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# LANDSCAPE ARCHITECTURE AND ART

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## INTRODUCTION

The compilation is published during the period when three Baltic States celebrate their centenary of independence. On this occasion, there are presented studies of Lithuanian architects that deal with the conservation opportunities of the cultural and historical heritage in the diversity of the development of urban construction. In the Lithuanian practice, it meets the guidelines referred to in the documents of the international organizations.

The trend is welcomed that the design solutions of the Lithuanian urban environment are based on ecological design, natural dynamics, street art, material reuse. Naturally, this leads to different social and psychological reactions of the urban population, and they vary depending on the aesthetic quality of the context.

To successfully implement the urban building projects in Lithuania, a tight context is searched with the attitude of the urban population against the public space and the modern design trends of art. Part of the respondents made a proposal to build landscaped public areas that offer opportunities to a wider range of activities.

The study of the eastern part of the old town of Vilnius includes two building ensembles, forming the characteristic ancient silhouette. The purpose of the research is to answer the question about the possible height of the new building of the former historical suburb of Vilnius.

The comparative method is one of the methods of the studies which provides information from a different viewpoint. Cognitive is the research on the four Baltic countries – Estonia, Latvia, Lithuania, and Poland, which are unified by the region with similar cultures and a common feature – the status of the post-socialist countries in Europe.

Technological innovations, industrial design, and 3D printing are nowadays an integral part of the whole that allows you to forecast development opportunities of the urban space. The research continues to discuss the application of technological opportunities in greater depth.

An important point is to know how well the design education of the landscape space prepares students for further practical action. The researchers of the school of landscape architecture in Krakow also discuss about the importance of education. Currently, in Poland, there is no doubt that landscape architecture is an independent professional discipline that plays a very important role in the development of each infrastructure of the urban environment.

## PRIEKŠVĀRDS

Rakstu krājums iznāk laika posmā, kad trīs Baltijas valstis svin savas neatkarības pastāvēšanas simtgadi. Šoreiz ir apkopoti Lietuvas arhitektūras speciālistu pētījumi, kas aplūko kultūrvēsturiskā mantojuma saglabāšanas iespējas pilsētbūvnieciskās attīstības daudzveidībā. Lietuvas praksē tas atbilst starptautisko organizāciju dokumentos norādītajām pamatnostādnēm.

Atzinīgi ir novērtēta tendence, ka Lietuvas pilsētvides dizaina risinājumu pamatā tiek pielietots ekoloģiskais dizains, dabas dinamika, ielu māksla, materiāla atkārtota izmantošana. Protams, tas izraisa dažādas pilsētas iedzīvotāju sociālās un psiholoģiskās reakcijas, un tās atšķiras atkarībā no estētiskās kvalitātes konteksta.

Lai veiksmīgi īstenotu pilsētu apbūves projektus Lietuvā, tiek meklēts ciešs konteksts ar pilsētas iedzīvotāju attieksmi pret sabiedrisko telpu un mākslas mūsdienu dizaina tendencēm. Daļa aptaujātie izteica priekšlikumu veidot labiekārtotas sabiedriskās vietas, kas piedāvā iespējas plašākam aktivitāšu spektram.

Pētījums par Viļņas vecpilsētas austrumu daļu aplūko divus apbūves ansambļus, kas veido raksturīgo senatnīgo siluetu. Izpētes mērķis bija atbildēt uz jautājumu par jaunās apbūves iespējamo augstumu bijušajā vēsturiskajā Viļņas priekšpilsētā.

Salīdzinošā metode ir viena no pētījumu metodēm, kas sniedz informāciju no cita skatu punkta. Izzinoša ir izpēte par četrām Baltijas jūras valstīm – Igauniju, Latviju, Lietuvu un Poliju, kuras vieno reģions ar līdzīgu kultūru un kopīgu iezīmi - postsociālisma valstu statuss Eiropā.

Tehnoloģiskās inovācijas, industriālais dizains un 3D druka ir mūsdienās neatņemams kopums, kas ļauj prognozēt pilsēttelpas attīstības iespējas. Pētījums turpina padziļināti plūkot tehnoloģisko iespēju pielietojumu.

Svarīgs jautājums ir zināt, cik labi ainavtelpas dizaina izglītība sagatavo studentus turpmākai praktiskai darbībai. Par izglītības nozīmi diskutē arī Krakovas ainavas arhitektūras skolas pētnieki. Polijā patlaban nav šaubu par to, ka ainavu arhitektūra ir neatkarīga profesionālā disciplīna, kas spēlē ļoti svarīgu lomu ikvienas pilsētvides infrastruktūras attīstībā.

**Aija Ziemeļniece**
Editor in Chief

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# Changes of approach to urban context in international guidelines and experiences in Lithuanian urban environment

Eglė Navickienė, Edita Riaubienė, *Vilnius Gediminas Technical University, Lithuania*

**Abstract. The focus of the research is the concept of context, guidelines for the approach to it, and the ways by which it was regarded in the development of urban environment. The paper defines how these approaches and practices changed during the last century. During the last century, an especially dynamic and turbulent one, Lithuanian state experienced divergent and controversial periods: independence (1918-1940), World War II (1939–1945), Soviet period (1944–1990) and independence restored (1990-present). The paper discusses the Western attitudes and the evolution of approach towards context while dealing with urban environment, and peculiarities of Lithuanian practice in conformity with these attitudes during last century.**

**The theoretic investigation is grounded by the documents formulated and declared by international organisations like CIAM, UNESCO, ICOMOS and others, as accumulations of pioneering thought. Particularly, their statements that consider the surrounding context as basis, principle, or inspiration for the creating, transforming or reconstructing the urban environment are analysed. The term context is used as a generalising term, an umbrella one, which covers several terms used in the documents or literature to define closer or wider urban environment while dealing with it. The paper focuses mostly on historical urban situations, and wide range of activities in changing the environment from architect or landscape architect's professional point of view.**

**The theoretic analysis is followed by the critical review of certain experiences in Lithuanian practice at that time, in characteristic redevelopment of spaces in the main cities (state capitals). The identified evolution reveals the expansion of the concept of urban context and growing regard for it both in theory and in practice. The evolution of contextual approach in Lithuanian practice follows the guidelines stated in documents of international organisations in spite of its political situation, but the research discloses its certain peculiarities.**

**Keywords: context, contextual approach, Congrès internationaux d'architecture moderne (CIAM), UNESCO documents, ICOMOS documents, historic urban landscape**

## Introduction

During the last century, urban landscape experienced extreme quantitative changes towards massive new developments. Qualitative aspects of progressive development trends point to even bigger issues as the legacy of last century features the decline of cultural significance with its deeper values, social inclusion, rootedness, and communicative qualities. The extent of urban transformation is incredible when progressive modernity is compared with meaningful cultural patterns and living tradition of pre-modern city. Although until the advent of modernity, the historic cities were never 'historic' and preserved in modern sense, they featured balanced inherent evolution following the traditional patterns without substantial transformations [1]. The dramatic gap of development of urban landscape comparing the cultural evolution processes of traditional societies and accelerated modern urban development brings forth the question of dealing with inherited urban context while bringing to life new objects of any type and any scale. The approach to existing context is the sharper question as the bigger difference in physical parameters, social patterns and semantic meanings occurs between a new element and the inherited environment.

The paper deepens into the attitudes of an architect or a landscape architect towards existing context while designing a new urban element. During the last century the understanding what context is, how much it is important, what aspects of context should be taken into account while dealing with the inherited situations, was constantly changing. The paper aims to define the concept of context, the guidelines for the approach to it, and the extent and ways by which it was regarded in the new developments in certain chronological periods. The evolution how these approaches and practices changed during the last century is described. The theoretic investigation is grounded by the statements and documents formulated and declared by international organisations like CIAM, ICOMOS, and UNESCO, as these manifestos are considered as the leading and guiding international contemporary thought. The paper deepens into particular statements of these documents that define or explain the reasons for the notion of context of that time with its certain significance and extent and point to ignoring or encouraging the consideration of the context as basis, principle, or precondition for the creating, transforming or reconstructing the urban landscape.

The period investigated is approximately the last century. If defined precisely, it covers period 1918–2018 and it remarkably matches with the centennial anniversary when Finland, Estonia, Lithuania, Poland and Latvia regained their independence in 1918, and with the topic this particular issue of the journal commemorates as well. Although we are not framing the territorial scope of the progressive theoretic thought stated in documents by international organisations mentioned above, the critical review of certain examples of practice, that follows theoretic investigation, focuses on the cases that are located in Lithuania, in its main cities: capital Vilnius and temporary capital Kaunas (1920–1939). The selected cases of redevelopment of built and open spaces reflect the approaches to context in practice, characteristic for that time.

The problem of dealing with context is the most relevant in introducing new elements into urban landscapes saturated with cultural imprints. Thus, the paper focuses mostly on historical urban situations, and wide range of activities in changing the environment in architectural or landscape architecture terms, as "architecture always creates, re-creates and destroys all at the same time" [2, *46*].

Last century faced immense changes in paradigms in the fields of architecture, landscape architecture, heritage preservation, and urban development. Consequently, the notions, definitions, and extent of context as the surrounding environment that interacts with a new urban element were shifting. Talking about urban context, we use the term context as a generalising term, an umbrella one, which covers terms used in the documents or literature to define closer or wider environment and that bear certain meanings of that time: setting, surroundings, environment, cultural landscape, urban historical site, place, historic urban landscape, etc. Rephrasing the definitions in the key dictionaries, context is situation within which space or object exists and in terms of which it is perceived1. The notion of context covers several layers: natural landscape and climatic circumstances; man-made built environment like urban pattern, spaces, buildings; social activities and experiences; cultural meanings and spirit of place. It took several decades for modern society to disclose these layers.

[1] *Definitions of 'context': the situation within which something exists or happens, and that can help explain it in Cambridge Dictionary: https://dictionary.cambridge.org; the circumstances that form the setting for an event, statement, or idea, and in terms of which it can be fully understood in Oxford Dictionary: en.oxforddictionaries.com*

**The apparent shift of architectural concept: from CIAM to Team X**

The 19th century society have oscillated between the extremes of totally planned and industrialised utopias and the denial of the reality of machine production [3]. Such fluctuation is reflected in the theoretical works of C.-N. Ledoux, E.-E. Viollett-le-Duc, A. W. N. Pugin, J. Ruskin, W. Morris, E. Howard, G. Semper, C. Sitte, O. Wagner, A. Loos and others. The architectural practice in 19th century used a lot of neo-styles, and the circle of imitations had expanded to include the whole domain of architectural history [4]. After 1850, this eclectic architectural culture favoured an intermingling of styles in all the European countries. It led to changes in the styles of the turn of the 20th century, when the architecture searched for new ways instead of using historical architectural elements or motifs. The new materials, developing new technologies and emerging new functions required corresponding forms and decisions.

According to K. Frampton, the history of modern architecture is as much about consciousness and polemical intent as it is about buildings themselves [3], so it is essential to observe in this chapter the deliberately formulated theoretical insights on architecture at that time and search for the articulation of conceptual context of architecture.

The internationally influential organisation *Congrès internationaux d'architecture moderne* (CIAM, established in 1928) had set the ambitious targets to formulate the contemporary program of architecture, to advocate the idea of modern architecture. These objectives allow grasping the contextual inclination towards technology, economy and society and "defined new socially transformative roles for architects and architecture, by convincing that architecture should serve the many and not the few" [5].

CIAM's *La Sarraz Declaration* (1928) [6] is the manifest for the totally new concept of architecture where architects have great professional obligations towards society. The thesis "architecture can spring only from the present time" and must "satisfy the spiritual, intellectual, and material demands of present-day life" testified the complete focus on the current person needs and implicated the strict rejection of the former achievements and celebrated distancing from tradition. Architectural phenomenon at that time was tightly inter-linked with and dependent on "the economic order and of social life". Such understanding pointed to yet unfamiliar architectural context, that can be characterised by terms of economic system, economic efficiency, rationalisation, standardisation, simplification, reduction, industrial technology. The focus was made on town planning "as the organisation of collective life", that is conditioned by "functional order", but not by "the claims of pre-existent aestheticism".

This CIAM very first declaration has formulated the completely different architectural context, expressed through the urban planning and functional order, by highlighting the economic and social aspects and totally denying the previous importance of tradition and aesthetic ("architecture must be set free from /../ preserving the formulas of the past").

*The Athens Charter for the Restoration of Historic Monuments* (1931) can be seen as the reaction to the statements of the *La Sarraz Declaration* and like a certain counterbalance to its revolutionary approach [7]. This Charter obviously represents the attitude of that time towards safeguarding the architecture: "the historic and artistic work of the past should be respected, without excluding the style of any given period". The charter focused on the preserving the historical architectural masterpieces and insisted to respect the character of "the neighbourhood of ancient monuments". The charter expressed the passive attitude of architectural creativity when new erection must be visually consistent with historic surroundings ("certain particularly picturesque perspective treatment should be preserved").

As D. Rodwell [8] aptly have noticed, the two opposite architectural approaches were identified in two documents of similar time and similar titles: *The Athens Charter for the Restoration of Historic Monuments* (1931) represents the conservation and CIAM *The Athens Charter* (1933) [9] promotes the modern movement. The latter document (composed by Corbusier and published in 1943) keeps the spirit of the *La Sarraz declaration*. It mainly deals with the concept of "Functional City". The modern movement conceptual context was understood as urbanism with domination of economic, social and political indicators. The function of dwelling was emphasised beside the working, leisure and circulation. In general, architect's activities were aimed there at the creation of a healthy human environment and his main creative elements were "three raw materials: sun, vegetation and space".

