* is vital to the city as they act like the arteries of its body. The analysis of streets as a network provides significant insights not only into the development of the transport infrastructure itself but also into the formation of the surrounding areas. The high-quality street network is characterised by the optimal access to all the areas, hierarchical complexity and a high level of integration, legibility – the possibility to understand the totality from its parts and the scale of dimensions respecting the human scale, and not only the flows of the motor transport. Therefore, if *some areas are difficult to access*, it is necessary to consider *(more intense) developing of the network of streets* with the priority to walking, cycling, public or sustainable transport. If the system of streets is *underdeveloped*, *the integrity and clarity* of the street network should be pursued. Oppositely, if the system of streets is *overdeveloped*, the conceptual *shift from cars to people is necessary*, and specific actions could be the introduction of wider pavements, bicycle lanes, richer landscaping. The research of the street network can reveal the *most controlling/integrated parts* of the network, and, by knowing them, the *public, commercial and other functions* encouraging interaction should be located nearby so that to create the nodes or centres of higher viability. Sometimes, the *network of streets is maze-like*, which indicates the necessity to establish the order, some kind of *hierarchy*, *to pursue higher intelligibility* (a higher correlation between the local and global integrities). Furthermore, more orientation in the network can be solved not only by tweaking the network but also by placing some distinguishing elements here and there, thus, the insights from the research on the separate elements could be revised here. The *system of building up* is one of the main components defining the general urban structure. Therefore, if the structure of building up is *cohesive and mature*, *the characteristic and valuable attributes (density, intensity, prevailing*

background height, configuration, morphotypes, etc.) of building up need to be maintained. Then, the structure of building up is *not fully resolved*, *the existing building up has to be improved by the previously clarified vision of the area*. It is also important to take into account insights from the research on the Sense of the place and the Meaning of the place.

Overall structure. The research on the overall structure provides insights into the overall qualities of the certain cityscape (views), reveals the richness, harmony, complexity, interest of the entire composition. Thus, when streetscape views are *hypertrophied, monotonous and boring*, and, especially, if they are in highly urbanised and densely populated areas, their *humanisation is necessary*. If streetscape views are *rich in diversity but chaotic, lacking order*, the consideration of the *establishment of the design code* (requirements for specific colours, setbacks, forms, etc.) is recommended in order to harmonise the chaos. Besides, streetscapes can be *lacking references/hints of the existing urban structure*. In such a case, some *landmarks leading towards the aim* could be introduced. As for the panoramic views, if they are *expressive and marked with valuable landmarks*, they should be *preserved*, and, if some kind of developments is going to be on that could affect those views, *visual impact assessment should be carried out beforehand*. When the panoramic views are *monotonic or aggressive*, especially the ones perceived by the masses, they need to be *addressed*, *the decisions for such views must result from in-depth analysis* taking into account the sense of the place, the meaning of the place, and the existing structure.

Table 4.2. Guidelines for urban development considering cityscape identity. Compiled by the author

Concept	Indications	Results of assessment	Directions for development
Residents' sense of the place	provides initial insights about the area and indicates the desires and needs of the population for the future development of the area		
	Sense of the place	positive neutral negative	• to maintain and foster • to foster and improve • to rethink and recreate
	Attachment to different scale units	state/ region/ city/ eldership/ neighbourhood/ home	• indicates which spatial territorial unit is the most important for the residents and their identification with the place • consideration of the sensitivity for changes there
	Factors	if *social connections and friendships* are weak	• strengthening the inclusion of the local communities and individuals in various activities and decision-making • development of functions and places which would encourage social interactions
		If the *culture and lifestyle* are weak	• development of new functions and places which would encourage certain activities • enhancement of the variety of options propagating health, culture, sports, etc. • development of the multifunctional areas vibrant from morning till late evening

Continuation of Table 4.2.

		If the *location* is remote and inconvenient	• improvement of the public and sustainable transportation system • development of the necessary functions within the area
		If the *prices of the real estate* are too high/ too low	• development of both affordable housing (including social housing) and more luxurious housing within the different areas in order to avoid social segregation • development of other functions which could normalise the prices
		If the *physical environment* is not satisfying	• if long-term vision/strategy is crucial, then changes should be prioritised based on the elements listed as the most important ones • implementation of CPTED principles to create safe physical environment • balanced and comprehensive development of the territory • maintenance of the existing environment
	Important elements	positive elements	• should be preserved and improved
		negative elements	• should be thoroughly investigated, and, if possible, eliminated
		preferred areas	• indicates the characteristics of the locally acceptable environment • these characteristics can be used as guidelines to create areas
Meaning of the place	provides insights about the context (cultural, political, historical, etc.) of the area and its symbols, the legacy of the areas which, according to the experts, should be preserved		
	Symbols of the cultural text (identification)	unanimous consensus: if it is an *important symbol* of a cultural text; if it is an *insignificant symbol* of the cultural text	• the object needs special attention • no special attention is required
		conflicting views, disagreements	• reveals controversial symbols requiring additional investigation
	Symbols of the cultural text (assessment)	cognition/ continuity/ legibility/ imageability	• reveals the quality and quantity of the meaning of the place conveyed by different symbols • efforts should be made to improve the poorly evaluated attributes of significant symbols
	Density of the meaning of the place	provides understanding how much and how easily the meaning of the place is perceivable in different parts of the city	
		places of *high density of meaning* of the place	• important to preserve, maintain and foster • promotion of knowledge about those places, their symbols and their significance among the general public
		places *with low density of the meaning* of the place	• to delve into the symbols that exist in order to understand whether they have the potential to become significant • accept that fundamental changes and the creation of a new meaning are needed

Continuation of Table 4.2.

Residents' sense of the place and **Meaning of the place**			
Elements and places important for the residents are also significant symbols of city's cultural text			• necessary to preserve
A gap between the assessment of the sense of the place and the meaning of the place can be present:			
• because of lack of knowledge on the values of the place; • because of non-compliance with the essential needs			• to increase awareness of the context of the place • reasonably and as much as possible to adapt for the community needs
Separate elements	provides insights about the separate elements of the area and how they should be treated during the development processes		
	Paths	the main visual routes; indicate the places from which the city is most often perceived by the masses of people	the areas along the main paths should be developed: • to reveal the most valuable elements of the cityscape wherever possible • to minimise the negative visual impacts
	Edges	the barriers creating the *sense of containment*, a well-defined place	• to maintain
		the barriers *abruptly breaking* the otherwise integral entity	• if possible, to eliminate or minimise their effect
	Districts	*well-defined zones* - thematic integrity and compatibility of functions	• to maintain and strengthen the established integrity as a sign of a mature structure
		unclear zones with fragmented and incompatible functions	• to address the incompleteness of the structure and the lack of integrity by the relocation of the clashing functions and the development of cohesive structures
	Nodes	presence of different types of nodes ensures the viability of the place	• to ensure the reasonable distribution of different types of nodes (social interaction, relaxation and restoration, providing certain services and hosting events) by the development processes • to take into account the insights from research on the *Sense of the place*
	Landmarks	the main landmarks can define the *image of the city*	• to assure the quality of the existing landmarks, their coherence with the surrounding environment • to evaluate the possible impact of new landmarks, especially in the areas sensitive to the change
		function of landmarks defines the *priorities of the society and the governing power*	• the replacement or obscuration of the old landmarks with the new ones should be responsibly justified not only through the prism of the short-term benefit, but by considering the importance of the cultural and historical legacy today and for the generations to come • we should take into account the insights from research on the *Meaning of the place*
		distribution of the landmarks defines the *orientation (wayfinding)* in the area	• to avoid development of confusing, mazy places

Continuation of Table 4.2.

Residents' sense of the place, **Meaning of the place** and **Separate elements**			
Specific objects of the *separate elements mentioned in the residents' survey*: • defined as *positive* • define as *negative*			the significance of the specific separate elements in shaping the sense of the place: • are significant and need to be preserved • are significant but need to be improved
Comparison of *separate elements in the most attractive places and in the most unattractive places*			preferences within a particular context as hints for successful development
Separate elements conveying the *meanings of the place*			• treated respectfully
Systems of elements	provides insights on how a certain group of elements co-exists together, what connections between the elements occur, what are the characteristics of the emerging networks and how they could be modified so that to achieve the optimal structure		
	System of water bodies	is an important natural resource that adds functional, social, ecological and visual value to the neighbouring areas, and, if the system of water bodies is well integrated, it highly influences the cityscape identity	
		if the existing *water features are not an integral* part of the area	• to ensure the optimal use of the existing potential by improving access (public transportation, development of new connections) and the development of new compatible functions nearby
	System of greenery	assures the quality of the environment, provides shelter for natural habitats as well as satisfies the healthy lifestyle and recreation of the society	
		the high-quality system of greenery	is systematic, regional, urban and socially valid, historically continuing, accessible, integral, ecologically sustainable, cost-effective, distinctive and aesthetic
		greenery in *densely-populated areas*	• needs to be assured as a factor of preferable environment
		greenery in *extensively populated areas*	• is needed to form the natural framework thus providing natural habitats
	System of streets	is like the arteries of the city's body, their analysis as a network provides significant insights not only for the development of the transport infrastructure itself but also for the formation of the surrounding areas	
		high-quality of street network	• optimal access to all areas, complex – hierarchical and well-integrated, legible, with the width respecting not only the flows of the motor transport but also the human scale
		knowing the most controlling/integrated parts of the street network	• to locate the public, commercial and other functions encouraging interaction nearby
		if some *areas are difficult to access*	• to consider developing/improving the network of streets with the priority to walking, cycling, public or sustainable transport
		if the system of streets is *underdeveloped*	• to pursue the integrity and clarity of the street network
		if the system of streets is *overdeveloped*	• the shift from cars to people is necessary • introduction of wider pavements, bicycle lanes, landscaping

Continuation of Table 4.2.

		if the network of streets is *maze-like*	• to pursue higher intelligibility (higher correlation between the local and global integrities); • to take into account insights from the research on *Separate Elements*
	System of building up	is one of the main components defining the general urban structure	
		if the structure of building up is *cohesive and mature*	• to maintain the characteristic and valuable attributes (density, intensity, the prevailing background height, configuration, morphotypes, etc.) of building up
		if the structure of building up is *not fully resolved*	• to improve the existing building up by a previously clarified vision of the area
		before any development of the system of building up	• to take into account insights from the research on the *Sense of the place* and the *Meaning of the place*
Overall structure	provides insights on the overall qualities of the certain cityscape (views), reveal the richness, harmony, complexity, interest of the overall composition of urban elements		
	Streetscape views	if the streetscape views are *hypertrophied, monotonous and boring*	• humanisation of such streetscapes is necessary, especially in the highly urbanised and densely populated areas
		if the streetscape views are *rich in diversity but chaotic, lacking order*	• to consider the establishment of a design code (requirements for specific colours, setbacks, forms, etc.) in order to harmonise the chaos
		if *references*/hints of urban structure are *lacking*	• place some landmarks leading towards the aim
	Panoramic views	if *expressive with valuable landmarks*	• should be preserved • necessary to perform assessment of the impact of changes
		if *monotonic or aggressive*	• should be improved, especially in the areas of high and intensive visibility

To sum up, it can be stated that the aim of the urban development to create a high-quality environment focusing on its users also includes aspects important for the identity of the cityscape. The holistic cityscape identity is not constant. It is the *changing physical environment* perceived and understood by people with *changing emotions* within the *changing contexts* (social, cultural political, etc.). Still, if places are developed in accordance with the opinion of the population, and if efforts are being made to meet their needs in a balanced, harmonious way (i.e., while also thinking about the future), the residents will be more satisfied with their environment. As a result, a positive sense of the place shall appear and develop. Besides, if the urban development processes take into account the current context and the legacy of the past contexts, and if it is sensitively actualised, adapted to the current needs without significant harm to the values, the density of the meaning of the place in such areas will increase. Furthermore, in the long term, the achievement of high quality even in the areas where the meaning of the place is not clearly conveyed yet, undeveloped or extinct, those places will gradually be filled with meanings.