As the inevitable response to the conservational approach, CIAM *The Athens Charter* (1933) admits that "witnesses of the past should be respected due to their historical, sentimental and artistic value", but pointed out the strict condition: "if their preservation does not entail the sacrifice of keeping people in unhealthy conditions". CIAM *The Athens Charter* rejected "any narrow-minded cult of the past", denied "the cult of picturesque and the historical", and didn't tolerated the "practice of using styles of the past on aesthetic pretexts for new structures erected in historic areas".

In general, CIAM *The Athens Charter* gave priority to creating healthy physical environment that satisfies the needs of a person and encouraged new architecture in respect to social environment and economy. The architectural context excluded the tradition, the history achievements, the aesthetic and visual concern; only the today's conditions, opportunities and needs are relevant. Heritage can exist autonomously as a museum object, without its authentic environment, and only if it does not interfere with the welfare of the community.

The World War II had changed the balance of the architecture; the industrial revolution had increased because of war industry. Consequently, the new building techniques, new materials, new usages of materials and new methods for structuring came to light [10]. The ideas of CIAM *The Athens Charter* were influential during the period after WWII as it was reaffirmed at the CIAM VI conference in 1947 [11]. The novelty of "Reaffirmation" was the manifested return of architecture to the realm of art and the necessity to "enrich the aesthetic language of architecture" for better compliance to human emotional needs.

After WWII the CIAM ideas had triumphed, the concept of "Functional City" seemed to solve many housing problems all over the world. However, in the 1950s the "new architecture" form and planning came under the severe criticism. The rationalism and technological standardisation produced intolerable uniformity and monotony, and formed inhumane environment. CIAM VIII conference in 1951 considered the societal, historical, and cultural problems that modern movement have confronted.

At CIAM IX conference in Aix-en-Provence in 1953, the problem of the identification with urban environment was discussed [12]. This caused a radical shift in the modern movement's conception of dwelling understood as "maschine for living" to the concept of "habitat" as encompassing patterns of living and dwelling in all of their complexity.

The CIAM X conference (1956) was the breaking point of CIAM and the emergence of Team X [13]. The new ideas included the introduction of human and social sciences in design, the concepts of culture, history, and regionalism inclusion in the discipline and practice of architecture. The participation of users in design process was the original idea. The oversimplification of architecture was rejected and complexity and contradiction in built environment was promoted.

As it was aptly observed by Baghdadi [14], the second half of the 20th century is comparable to the Renaissance. It represents the major shift of architectural paradigm towards systemic approach. Architecture, being closely related to economy and having the commitment for the society now in its conceptual context have recovered the artistic category and included the aesthetic requirement.

*Fig. 1. Vokiečių avenue in Vilnius Old Town, 2018.*

*Fig. 2. The secondary school in Vilnius Old Town, built in 1964,*
*now Salomėja Nėris gymnasium, 2018.*

As a certain revival of architecture can be perceived the extension of it's context by incorporating historical and cultural concepts.

The change of reduced architecture conceptual context to the wide and multifaceted context didn't happen naturally. Originally, it was rejected by supporters of modern movement, then legitimised over time in the 1960s and accepted by the architectural community since 1970s.

During interwar period Lithuania have gained Independence and started creating the national state. The architectural concept at that time followed the tradition of the 19th century, but in the fourth decade of the 20th century the modest applications of the modern movement can be seen in Lithuanian architecture.

The ideas of CIAM was very influential in Lithuania after the WWII, when there was a great need to rebuild the ruined cities. Lithuania was occupied by Soviets and the ignorance of historical context can be perceived as an ideological proposition. The redevelopment of Vokiečių avenue in Vilnius Old Town, that was erected instead of the ruined historic blocks, can be the example of such approach (Fig. 1). The design of apartment buildings (1953-1955) was made by architects from Petersburg L. Anikina and L. Kazarinsky. The reconstruction task (1948) was to create the most favourable cultural, household and sanitary-hygienic conditions for the population. The space of demolished quarters was expected to use for new streets and squares, for the maximum afforestation of the city, and for improvement of transport conditions [15]. These objectives correspond to the ideas of "Functional City" declared in *The Athens Charter*. The new avenue was planned about ten times wider than previously was (from 4 to 35 meters). The new structure ignores the former environmental character, claims the rational principles of straight lines, large spaces and masses. One side of the street was formed of the 4-story buildings of pseudo-classical architecture (stalinistic architecture style). This public space was formed in 1959 and violated the existing spatial structure of old Vilnius by introducing the attributes of modern socialistic city. The secondary school, as the extension of the avenue was built in 1964 by the project of architect L. Kazarinsky (Fig. 2). The modernistic architecture stands out of the historical architectural environment, but makes it possible to exhibit the baroque church, like a piece of art (like in the museum). Such a spatial solution meets the CIAM's heritage provisions to preserve the object, but to ignore the environment of the protected item.

**Context as physical built environment perceived visually in 1960-1970s**

Talking further about the change of mind in approach to context as the base and support for the design of a new urban element introduced into inherited environment, there was a great push forward in the beginning of 1960s, when international legal regulation by the UNESCO (The United Nations Educational, Scientific and Cultural Organization, founded in 1945), ICOMOS (The International Council on Monuments and Sites, founded in 1965) and other international organisations started. Since identifying the problems faced, the legal documents adopted by these organisations declared the progressive statements on principles, policies, and guidelines for issues of the greatest relevance at that time. And the most relevant issue concerning urban environment at that time was the conservation of its valuable elements. International doctrine towards urban environment and its safeguarding, maintenance and management in the initial legal regulation by the UNESCO and ICOMOS organisations explains the reasons for the specifics of that period in dealing with context.

In the international doctrine of that time, urban territory was considered in a fragmentary way, from the points of view of relevant fields. Symptomatically, the first two documents adopted in the beginning of 1960s, that concern safeguarding of urban landscape, reflect two different approaches based on landscape and architectural disciplinary fields, and each one pick out their object of interest in urban territories. *Recommendation concerning the*

*Fig. 3. The apartment building in Vilnius, in Pilies Str., built in 1979, 2018.*

*safeguarding of the beauty and character of landscapes and sites* focuses on the protection of "natural, rural and urban landscapes and sites, whether natural or man-made, which have a cultural or aesthetic interest" [16]. *The Venice charter-1964* talks about historic monuments and sites, and its focus is on architectural monuments of exceptional aesthetic and historic value within "the urban or rural setting in which is found" [17]. It should be emphasized, that in these documents and the next ones adopted by UNESCO and ICOMOS in the following decade that talk about urban territories, like *Resolutions of the Symposium on the introduction of contemporary architecture into ancient groups of buildings* and *Recommendation concerning the Safeguarding and Contemporary Role of Historic Areas*, the second approach concerning architectural monuments was elaborated much more than the first one concerning landscapes, and than the urban outlook as well [18; 19]. International doctrine of that time was "mainly focused on architecture, even when related to historic urban areas (…). What we are missing here are the notions that would make an urban area *urban* beyond architecture (if possible)" [20; 23]. The other important point here is the fact that the valuable urban (in the point of view of that time – architectural) environment was treated reduced up to the tangible elements that constitute it, its "significance was universally assumed to reside on material form" [21, *56*]. The physical built environment is the central issue in urban territories; it excludes movable forms and non-material expressions [22]. As the protection of urban environment (at that time – mainly architectural one) was focused on the tangible dimension of cultural heritage assets, its management was mostly defined by an intolerance to change [23, *245*], where urban landscape of artistic and historical value was looked on as a picturesque and static view.

The approach towards context prevailing in 1960–1970s is explained by the key attitudes expressed in documents by UNESCO and ICOMOS international organisations. In valuating urban landscape, and consequently, in treating urban environment as the context for introducing changes, the architectural segment of urban environment was prioritized above the landscape and the urban segments; the focus was on the material aspects of the built environment; and significant urban spaces were managed by freezing them as static pictures. The perception of urban spaces, in the treatment by professionals like architects or landscape architects, was of limited scope, relying on human senses, and especially on visual perception; "if some aspect of the built environment cannot be directly perceived, then it simply does not exist" [24, *4*]. Fragmented extent of urban environment was calling for the regard for context based only on visual perception and architectural compatibility while introducing a new urban element into an existing environment [25]. Any new element in a inherited urban environment was judged mainly by visual compatibility. This approach was predominating in professional literature of that time, too, for example, in the book *Architecture in Context: fitting new buildings with old* the main emphasis is put on visual integration, aesthetic compatibility, and visual continuity [26].

Although Lithuania was part of Soviet Union in period 1944–1990, the attitudes towards the relationship to the context in architecture in historic environment was in parallel to international guidelines. The apartment building with shops on the ground floor in Vilnius, in Pilies Str. 23, that was designed in 1970 (architect A. Lukšas) and built in 1979, is a distinct representative of the positions of that time (Fig. 3). The building is located in the very centre of Vilnius Old Town, in the part of the territory bombed and burnt during the WWII, in the place of pre-existent buildings finally demolished in 1957 [15]. As well as the newly established public space beside it, the layout of building does not follow previous urban structure and its possession grid. The building sets much larger urban scale with its massive volume and regular geometry. In order to achieve a better visual integration, its volume is divided vertically into segments. Also, the building is divided into three horizontal parts by introducing ground floor gallery and elements of mansard roof on the top. These architectural solutions make its scale smaller and provide 'a kind of historic' image that helps to integrate the building visually into the streetscape. But if we consider that visual compatibility is not enough, and if we go deeper into the design of the building as an integral part of Vilnius Old Town, besides urban discrepancies, we can find architectural ones, too: the ground floor galleries and mansard roof are not characteristic to historic Vilnius Old Town architecture; mansard

roof is fake – it's a building with flat roof and vertical exterior walls with decorative element of mansard roof attached. In the point of view of that time, urban and architectural discrepancies were outside of the matter of interest, as the main goal – the visual integration into existing architectural environment – was achieved.

**Context as dynamic and people-centred cultural landscape in 1980-1990s**

The 1980s brought landscape, urban and human dimensions into the scope of urban heritage by upscaling the attributes from single object to landscape. Regarding the historic urban heritage, *Washington Charter 1987* stated that it comprises "the natural and the built environment and the everyday living experience of their dwellers as well". The Charter added urban attributes (urban patterns, relationships between buildings and green and open spaces, the formal appearance of buildings, the relationship between urban area and its setting) and human experience (everyday living experience, functions, spiritual elements) [27] to understanding, what historic urban heritage is, as a valuable entity, and as the context for new elements introduced to it. The guidelines for managing a dynamic process in a heritage place whose character was defined by living organisms, instead of preservation of historic fabric, for the first time was set in ICOMOS *Florence Charter* for the conservation of historic gardens [22, *57*].

Nevertheless, the fundamental push forward in this period was made by influential regional document The Burra Charter [28] that continues to hold international importance due to its global recognition [23, *250*], and also by regional documents adopted later by the national committees of ICOMOS from Canada, Mexico, Brasilia, New Zealand. These societies are the New World societies with a need to adapt to multiculturalism, as they all result from invasion of territories previously controlled by what have become indigenous minority groups [29, *4*]. As an opposition to prevailing Euro-American tradition in conservation based on fabric-centred approach, authenticity, and maintaining existing structures according principle of minimum intervention, the 'periphery' documents used the term *place* with its full scope, instead of *monument* and *site* [24; 29]. These documents brought multidisciplinary people-centred [24] and landscape-based [23] approach, turned the management of valuable places to dynamic process instead of freezing the static situation, and put the priority on the safeguarding of people identity, the cultural meanings and associations inscribed in heritage sites: "in certain types of heritage sites, such as cultural landscapes, the conservation of overall character and traditions, such as patterns, forms and spiritual value, may be more important than the conservation of the physical features of the site, and as such, may take precedence" [30]. The role of intangible attributes like uses and traditional activities, meanings and spiritual associations sprouts up towards the same importance as material fabric.

The concept of cultural landscapes as a system of interaction between human activity and natural habitat that focuses on dynamic cultural processes was elaborated. In the light of cultural landscape, urban landscape was treated as a social construct [23, *255*], that "is permanently undergoing a dynamic process of successive transformations" [20]. The emerging landscape-based approach in management of urban heritage territories gave priority to social practices and cultural processes. In cases of further urban changes, this approach called for the interpretation of character and traditions of setting and context, and for the regard for intangible elements beside physical ones, like memories and meanings. Landscape-based approach called for more than visual and compositional compatibility in transformations of a place, and the readiness for more careful and elaborated regard to the context appeared [25]. The emphasis was put on the safeguarding of the historic character of the urban territory and reflecting it in new activities [27]. The character, according to influential thinker of that time Chr. Norberg-Schulz, describes the very nature of locality; it denotes a general comprehensive atmosphere answering to the question how one feels in a certain place [31]. Phenomenological discourse brought more experiential issues into understanding what context is, like spirit of place, sense of place and place attachment that deal with the emotional bond with a place. In practice, this set of mind helped to avoid new elements that are visually compatible, but not characteristic for the particular place. One should admit that the regard for the character of a context in design of new interventions could result in a different quality, ranging from 'rooted' relationship based on consistent reflection of place's qualities, to superficial imitation, pastiche of appearance of neighbourhood. Anyway, it was understood that the quality of integration of a new element into place depended on the knowledge of a peculiar place and ability to reflect it. More categories were added for integration of new elements into an urban heritage territories: reflection of character that embraces qualities of buildings, spaces, functions and social diversity; continuity of traditional building materials, technology and crafts; and reflection of social experience, memories and meanings.

The attitudes of that time can be recognized in the complex relationship of the building of the Ministry of National Defence in Šv. Ignoto Str.

*Fig. 4. The building of the Ministry of National Defence in Vilnius, Šv. Ignoto Str., built in 1997, 2018.*

*Fig. 5. Sculpture Sisters in the Lazdynų Pelėdos public square in Vilnius Old Town, arranged in 1995, 2018.*

in Vilnius (architect N. E. Bučiūtė) to its place (Fig. 4). The building was designed, re-designed and built during the long period 1977–1997 as its experienced changes in function, architectural design and even in political situation as Lithuania regained its Independence in 1990. After the archaeological excavations disclosed the remains of four gothic houses with a wall between them, the architect changed the initial design by restoring to life the silhouette and rhythm of the 14th and 15th century structure of Šv. Ignoto Street. The gable of the last house overhangs the street that came into being in later centuries. On the other side of the building, the high base part marks the wall of previous historic storehouses. The signs, symbols and associations inscribed into the building, and the structural and compositional harmony with the surroundings are based on the thorough knowledge of the place's historic and artistic qualities, and they set a deep relationship to the context on urban, architectural and mental level. Semantic meanings also help to integrate sculpture *Sisters* (sculptor D. Matulaitė, architects R. Buivydas ir J. Balkevičius, 1995) in the Lazdynu Peledos public square in Vilnius Old Town (Fig. 5). The sculpture pictures two sisters – writers Lazdynų Pelėda – siting on the chest that symbolises all kinds of treasures and temporality at the same time. Through references of architectural elements to remains of a burnt house, the platform of the sculpture upscales the meanings of chest from personal experience to the urban one, and recalls the narrative of lost quarter, that was partly ruined during the WWII, demolished after more than a decade and turned into a public square.

**Context as multi-layered and culture-centred historic urban landscape since 2000**

In 2000 *European Landscape Convention* recognised the complexity of the idea of landscape where it is defined as "an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors" [32]. Cultural landscape, as described by J. Jokilehto, is a living territory characterized by layers of history and evolution over time, by the traces left by the different generations in response to the challenges offered by the natural environment [20: 33]. Later on the concept of cultural landscapes, including historic urban landscape, was updated "as living, evolving socio-ecosystems, and as systems and processes, rather than primarily as sites as objects" [33: 8]. The notion of historic urban landscape was firstly set in *Vienna Memorandum on "World Heritage and Contemporary Architecture – Managing the Historic Urban Landscape"* (UNESCO, Vienna, 2005), and it brought place-based approach to historic cities [34]. The approach of historic urban landscape sees towns and cities "as a space for ritual and human experience" [35; *19*]. According to this approach, the change in historic cities can range from static to dynamic and it should maintain specific qualities, which should be recognized for their social and cultural as well as physical characteristics [20; *33*]. The historic urban landscape approach, even in the cities inscribed on UNESCO's World Heritage List, "has been particularly controversial in that it suggests that in historic cities the process of change per se can be an integral component of the significance of the place" [36]. The city became understood as a strategic and complex system, where its heritage contains, conveys and creates value [23], where its valuable places anchor cultural identity and become an important element at the heart of community development and incubator for creativity [22].

K. Taylor defines landscape as a cultural process with fundamental connections between landscape and identity and hence memory, thought, and comprehension. He sees landscape as "a cultural construct, a mirror of our memories and myths encoded with meanings which can be read and interpreted" [35, *23*]. In the very beginning of this century, the growing importance of cultural dimension in urban landscapes concentrated the

*Fig. 6. Reconstructed Jewish quarter surrounded by Ašmenos, Dysnos and Mėsinių Str. in Vilnius Old Town, built in 2006, 2018.*

*Fig. 7. Multi-functional complex Ogmios miestas, conversion since 2005, 2018.*

attention to intangible attributes and experiential issues, like emotional connection to place. The stimulus to outline, describe and elaborate these issues up to an applicable tool resulted in *Convention for the Safeguarding of the Intangible Cultural Heritage* [37] and *Quebec declaration on the preservation of the spirit of place* [38]. Spirit of place is defined as the tangible (buildings, sites, landscapes, routes, objects) and the intangible elements (memories, narratives, written documents, rituals, festivals, traditional knowledge, values, textures, colors, odors, etc.), where the two interact and mutually construct one another and give meaning, value, emotion and mystery to place [38]. Intangible dimension and emotional connection to place through spirit of place and sense of place added more new layers into understanding how the context should be regarded. New layers deepen the understanding of context, to which new elements must respond: it is more than a three-dimensional built environment, it is rather a multi-dimensional place filled with interacting natural, tangible and intangible attributes and people's experience of the place treated as an integral part of their society [25]. A new element inserted is a means to provide a sense of continuity and support the social and cultural identity of a place.

*Vienna Memorandum on "World Heritage and Contemporary Architecture – Managing the Historic Urban Landscape"* made a step forward in recommendations for new design in urban historical landscape [34]. While new approaches to inherited territories that emerged during last decades added more elements or layers to the understanding of context to be regarded in new interventions, *Vienna Memorandum* pointed to qualitative features of a new intervention itself instead of expansion of features of the context. It highlighted three major keystones for new interventions: continuity of culture through high-quality interventions, avoiding pseudo-historical design [34]. While the last demand to avoid pastiches is repeated regularly since Athens Charter [7] and the request for continuity of culture is part of management of cultural landscapes, the demand for high-quality design and execution of new cultural expressions is a request that for the first time is set by international document concerning changes in urban landscape.

Wide span of layers in the notion of context give basis, stimulus and inspiration for new elements introduced into historic urban landscape. Material level of context to be regarded in its design covers built environment (site, spatial structure, street pattern, buildings, objects), natural features and visual relationships [39]. Intangible level of context comprises human activities and practices, cultural expressions, traditional knowledge, narratives, meanings and memories. Interaction of both levels gives meaning to places, tells stories that can be read, interpreted and experienced [35, *24*], and by various social actors, its architects and managers as well as its users [38] construct spirit of place. As *Vienna Memorandum* states, the reflection of abundant qualities of place should result in high-quality intervention in its artistic design and execution, as contemporary elements, as well as the historic ones, "contribute significantly to the value of the city by branding the city's character" [34]. There is a danger, as R. van Oers argues, that in this view, the role of new interventions appears "to be more related to city marketing strategies than to the making of urban space" [40, *12*]. Having in mind dynamic and ever-changing nature of historic cities, it means that by introducing a new element, an architect or a landscape architect contributes to the future context of valuable urban landscape. New intervention is as a cultural construct of that time, which is an active contribution to dynamic and ever-changing evolution of historic processes and patterns of urbanisation that ensures its integrity and contributes to social and cultural identity of place.

The contemporary approach towards regarding the context and contributing to it in the recent Vilnius practice is quite controversial. Since regaining of Independence in 1990, recent Vilnius Old Town legal and regulatory documents encourage identical or image reconstruction of demolished historical buildings in Vilnius territory inscribed on UNESCO World Heritage List, despite the international documents of last century require to avoid historical reconstruction and pseudo-historical design. There are many cases of reconstructed buildings and even quarters, that use design of former historic buildings in imprecise and pseudo-historical way, with the exterior similar (usually higher) to previous buildings, and the other parts following needs of contemporary society like in the former Jewish quarter surrounded by Ašmenos, Dysnos and Mėsinių Str., Vilnius (architects UAB "Archinova", 2006). In such a way, the interaction to the rich context is limited up to recalling of historical information (Fig. 6), although in the way that is not ethic and methodical, distorting recognisability and skin-deep. Outside the territories of strict regulation, we can find examples that follow the contemporary progressive attitudes. The multi-functional complex *Ogmios miestas* is a territory of 12 ha that is a former military camp for czar Russia, Polish and Soviet armies. Barracks, garages for tanks, warehouses, most of them from soviet period, are still there in *Ogmios miestas*, in the part of previously closed military territory. The dialog between managers and architects (architects UAB "Do Architects", since 2005) led to the concept of commercial polycentric human-scale development that follows the Old town urban pattern by reconstructing the inherited built environment. Architects organised scattered urban structure of reconstructed buildings by adding cosy public spaces that are friendly for people, for families (Fig. 7). The step-by-step reconstruction of buildings and new public spaces strengthen the spirit of place as everyday elements from soviet period are recalled in sculptures and fountains, the interiors expose the fragments of soviet structures, the industrial and military elements are left to mark the history. The exposition of eloquent inherited elements and reflections of place history, memories and local narrative strengthen its identity and construct a strong sense of place.

**Conclusions**

Urban context is the situation within which an object exists and in terms of which it is perceived. The understanding of notion and extent of that situation is mostly determined and formed by the movements that deal with urban landscape. These movements emerge from disciplines like urban planning and design, architecture, landscape architecture and cultural heritage, and they rise from concerns and priorities of professional community. While analysing the last century evolution of statements of documents of international organisations, it is obvious that the movements and factors that impact the understanding of urban context, were of different importance, and they represent different disciplinary fields. Consequently, the notion and dealing with urban context on certain periods depended on ideological and methodological background of the movements and factors that were of major progression and relevance in professional society at that time.

During the period 1928–1960, the conceptual context of architecture that was dominated by the urban planning disciplinary field has experienced essential changes. Firstly, it focused on economy and social demands by celebrating the functionalistic approach, later it turned to the multifaceted conceptual context that includes culture, human and social sciences, history and art, and perceives the complexity of the architectural phenomenon. The essential change was caused by the critique of modern movement in 1950s that is closely connected with the rising urban heritage preservation movement. In its beginning, only fragmented architectural environment was preserved, and in cases of transformations of urban environment, its context was treated as physical built environment that is perceived visually. Later, the concept of cultural landscape and the attitudes of non-Western societies brought multidisciplinary people-centred and landscape-based approach in dealing with urban environment. This approach gave priority to dynamic social practices and cultural processes. Urban context was treated as a place rich in character, history and intangible elements. The concept of historic urban landscape and the growing concern about intangible attributes, cultural identity, and experiential issues, upgrades the understanding of urban landscape up to holistic cultural process. Thus, the urban context is not just a three-dimensional urban space filled with architectural objects, it is rather a multi-dimensional place filled with interacting natural, tangible and intangible attributes and people's experience of the place. According to such a holistic approach, urban context is considered as a cultural construct and an integral part of society.

In general, Lithuanian practice in regard to urban context is in parallel to the evolution revealed. The architectural practice in Lithuania after WWII followed the notion of modern movement and mainly complied with the contextual requirements of CIAM *The Athens Charter*. Later contextual approach was extended from visually perceived built environment,

to complex treatment of urban landscape in its systemic transformations by adding historical, social and experiential dimensions. The research disclosed certain variances. Architectural practice of interwar period, when Lithuania was establishing independent state (1918–1940), was characteristic for its conservative approach that accepted radical attitudes of modern movement only moderately. It is much more difficult to ground the recent encouragement of pseudo-historical design and demand for historical reconstruction in the Vilnius Old Town as UNESCO World Heritage place.

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**Kopsavilkums.** Pētījuma fokusā ir konteksta koncepts, vadlīnijas tam, un kā tas ir ņemts vērā pilsētvides veidošanā. Raksts definē kā šīs pieejas un prakses mainījušās pēdējā gadsimtā. Pēdējā gadsimta laikā, Lietuvas valsts pieredzēja atšķirīgus un pretrunīgus periodus: neatkarība (1918–1940), Otro pasaules karu (1939–1945), Padomju Savienību (1944–1990) un atjaunoto neatkarību (1990–mūsdienas). Raksts atspoguļo Rietumu attieksmi un kontekstuālās pieejas attīstību pilsētvides jautājumos un Lietuvas pieredzes īpatnības saskaņā ar šiem viedokļiem pēdējā gadsimtā.

Teorētiskais pētījums ir balstīts tādu starptautisku organizāciju kā CIAM, UNESCO, ICOMOS izdotajos dokumentos. Termins – konteksts – ir lietots kā vispārinājuma termins, kas nosedz vairākus terminus, kas lietoti dokumentā vai literatūrā, lai definētu tuvāku vai tālāku pilsētvidi. Teorētiskajām analīzēm seko kritiskais pārskats par konkrēto Lietuvas pieredzi šajā laikā, raksturīgajā vides pārveidē galvaspilsētās. Kontekstuālās pieejas attīstība Lietuvā seko starptautisko organizāciju dokumentos noteiktajam vadlīnijām, par spīti politiskajai situācijai, bet pētījums atklāj noteiktas atšķirības.