GENERAL CONCLUSIONS

1. The search for the human place in the conditions of urbanisation, the search for uniqueness in the conditions of globalisation, and the search for stability in the constant change are the main reasons why cityscape identity issues are relevant today. The broad literature review has revealed that it is a multifaceted and interdisciplinary phenomenon which requires the holistic approach. Still, the review of the experience of the assessment has demonstrated that, despite the great interest in the topic for almost half a century, the concept itself is vague, and comprehensive tackling of the issue of the cityscape identity is still an open question. However, the recent advance in the spatial, qualitative and integrated research methods and technologies along with previously untried options of analysis provides new angles of the view for understanding the phenomenon of the cityscape identity.

2. The overview of the related scientific research has indicated the lack of a unified concept of the phenomenon of the cityscape identity, and that led to methodological difficulties of its assessment. Therefore, the notion of the *holistic cityscape identity* was formulated in the work. The *holistic cityscape identity* is synthesis of both subjective and objective cityscape identities. *The subjective cityscape identity* is perceived by observers, hence, it is determined not only by the physical characteristics of the tangible environment but also by the psychophysiological and emotional mechanisms of human beings, whereas *the objective cityscape identity* is a set of unbiased cityscape features (i.e., the physical characteristics of the tangible environment).

3. In order to reveal the complex phenomenon of the *holistic cityscape identity*, both subjective and objective aspects need to be addressed. Therefore, the following directions for the research were established: analysis of people's reactions in the particular place to reveal the *emotional identity* ('subjective'), analysis of the meanings and significance of the place so that to reveal the *contextual identity* (between the 'subjective' and the 'objective') and analysis of the physical properties of the environment so that to reveal the *spatial/territorial identity* ('objective'). Then, the concepts that best describe the suggested directions and reflect the most common approaches outlined in the scientific literature were identified. They are as follows: the *sense of the place* for emotional identity; the *meaning of the place* for contextual identity; *separate elements, systems of elements*, and the *overall structure* for spatial/territorial identity. All of them integrated together in the assessment enable the disclosure of the *holistic cityscape identity*.

4. The research on the *sense of the place* concept reveals people's feelings (positive, negative or neutral) towards a particular place (which can be of a different scale). Sociological surveys are used. In Kaunas, the research on the residents' sense of the place showed that the residents are more attached to the whole city than to their neighbourhoods, but the residents from culturally and urbanistically valuable areas feel stronger place attachment. The main factors determining higher assessment are the *geographical location*, *physical environment*, and the *prices of the real estate*. The elements of the physical environment which are important to the city dwellers are the *green spaces*, *commercial bodies*, and the *social infrastructure*. High-quality design

of these objects and their cohesive integration into the existing urban fabric should be ensured. In general, research on the sense of the place provides initial insights about the area and indicates not only the basic desires and needs of the population but also guides to the development of the place to which one feels belonging.

5. The research on the *meaning of the place* reveals the traces of culture, politics, technological advance, regionality or the status of power reflected through the physical environment. The cityscape is a spatial cultural text embedded with meanings. The meanings of different symbols of the city's cultural text are always filtered by the perception barrier. Thus, *cognition*, *continuity*, *legibility* and *imageability* are the aspects to assess. The experts' assessment of Kaunas City through the prism of attributes of the meaning of the place had a double benefit. On the one hand, the areas with the highest density of the meaning of the place were revealed (*Centras* and *Žaliakalnis*). These zones are particularly important for *the preservation* of the identity of the cityscape. On the other hand, the zones were emerging where symbols of the meaning of the place were missing or not fully understood (*Panemunė*, *Šilainiai* and *Dainava*). The strategies for those zones should be either to *delve into the symbols* that *do* exist there and try to understand whether they have the potential to become significant in the future or to accept that fundamental changes and the *creation of a new meaning* are necessary.

6. The research on the *separate elements*, *systems of elements* as well as the *overall structure* reveals the objective characteristics of the cityscape identity. The research in Kaunas City revealed the concentric arrangement of *separate elements*. The main paths lead to the centre. There, various functions intertwine most closely, and the highest density of significant nodes and landmarks is found. Further away, the areas become more monofunctional, homogeneous, sometimes chaotically fragmented; they are lacking centres of attraction and recognisable landmarks. The most important *systems of elements* for the perception and assessment of the identity of Kaunas cityscape are the systems of water bodies (a strong formant of the cityscape identity in the areas having good access, i.e., *Vilijampolė*, *Petrašiūnai*, *Centras*, *Šančiai*); the system of green spaces (which could be improved by developing green spaces in the areas of large populations and by integrating individual parts into a coherent strip-wedge system), the network of streets (well-developed in the centre, not possible and/or not intended to be developed in the areas abundant with nature (e.g., *Kleboniškis*, *Petrašiūnai*), underdeveloped, yet ones which should be improved in the periphery (e.g., *Aleksotas*)), and the system of building up (the highest complexity is observed in the centre, but, at the whole city level, the system could be compacted). Finally, when analysing the *overall structure*, the fractal dimensions calculated for the streetscape and panoramic views of different districts of Kaunas City revealed that districts of a different character have different values of the fractal dimension. Although a higher fractal dimension not always meant a higher semantic load, it represented the nature of the city identity formants.

7. The comparison of the quantitative results from the research of different concepts of Kaunas cityscape identity revealed that the residents' sense of the place has a strong positive correlation with the experts' assessment of the meaning of the place (ρ=0.79). The residents' sense of the place also had a moderate positive

correlation with the density of building up (ρ=0.55), and with the density of the street network (ρ=0.53). If the density of these systems could be equated with the maturity of the urban structure, this would mean that more developed urban structures better meet the needs of the population, and, therefore, this leads to a stronger sense of the place. The meaning of the place had even stronger correlation with the density of the street network (ρ=0.76) and the density of building up (ρ=0.79). This suggests that a more concentrated urban structure also carries a greater semantic load.

8. The quantitative, as well as the qualitative, results of the assessment of the cityscape identity can be defined as the attributes and georeferenced by using the possibilities of GIS. This allows not only the overlapping of the layers containing different data or reflecting different types of results, but also provides endless ways to process and display these results. In the case of Kaunas City, *ArcGIS* was employed in all the parts of the research either to visualise the results obtained by other research methods (e.g., sociological surveys, experts' interview, fractal analysis, etc.) or to perform further analysis (spatial, statistical, network, etc.) of the collected data. Therefore, it is important to note that the full description of the identity of Kaunas cityscape is the whole dataset of the different attributes defining it. Yet, in this research, the holistic cityscape identity was visualised by overlapping the correlating quantitative values of the attributes of cityscape identity (i.e., the residents' sense of the place, the experts' meaning of the place, the density of building up as well as the network of the streets) and by displaying the most relevant separate elements.

9. All in all, the research revealed that there are no universal solutions when tackling the issues of the cityscape identity. Nevertheless, the path to the discovery of the unique solutions leads through in-depth interdisciplinary assessment of the current situation while considering not only the physical but also the emotional and contextual aspects of the cityscape. We strongly believe that, by following the methodology described in this dissertation, there is a better chance to understand the cityscape identity more profoundly than while blindly wandering and not knowing where to start. Close cooperation between the public, the professionals and the government is also necessary not only to ensure formal exchange of different opinions but also to minimise opinion gaps occurring due to ignorance, miscommunication or the lack of knowledge.

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APPENDICES

APPENDIX 1
International strategic documents

Chronological list of key international documents related to some extent to the protection and further development of the cityscape identity and/or its elements. (H – heritage; D – development; S – sustainability). Compiled by the author

Title	Level	Importance	Quotes	Focus on
The Manifesto of the Society for the Protection of Ancient Buildings (SPAB) (Bloomsbury, UK, 1877)	Global	The first attempt to establish a philosophy for building conservation	"to put Protection in the place of Restoration"	H
The La Sarraz Declaration (CIAM) (La Sarraz, Switzerland, 1928)	Global	Formalisation of Modernism architecture. Architecture cannot be isolated from politics, economics or society	"architecture must be set free from <…> preserving the formulas of the past"	D
The Athens Charter for the Restoration of Historic Monuments (International Museums Office) (Athens, Greece, 1931)	Global	Recognition of the importance of cultural heritage and its conservation. Basic principles for conservation. Importance of training	"prevent mistakes which will cause loss of character and historical values to the structures"	H
The Charter of Athens for Urbanism (CIAM) (Athens, Greece, 1933)	Global	Urbanism, planning. The spiritual, cultural and economic value of the architectural heritage. Condemns the use of pastiche for new construction in historic areas	"fine architecture <…> should be protected from demolition" "the re-use of past styles of building for new structures in historic areas under the pretext of aesthetics has disastrous consequences"	D
The European Cultural Convention (Council of Europe) (Paris, France, 1954)	Regional	The appreciation of cultural diversity. National contributions for common European culture	"to foster <…> the study of the languages, history and civilization"	H
Recommendations concerning the Safeguarding the Beauty and Character of Landscapes and Sites (UNESCO) (Paris, France, 1962)	Global	It established preventive and corrective measures for protecting landscapes (natural, rural and urban) and sites (both natural and man-made) which have cultural or aesthetic interest	"avoiding a facile imitation of certain traditional and picturesque forms" "harmony with the general atmosphere"	H+D
The Charter for the Conservation and Restoration of Monuments and Sites (ICOMOS) (Venice, Italy, 1964)	Global	Definition of the concept of integral conservation. The importance of setting, respect for original fabric, the significance of contributions from all periods to the building's character, historic buildings for a social purpose.	"historic monuments <…> as living witnesses of their age-old traditions" "conserving and restoring <…> to safeguard them no less as works of art than as historical evidence"	H

Recommendations concerning the Preservation of Cultural Property Endangered by Public or Private Works (UNESCO) (Paris, France, 1968)	Global	Preventive and corrective measures concerning works such as urban expansion, renewal projects, facile repairs, and so on, as these processes might damage or destroy cultural properties	"surest guarantee for the preservation of cultural property rests in the respect and the attachment felt for it by the people themselves" "the preservation in situ <…> in order to preserve historical associations and continuity"	H+D
The European Convention on the Protection of the Archaeological Heritage (Council of Europe) (London, UK, 1969)	Regional	It was concerned principally with the regulation of archaeological excavations and the dissemination of the results of those excavations	"heritage is essential to a knowledge of the history of civilisations"	H
Recommendations concerning the Protection at National Level of the Cultural and Natural Heritage (UNESCO) (Paris, France, 1972)	Global	Definition of natural and cultural heritage. Proposal of general principles and organisation of services for heritage management and protective measures regarding finances, administration, science and technology	"to preserve for him a fitting setting in which to live, where he will remain in contact with nature and the evidences of civilization bequeathed by past generations"	H
Convention concerning the Protection of the World Cultural and Natural Heritage (UNESCO) (Paris, France, 1972)	Global	Definitions of natural (natural features, geological and physiographical formations, natural sites including habitat of threatened species) and cultural (monuments, groups of buildings, sites) heritage. The concept of World Heritage Sites	"the cultural or natural heritage are of outstanding interest and therefore need to be preserved as part of the world heritage of mankind as a whole" "give the cultural and natural heritage a function in the life of community"	H
The Resolution of the Symposium on Introduction of Contemporary Architecture into Ancient Groups of Buildings (ICOMOS) (Budapest, Hungary, 1972)	Global	The need for appropriate use of mass, scale, rhythm and appearance, and the avoidance of imitation	"past, present and future expression must be treated as a whole, the harmony of which must be constantly preserved"	H+D
Resolutions of Bruges: Principles Governing the Rehabilitation of Historic Towns (ICOMOS) (Bruges, Belgium, 1975)	Global	It emphasised the preservation of historic towns, their rehabilitation and adaptation to present-day needs	"the new is imposing itself on the old, stifling and bruising, if not destroying, its ancient fabric" "preservation of historic towns is certainly justified by their cultural and aesthetic value, but a stronger justification still is to be found in their social function"	H+D
Resolutions on Conservation of Smaller Historic Towns (ICOMOS) Rothenburg ob der Tauber, Germany, 1975)	Global	Based on Resolutions of Bruges, focused specifically on the issues of the smaller historic towns. Drew attention to the balance of economic activities (as both lack and overload might be dangerous)	"suffer from a lack of economic activity leading to the emigration" "too much economic activity may cause disruption of the old structure"	H+D

The European Charter of the Architectural Heritage (Council of Europe/ ICOMOS Europe) (Amsterdam, Netherlands, 1975)	Regional	Definition of integrated conservation (consisting of sensitive restoration techniques, the effective use of laws and regulations, appropriate administrative support, and adequate technical and financial support). Importance of training	"the future of the architectural heritage depends largely upon its integration into the context of people's lives and upon the weight given to it in regional and town planning"	H
Recommendation concerning the Safeguarding and Contemporary Role of Historic Areas (UNESCO) (Nairobi, Kenya, 1976)	Global	It stressed that the safeguarding of historic areas and their integration into the life of the contemporary society is a basic factor in territorial, regional or local planning	"the most tangible evidence of the wealth and diversity of cultural, religious and social activities" "every historic area and its surroundings should be considered in their totality as a coherent whole"	H+D
Historic Gardens (The Florence Charter) (addendum to Venice Charter) (ICOMOS) (Florence, Italy, 1981)	Global	Definition of historic garden. The need to identify and list historic gardens. Guidance on maintenance, conservation, restoration and reconstruction	"the historic garden cannot be isolated from its own particular environment" "associated with a memorable act, as, for example, a major historic event; a well-known myth; an epic combat; or the subject of a famous picture"	H
The Convention for the Protection of the Architectural Heritage of Europe (Council of Europe) (Granada, Spain, 1985)	Regional	It included principles of integrated conservation. Reinforcement and promotion of policies for the conservation and enhancement of Europe's heritage	"the architectural heritage, both as an element of cultural identity and as a source of inspiration and creativity for present and future generations"	H+D
The Charter for the Conservation of Historic Towns and Urban Areas (refers to Venice Charter) (ICOMOS) (Washington, 1987)	Global	Broad principles, objectives and methods for the protection, conservation and restoration of historic urban areas as well as their development and harmonious adaptation to contemporary life	"urban communities <…> are an expression of the diversity of societies throughout history"	H+D
Our Common Future (World Commission on Environment and Development) (1987)	Global	Definition of sustainable development. Re-examination of issues of environment and development and proposals to deal with them. Importance of international cooperation. Raising the level of understanding and commitment to action on the part of different groups and individuals	"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs"	S
The European Convention on the Protection of the Archaeological Heritage (Revised) (Council of Europe) (Valletta, Malta, 1992)	Regional	It stressed the change in the nature of threats to the archaeological heritage. Defined conservation and enhancement of the archaeological heritage as one of the goals in regional and urban planning. Emphasised the role of public access, education and public awareness	"archaeological heritage as a source of the European collective memory and as an instrument for historical and scientific study"	H

The European Urban Charter (Council of Europe) (Strasbourg, France, 1992)	Regional	Focused on urban policies regarding the improvement of physical environment, rehabilitation of housing stock, the creation of social and cultural opportunities, community development and public participation. First steps towards sustainability	"the character of a town is to be found in its contemporary architecture and architectural heritage" "Sustainable development, i.e., striking a balance between economic development, environmental protection and social improvement, should be the overall objective of urban economic growth"	S
The Rio Declaration on Environment and Development (United Nations) (Rio de Janeiro, Brazil, 1992)	Global	It defined sustainable development in 27 principles. Emphasised participation of citizens, particular roles were attributed to women, children, the youth and indigenous people. Necessity of environmental impact assessment was highlighted	"Human beings are at the centre of concerns for sustainable development"	S
Agenda 21 (United Nations) (Rio de Janeiro, Brazil, 1992)	Global	Action plan with regard to sustainable development. Covered social and economic dimensions, conservation and management of resources for development. Stressed the role of major groups. Suggested several means of implementation	"integration of environment and development concerns" "fulfilment of basic needs, improved living standards for all, better protected and managed ecosystems and a safer, more prosperous future"	S
The Nara Document on Authenticity (ICOMOS) (Nara, Japan, 1994)	Global	It aimed to bring greater respect for cultural and heritage diversity. Highlighted the threats of aggressive nationalism and the suppression of the cultures of minorities	"All cultures and societies are rooted in the particular forms and means of tangible and intangible expression which constitute their heritage, and these should be respected." "cultural heritage of each is the cultural heritage of all"	H
The European Landscape Convention (Council of Europe) (Florence, Italy, 2000)	Regional	It promoted landscape protection, management and planning. Focused on natural, rural, urban and peri-urban areas. Covered both outstanding and everyday (or even degraded) landscapes	"[landscape is] 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"	H+D+S
A European Union Sustainable Development Strategy (Commission of the European Communities/ Council of Europe) (Brussels, Belgium, 2001)	Regional	Long-term strategy combining policies for economically, socially and ecologically sustainable development and addressing threats such as climate change, health, poverty, ageing, loss of biodiversity and transport congestion	"economic growth, social cohesion and environmental protection must go hand in hand" "strategy should be a catalyst for policy-makers and public opinion"	S
Towards a Thematic Strategy on the Urban Environment (Commission of the European Communities) (Brussels, Belgium, 2004)	Regional	Improvement of the environmental performance and quality of urban areas and assurance of healthy living environment for Europe's urban citizens. Reinforcement of the environmental contribution to sustainable urban development while taking into account the related economic and social issues	"[sustainable development] creates beautiful, distinctive, secure, healthy and high quality places for people to live and work in that foster a strong sense of community, pride, social equity, integration and identity"	S

Vienna Memorandum on World Heritage and Contemporary Architecture – Managing the Historic Urban Landscape (UNESCO) (Vienna, Austria, 2005)	Global	Definition of historic urban landscape. Guidelines for both conservation management and urban development in order to enhance quality of life and production efficiency, without compromising existing valuable character and significance of the historic urban fabric and form	"the emotional connection between human beings and their environment, their sense of place, it is fundamental to guarantee an urban environmental quality of living to contribute to the economic success of a city and to its social and cultural vitality"	H+D
The Renewed EU strategy for Sustainable Development (Council of the European Union) (Brussels, Belgium, 2006)	Regional	Revision and supplement of previous strategy (2001). Assurance of environmental protection, social equity and cohesion, economic prosperity and international responsibilities	"safeguarding the earth's capacity to support life in all its diversity and is based on the principles of democracy, gender equality, solidarity, the rule of law and respect for fundamental rights, including freedom and equal opportunities for all"	S
The Leipzig Charter on Sustainable European Cities (Leipzig, 2007)	Regional	It promoted integrated urban development for a city as a whole. Focused particularly on the issues of deprived neighbourhoods	"historical buildings, public spaces and their urban and architectural value must be preserved"	S
The European Urban Charter II – Manifesto for a New Urbanity (Council of Europe) (Strasbourg, France, 2008)	Regional	Common principles and concepts enabling towns and cities to meet the current issues. European towns and cities should be developed with and for *people*; they should be *sustainable*, *cohesive* socially and spatially, and based on *knowledge* and innovation	"Our towns and cities are culturally and architecturally different and diverse, and must remain so" "these roots in past and in our collective memories are also an asset that helps us to project ourselves into the future on the basis of a strong identity"	S
Toledo Declaration (Council of EU) (Toledo, Spain, 2010)	Regional	It integrated urban regeneration considering global economic and social crisis influencing quality of life. Addressed implementation of the *Europe 2020* strategy.	"besides protecting the heritage from a physical point of view, it is often necessary to guarantee its inhabitability and attractiveness in order to keep it really alive"	S
The Recommendation on the Historic Urban Landscape (UNESCO) (Paris, France, 2011)	Global	It addressed the need to better integrate and frame urban heritage conservation strategies within the larger goals of overall sustainable development. Understanding of the historic layering.	"comprehensive and integrated approach for the identification, assessment, conservation and management of historic urban landscape within an overall sustainable development framework"	S
Towards An Integrated Approach to Cultural Heritage for Europe (European Commission) (Brussels, Belgium, 2014)	Regional	Enhancement of heritage's intrinsic value and take of advantage of its economic and societal potential. Development of a strategic approach to heritage, across different policy areas. Description of measures available to strengthen policy cooperation at different levels	"Historic cities <…> face the most complex problems in terms of preserving the fabric of European identity" "from an appreciation of the uniqueness of one's own heritage to an interest in and respect for the heritage of others"	H+D