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# Possibilities to Apply the Urban Acupuncture Concept in Kaunas: Social Aspect

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**Abstract. The concept of urban acupuncture, which has been gaining ground in recent decades, is based on the activation and revitalization of urban environments using small architectural or landscape architectural interventions in precise carefully selected locations of urban fabric. However, the rapid and unexpected design solutions of urban acupuncture, based on ecological design, nature dynamics, street art, material re-use, can cause different social and psychological reactions of urban population and these reactions may vary depending on cultural contexts. Consequently, in order to implement successful urban acupuncture projects in Lithuanian cities, it is very important to find out public opinion and priorities in the fields of public space management, aesthetics, and public art. The aim of the research was to analyze the opinion of Kaunas city residents regarding these issues. For this purpose, a sociological questionnaire survey was used. The questionnaire containing 20 questions was designed, with the aim to find out the trends of use of public spaces in the city, the attitudes of residents towards street art and other small-scale initiatives in public spaces implemented in the recent years, possibilities of creating landscape architecture based on ecological ideas in urban environment, the attitude of inhabitants towards community spaces and community space design in the city, etc. 100 residents of Kaunas participated in this online administered survey. The survey has demonstrated general positive attitude towards contemporary design trends of public spaces and public art; however, the surveyed population expressed preferences towards fully equipped public spaces offering possibilities for a wide range of activities.**

**Keywords: urban acupuncture, public space, social acceptability, public art, ecological landscape architecture**

## Introduction

Contemporary research is increasingly becoming interdisciplinary and transdisciplinary and knowledge exchange and transfer between various fields becomes common both in research and practice. The field of urban studies is not an exception; the interface between spatial and social sciences, environmental research and psychology are gaining ground. The disciplines or research areas, such as environmental psychology, environmental ethics, environmental sociology, psychogeography [1] are emerging and developing in this field as well. Urban acupuncture is one of those examples of knowledge transfer (between traditional Chinese practice and urbanism) that was elaborated in the last decades of the 20th century. The cities here are viewed as "biological systems, receptive to holistic wellness plans" [2]. This concept concentrates on ecological, social, and information flows in the city and targeted interventions, affecting these flows, resulting in revitalization of wider surrounding territory. The complexity and management challenges of contemporary cities urge to search for such unconventional ideas that could complement or even replace some conventional city planning and management practices. Urban acupuncture interventions are often characterized by unconventional, rapid, experimental solutions, some degree of incompleteness, emphasis on natural dynamics, involvement of social initiatives, low implementation costs. The urban acupuncture solutions can lead to diverse public perceptions ranging from very positive to total rejection, due to favored ecological landscape architectural solutions, based on the natural processes and aesthetics of natural areas, reuse of various materials and objects, and street art initiatives. Thus, this issue must be carefully considered while designing individual or systematic urban acupuncture interventions.

The aim of this research was to analyze the social-psychological preferences of the residents of the second largest city in Lithuania Kaunas towards the interventions in the city that can be considered as the analogues of urban acupuncture and their general attitudes towards urban acupuncture. The methods used in the research include the analysis of literature, the sociological survey of Kaunas residents, the analysis and discussion of the survey results.

## Literature review

### *The concept of urban acupuncture*

One of the pioneers of urban acupuncture is the Finish architect, urbanist, artist and researcher Casagrande with his work in Taipei Treasure Hill, which was traditionally sustainable although derelict neighborhood [3]. Currently a wide range of urban acupuncture research and practice examples can be found, starting from the general and practical book "Urban Acupuncture" by J. Lerner [4] to more

specialized research of digital urban acupuncture by **Iaconesi** and **Persico** [5], where they analyze the networking phenomena and potential in the age of internet communication, rapid data transfer and social networks or even neural networks in urban acupuncture [6]. Generally speaking, the concept of urban acupuncture is a theory that seeks to solve social and environmental problems in the urban environment with rapid, minimal and very well targeted interventions. Here, using the analogy of the traditional Chinese practice of acupuncture, the city is compared to human body, the objects in the city – buildings, public spaces and streets etc. are seen as organs called Zang-fu in Chinese medicine, and the movement and activity of people and other flows (ecological, informational) are comparted to the energy Chi, which runs through the body. The purpose of urban acupuncture is to regulate these energy flows in the body of the city so that it can function properly [7]. The urban acupuncture interventions can be both individual and systematic: "a method known as urban acupuncture on the one hand tests the local effects of every project, and on the other hand establishes a network of points or dots to act upon" [6]. The online project Network of Urban Acupuncture exists, where each example of urban acupuncture around the world can be registered and demonstrated. The network uses urban acupuncture typology including urban aquapuncture (water-based interventions), musical acupuncture, public space interventions and other types of acupunctures [8]. There is a call even for wider knowledge transfer to urbanism and landscape architecture to improve life quality and health in contemporary cities: "exploring concepts from eastern medicine such as acupuncture, aromatherapy (or horticulture therapy), directional alignment with the sun and the moon, nocturnal gardens, botanical soundscapes and energy balancing might be applied to exert a positive impact on mental health in modern cities" [2].

**Social and psychological aspects in urban acupuncture**

Urban acupuncture has strong emphasis on social aspect. Even the term "social acupuncture" [9] exists and the social networking is used for this purpose [10]. It is commonly agreed that social and psychological aspects are very important in developing successful lively public spaces. The discourse about urban health is primarily focused on green spaces and walkability [2]; however, contemporary research employing surveys, statistics, monitoring devices and other technology, demonstrates that social-psychological-spatial links in the city can be much more complex and subtle. For example, the research carried out in the large Northern Italian city Turin has demonstrated, that "good accessibility to public transport, as well as a dense urban structure (versus sprawl), could contribute to a reduced risk of depression, especially for women and elderly, by increasing opportunities to move around and enjoy an active social life" [11]. Another study in the area, that is called psychogeography, demonstrates that urban design can strongly influence the patterns of human behaviour and the levels of stress. The study showed that beyond the well-documented restorative effects of green-spaces, many aspects of the urban surroundings can strongly effect moods and attraction to particular areas of the city [1]. The **Project for Public Spaces (PPS)** is a non-profit organization that analyses more and less socially successful public spaces and had distinguished a system of criteria for their assessment. The system includes such sets of characteristics as access and linkages, comfort and image, uses and activities, and sociability and presents the array of observation and public space assessment questions including: "Are people using the space or is it empty?; Is it used by people of different ages?; How many different types of activities are occurring – people walking, eating, playing baseball, chess, relaxing, reading?; Are people in groups? Are they talking with one another?" etc. [12]. Thus, developing urban acupuncture interventions in public spaces, social-psychological aspects must be carefully considered.

**Aesthetics and preferences of public spaces**

The aesthetics and preferences of public spaces is another issue strongly related with effective urban acupuncture. Contemporary urban acupuncture interventions involve both street art and the design solutions based natural dynamics. It can be stated that successful and sustainable urban acupuncture intervention should positively affect both social and environmental dynamics. In order to achieve this, it must be both environmentally beneficial and socially and psychologically acceptable. Numerous researchers contributed to the analysis of landscape preferences. However, studies by American landscape architect and researcher Nassauer [13; 14] indicate, that there might be differences in people's preferences towards landscape in natural and urban areas. According to her, people prefer what can be referred to as "the aesthetics of care" in their everyday environment. Thus she advocates integrating the signs of stewardship and care into ecologically valuable interventions in urban environment and achieving both environmental education and social preferences in this way. Hence, people will be more likely to protect those landscapes that they perceive as aesthetically appealing, than those they consider ugly or boring. Aesthetic experience can help associate the pleasant feelings created by the perceived environments with

TABLE 1

Sociodemographic characteristics of respondents.

| Age | Percent | Education | Percent | Residency | Percent |
|---|---|---|---|---|---|
| 18-29 | 60 | Higher | 64 | Old town | 2 |
| 30-45 | 34 | Unfinished higher | 4 | New town | 7 |
| 46-59 | 6 | College | 11 | Šančiai | 24 |
| | | Unfinished secondary | 2 | Žaliakalnis | 21 |
| | | Secondary | 18 | Vilijampolė | 2 |
| | | Vocational | 1 | Petrašiūnai | 1 |
| | | | | Residential block area | 27 |
| | | | | Suburbs | 16 |
| Total | 100 | Total | 100 | Total | 100 |

ecologically valuable landscapes, whose visual expression can only partly reflect their ecological functions [15]. Nassauer [13] in her North American study identified the following "maintained" landscape features preferred by the society: moved lawns, flowering plants and trees, feeders for animals and birds, clear, visible design elements, trimmed shrubs, vegetation planted in lines, fences, architectural elements, lawn decorations, painted surfaces, planting around the foundation of buildings. This might be relevant to urban acupuncture as well; however, the social landscape preferences may differ from culture to culture and Northern American preferences cannot be transferred directly to Lithuanian context. In many Lithuanian cities there exists a clear whole of natural, cultural and urban values shaped by the terrain, water bodies and the course of history [16] and traditionally Lithuanian landscape and even contemporary cities had maintained numerous natural features. Thus it is necessary to analyse social-psychological preferences not only towards public art, which is often a subject of tastes and debates, but also to fragments of natural environment in the urban environment in the Lithuanian context.

**Research method and tools**

Kaunas is a green city (green areas occupy circa 30 percent of city's territory [17]) with emerging street art culture. Even an illustrated guide for the street art of Kaunas exists [18]. Art and nature coexists together in Kaunas. Take for example Kaunas Picture Gallery which is situated near the green slopes and develops street art and installation culture as well. It is necessary to note, that even if Kaunas is a green city form statistical point of view, the majority of its green areas are "untamed" and had maintained their natural or semi-natural character. This makes a Kaunas city an interesting object for the study of social preferences for ecological interventions and street art.

The selected survey method – written questionnaire. The general population of the survey is the adult population (from the age of 18) of Kaunas. In order to reach the targeted population more effectively, the survey was administered online and was available for respondents from the 4th till the 24th of April 2018. 100 respondents had completed the questionnaire. In order to reach the potential respondents, the social media networks and the nongovernmental organization Fluxus Labas working in the frame of the event Kaunas Capital of Culture 2022 were actively involved. This survey can be viewed as a pilot study, providing a framework for the further research on urban acupuncture in the context of Kaunas.

The questionnaire included 20 questions, the majority of which were closed and semi-open. The introductory part of the questionnaire provided four questions (Nr. 1, 2, 3, 4) concerning the social-demographic characteristics and the place of residence of respondents. The following questions (Nr. 5, 6, 7, 10, 11) were formulated in order to find out the information about the leisure and recreation activities, habits and their locations including the visiting of places, that can be referred as the analogues of urban acupuncture: the Cabbage Field in historic district Šančiai, Courtyard Gallery and the street art zone in the city center etc. The questions 14, 16, 17, 18, 19 were intended to elicit the potential involvement of communities in urban acupuncture interventions. At the end of the questionnaire the respondents were asked to remember and identify the socially catalyzing interventions in the urban fabric of Kaunas, that had attracted the users to previously abandoned spaces.

**Research results and discussion**

*Sociodemographic characteristics of respondents*

The majority of the respondents (60%) who participated in the survey were 18–29 years old, 34% – 30-45 years old, 6% – 46-59 years old. Older than 59 years old respondents did not participate in the survey. 71% of respondents were women and 29% – men. The majority of respondents had acquired higher education (64%), unfinished higher education (4%) or college education (11%). The rest 21 percent of respondents had acquired unfinished secondary (2%), secondary (18%) or vocational education. Only few respondents live in former historic suburbs such as Vilijampolė (2%)

and Petrašiūnai (1%). The rest 43% of respondents live in so-called sleeping districts and contemporary suburbs of Kaunas city.

**Trends of uses of public spaces**

One of the aims of this study was to find out the leisure habits and trends of using public spaces of the residents of Kaunas. The study showed that respondents usually spend their leisure time indoors: at home, in sports club, etc. (54 choices), at Kaunas historical center (54 choices), in the park or other city's green space (45 choices). Only 24% of the respondents spends leisure in their residential district (Fig. 1). Most of the respondents spend their free time in public spaces 2 times per week.

The preferable urban interventions of Kaunas city, implemented over the recent years, were selected and evaluated from the given list with photographs by the respondents. The presented interventions can be classified into community initiatives, artists' initiatives, interventions in city public spaces and public spaces of historic Vilijampolė district that currently are not so popular. Respondents were asked to specify, which of these spaces they had ever visited.

The study showed that the least visited were small scale community's or artists' initiatives (Šančiai Cabbage Field – 26%, Courtyard Gallery – 27%, street art zone – 48%).

The most visited places were those, which were implemented in the public spaces of city's central part (embankment amphitheatre – 90%, castle's amphitheatre – 64%, Kaunas Picture Gallery with a courtyard and café '*Culture'* – 67%, former *'Fluxus Ministry'* – 64%).

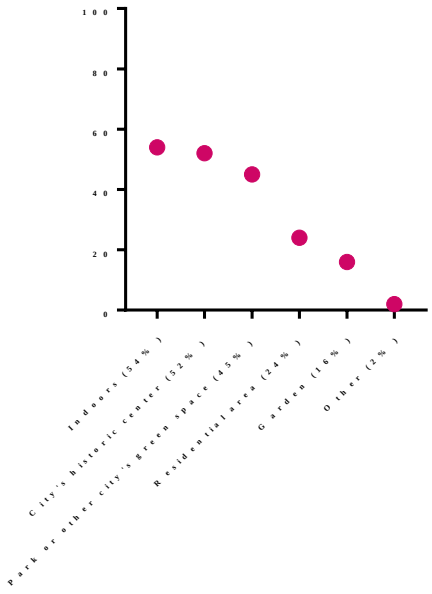


*Fig. 1. Places of spending free time (percentage show how many people chose the answer).*

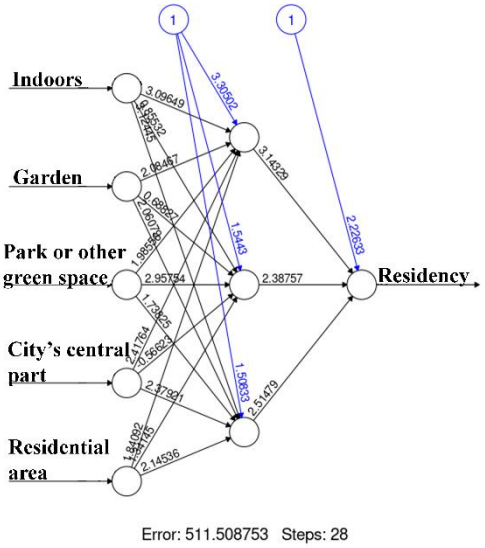



*Fig. 2. Artificial neural network showing coherence of residency and leisure places.*

Public spaces of quite unpopular historic district – Vilijampolė were also little visited (Neris riverside park – 40%, Lampėdžiai beach – 49%).