APPENDIX 2
Lithuanian legal documents

Summary table of strategic, political documents, laws and by-laws relevant for cityscape identity. Compiled by the author

Document	Year	Main statements relevant to the cityscape identity
Strategies		
National Long-term Development Strategy	2002	Issues of the cityscape identity fall under the priority directions of *culture* and *environment protection*. • *Culture* – principles of *openness* and *authenticity*. • *Environment protection* – the principle of *sustainability*, preservation of *natural heritage*, *uniqueness of the landscape* and *biodiversity*.
National Sustainable Development Strategy	2003	Issues of the cityscape identity fall under the sections of *environmental quality* and *social development*. • *Environmental quality* includes the *protection of landscape and biological diversity*. • *Social development* covers the *preservation of cultural identity*.
National Environmental Protection Strategy	2015	Issues of the cityscape identity fall under the topic of *improvement of* general *environmental quality*, where the *quality of the urban environment* is assigned to the important determinants. Emphasis on *sustainability* in territorial planning processes.
Other long-term strategic planning documents		
Description of Landscape Policies of the Republic of Lithuania	2004	Issues of the protection of *landscape* (including *cityscape*) of different levels are addressed. The main directions are: • *sustainability* in the landscape development process; • expedient protection and management of landscape highlighting the *peculiarities of regional self-expression*; • maintenance and enhancement of existing *biodiversity* and unleashing the potential of the *territorial spatial structure of the landscape*; • optimal formation of *cultural landscape*; • harmonisation of *the architectural spatial composition of the landscape*. *Landscape benchmark* – the desirable goal of landscape quality. The goals of landscape quality should be reached through *strategic planning documents* and *territorial planning documents*.
Description of Architecture Policies of the Republic of Lithuania	2005	*Architecture* defines the *landscape.* The peculiarity of the Lithuanian culture is seen, perceived and appreciated through architecture. The main directions are: • new design taking into account the *existing urban and natural environment*; • *effective and publicly accepted solutions* to urban and architectural issues; • ethical and harmonious *relationship between contemporary architecture and architectural heritage*; • enrichment of the *traditions and features of local and regional architecture*; • favourable conditions to create *good architecture*.
Main Directions of Lithuanian Urban Policy and Recommendations for their Implementation	2019	Issues of the cityscape identity fall under two directions of urban policy: *vitality and equality of local communities* and *sustainable development of urban areas*. Recommendations regarding *local communities*: • to ensure *cultural diversity*, high quality of urban planning, architecture and environment; • to foster *natural and cultural heritage* and unprotected buildings (places) significant for the *quality of life* and *historical memory* of local communities. Recommendations regarding *sustainable development*: • to identify the potential of *low-quality urban areas* and to *develop their character* as well as *local identity*; • to increase the aesthetic value of territories by the development of *unique urban structures* and their elements;

		• to use *advanced tools* in the processes of urban development; • to create an *attractive, aesthetic, people-oriented urban landscape*, while preserving and *maintaining the value* of urban, architectural and immovable cultural heritage.
Law		
Law on Territorial Planning	2013	Issues of the cityscape identity fall under the broader aims of *sustainable territorial development* and *rational urbanisation*. The main objectives of territorial planning also include: • preservation, purposeful use and knowledge of the *peculiarity of the natural and cultural landscape* of the country.
Law on Architecture	2017	Issues of the cityscape identity are not tackled directly, they are dealt with only as a part of general architectural development goal to create a high-quality environment, which is also *harmonious with the peculiarity of the country and culture*. Architecture is defined as the formation of not only structures and complexes but also *landscape*. Thus, the influence of architecture and its quality on the cityscape identity is salient.
Law on Protected Areas	2001	The issues of the cityscape identity are addressed through the prism of protected areas (particularly the *cultural* and *complex* ones). Protected areas important for cityscape identity: • strict cultural reserves; • cultural reserves, complex reserves; • cultural heritage objects; • national and regional parks (complex multifunctional areas valuable both from the cultural and natural point of view). Requirements for these areas are governed by the general and individual regulations for specific protected areas and by the Law on Protection of Immovable Cultural Heritage.
Law on Protection of Immovable Cultural Heritage	2004	The issues of the cityscape identity are addressed from the perspective of the protection of *immovable cultural heritage*, as it is understood as an integral part of the *cultural landscape*. The essential aspects of immovable cultural heritage: • its authenticity; • valuable properties. Safeguarding regimes to maintain essential aspects: • reserve regime; • the authentic purpose regime; • the sparing use regime. The immovable cultural heritage has to be revitalised so that the society would understand the importance of the heritage for the *national identity*, social and economic welfare, civil society, national security, etc.
Law on Construction	2016	The *landscape* (together with structures and other territorial planning objects) is the subject of matter of *architecture*. *Harmony with the landscape* is one of the essential requirements for the architecture of the structures.
Law on Land	2004	The issues of cityscape identity, national identity or significance of the peculiarities of land are not addressed directly in the Law. Still, the established classification of the main *purposes of land use* and the *ways of land use* are important as territorial planning documents are prepared based on it, and those documents subsequently determine the changes in the cityscape identity.
Project of Law on Fundamentals of Cultural Policy	2019	The issues of cityscape identity are addressed from the cultural perspective. The *preservation of the identity and distinctiveness* of the ethnographic regions and areas is one of the aims of the *regional cultural policy*.
Bylaws, rules and norms		

Rules for the preparation of complex spatial planning documents	2014	The issues of cityscape identity fall under the requirements for preparation of the *municipal* and *local level* territorial planning documents. *The comprehensive plans of municipalities:* • identification of the territories important for landscape identity of residential areas; the establishment of anthropogenic and natural elements, viewpoints and panoramas representing valuable landscape; provision of developmental directions and principles for their further use and protection; • initiation of research on the peculiarity of landscape and the identification of cultural heritage sites significant to the landscape if the existing knowledge is insufficient. *The comprehensive plans of parts of municipalities and detailed plans*: • the requirements are more detailed and specific: *types of land use*, *main purposes of land use*, *ways of land use*, *permissible height*, *density*, *intensity*, *volume density*, *types of building up* and other similar indicators.
Description of the content of land uses	2013	The issues of cityscape identity are, to some extent, addressed from the perspective of *functional zoning*. The establishment of urban areas of different main *purposes of land use* and the *ways of land use* in territorial planning documents affect the cityscape and its identity.
Territorial planning norms	2014	The issues of cityscape identity are, to some extent, addressed from the perspective of *territorial planning*. Qualitative and quantitative requirements (development regimes, functional zones, types of land use, density and intensity of building up), specified in complex territorial planning documents, also determine the future situation of the cityscape identity.
Rules for the preparation of special plans for the protected areas	2014	The issues of the cityscape identity are addressed through the prism of *protected areas*. The *system of landscape management zones* covering protection, management and use of valuable areas, if established in urban territories, determines the development of the cityscape identity as well.
Rules for the preparation of special territorial planning documents of immovable cultural heritage	2016	The issues of the cityscape identity are addressed through the prism of the *protection of immovable cultural heritage*. *Specific territorial protection measures* adopted in special territorial planning documents on immovable cultural heritage to some extent also determine the development of the cityscape identity. The *maintenance of valuable features*, *preservation of the cultural landscape*, and the *harmony of the whole* or the *relation with the natural environment* are significant for the protection and enhancement of the cityscape identity.
Description of criteria for the evaluation, selection and determination of significance level of cultural property	2016	The issues of the cityscape identity are to some extent addressed through the prism of *cultural properties*. The evaluation of cultural property depends on the *cultural identity of the time*. Yet, *equity*, *respect* and *tolerance* for other forms of cultural identity must remain. *Evaluation indicators*: age, authenticity, significance, level of significance. *Selection criteria*: authenticity, preservation probabilities, use opportunities, initiatives, condition. *Potentially valuable features of the sites:* • *planar structure* – type, network, quarters, possessions, streets, squares, layout of building up and natural elements; • *volumetric spatial composition* – contents, types of building up, open spaces, closed spaces, panoramas, silhouettes, perspectives, elevations, dominants; • *features of building up* – shapes of roofs, details of façades and roofs, finishing materials, colours, arches, fences, gateways and gates; • primary and historically established *function*; • *features of the surrounding cultural landscape*; • *facts* about the important personalities of the society, culture and the history of the state, events, folklore, literature or other works of art.

APPENDIX 3
Residents' Sense of the place survey

Dear Respondent,

I am Ingrida Povilaitienė, PhD student in History and Theory of Arts at Kaunas University of Technology (Lithuania). The subject of my dissertation is "Assessment and modelling of the identity of cityscape," and a very important part of the holistic cityscape identity is the residents' feelings and emotions towards their living environment. This sociological survey is one of the research methods which could help me understand the phenomenon of the Sense of the Place both in the whole city of Kaunas and in individual neighbourhoods.

This questionnaire is anonymous, so I hope that sincere and insightful answers will help me obtain fair and objective results. I assure you that the data collected through the questionnaire shall be used for academic purposes only.

Thank you in advance for your answers and time!

1. Age group

0–17
18–25
26–40
41–65
65+

2. Gender

Female
Male

3. Education

Lower secondary education
Secondary education
Vocational education
Higher education (non-university, college)
Higher education (university)
Other...

4. Occupational status

Pupil
Student
Employed
Unemployed
Retired
Other…

5. Is KAUNAS your native city?

Yes
No

6. How many years have you been living in KAUNAS?

...

7. Please choose ONE statement which most accurately reflects YOUR FEELINGS about KAUNAS City:

I do not want to live in the current place
I have no particular feeling for this place
I do not really feel like I am from this place
I always feel like I belong here
I am emotionally attached to this place
I identify with the goals of this community
I identify with the lifestyle and values of the people who live (come) here
I have (am willing to) invest(-ed) my heart and soul in this place
I would make (have made) personal sacrifices to save/protect/preserve/ maintain this place

8. Which ADMINISTRATIVE DISTRICT of KAUNAS city do you live in?

9. Which NEIGHBOURHOOD do you live in?

Aleksotas (*options for the 9th question:* Aleksotas, Birutė, Freda, Kazliškiai, Marvelė, other…)
Centras (*options for the 9th question:* Naujamiestis (New Town), Senamiestis (Old Town), other…)
Dainava (*directly goes to the 10th question)*
Eiguliai (*options for the 9th question:* Eiguliai, Kleboniškis, other…)
Gričiupis (*directly goes to the 10th question)*
Panemunė (*options for the 9th question:* Panemunė, Rokai, Vaišvydava, Vičiūnai, other…)
Petrašiūnai (*options for the 9th question:* Amaliai, Naujasodis, Palemonas, Petrašiūnai, other…)
Šančiai (*options for the 9th question*: Aukštieji Šančiai (Higher Šančiai), Žemieji Šančiai (Lower Šančiai), other…)
Šilainiai (*options for the 9th question*: Linkuva, Milikoniai, Romainiai, Sargėnai, Smėliai, other…)
Vilijampolės (*options for the 9th question*: Lampėdžiai, Panerys, Veršvai, Vilijampolė, other…)
Žaliakalnis (*options for the 9th question:* Kalniečiai, Žaliakalnis, other…)
I do not know exactly (*9th question* – name the NEIGHBOURHOOD you live in...)
Other…

10. How many years have you been living in this NEIGHBOURHOOD?

…

11. Please choose ONE statement which most accurately reflects YOUR FEELINGS about YOUR NEIGHBOURHOOD:

I do not want to live in the current place
I have no particular feeling for this place
I do not really feel like I am from this place
I always feel like I belong here
I am emotionally attached to this place
I identify with the goals of this community

I identify with the lifestyle and values of the people who live (come) here
I have (am willing to) invest(-ed) my heart and soul in this place
I would make (have made) personal sacrifices to save/protect/preserve/ maintain this place

12. Do you think that it is important for a place to have its identity, be outstanding and easily recognisable?

Yes
No
I do not know

13. Could you please explain your answer: why do you think so?

…

14. Please evaluate each of the below listed aspects from 1 to 5 depending on how each of them are salient for the sense of the attachment you possess for YOUR NEIGHBOURHOOD

	1 – not important	2 – fairly important	3 – neutral	4 – important	5 – very important
Social network and friendships					
Culture and lifestyle					
Geographical location					
Physical environment					
Sales and rental rates of real estate					

15. Please identify if there are any other factors (not mentioned here) influencing your attachment to the place.

…

16. Is here anything that you DO NOT LIKE about your NEIGHBOURHOOD? Could you please specify what and why?

…

17. Could you please list at least three elements of the physical environment in your NEIGHBOURHOOD which are the most IMPORTANT FOR YOU? (for example, the church, a specific shop, etc.)

…

18. In your opinion, which functions do mainly attract other people (non-residents) to your NEIGHBOURHOOD?

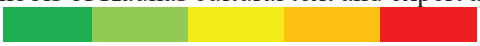
Residential (it is a great place to live in)
Commercial (plenty of shops, cafés, etc.)
Recreational (greenery, rivers, lakes, etc.)
Cultural (events, festivals, celebrations, etc.)
Conservational (historical and cultural heritage)
It is not an attractive place at all
Other…

19. Which KAUNAS NEIGHBOURHOOD (not necessarily the one in which you live in) seems to be the most attractive to you and why?

…

Thank you for your patience and honest answers!

APPENDIX 4

Selection of the symbols of Kaunas cultural text and expert agreement (from the survey) on that: Agree -  -Disagree.

Compiled by author

	Name	Basis for selection	Experts
NATURAL			
1.	Oak Grove	The biggest oakery in the city, remains of a historic forest, a monument of nature included in the Register of Cultural Heritage	100%
2.	Pažaislis Pinewood	A large massif of woodland, next to Kaunas Lagoon; it includes Pažaislis Monastery Complex. Recreational zone	75%
3.	Panemunė Pinewood	A large massif of woodland in the loop of the Nemunas River; as a recreational place, it became popular in the Interwar period	87.5%
4.	Lampėdis Park	A large massif of woodland next to Lampėdis Lake	50%
5.	Vytautas Park	Remains of a historic forest, an important recreational park during different periods, contains elements of Kaunas Fortress, included in the Register of Cultural Heritage	87.5%
6.	Santaka Park	Situated in the confluence of the Nemunas and the Neris rivers, a part of Kaunas Old Town, considered to be the place of establishment of the whole city of Kaunas	87.5%
7.	Nemunas Island	A unique feature, the winter port in the Interwar period, a recreational park afterwards	87.5%
8.	Kleboniškis Forest	A large massif of woodland in Kaunas City	37.5%
9.	Napoleonas Hill	Jiesia Hill, a natural hill adapted to the defence, part of Jiesia Landscape Reserve, a cultural monument related with several historic events and figures	87.5%
10.	Owls Hill	A hill and a park whose fence is decorated with sculptures of owls created by with V. Grybas; it includes Art School, inscribed in the Register of Cultural Heritage	75%
11.	Nemunas River	The longest river in Lithuania, flowing through the city, influencing its life and cityscape	100%
12.	Neris River	The second longest river in Lithuania, flowing through the city, influencing its life and cityscape	100%
13.	Nevėžis River	The seventh longest river in Lithuania, does not exactly flow though the city but forms a segment of the city limit	75%
14.	Jiesia River	A left tributary of the Nemunas River, the landscape formed by the river is protected; it is quite natural	75%
15.	Veršvas Creek	A right tributary of the Nemunas River, most of the riverbed is formed, a landscape reserve has been established in the section of the natural riverbed	43%
16.	Lampėdis Lake	A large artificial lake formed by excavating a gravel quarry in the Nemunas valley, part of a landscape reserve of the confluence of the Nemunas and the Nevėžis rivers	50%
17.	Kaunas Lagoon	The largest artificial water body in Lithuania, part of which belongs to Kaunas City; it was created by damming the Nemunas River, and relocating many villages and homesteads, Kaunas Lagoon Regional Park has been established	100%

FUNCTIONAL			
18.	Draugystė Park	A recreational park in a residential district, architect A. P. Steponavičius, dendrologist R. Augustienė, valuable in the urban sense	57%
19.	Kalniečiai Park	A recreational park in a residential district, architect dendrologist R. Augustienė, valuable in the urban sense	57%
20.	Dainava Park	A recreational park in a residential district, valuable for the local neighbourhood	50%
21.	Santarvė Park	A recreational park in a residential district, valuable for the local neighbourhood	17%
22.	Sąjungos Square	An open space reflecting the ideological change of different periods, includes a memorial with a partially dismantled monument from the Soviet times	43%
23.	Čečėnijos Square	An open square in the residential area, designed around 1980, had a famous fountain. Reconstructed in 2008	43%
24.	KTU Campus	A university campus developed in 1960–1984, a modern architecture complex, Soviet times, Architects V. Dičius, D. Petkelienė (the Faculty of Design)	100%
25.	LSMU Hospital Kaunas Clinics	Developed in 1937–1939 according to a project of U. Cassan; it was the one biggest objects developed in the interwar Lithuania, modern Historism architecture, new construction technologies	100%
26.	Kaunas Clinical (2nd) Hospital	A hospital complex next to a residential area. Built around 1967. Presently, it also includes Kaunas Infectious Diseases Hospital	0%
27.	LSMU Veterinary Academy	Interwar period Modernism architecture. 1936. Listed as cultural heritage. Designed by Jasiukaitis	75%
28.	S. Darius and S. Girėnas Airport	The oldest functioning airport in Lithuania (1915). Cultural heritage	100%
29.	Military Aviation Factory	A military Airport. During the interwar period, a military aviation workshop was operating	25%
30.	Complex of Kaunas Depot Buildings	A cultural heritage object significant in terms of the architecture and engineering solutions	57%
31.	*Urmas* shopping area	The biggest shopping area in Kaunas. Established in 1992 by adapting the warehouses of a Soviet trading base	50%
32.	Shopping centre *Akropolis*	A major shopping centre in the New Town, next to the Nemunas River. 2007	50%
33.	Shopping centre *Mega*	A major shopping centre built in 2005, next to highway A1, thus, it influences the gateway of Kaunas City	50%
34.	Shopping centre *Molas*	A major shopping centre in a residential district, built in 2003	12.5%
35.	Shopping centre *Savas*	A major shopping centre in a residential district, built in 2004, next to Savanorių Street	0%
36.	Shopping centre *Hyper Maxima*	A major shopping centre, next to Savanorių Street, built in 2003. The main façade is combined with a decorative mill	0%
37.	Shopping centre *Maxima Bazė*	A major shopping centre in Aleksotas, built in 2005	12.5%
38.	Kaunas Bus Station	Built in 1936. Reconstructed in 2017. Now, it is the biggest and most modern bus station in Lithuania	62.5%
39.	Kaunas Railway Station	Built around 1860. The complex consists of an administrative and passenger hall building, depot, repair workshops, various warehouses, etc.	75%
40.	Kaunas Railway Tunnel	Built from 1859 to 1861. The only operating tunnel in the Baltic States. Passes through a 30m-high hill, and	100%

		Aukštieji Šančiai residential district is on the hill over the tunnel	
41.	Kaunas Hydroelectric Power Plant	Built in 1960. Architect P. Ryžikas, engineer D. Chrenovas. Economic, environmental and contextual significance	87.5%
42.	Kaunas Sports Hall	Designed by A. Rozenbliumas, 1938-1939, modern architecture, reflects the spirt of the time, technical decisions	87.5%
43.	Kaunas County Public Library	1977–1987, architect Zabulionis, modern-postmodern architecture, the biggest library in Central Lithuania	75%
44.	Cultural centre *Girstutis*	1975, *Girstutis* was built by Kaunas Artificial Fibre Factory. The building was designed for a professional theatre	75%
45.	Yacht Club	1981, architects D. Petkelienė, M. Gimbutienė, a complex near Kaunas Lagoon, near Pažaislis	50%
ICONIC			
46.	Christ's Resurrection Church	1940, architect K. Reisonas, functionalism – modernism architecture, the symbol of the rebirth of the nation	100%
47.	Kaunas City Hall	1542, the chief mason and probably the author of the design B. Chojnauskas, the administrative, commercial and economic centre of the city, the most important architectural dominant of the square to this day	100%
48.	Vytautas the Great War Museum	One of the oldest Lithuanian museums, the current building opened in 1936, architects V. Dubeneckis, K. Reisonas and K. Kriščiukaitis, early functionalism, important in terms of nationality	100%
49.	Kaunas Castle	14th century, Romanesque, Gothic style, a significant symbol of Kaunas history, listed as cultural heritage	100%
50.	House of Thunder (the House of Perkūnas)	A monument of gothic architecture; the real purpose of the house is unknown. It is romanticised in the modern times. The building was used as the trading headquarters of Hanseatic merchants.	100%
51.	Kaunas State Musical Theatre	1891, architect U. Golinevičius, eclectic, baroque revival after reconstruction when Kaunas became the Provisional Capital, the Constituent Seimas began its work here	100%
52.	Kaunas Cathedral Basilica	15th century, gothic/baroque, a cultural monument, the visual and cultural symbol of the city	100%
53.	Church of Vytautas the Great	Ca. 15th century, gothic, rebuilt many times, despite all the changes, it was always a significant visual and cultural symbol of the city	100%
54.	Kaunas Central Post Office	1930–1932, architect F. Vizbaras, 'national style', functionalism, modernism. An important representative building of the Interwar period	100%
55.	St. Michael the Archangel's (the Garrison) Church	1895, designed by architect D. Grimas, neo-byzantine style, built as a representative building of the fortress, expressing luxury and officialdom	100%
56.	Pažaislis Monastery and the Church of the Visitation	17–18th century, founder K.Z. Pacas, a monument of cultural heritage, important as both as a visual dominant and as a symbol of culture	100%
57.	Kaunas Choral Synagogue	1872, historism architecture, architect U. Golinevičius, reflects the cultural diversity of Kaunas City	87.5%
58.	Kaunas Mosque	Built om 1930, architects V. Michnevičius and A. Netyksas, listed in the Register of Cultural Properties, reflects the cultural diversity of Kaunas City	87.5%