It is presumed that interventions of a small scale are not well visited because they are not known very well and because it is necessary to visit them on purpose – they are away from the main pedestrian routes, or because they lack variety of activities.

The study tried to find coherence between the respondets' place of residence and the places of respondents' favorite leisure activities. Regression with factors did not show any significant results, therefore, artificial neural network was applied. Neural networks of 1–2 layers and 3–6 neurons were tested. The network has predicted with 27% accuracy. In general, the model showed that there was no significant multilayer and nonlinear coherences (Fig. 2).

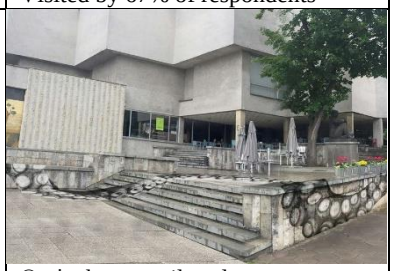
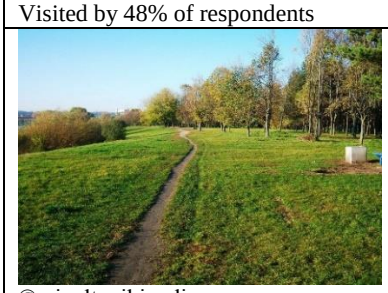
**Perception of artistic-urban phenomena in the city**

As urban acupuncture interventions usually are based on kind of unexpected design solutions, the analysis of social-psychological aspects was important for this study. The study tried to find out the resident's attitudes towards small scale urban interventions, mostly of artistic nature. Therefore, respondents were asked to evaluate two sets of selected interventions in the scale from 1 (low evaluation) to 5 (high, positive evaluation): those that they have visited in Kaunas (Table 1) and those that might reveal different tolerance levels (provocative, promoting eco-awareness, entertaining activities and moderate arrangement interventions) (Table 2).

In case of the first set of interventions (those, which they had visited), respondents more

TABLE 2

*Kaunas urban interventions (Set No.1.) ranked by the residents' evaluation in 1-5 point scale*

| | | |
|---|---|---|
| **4,08** - embankment amphitheatre<br>Visited by 90% of respondents | **4,07** – castle's amphitheatre<br>Visited by 64% of respondents | **3,90** – Kaunas Picture Gallery with a courtyard and café '*Culture'*<br>Visited by 67% of respondents |
|  <br>© pic. 15min.lt |  <br>© pic. Kaunas City Municipality |  <br>© pic. kaunas.pilnas.lt |
| **3,89** – former *'Fluxus Ministry'*<br>Visited by 64% of respondents | **3,77** – Courtyard gallery<br>Visited by 27% of respondents | **3,49** – Street art area<br>Visited by 48% of respondents |
|  <br>© pic. lrt.lt |  <br>© pic. kauno.diena.lt |  <br>© R.Tenys/pic. kaunas.kasvyksta.lt |
| **3,49** – Neris riverside park in Vilijampolė<br>Visited by 48% of respondents | **3,29** – Šančiai Cabbage Field<br>Visited by 26% of respondents | **3,20** – Lampėdžiai beach<br>Visited by 49% of respondents |
|  <br>© pic. lt.wikipedia.org |  <br>© pic. pilotas.lt |  <br>© pic. miestai.net |

positively evaluated those places, which were located in the central part of the city, well maintained and fully equipped, as well as places with more activity opportunities (or activities around them) and places where events take place.

In case of the second set of interventions (those, which might reveal different tolerance level), respondents preferred the most so-called 'green' public space maintenance intervention (4,54 points). The majority of other interventions were evaluated as 'good' and the evaluations ranged between 4,43–3,53 points. The lowest scores (which were still relatively high – 3,16–3,04 points) were given for those interventions, which people did not understand without additional explanation (e.g. monument for routine or inaccessible Mačiūnas square). In general, artistic interventions were evaluated positively – the average is 3,99 points.

The study tried to find out the coherence of age, education and evaluation of urban interventions. It was assumed that younger and more educated persons better evaluate urban interventions. Spearman's rank correlation was used for this purpose. The fig.3 shows results of this correlation, where $p<0,05$ at the first three cases and $p = -0,01$ at the last case. The first three cases did not show significant coherence, however the last one showed very weak (however, still statistically insignificant) coherence between evaluation of urban interventions and education, which means that persons having lower education evaluate urban interventions more positively. The artificial neuron network was also applied in order to check the coherence; however, it did not show any significant results, which might be the result of data distribution or insufficient sample.

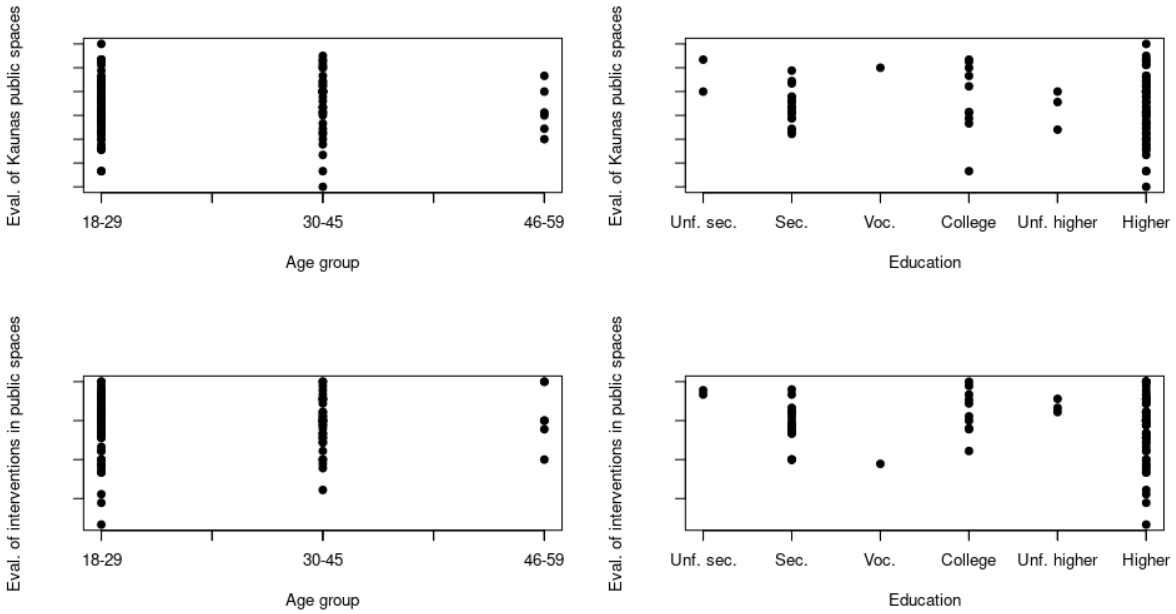



*Fig. 3. Coherence of age, education and evaluation of urban interventions.*

TABLE 3

*Artistic-urban interventions (Set No.2.) ranked by residents' evaluation in 1–5 point scale.*

| | | |
|---|---|---|
| **4,54** – 'green' public space maintenance intervention | **4,28** – intervention of entertaining activities | **4,20** – provocative artistic intervention |
|  © pic. zainteriora.net |  © pic. magisdesign.com |  © pic. archdaily.com |
| **4,20**– maintenance intervention | **4,07**– intervention promoting eco-awareness | **4,00** – intervention promoting eco-awareness |
|  © pic. 15min.lt |  © pic. designboom.com |  © pic. animalsandtheclimate.com |
| **3,96** – provocative artistic intervention | **3,91** – intervention of entertaining activities | **3,90** – provocative artistic intervention |
|  © R.Tenys / pic. kaunas.kasvyksta.lt |  © pic. inhabitat.com |  © pic. 15min.lt |

| **3,87** – intervention of entertaining activities | **3,53** – intervention of entertaining activities | **3,16** – maintenance intervention |
|---|---|---|
|  |  |  |
| © pic. weekendnotes.com | © E.Kniežauskas /pic. kauno.diena.lt | © pic. Kaunas City Municipality |
| **3,04** – provocative artistic intervention | | |
|  | | |
| © T.Ragina / pic. kauno.diena.lt | | |

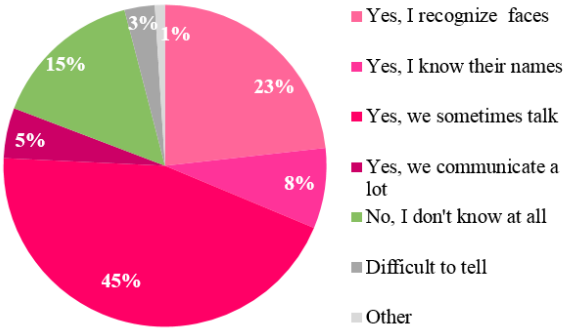



*Fig. 4. Question: how well do you know your neighbors?*

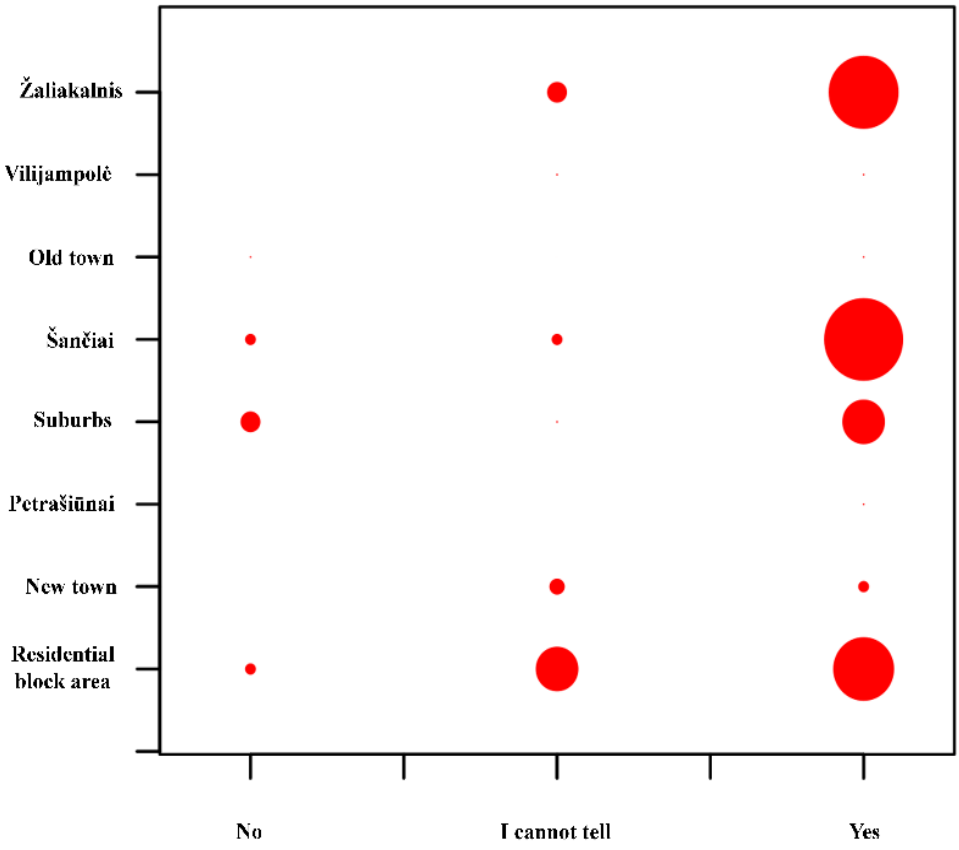



*Fig. 5. Coherence between respondents' living area and their desire to be involved in the development of the surrounding environment.*

**Potential of involvement of residents in development of community spaces**

Urban acupuncture concept is based on the flows in the city and activities of people, where communities play an important role. Potential involvement of communities is one of the most important factors in urban acupuncture theory. Therefore, this study analyzed relation between communities and Kaunas' urban interventions.

In order to find out the possibilities of gathering communities through urban acupuncture interventions, current and possible relations among neighbors were analyzed as well as people's involvement in creating their surrounding environment.

The most of the respondents know their neighbors quite well, thus it is assumed that the urban intervention might encourage further communication (Fig. 4).

64% of residents would like to participate in creating their surrounding environment and only

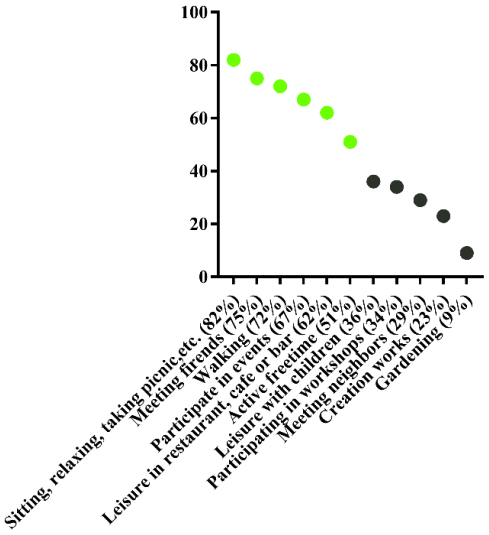



*Fig. 6. Question: what would you like to do in city's public spaces.*

12% would not create their living environment. 73% of respondents told that they would sometimes visit the community space in their neighbourhood and 41% would help to create this kind of community space. Only 4% of respondents think that government should create community spaces for neighbourhood. Therefore, it is expected that communities would be involved in creating urban acupuncture interventions.