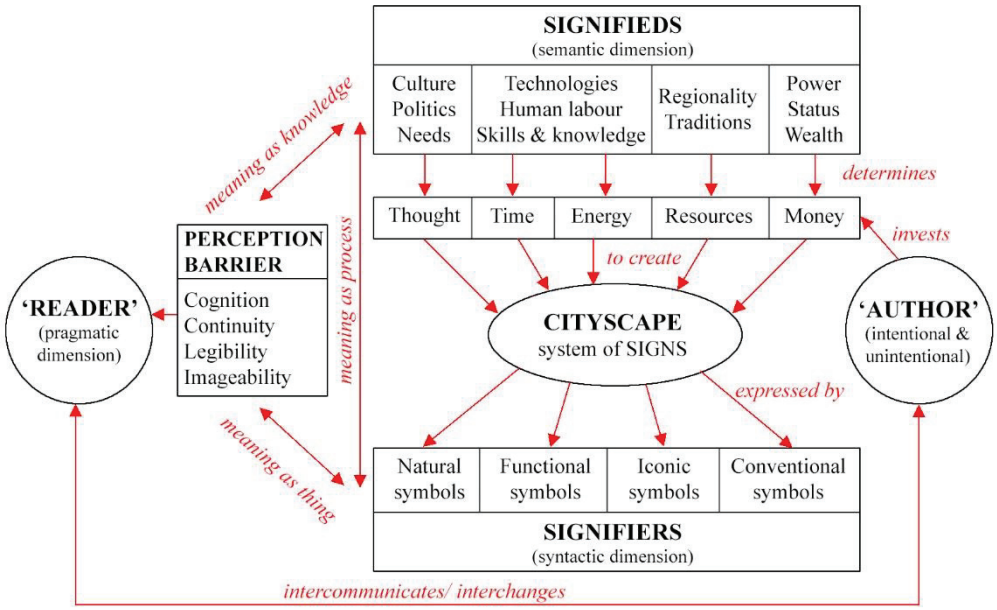
59.	Kaunas Historic Mill Elevator	Historism, 'brick style', the mill's warehouses are protected as cultural heritage, the elevator itself is not protected, but it is an important landmark of the cultural text of Kaunas City	75%
60.	*1000 litų* Building	2008, designed by architect R. Adomaitis, post-modernism, the unique exterior repeats a drawing of the 1000 litas banknote in circulation in 1926–1941	43%
61.	Žalgiris Arena	2011, architects E. Miliūnas and A. Ramanauskas, minimalism, slick-tech and high-tech architecture, a significant location and function	75%
62.	Abandoned hotel *Britanika*	Architect A. Paulauskas, late modernism, was never finished, Soviet times, reflects the period and is a strong visual dominant of the cityscape, 1977–1988	14%
CONVENTIONAL			
63.	Ramybė Park (Old Kaunas Cemetery)	Listed in the Cultural Heritage Register. In 1847–1959, it was the main cemetery in Kaunas. Catholics, Orthodox Christians, Muslims and Evangelical Lutherans had their sectors in this cemetery	87.5%
64.	Petrašiūnai Cemetery	Established in 1939. Many famous personalities denoted by merits to Lithuania were buried here. A lot of tombstones were created by famous sculptors and preserved as art monuments	100%
65.	Aukštieji Šančiai Military Cemetery	Established in 1891. Soldiers of Russia, Germany and Lithuania were buried here. An object protected by the state	87.5%
66.	Žaliakalnis Jewish Cemetery	Started in 1861. In the Soviet times, the cemetery was not looked after. Since 1998, it has been listed in the Register of Cultural Properties	75%
67.	Garden of the Historical Presidential Palace	The palace was designed as a residential house. Its construction started in 1846, the garden was open for the general public. The building served as Kaunas Governor's Residence. During the Interwar period, all the three Presidents of the Republic of Lithuania worked and lived in the palace. The building presently houses a museum	100%
68.	Valley of Songs	A traditional place for Song Festivals. It was founded by composer K. Griauzdė; it has been in use since 1937	100%
69.	Mickevičius Valley	A place related with poet A. Mickevičius (he liked to spend time there), since 1823, it has been named after the poet	87.5%
70.	Kaukas Stairs	1936. The Interwar period. Architects F. Vizbaras and S. Kudokas	100%
MIXED			
71.	Laisvės Avenue	Designed in Kaunas General Plan of 1847, it featured two lanes with a pedestrian path between them and served as the main axis of the central part of the city. Since 1975, it has been a pedestrian avenue	100%
72.	Lithuanian Zoological Garden	Established in 1938 on the initiative of T. Ivanauskas, located between the oakery and Valley of Mickevičius	100%
73.	VDU Botanical Garden	Established in 1923 as the Lithuanian Botanical Science Centre. It includes the manor park which formerly belonged to J. Godlevskis and features ponds and a part of the defensive equipment of Kaunas Fortress	87.5%
74.	9th Fort	One of the Fortress Forts of Kaunas which was used as Kaunas City prison during Nazi occupation. It was the	87.5%

		place of mass murder, since 1958, it has been a museum included in the list of cultural monuments, it is a visual dominant, a monument to the victims of Fascism, built in 1901–1913	
75.	Elements of Kaunas Fortress	A Tsarism period polygonal type defense system (forts and defensive batteries).	87.5%
76.	Žemieji Šančiai Military Campus	Tsarism architecture. Historism style. The biggest military complex in Kaunas City	62.5%
77.	Linkuva Manor	A cultural monument	71%
78.	Freda Manor	A heritage object. Classicism	75%
79.	Former shop *Rėda*	A building of individual project in a residential district, architect E. Miliūnas, Brutalism architecture, reflects the spirit of the time and the general trends, Soviet times, 1976–1986	50%
80.	Former shop *Kalniečiai*	A building of individual project, architect E. Miliūnas, Postmodernist architecture, the biggest shopPing centre at the time, it reflects the spirit of the time and the general trends, Soviet times, 1978–1988	50%
81.	Former shop *Vitebskas*	Architects V. Juršys and V. Paipalas, Soviet times, the original building was redesigned and ultimately became a referential place, 1980	25%
82.	Former restaurant *Pasimatymas*	A shopping centre was built in the residential district of Dainava where a café-restaurant was functioning	25%
83.	Former restaurant *Trys Mergelės*	Architects A. Jakučiūnas, V.Jakučiūnienė, Modernist architecture, it reflects the spirit and the trends of the time, Soviet times, presently abandoned, 1967–1968	50%

APPENDIX 5
Questionnaire for the Assessment of the Meaning of the Place by Experts

Dear Respondent,

I am Ingrida Povilaitienė, a PhD student in History and Theory of Arts at Kaunas University of Technology. The topic of my dissertation is "Assessment and Modelling of the Identity of Cityscape," and one of the constituent parts of the cityscape identity is the meaning of the place. This concept is based on the understanding that the cityscape is not just a physical tangible object. No matter how ordinary it may seem, cultural meaning is always consciously or not necessarily encoded in the cityscape.



Model of formation and interpretation of cityscape meaning,
developed based on Peirce-Morris semiotic triangle. Scheme by the author

To reveal the meaning of the place, the cityscape can be "read as a text" distinguishing and recognising signifiers – symbols of the cultural text (natural, functional, iconic and conventional). However, the meaning understood by each reader not only depends on the level of the 'grammar' knowledge and familiarity with the context of the latter, but it is also filtered by the perception barrier. Based on the literature review, four aspects are essential in the process of the perception of the meaning: ***cognition***, ***continuity***, ***legibility*** and ***imageability***.

The evaluation of the signifiers as distinguished by the doctoral student through the prism of these aspects would not only reveal the territorial distribution of the cultural text symbols in Kaunas City, but also provides significant insights into the re-readability of the semantic load and the possibilities of developing and strengthening the meaning of the place for the future. Expert judgment would allow to avoid misinterpretation of the meaning of the place due to possible lack of knowledge of the

context. Therefore, I hope that Your help in evaluating the symbols of Kaunas City will help to obtain reliable research results. Thank you in advance!

1. Symbol of cultural text. Do you agree that the object included in the table is a symbol of the cultural text of Kaunas City? Write '+' if yes and '-' if no.

2. Assessment by criteria. Evaluate each object according to the following criteria on a five-point Likert scale:

Cognition – the meaning of symbols, knowledge about the object, degree of familiarity (from 1 – little or no knowledge, to 5 – very well known);

Continuity – historicity (from 1 – historical continuity is weak or non-existent, to 5 – strong historical continuity and richness);

Legibility – informativeness, feature of clarity (from 1 – the object is difficult to perceive, to 5 – the object is clear);

Imageability – the ability to evoke strong images to create a powerful impression (from 1 – makes it difficult to evoke images or does not evoke them at all, to 5 – evokes images very easily).

3. Other. If you think that there are other important symbols of Kaunas City cultural text (not included in this table), please write them in the empty fields left at the end of the table.