This study also tried to find coherence between respondents' living area and their desire to be involved in forming the surrounding environment.

The statistical calculation showed that people desire to be involved in creation of their environment (Fig. 5).

**Attitudes towards functioning and aesthetics of urban public spaces**

Residents would go to visit even such neglected areas as Vilijampolė is today, if they had interest there. 42% of residents answered 'yes' and 48% – 'maybe' when asked if they go to spend their leisure in Vilijampolė.

In order to find out the aesthetics preferences, residents were given four different types of urban environment to choose their favourite one. Most of the residents (54%) chose 'balanced urban-ecological environment' as their preferred (Fig. 7).

***The need of public spaces***

67% of respondents answered 'yes' to the question 'Is there a lack of public spaces in your neighborhood for spending your free time?'. People suggested the most needed spaces: café or other communal space for youth to spend their free time in winter; café for families with children; space for creativity; green spaces; multifunctional, cooperation spaces; areas for children and pets.

People remembered a lot of changes that catalyzed activities in previously abandoned spaces. Their memories can be grouped as seen in Table 4.

Very urbanized, hard surfaces are predominant
© pic. pinterest.co.uk

Urbanized with natural elements
© pic. curbd.org

Balanced urban-ecological environment
© pic. arch2o.com

Highly ecological - wild plants are predominant
© pic. nigeldunnett.com

*Fig. 7. Different types of urban environment.*

TABLE 4

*The groups of people's memories of changes in abandoned urban spaces that catalysed activities in the area.*

| Changes | No. of answers |
|---|---|
| The arrangement of the public space | 16 |
| Food, entertainment, events, trips | 16 |
| Maintenance projects of public green spaces | 15 |
| Šančiai *Cabbage Field* | 8 |
| Former '*Fluxus ministry*' | 6 |
| Activities of the communities | 4 |
| Artists activities (interventions, initiatives) | 4 |
| Conversion of abandoned buildings for permanent activities | 3 |
| Total: | 72 |

## Conclusions

The results of the study shows potential possibilities of urban acupuncture interventions in Kaunas city. The majority of respondents (67%) expressed the need of public spaces, which might be related more with quality of public spaces rather than physical space itself.

The reputation of the neighbourhood might be very important for the success of the urban acupuncture intervention. The results of the study showed that small scale interventions, which were implemented by communities or artists initiatives, were visited less in comparison with interventions, located in central part of the city and having better visual and physical connections with other spaces as well as having more activities around them.

Moreover, the majority of the respondents expressed their preference towards fully equipped, well maintained, multifunctional and offering a wide range of activities public spaces. During the study, trends of public space functions and aesthetics emerged. To the questions, concerning people leisure habits and preferences, desire to be in and visit natural areas as well as spaces for meeting and events were the strongest. Priorities of desired activities in the public spaces were set, which were recreation, socialization, walking, attending events and active leisure. Concerning aesthetics and identity of the space, balanced urban-natural environment was the most attractive for the people in their living environment.

In addition, people tend to move around the city in order to visit their favourite leisure places, which is probably because Kaunas is compact and small city, having well-functioning transport system.

It might be assumed that urban interventions can stimulate the formation of communities as well as the involvement of them into design and implementation of acupuncture interventions. The majority of the surveyed people know their neighbours quite well, people desire to participate in the development of their environment and to attend community spaces. Acupuncture intervention might be the gathering place in the life of community.

As urban-artistic phenomena and interventions of Kaunas city in general were evaluated well (3,99 points of 5,00) by the respondents, it is assumed that such urban interventions are psychologically acceptable to the public and should be encouraged.

To sum up, the general recommendation for forming urban acupuncture interventions in Kaunas city would be to follow the functioning and aesthetics tendencies, described in this study, as well to improve existing public spaces of Kaunas with the help of community in the light of urban acupuncture concept.

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**Kopsavilkums**. Pēdējos gadu desmitos populārs ir kļuvis urbānās akupunktūras koncepts, kas ir balstīts uz urbānās vides aktivizēšanu un revitalizāciju, izmantojot nelielu arhitektūras vai ainavu arhitektūras iejaukšanos noteiktās vietās urbānajā vidē. Tomēr urbānās akupunktūras netradicionālie dizaina risinājumi, kas pārsvarā balstīti uz ekoloģisku dizainu, dabas ritumu, ielu mākslu un pārstrādājamiem materiāliem, var izsaukt dažādas reakcijas. Lai veiksmīgi integrētu urbānās akupunktūras projektus Lietuvas pilsētās ir svarīgi apkopot iedzīvotāju viedokļus par publisko telpu izmantošanu, estētiku un mākslu. Pētījuma mērķis ir analizēt Kauņas pilsētas iedzīvotāju viedokļus šajos jautājumos. Lai sasniegtu mērķi, tika veikta socioloģiskā aptauja. Aptauja sastāvēja no 20 jautājumiem un tika veidota ar mērķi noteikt publiskās telpas izmantošanas tendences pilsētā un iedzīvotāju attieksmi pret dažādām maza apjoma iniciatīvām, kas tikušas realizētas pēdējos gados  Šajā tiešsaistes aptaujā piedalījās 100 Kauņas pilsētas iedzīvotāji un tās rezultāti uzrāda pozitīvu attieksmi pret mūsdienu publiskās vides dizaina tendencēm un publisko mākslu, tomēr aptaujātie iedzīvotāji deva priekšroku pilnībā aprīkotai publiskajai viei, kurā tiek piedāvātas dažāda veida aktivitātes.

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# Evaluation of the transformation potential of urbanised landscape (Vilnius case)

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**Abstract. The article analyzes the evaluation of the transformation potential of valuable urbanised landscape. Many of the old towns formed as valuable urbanised landscapes. However, the transformation of urban structures of viable cities, which also entails transformation of urbanised landscapes, is inevitable. Basically, there are only two ways of transformation – either it happens in its own way or it can be professionally controlled. In this article the problem of urbanised landscape transformation is illustrated by the analytical work carried out for the eastern part of the Old Town of Vilnius (UNESCO heritage site). In the eastern part of the Old Town of Vilnius there are two architectural ensembles that form the characteristic panoramas and silhouettes of the Old Town. In this part of the city, various new built-up initiatives have been active since 2007. The article discusses the urban research, the purpose of which was to answer the question about the potential height of the newly designed built-up in a former historic suburb of Vilnius. The potential impact of new buildings on the panoramas, silhouettes, dominant elements, and perspectives as well as nominal spaces of that concrete street of the historical suburb is assessed based on the analysis of the townscape seen from typical external and internal viewing points of the Old Town. The article describes an integrated method of assessing visual effect on the urbanised landscape.**

**Keywords: urbanised landscape; townscape; panorama; silhouette; nominal space**

## Introduction

As a rule, towns have been developed in expressive natural settings and this has resulted in the creation of different urbanised landscapes – geosystems composed of natural and sociogenic elements. Urbanised landscapes have shaped exceptional, unique, and recognisable townscapes. The panoramas and silhouettes of the majority of old towns are recognised as valuable heritage that needs to be preserved. However, the age of globalisation poses new challenges to the preservation of valuable urbanised landscapes. Nowadays the question raised is whether and to what extent urbanised landscape can transform to still remain recognisable and valuable.

International documents of the beginning of the 21st century dealing with cultural heritage protection attribute equal significance to both contemporary and historical architecture. Contemporary architecture is subject to the following requirements: respect for historical context, harmony, and quality. In this article the problem of urbanised landscape transformation is illustrated by the analytical work carried out for the eastern part of the Old Town of Vilnius (UNESCO heritage site). Vilnius Old Town does not have a complete composition structure. On the contrary, it is an open structure at a certain stage of its development and only some of its microstructures are fully developed. Therefore, the composition and functional structure of the Old Town need to be developed further. This creates objective grounds for new architecture to appear in the Old Town. On the other hand, the built-up that has been developed in the Old Town of Vilnius is considered to be a historical and highly valuable environment, thus the height of the built-up is treated as final and the townscape that it creates is viewed as valuable. The objective of the analysis was to answer the question what height of new built-up is acceptable in this former historical suburb of Vilnius. The potential impact of new buildings on the panoramas, silhouettes, dominant elements, and perspectives as well as nominal spaces of that concrete street of the historical suburb is assessed based on the analysis of the townscape seen from typical external and internal viewing points of the Old Town. The article describes an integrated method of assessing visual effect on the urbanised landscape.

## Principles for creating new architecture in the historical environment

Transformation of urban structures of viable cities, which entails transformation of urbanised landscapes, is inevitable. Basically, there are only two ways of transformation – either it happens in its own way or it can be professionally controlled.

At the beginning of the article, we will briefly discuss according to what principles, what and where might emerge in a historically established, urbanistically valuable territory. The protection of cultural heritage worldwide is governed by charters, conventions, declarations and recommendations of various heritage protection organizations. It is often that they complement one another, however some common trends can be felt. The documents of the Council of Europe, UNESCO and ICOMOS international organizations contain provisions not

only on the protection of cultural heritage, but also on development of new architecture in the historical environment, which, incidentally, has kept pace with the flow of time. Brief overview of these provisions:

- The 7th – 8th decades of the 20th century. The context of cultural heritage was treated as a basis for creativity, also the structural and compositional harmony of new structures with the historical environment was encouraged and there was an emphasis on the principle of modernity – each piece must represent its age.
- The 8th – 9th decades of the 20th century. Knowing and respecting the context of cultural heritage should lead to the organic relationship of a new piece with the environment. Emphasis is placed on maintaining the integrity, identity and local spirit of the historical environment. When developing new architecture, it is recommended to use building materials typical of the region and to preserve traditional technologies. New architectural works should complement and enrich the values of historical media without transforming them. The principle of modernity is emphasized more gently – the novelty of an object should be recognized only by carefully examining it.
- The juncture of the 20th – 21st centuries. International documents support the transformation of historical urban environment, preserving and strengthening the cultural significance and specific character of the heritage. The latest documents attempt to combine both the provisions for protection and sustainable consumption and the provisions for development and creation of new architecture. The promotion of contextual, contemporary and high-quality architecture is encouraged. A new piece of architecture should reflect its age and traces of intervention should be recognized in the future.

International documents of the beginning of the 21st century treat contemporary architecture as equivalent to historical architecture – "Historic and contemporary architecture constitute an asset to local communities" [1]. Requirements for modern architecture are respect for the historical context, harmony and quality. Provisions that could be referred to in creation of new objects in valuable urban areas are also described in the Management Guidelines for World Cultural Heritage Sites prepared on the joint initiative of ICCROM and ICOMOS under the auspices of UNESCO. Designed new modern structures should express the spirit of their times, but also take into account the historical context. The design of new structures should be based on a clear systematic analysis of the morphology of the historical fabric. According to the Guidelines, the new building should have:

- a *rhythm* that harmonizes with the urban rhythms and the morphological pattern of the surrounding fabric;
- a *mass* in balance in its context (...);
- a *street boundary line* following the line of the existing setbacks;
- a *silhouette* respecting the traditional local character and silhouette;
- *materials* that are traditional, or compatible with traditional materials;
- *windows* similar in character and in window:wall ratio to typical buildings in the same area;
- and be of high quality in construction and design... [2].

V. Jurkštas, one of the most famous researchers in the old towns of Lithuania, who studied in detail the volumetric spatial composition of the Vilnius Old Town, drew attention to the fact that the most striking feature of the urban structure of the Vilnius Old Town is the diversity of spatial composition. He also said that: "[Vilnius] Old Town does not have a complete composition structure. On the contrary, it is an open structure at a certain stage of its development and only some of its isolated microstructures are fully developed. Therefore, the composition and functional structure of the Old Town need to be developed further, adding new cells. This feature of its is an objective basis for creativity in the Old Town to flourish" [3]. One can agree with the researcher that the Vilnius Old Town has internal resources and potential for further development, but it should be noted that the creation of new urban quality in the historical environment, without compromising the existing harmony, is a complex and complicated task. Its solution requires methodological consistency. In order to achieve the final result, the projects should consistently pass the stages of the study of the peculiarities of the existing urban structure, the substantiation of the concept and preparation of detailed designs. The success of projects also depends on the mastery of the developers.

In the 21st century, investors have been particularly active in their initiatives to develop various projects and initiate new construction in the Old Town of Vilnius. Such initiatives are strictly regulated by the Lithuanian state heritage protection institutions and are frequently resisted by the society. The research work presented in the article analyses the possibilities of the emergence of namely new buildings in the eastern part of the Old Town of Vilnius, in the territory of the historical suburb behind the Subačiaus gate of the former defensive wall, at the approaches to Subačiaus street. Various designing works have been going on in this area since 2007.