No.	Object	**1. Symbol of cultural text** (YES or NO)	**2. Assessment by criteria** (from 1 to 5)			
			Cognition	Continuity	Legibility	Imageability
NATURAL SYMBOLS						
1.	Oak Grove					
2.	Pažaislis Pinewood					
3.	Panemunė Pinewood					
4.	Lampėdis Park					
5.	Vytautas Park					
6.	Santaka Park					
7.	Nemunas Island					
8	Kleboniškis Forest					
9	Napoleonas Hill					
10.	Owls Hill					
11.	Nemunas River					
12.	Neris River					
13.	Nevėžis River					
14.	Jiesia River					
15.	Veršvas Creek					
16	Lampėdis Lake					
17.	Kaunas Lagoon					
FUNCTIONAL SYMBOLS						
18.	Draugystė Park					
19.	Kalniečiai Park					

20.	Dainava Park					
21.	Santarvė Park					
22.	Sąjungos Square					
23.	Čečėnijos Square					
24.	KTU Campus					
25.	LSMU Hospital Kaunas Clinics					
26.	Kaunas Clinical (2nd) Hospital (Šilainiai)					
27.	LSMU Veterinary Academy					
28.	S. Darius and S. Girėnas Airport					
29.	Military Aviation Factory					
30.	Complex of Kaunas Depot Buildings					
31.	*Urmas* shopping area					
32.	Shopping centre *Akropolis*					
33.	Shopping centre *Mega*					
34.	Shopping centre *Molas*					
35.	Shopping centre *Savas*					
36.	Shopping centre *Hyper Maxima*					
37.	Shopping centre *Maxima Bazė*					
38.	Kaunas Bus Station					
39.	Kaunas Railway Station					
40.	Kaunas Railway Tunnel					
41.	Kaunas Hydroelectric Power Plant					
42.	Kaunas Sports Hall					
43.	Kaunas County Public Library					
44.	Cultural centre *Girstutis*					
45.	Yacht Club					
ICONIC SYMBOLS						
46.	Christ's Resurrection Church					
47.	Kaunas City Hall					
48.	Vytautas the Great War Museum					
49.	Kaunas Castle					
50.	House of Thunder (the House of Perkūnas)					
51.	Kaunas State Musical Theatre					
52.	Kaunas Cathedral Basilica					
53.	Church of Vytautas the Great					
54.	Kaunas Central Post Office					
55.	St. Michael the Archangel's (the Garrison) Church					
56.	Pažaislis Monastery and the Church of the Visitation					
57.	Kaunas Choral Synagogue					
58.	Kaunas Mosque					

59.	Kaunas Historic Mill Elevator					
60.	*1000 litų* Building					
61.	Žalgiris Arena					
62.	Abandoned hotel *Britanika*					
CONVENTIONAL SYMBOLS						
63.	Ramybė Park (Old Kaunas Cemetery)					
64.	Petrašiūnai Cemetery					
65.	Aukštieji Šančiai Military Cemetery					
66.	Žaliakalnis Jewish Cemetery					
67.	Garden of the Historical Presidential Palace					
68.	Valley of Songs					
69.	Mickevičius Valley					
70.	Kaukas Stairs					
MIXED SYMBOLS						
71.	Laisvės Avenue (FIC)					
72.	Lithuanian Zoological Garden (FN)					
73.	VDU Botanical Garden (FN)					
74.	9th Fort (FI)					
75.	Elements of Kaunas Fortress (FK)					
76.	Žemieji Šančiai Military Campus (FK)					
77.	Linkuva Manor (FK)					
78.	Freda Manor (FK)					
79.	Former shop *Rėda* (FK)					
80.	Former shop *Kalniečiai* (FK)					
81.	Former shop *Vitebskas* (FK)					
82.	Former restaurant *Pasimatymas* (FK)					
83.	Former restaurant *Trys Mergelės* (FK)					
3. Other. Add if you think there are other objects important symbols of the cultural text in Kaunas						

Thanks for your patience!

APPENDIX 6
Distinctive elements forming cityscape identity

PATHS	
Title	**Intensity (vehicles/h)** (*General Plan of Kaunas*, 2011)
High significance paths	***more than 2000 cars/h***
Laisvės av.	Pedestrian path
Vilniaus st.	Pedestrian path
Islandijos r.	3800–5200 (av. 4500)
M. K. Čiurlionio st.	4300
Tunelio st.	4100
K. Baršausko st.	4100
Birštono st. /Gimnazijos st.	4100
Nuokalnės st.	2800–5100 (av. 3950)
Tvirtovės av.	3900
Šv. Gertrūdos st.	2200–5300 (av. 3750)
Karaliaus Mindaugo pr.	3400–3700 (av. 3550)
Prietilčio st.	3300
Jurbarko st.	2800–3800 (av. 3300)
Savanorių pr.	2700–3900 (av. 3300)
Vakarinis bypass	2800–2900 (av. 2850)
Žemaičių r.	3200
Pramonės pr	2500–2900 (av. 2700)
Taikos pr.	1800–3400 (av. 2600)
Birželio 23-ios st.	2400–2800 (av. 2600)
Europos pr.	2500
K. Petrausko st.	2500
Draugystės st.	2300
R. Kalantos st.	2300
Veiverių st./Garliavos r.	2100–2500 (av. 2300)
Utenos st.	2200
Jonavos st.	1800–2400 (av. 2100)
Linkuvos st.	2100
Raudondvario r.	1300–2800 (av. 2050)
Moderate significance paths	***from 800 up to 2000 cars/h***
Baltų pr.	1700–2200 (av. 1950)
Vytauto pr.	1500–2400 (av. 1950)
Parodos st.	1950
Ateities r.	1400–2400 (av. 1900)
Sukilėlių pr.	1900
A. Juozapavičiaus pr.	1800
Šiaurės pr.	1600–1900 (av. 1750)
Jotvingių st.	1700
T. Masiulio st.	1600
Neries krantinė	1300–1900 (av. 1600)
Marvelės st.	1500
Vandžiogalos r.	1500
Kovo 11-osios st.	1300–1600 (av. 1450)
S. Žukausko st.	1300–1400 (av. 1350)
A. Baranausko st.	1200
K. Donelaičio st./E. Ožeškienės st.	1160
V. Krėvės pr.	800–1500 (av. 1150)

Vydūno av.	1100	
P. Lukšio	1100	
H. and O. Minkovskių st.	950	
Vaišvydavos r./Didžioji st.	950	
I. Kanto st.	950	
Kęstučio st.	940	
Vaidoto st.	800–1000 (av. 900)	
Panerių st.	850	
Baltijos st.	800	
Piliakalnio st./Jiesios r.	800	
Marijampolės r./Pietinis bypass	800	
LANDMARKS		
Name	***Type***	***Uniqueness***
Christ's Resurrection Church	Religious	5
St. Francis Xavier Church and Jesuit Monastery	Religious	5
Kaunas Cathedral Basilica	Religious	5
Pažaislis Monastery and the Church of the Visitation	Religious	5
St. George the Martyr Church	Religious	5
St. Michael (Benedictine) Church	Religious	5
Church of Vytautas the Great (the Assumption of the Blessed Virgin Mary)	Religious	5
St. Michael the Archangel's (the Garrison) Church	Religious	4
Kaunas Evangelical Lutheran Church	Religious	4
Holy Cross (Carmelite) Church	Religious	4
Kaunas Reformed Evangelical Church	Religious	4
Aleksotas St. Casimir Church	Religious	4
Kaunas Corpus Christi (Blessed Sacrament) Church	Religious	4
Kaunas Church of the Good Shepherd	Religious	3
Kaunas City Hall	Public	5
Kaunas Castle	Public	5
House of Thunder	Public	5
Kaunas Central Post Office	Public	5
Fire station (Firefighters Palace)	Public	5
Palace of Aukštoji Freda manor	Public	5
Kaunas Ninth Fort Museum	Public	5
Vytautas the Great War Museum	Public	4
Kaunas State Musical Theatre	Public	4
Žalgiris Arena	Public	4
KTU *Santakos Slėnis* 8-storey building	Public	4
Kaunas County Public Library	Public	3
Complex of Kaunas Fortress Artillery Officers' Buildings	Public	3
Clinic *Ortopedijos technika*	Public	3
Kaunas *Girstutis* building	Public	3
Funeral home *Liūdesys*	Public	3
Kaunas Railway Station	Public	2
Cultural Centre of J. Janonis Paper Factory (former)	Public	2
Kaunas Construction and Service Training Centre (former Pažaislis Municipal House)	Public	2
Kaunas Vaišvydava Basic School	Public	1
Shopping mall *Akropolis*	Commercial	4
Shopping Mall *Molas*	Commercial	2
Shopping Mall *Maxima Bazė*	Commercial	2
Statoil gas station (Taikos pr.)	Commercial	1

Grocery store *Šilas*	Commercial	1
Grocery store *Maxima*	Commercial	1
Grocery store *Maxima*	Commercial	1
Business centre *1000*	Business	4
Office building *Sqveras*	Business	4
Business centre *Magnus*	Business	4
Building of Urban Design Insitute (*BLC*)	Business	3
Telia (former *Lietuvos Telekomas*, *Teo*) building	Business	2
Abandoned Hotel *Britanika*	Business	1
15-storey multi-functional complex *Žaliakalnio terasos*	Residential	3
13-storey apartment buildings (Sukilėlių pr 87a)	Residential	3
3-storey apartment building (Vaidoto st. 36) (*Tires in the sky*)	Residential	3
11-storey apartment building (Savanorių pr. 172)	Residential	2
12-storey apartment building (A. Krikščiukaičio st. 6)	Residential	1
9-storey apartment building (Europos pr. 14)	Residential	1
9-storey apartment building (Piliakalnio st. 11)	Residential	1
9-storey apartment building (M. Riomerio st. 33)	Residential	1
9-storey apartment building (M. Riomerio st. 35)	Residential	1
16-storey apartment building (V. Krėvės pr. 45)	Residential	1
16-storey apartment building (V. Krėvės pr. 47)	Residential	1
13-storey apartment building (V. Krėvės pr. 8a)	Residential	1
12-storey apartment building (Birželio 23-iosios st. 2)	Residential	1
9-storey apartment building (Taikos pr. 43)	Residential	1
9-storey apartment building (Taikos pr. 41)	Residential	1
9-storey apartment building (Taikos pr. 39)	Residential	1
13-storey apartment building (Taikos pr. 36)	Residential	1
13-storey apartment building (Taikos pr. 34)	Residential	1
9-storey apartment building (Basanavičiaus a. 53)	Residential	1
9-storey apartment building (Basanavičiaus a. 51)	Residential	1
12-storey apartment building (Draugystės st. 3a)	Residential	1
12-storey apartment building (Draugystės st. 3c)	Residential	1
12-storey apartment building (Draugystės st. 3b)	Residential	1
12-storey apartment building (Kovo 11-osios st. 60)	Residential	1
12-storey apartment building (M. Gimbutienės st. 7)	Residential	1
12-storey apartment building (R. Kalantos st. 98)	Residential	1
9-storey apartment building (Prancūzų st. 90b)	Residential	1
9-storey apartment building (Ratnyčios st. 11)	Residential	1
9-storey apartment building (Raudondvario r. 200)	Residential	1
9-storey apartment building (Raudondvario r. 206)	Residential	1
9-storey apartment building (Raudondvario r. 208)	Residential	1
12-storey apartment building (P. Lukšio st. 64)	Residential	1
12-storey apartment building (S. Žukausko st. 2)	Residential	1
13-storey apartment building (P. Lukšio st. 68)	Residential	1
12-storey apartment building (Sukilėlių pr. 87)	Residential	1
13-storey apartment building (Šiaurės pr. 34)	Residential	1
12-storey apartment building (Taikos pr. 117)	Residential	1
12-storey apartment building (Taikos pr. 119)	Residential	1
9-storey apartment building (Taikos pr. 117b)	Residential	1
9-storey apartment building (Mosėdžio st. 7)	Residential	1
Fountain of Laisvės Avenue	Infrastructural	4
Bridge to Nemunas Island	Infrastructural	4
Kaunas passenger pier	Infrastructural	3