## Development of the eastern territory of the Old Town of Vilnius and the established values

*Old Town of Vilnius*

Vilnius, as the capital of the state of Lithuania, was for the first time mentioned in a written source in 1323, when the state was ruled by grand duke Gediminas. Today the town's historical centre consists of: (i) the territory of castles; (ii) the historical kernel of the town, which was surrounded by a defence wall in the 16th century; and (iii) historical suburbs that formed by the mid 19th century (Medieval suburbs). Historical buildings represent various architectural styles. Nearly 40% of these buildings are of the highest architectural and historical value. Together they form a very rich, multifaceted and, at the same time, harmonious townscape. The plan and spatial structure of the old Vilnius is a good example of a naturally developed organism of a town, with all the development traces preserved and clearly visible. No major urban changes were undertaken in this town until the second quarter of the 19th century. The town's plan developed spontaneously, its structure was mainly determined by the roads and topographic conditions – Vilnius Old Town has a typical medieval street network structure. From the 13th century until the middle of the 18th century Vilnius Old Town had a strong influence on architectural and artistic developments of the entire region (Lithuania, Belarus, the Ukraine and Poland) and is the most East remote town of Central Europe, in which a strong interaction of the cultures of Eastern and Western Europe took place. In 1994 the historical centre of Vilnius was included in the World Heritage List – it is thus recognised as having an outstanding universal value from the point of view of history, art, science, aesthetics, ethnology and anthropology and is classified as a living, developing and changing town [4].

Vilnius has more than one historical suburb. The unique feature of this town is that the town's kernel and the suburbs located closest to it have coalesced into one unit – sometimes it is even not clear where the border separating them goes. It is more visible only where natural barriers still exist today. Despite these natural barriers the suburbs blend smoothly into the town's pattern. In many cases these borders link rather than separate the town's individual parts. The plan structure and the composition of the population of the suburbs have made them different from the town itself and from each other [5].

*Eastern part of the Old Town of Vilnius. Ensembles of the Missionary Monastery and the Children's Shelter of Baby Jesus*

The literature about Vilnius mentions the suburb behind the Subačiaus gate as one of the oldest inhabited places in Vilnius. The formation of this suburb could have been affected by the road to Polotsk and construction of the Bishops' Mill at the end of the 14th century. The territory gained more inhabitants in the 15th – 16th centuries. At the end of the 16th century and at the beginning of the 17th century, the territory had craftsmen's wooden houses, the formation of estates and built-up in this place depended on the city's defensive wall and the complicated conditions of natural environment (land pocket, hill, steep slope). In the first half of the 17th century, several of the buildings and plots in the area went to the Lithuanian noblemen family of dukes Sanguškos. A palace was built in the territory. At the end of the same century, the estate passed to the ownership of the Missionary Monastery. The monks significantly expanded their territory at the expense of the surrounding craftsmen's plots. In 1695–1730, the missionaries built the Church of the Lord's Ascension, built a monastery and utility buildings near the former Sanguškos Palace, thus forming the ensemble of the Missionary Monastery buildings by the present Subačiaus street. In the 18th century and in the first half of the 19th century, the monastery became a major center of religion, culture and education. By fostering charity ideas, at the end of the 18th century, the missionaries, together with influential sponsors, founded the Children's Shelter of Baby Jesus next to the monastery, which was taken care of by nuns – sisters of mercy. A two-storey masonry house was built as the shelter building. At the beginning of the 19th century, the territory of the shelter was expanded at the expense of the city land areas, incorporating the current territory of the Bastėja (artillery fortifications) and a private estate by the Vilnia river. The primary function of the Children's Shelter of Baby Jesus also remained after World War II – it was the Infant Home. On 1976–1978, the building was reconstructed, a new annex was connected to it and it became a part of the Second Vilnius City Hospital, called the Missionary Hospital. During the construction of a new block of the hospital, the northern wing of the Children's Shelter of Baby Jesus was demolished [6].


1808 2017

*Fig. 1. Fragments of the Maps of Vilnius Old Town.*
*Photo in 1808: [7], photo in 2017: http://www.maps.lt/map/default.aspx?lang=lt#q=Vilnius.*

1833 1900 2015

*Fig. 2. The Ensemble of Missionary Monastery. Photo in 1833:[7], in 1900: [8], in 2015: photo by the author.*

The volumetric spatial composition of the Missionary Monastery ensemble has remained almost unchanged up to this day. This is an original and dynamic composition of the buildings of different volumes with the dominant double-tower church (Fig. 1, 2). The former built-up by Subačiaus street, between the Missionary Monastery ensemble and the Children's Shelter of Baby Jesus became obsolete.

*Values and regulation of urban development of the formed territory*

In 2007, in the territory in question, i.e. at approaches to Subačiaus street, the Vilnius City Municipality sold four buildings of the former hospital by way of a public auction. For more than ten years, various development projects have been prepared for this territory. Finally, an architectural competition was held in 2014, the project selected during which should be implemented. The research work presented in the article assessed all researches performed in 2007–2018 and valid legal documents, which helped to define the relevant tasks and scopes of the urban research.

Based on archaeological research, the area under consideration was built up with wooden buildings already in the 16th century, from the middle of the 17th century masonry buildings were also erected here (the remains of three masonry buildings were uncovered), although some of the buildings remained wooden (the remains of a wooden building and basement with stone-based floors were found), masonry buildings were also built in this area in the 19th century, household and construction ceramics production site dating back to the end of the 16th century and the 1st half of the 17th century were found here. However, the condition of the remains of the uncovered furnaces and the masonry buildings of the 17th century and 19th century is very poor, the excavated masonry work is deteriorating. Only the eastern masonry wall of the northern block of the Children's Shelter of Baby Jesus has survived well and is strong, which archaeologists recommend to preserve [9; 10; 11].

According to the historical study of the complex of buildings of the former Missionary Hospital, the exploratory architectural studies and the special plan for the protection of the immovable cultural heritage of the ensemble of the Monastery buildings (hereinafter referred to as the Special Plan), one can identify the main characteristics and the formed values of the territory and architectural ensembles:

- The land plots of the complex of the Missionary Monastery and the church and of the Children's Shelter of Baby Jesus were historically and functionally independent and two separate architectural ensembles were formed.
- The area between the complex of the Missionary Monastery and the church and of the Children's Shelter of Baby Jesus was built up in the 18th century; at the beginning of the 19th century it was turned into a garden that originally belonged to the monastery, later to the Children's Shelter of Baby Jesus.
- The natural boundary between the complex of the Missionary Monastery and the church and of the Children's Shelter of Baby Jesus is a no-name dead-end street as the extension of Rasų street, that has existed since the 18th century.
- The northern part of the building of the Children's Shelter of Baby Jesus was demolished in 1976, when building the hospital.
- In the urban heritage protection aspect, the built-up in the land plot of the Children's Shelter of

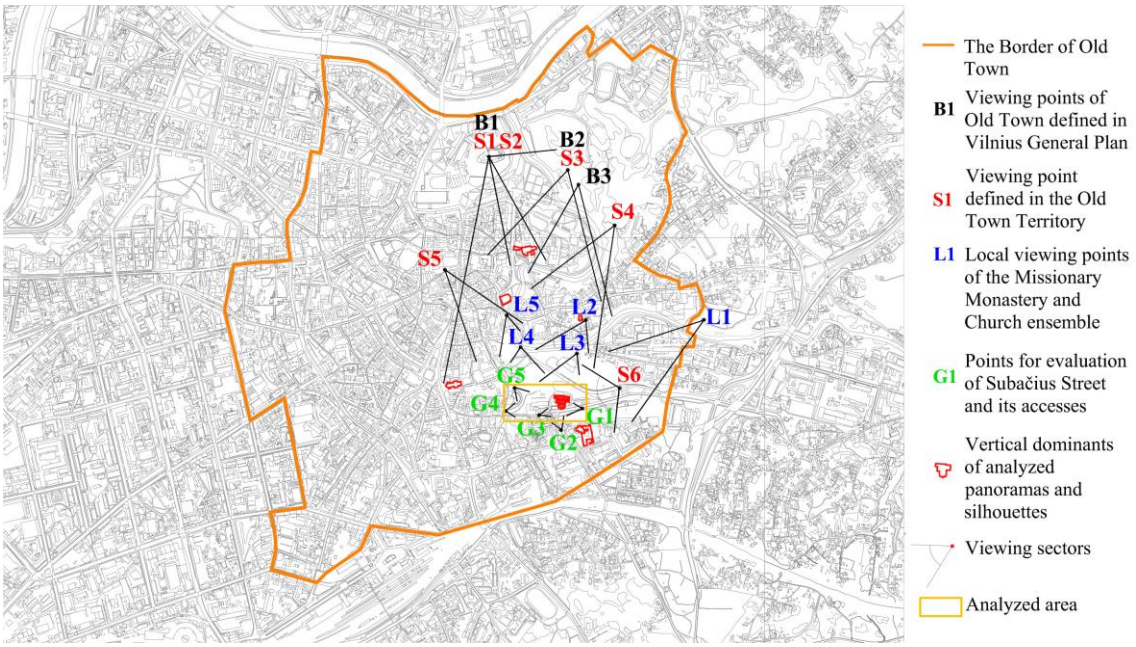


*Fig. 3. Viewing Points and Places from which the Situation was Acsessed. Scheme by the author, 2016, 19.*

Baby Jesus is not formed: the northern part of the building of the Children's Shelter of Baby Jesus is demolished; the Children's Hospital building violates the object of heritage, does not have architectural value; after the buildings by Subačiaus street were demolished, the character of the street built-up structure has changed non-typically.

- The ensemble of the Missionary Monastery and the church is one of the most important voluminous-spatial dominant elements of the Old Town of Vilnius.
- In the panoramic views, the buildings of the Children's Shelter of Baby Jesus and the hospital visually blend with the built-up of Subačiaus street.
- The Missionary Monastery and church ensemble and buildings of the Children's Shelter of Baby Jesus organically extend the built-up of the Old Town, emphasizing the historical tract – Subačiaus street.
- The green slopes of the former monastery garden are a visual part and parcel of the ensemble.
- The Missionary Monastery and church ensemble and the Children's Shelter of Baby Jesus can be seen from the most important viewing points in the Old Town of Vilnius and many places in the eastern part of the Old Town. Also, this territory is one of the most perfect viewing points in the Old Town of Vilnius [6; 12; 13].

The Special Plan has established priority management directions for the area in question:

- The priority direction in the management of the territory of the ensemble of the Missionary Monastery buildings is the preservation of the urban structure.
- Meanwhile, in case of the territory of the Children's Shelter of Baby Jesus building, the priority direction is regulated transformation of the urban structure in order to restore the destroyed historical urban spatial structure or extend the principles of spatial formation characteristic of the Old Town of Vilnius [14].

The main goal of the regulated transformation of the urban structure (according to the concept of the Special Plan of the Old Town of Vilnius) is "to preserve all the attributes of authenticity, restore the lost physical and technical qualities, to highlight and reveal the cultural value and adapt to the needs of the present. In the parts of the territory, where the built-up structure has lost the signs of authenticity, the management construction works can be performed (construction or demolition works, as defined in the Law on Construction), construction of new buildings (conversion) is regulated in compliance with the features of the integrity (morphology) of the territory built-up. The transformation of the built-up structure is regulated, in order to restore the destroyed urban spatial structure or to extend the principles of spatial formation typical of the Old Town of Vilnius, one may be guided by the resolutions of the Government of the Republic of Lithuania, other legal acts and approved and effective territory planning documents" [15].

The Special Plan establishes the following main goals for the territory of the Children's Shelter of Baby Jesus building in the historical urban aspect:


*Fig. 4. Analysis of the Panoramas. Viewing Points S1, S2, B1. Photos and analysis by the author, 2016, 19.*

- The reconstruction of the hospital block built in the post-war years (at the time of the construction, a part of the Children's Shelter of Baby Jesus building was demolished), adapting it to the restored building of the Children's Shelter of Baby Jesus, bringing it to better harmony with the silhouette of the ensemble of Missionary Monastery buildings and forming the built-up morphotype typical of the Old Town;
- Highlighting the features of the typical Subačiaus street built-up by restoring or shaping with new buildings the characteristic urban structure and layout [14].

The Special Plan establishes the allowed built-up density, intensity, height of buildings for this territory. The height of buildings by Subačiaus street in restoring built-up should be determined by research.

According to the data of the Cultural Heritage Register, valuable features were assigned to the ensemble of the Missionary Monastery buildings (unique code 761) by Act No. KPD-AV-380 of the Immovable Cultural Heritage Evaluation Council of the Cultural Heritage Department, dated 5 November 2012. Valuable features of the Children's Shelter of Baby Jesus building were established by Act No. VI-RM-160 of the Immovable Cultural Heritage Evaluation Council of the Vilnius City Municipality, dated 23 April 2010. Valuable features of these ensembles established in the acts define the valuable qualities of the volumes of the buildings, the layout, the architectural solution of the facade, the structures, and the materials. The definition of volumes is relevant for the urban research, but for the formulation of the task of the urban research, the valuable features of the Old Town of Vilnius (unique code 16073), as an urban area, which includes the approaches to Subačiaus street in question, are more important. For the research of the approaches to Subačiaus street, the following features are relevant: routes of historical streets; natural elements (relief, slopes of the Vilnia valley terraces); built-up features; open urban spaces; panoramas and panoramic viewing points; silhouettes; perspectives; dominant elements [16].