Complex of *Kauno Grūdai* Factory	Industrial	4
Complex of *Pieno Centras* buildings	Industrial	5
Factory *Kauno Stiklas*	Industrial	3
8-storey abandoned industrial building (Ateities pl. 30a)	Industrial	1
Kaunas combined heat and power plant	Industrial	2
Kaunas combined heat and power plant (chimney)	Industrial	1
Kaunas combined heat and power plant (chimney)	Industrial	1
Petrašiūnai Thermal Power Plant (chimney)	Industrial	1
Petrašiūnai Thermal Power Plant (chimney)	Industrial	1
Raudondvario 7-asis takas 4 (chimney)	Industrial	1
Drobės g. 62 (chimney)	Industrial	1
Drobės g. 66a (chimney)	Industrial	1

APPENDIX 7
Materials of the author's publications used in some parts of the dissertation

Publication	The material of the publication was used in dissertation parts/sections
[S4; LV] **Povilaitienė, Ingrida**; Kamičaitytė-Virbašienė, Jūratė; Zaleckis, Kęstutis. Evaluation of formants of cityscape identity using fractal analysis (Kaunas case) // Architecture and urban planning = Arhitektūra un pilsetplānošana. Riga : Warsaw : RTU Press; De Gruyter. ISSN 1691-4333. eISSN 2255-8764. 2018, vol. 14, p. 96-104. DOI: 10.2478/aup-2018-0013. [Art and Architecture Complete] [M.kr.: H 003] [Contribution: 0.334]	Introduction, Section 3.6.
[S4; LT] **Povilaitienė, Ingrida**; Kamičaitytė-Virbašienė, Jūratė. Vietos jausmo reiškinys kaip neatsiejamas miestovaizdžio identiteto dėmuo (Kauno miesto atvejis) = Phenomenon of sense of the place as an integral dimension of cityscape identity (Kaunas case) // Science - future of Lithuania: K. Šešelgis Readings - 2017 = Mokslas - Lietuvos ateitis: K. Šešelgio skaitymai - 2017. Vilnius : Technika. ISSN 2029-2341. eISSN 2029-2252. 2017, vol. 9, no. 1, p. 16-29. DOI: 10.3846/mla.2017.996. [Academic Search Complete; Academic OneFile; Directory of Open Access Journals] [M.kr.: H 003] [Contribution: 0.500]	Section 3.2
[S4; LT] **Povilaitienė, Ingrida**. Residents' sense of the place in Galata neighbourhood, in Istanbul // Journal of sustainable architecture and civil engineering = Darnioji architektūra ir statyba. Kaunas : Technologija. ISSN 2029-9990. eISSN 2335-2000. 2016, vol. 14, iss. 2, p. 13-19. DOI: 10.5755/j01.sace.15.2.15121. [IndexCopernicus] [M.kr.: H 003] [Contribution: 1.000]	Section 1.1.
[P1d; PT] **Povilaitienė, Ingrida**; Kamičaitytė-Virbašienė, Jūratė. Theoretical premises of cityscape identity evaluation // CITTA 8th annual conference on planning research / AESOP TG public spaces & urban cultures meeting: generative places smart approaches happy people : book of proceedings / Edited by Sara Santos Cruz, Fernando Brandão Alves, Paulo Pinho. Porto : University of Porto, 2015. ISBN 9789727521951. p. 381-401. [M.kr.: H 003] [Contribution: 0.500]	Introduction, Section 1.1. Chaper 2.

LIST OF PUBLICATIONS

Articles in reviewed periodical scientific publications

Publications indexed in the Web of Science database without citation index

1. [S1; LT] Dringelis, Liucijus Albertas; Ramanauskas, Evaldas; **Povilaitienė, Ingrida**; Mačiukėnaitė, Justina. Exploration and respectation of the spatial structure of cities, towns, townships and villages as a significant formant of their identity // Journal of architecture and urbanism. Vilnius ; Abingdon : Technika ; Routledge-Taylor & Francis. ISSN 2029-7955. eISSN 2029-7947. 2015, vol. 39, iss. 1, p. 79-100. DOI: 10.3846/20297955.2015.1028509. [Emerging Sources Citation Index (Web of Science); Scopus; CSA/ASCE Civil Engineering Abstracts] [M.kr.: H 003] [Contribution: 0.250]

In other peer-reviewed scientific publications

2. [S4; LV] **Povilaitienė, Ingrida**; Kamičaitytė-Virbašienė, Jūratė; Zaleckis, Kęstutis. Evaluation of formants of cityscape identity using fractal analysis (Kaunas case) // Architecture and urban planning = Arhitektūra un pilsetplānošana. Riga : Warsaw : RTU Press; De Gruyter. ISSN 1691-4333. eISSN 2255-8764. 2018, vol. 14, p. 96-104. DOI: 10.2478/aup-2018-0013. [Art and Architecture Complete] [M.kr.: H 003] [Contribution: 0.334]

3. [S4; LT] **Povilaitienė, Ingrida**; Kamičaitytė-Virbašienė, Jūratė. Vietos jausmo reiškinys kaip neatsiejamas miestovaizdžio identiteto dėmuo (Kauno miesto atvejis) = Phenomenon of sense of the place as an integral dimension of cityscape identity (Kaunas case) // Science - future of Lithuania: K. Šešelgis Readings - 2017 = Mokslas - Lietuvos ateitis: K. Šešelgio skaitymai - 2017. Vilnius : Technika. ISSN 2029-2341. eISSN 2029-2252. 2017, vol. 9, no. 1, p. 16-29. DOI: 10.3846/mla.2017.996. [Academic Search Complete; Academic OneFile; Directory of Open Access Journals] [M.kr.: H 003] [Value: 0,500]

4. [S4; LT] **Povilaitienė, Ingrida**. Residents' sense of the place in Galata neighbourhood, in Istanbul // Journal of sustainable architecture and civil engineering = Darnioji architektūra ir statyba. Kaunas : Technologija. ISSN 2029-9990. eISSN 2335-2000. 2016, vol. 14, iss. 2, p. 13-19. DOI: 10.5755/j01.sace.15.2.15121. [IndexCopernicus] [M.kr.: H 003] [Contribution: 1.000]

Conference material

5. [P1d; PT] **Povilaitienė, Ingrida**; Kamičaitytė-Virbašienė, Jūratė. Theoretical premises of cityscape identity evaluation // CITTA 8th annual conference on planning research / AESOP TG public spaces & urban cultures meeting: generative places smart approaches happy people : book of proceedings / Edited by Sara Santos Cruz, Fernando Brandão Alves, Paulo Pinho. Porto : University of Porto, 2015. ISBN 9789727521951. p. 381-401. [M.kr.: H 003] [Contribution: 0.500]

6. [P1f; LT] Mačiukėnaitė, Justina; **Povilaitienė, Ingrida**. Upės vaidmuo miesto centre: pasaulio patirties apžvalga = The role of river in the city centre: the world's experience review // 7 Lietuvos urbanistinis forumas: miestas ir vanduo / Kauno technologijos universitetas. Kaunas : Technologija. ISSN 2029-3399. 2014, p. 27-33. [M.kr.: T 004] [Contribution: 0.500]

CONFERENCE PRESENTATIONS

In total, participation in the 7 scientific conferences abroad and in Lithuania:

1. 4th International Conference "Advanced Construction 2014". Presentation title "Identity Features of Spatial Structure in Small Cities Towns and Villages in Dzūkija", **I. Povilaitienė**, J. Mačiukėnaitė. Oral presentation; extended abstract published in the conference proceedings "4th International Conference Advanced Construction 2014 Proceedings" (ISSN 2029-1213). 2014-10-10. Kaunas, Lithuania.
2. International Journal of Arts & Sciences (IJAS) Annual Multidisciplinary Conference 2015. Presentation title "Formants of City Identity and Evaluation of their Significance in a Cityscape Using Fractal Analysis (Kaunas Case)", **I. Povilaitienė**, J. Kamičaitytė-Virbašienė, K. Zaleckis. Oral presentation; abstract published in the conference proceedings "Conference of the International Journal of Arts and Sciences" (ISSN 1943-6114). 2015-06-16 - 2015-06-19, Florence, Italy.
3. CITTA 8th Annual Conference on Planning Research "Generative Places. Smart Approaches. Happy People." Presentation title "Theoretical premises of cityscape identity evaluation". **I. Povilaitienė**, J. Kamičaitytė-Virbašienė. Oral presentation; article published in the conference proceedings "AESOP TG: book of proceedings" (ISBN 9789727521951). 2015-09-24 - 2015-09-25, Porto, Portugal.
4. 3th International Conference "Ecological Architecture 2015". Presentation title "Assessment and Modeling of Townscape Identity: an Overview of Lithuanian and International Legislative Framework and Practical Experience". **I. Povilaitienė**. Extended abstract published in the conference proceedings "Ecological architecture 2015: proceedings of the 3th international scientific conference dedicated to sustainability in architecture and planning" (ISSN 2345-0738). 2015-10-22 - 2015-10-23, Kaunas, Lithuania
5. 5th International Conference "Advanced Construction 2016". Presentation title "Residents' Sense of the Place in Galata Neighbourhood, in Istanbul". **I. Povilaitienė**. Oral presentation, extended abstract published in the conference proceedings "5th International Conference Advanced Construction 2016 Proceedings" (ISSN 2029-1213). 2016-10-06 - 2016-10-07, Kaunas, Lithuania.
6. Youth scientists conference "K. Šešelgio skaitymai - 2017". Presentation title "Vietos jausmo reiškinys neatsiejamas miestovaizdžio identiteto dėmuo (Kauno miesto atvejis)". **I. Povilaitienė**, J. Kamičaitytė-Virbašienė. Oral presentation; article published in the conference proceedings "Mokslas - Lietuvos ateitis" (ISSN 2029-2341). 2017-05-12, Vilnius, Lithuania.
7. Riga Technical University 59th International Scientific Conference 2018. Presentation title "Evaluation of Formants of Cityscape Identity using Fractal Analysis (Kaunas case)". **I. Povilaitienė**, J. Kamičaitytė-Virbašienė, K. Zaleckis. Poster presentation; article pubished in journal "Architecture and Urban planning" (ISSN 1691-4333). 2018-10-11, Riga, Latvia.

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