The restoration of the valuable historically-developed built-up is based on historical urban development studies based on analysis of historical sources and iconographic material, as well as archaeological research. Based on such studies of the approaches to Subačiaus street, one may conclude that from the urban point of view it is the Missionary Monastery and church ensemble and the Children's Shelter of Baby Jesus buildings that are valuable. In the remaining area between these buildings, there were no valuable urban structures developed and there are no valuable buildings that could be restored. The priority directions of the management of the territory of the Children's Shelter of Baby Jesus building provided for in the Special Plan allow and recommend the regulated transformation of the urban structure in order to restore the destroyed historical urban spatial structure or extend the principles of spacial formation, which are characteristic of the Old Town of Vilnius. When restoration is not an option, only regulated new construction can be performed. A lot of parameters for new construction are already

given in the very Special Plan: built-up density, built-up intensity, recommended typical built-up morphotype. The main task of the urban research is to answer the question about the possible height and location of the new built-up at the approaches to Subačiaus street. The research work chooses the following urban research methodology – natural urban research of the current situation, assessing the possible visual impact of the new built-up on the established valuable features of the Old Town of Vilnius and individual objects (the monastery complex, the shelter).

**Assessment of possible visual impact of the new built-up**

The visual identity of the townscape of the Old Town of Vilnius is perceived from the external Old Town viewing points and internal characteristic viewing points. The master plan of the city of Vilnius and the act of establishing valuable features of the Old Town respect the uniqueness and value of the city silhouette and panoramas, indicating points the view from which should not radically change. This method is fairly widespread for cities with clear silhouette viewing sites. When a city has a clearly-defined relief and its historic dominant elements are dispersed (as in case of Vilnius), then the application of the so-called "viewing points" method may be insufficient. Then, the viewing conditions must be evaluated more precisely and divided into points of panoramic views and points of mass observation (low-situated crowding places – streets, bridges, squares, recreational areas, etc.). The visual viewing zone of the Old Town of Vilnius is located in the form of two rings. The first narrow ring surrounds the Old Town, and the viewing points are located on the hills that rise 20–70 metres above the city. The second ring consists of separate viewing points on the hills at a distance of 2–3 km from the Old Town, from where it is seen as a small-scale silhouette [17].

The need for height regulation relates to the valuable peculiarities of the urban structure. In the case of the Old Town of Vilnius, the built-up can be considered as a historically present and very valuable environment, therefore the built-up height is fixed as final.

The panoramas and silhouettes of the Old Town of Vilnius have features characteristic of a city that developed spontaneously and uninterruptedly: the organic connection between nature and architecture, the interconnection of verticals different in volume and shape with ordinary buildings, quite a lot of randomness and chaos. But in this "aesthetic mess", the regularity of the vertical arrangement in three groups is clearly noticeable. The groups capture the former most important places in the city. The concentration of verticals in groups gives the silhouette a wave that repeats itself on a hilly relief [3, *18]*.

Assessing the potential impact on the panoramas, silhouettes and dominant elements of the Old Town of Vilnius, two categories of viewing points and places from which the situation was assessed are distinguished:

1. The viewing points of the Old Town important on the city scale (the Old Town viewing control points and other important Old Town viewing points captured in the master plan of the Vilnius city municipality).

2. Regulated viewing points in the Old Town territory (the panoramic view points and silhouette observation locations indicated in the act of the Vilnius Old Town Evaluation Council).

Since the townscape is characterized not only by its external but also internal characteristics; therefore, in choosing the viewing points, it was necessary to evaluate not only the quality of the static image but also the changing view while moving. The aim of an "ideal" view from any possible viewing point is an unrealistic task, therefore, priority viewing points and routes were selected in this work, which allowed to assess the possible visual impact of new built-up on local spaces and nominal pictures of Subačiaus street. Characteristic observation locations of nominal spaces and nominal picture were also of two categories:

1. Local points of viewing the Missionary Monastery and church ensemble.
2. Locations of assessing Subačiaus street space and its approaches (Fig. 3).

*An assessment of the visual impact on the townscape of the Old Town of Vilnius*

The analysis of the panoramas of the Old Town important on the city scale has revealed the following characteristic features:

- Panoramic view is multidimensional.
- Both the first and the second layer of panorama distinguish vertical dominant elements (church and monastery ensembles) and the background built-up of the Old Town (mostly residential buildings).
- From some hills, the array of trees forms the first layer of panorama.
- The built-up at approaches to Subačiaus street is background built-up of the second layer of panorama. The altitude of the buildings rooftops ranges from 143.90 to 147.10 of the absolute altitude (Fig. 4).

In the fragment of panorama from the viewing point located inside the Old Town (the bell tower of St. Johns' Church), covering the approaches to Subačiaus street, the background built-up of the second layer of panorama is covered by an array of trees and the very built-up is visible fragmentarily (Fig. 5).

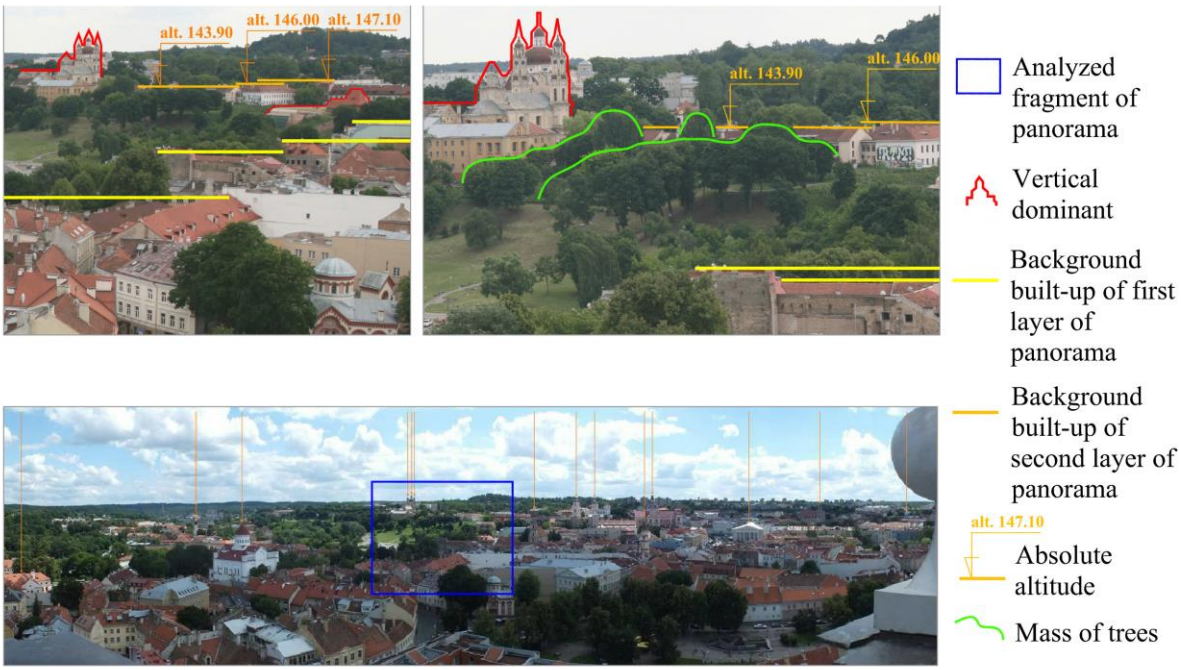


*Fig. 5. Analysis of the Panoramas. Viewing Point S5. Photos and analysis by the author, 2016, 19.*


*Fig. 6. Analysis of Silhouette. Viewing Points L2, L5. Photos and analysis by the author, 2016, 19.*


*Fig. 7. Perspective View of Subačiaus Street. Viewing Point G3. Photos and analysis by the author, 2016, 19.*


A B

*Fig. 8. Silhouette of Subačiaus Street. Viewing Point G5 (A - The Former Hospital, B - Newly Formed Built-up). Photo and visualization by DO Architects, 2016.*

The fragment of the southeast silhouette from Subačiaus street captured in the act of the Vilnius Old Town Evaluation Council, encompassing the territory in question, is dominated by the Missionary Monastery and church ensemble and the array of trees. Newly formed built-up in approaches to Subačiaus street is not visible.

Analyzing the panoramas of the Old Town from the individual viewing points on the hills at a distance of 2 – 3 km from the Old Town, the virtual panoramas of the GIS modelling were evaluated. In these panoramas the Old Town is seen as a small-scale silhouette, while the background built-up of approaches to Subačiaus street either is not visible at all or it merges with the arrays of trees behind it.

*An assessment of the visual impact on local spaces and nominal pictures of Subačiaus street*

Analyzing the local points of viewing the Missionary Monastery and church ensemble and the newly developed built-up in Subačiaus street, the built-up is projected as a silhouette against the sky. The following features of the silhouette appear:

1. The array of trees plays a prominent role in silhouettes, many of which cover the background built-up (Fig. 6).
2. Silhouettes show fragments of three blocks being newly designed instead of the current hospital building and the Children's Shelter of Baby Jesus building.
3. A new building beign designed in parallel to Subačiaus street is not visible in silhouettes.

In order to evaluate the possible impact of the new built-up in approaches to Subačiaus street on the characteristics of the Subačiaus street space itself, the characteristics of this street need to be described. The classical division of urban spaces into types is as follows: (1) street-type space; (2) embankment-type space; (3) the transitional type of space between a street and a square; (4) square-type space. Subačiaus street begins in the territory of the Old Town kernel, formerly circled with the defensive wall, and extends beyond the defensive wall to the former historical suburb. The street-type and embankment-type spaces interchange there. We are interested in the section of Subačiaus street behind the former defensive wall. This section begins with an embankment-type space – it has buildings only one (southern) side. The absence of buildings on the northern side opens up a view to Bastėja and the Old Town panoramas. The street-type space begins from the Children's Shelter of Baby Jesus and buildings at Subačiaus st. 19 and goes towards the Missionary Monastery and church ensemble. The ratio of the width and height of space in this section is equal to one, the perspective is deep (as there are no abrupt street turns), the space ends with the Missionary Monastery and church ensemble. Another vivid and exceptional feature of the street space section is that the street perimeter is formed not only with buildings and also with high masonry fences that mark boundaries of the estates. According to V. Jurkštas, such a composition of street space is considered to be the most vivid stereotype of Vilnius. "... this feature of space and architecture is typical of the cities of such social society that lived private family life. It can be said that exclusiveness of street space and architecture is a sign of an archaic city. It is only in a rare European city that the archaic form remains, therefore, such Vilnius streets should be particularly well protected [3]".

The assessment of the influence of built-up restored and newly formed at the approaches to Subačiaus street on the spatial characteristics of Subačiaus street has revealed:

1. The first layer of panorama of the perspective view of Subačiaus street from the east is formed by the ensemble of the Church of the Lord's Ascension (Missionary Church) and a masonry fence. Newly designed buildings form the second layer of panorama, they do not exceed the height of the background built-up at Subačiaus street.
2. The first layer of panorama of the perspective view of Subačiaus street from the west is formed by masonry fences and the perspective is crowned and closed by the ensemble of the Church of the Lord's Ascension (Missionary Church). The newly designed building, which is set back from the fence and is parallel to the Subačiaus street, affects the perspective view, but does not change its essential characteristics (Fig. 7).
3. The built-up being restored and newly formed complements and provides multiplicity to the currently poor Subačiaus street perspective view from the north.
4. The built-up being restored and newly formed does not affect the silhouette observed from the crossing of Bokšto and Subačiaus streets.
5. The built-up being restored and newly formed tranforms the silhouette that is currently formed by the abandoned building of the former hospital, but the altitude of the rooftops of the buildings forming the silhouette does not change (Fig. 8).

**Conclusions**

Summarizing the research done, it is possible to draw conclusions both about the specific case of the Old Town of Vilnius and about the general evaluations of the transformation potential of urbanised landscape and its methods.

The Vilnius case study revealed:

1. The built-up of the Old Town of Vilnius and its fragments can be considered as a historically present and very valuable environment, therefore the built-up height is fixed as final.
2. The master plan of the city of Vilnius and the act of establishing valuable features of the Old Town respect the uniqueness and value of the city silhouette and panoramas, indicating points the view from which should not radically change.
3. If the newly formed built-up in the approaches to Subačiaus street does not exceed the highest altitude of buildings in the background built-up of Subačiaus street, it will not affect the formed valuable panoramas and silhouettes of the Old Town of Vilnius.

General conclusions: Many of the old towns formed as valuable urbanised landscapes. However, the transformation of urban structures of viable cities, which also entails transformation of urbanised landscapes, is inevitable. Basically, there are only two ways of transformation – either it happens in its own way or it can be professionally controlled.

In order to evaluate the possible impact of the urbanised landscape transformation on the formed townscape values, complex urban studies are needed that would justify one or another parameter of the emerging built-up (height, built-up intensity, morphological type of built-up, etc.). Such studies are unique in each case, since for each situation, depending on the parameters studied, an individual research methodology should be developed. After carrying out natural studies, considering the urban architectural peculiarities, volumetric-spatial modeling (parameters of the building, approaches to it) should be performed and the potential impact of the new built-up on the urban context should be assessed.

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**Kopsavilkums.** Raksts analizē vērtīgu urbanizēto ainavu transformācijas potenciāla novērtējumu. Daudzas vecpilsētas ir veidojušās, kā nozīmīgas urbānās ainavas. Urbāno struktūru transformācijas dažādās pilsētās ir nenovēršamas. Pamatā ir divi transformācijas veidi: tas notiek pats savā veidā, vai kontrolēti. Raksts atspoguļo transformācijas problemātiku, kas ilustrēta ar Viļņas vecpilsētas austrumu daļas (UNESCO mantojuma teritorija) analītisko izpēti. Viļņas vecpilsētas austrumu daļā atrodas divi arhitektūras ansambļi, kas veido raksturīgo pilsētas siluetu. Kopš 2007. gada ir vairākas jaunas būvniecības aktivitātes uzsākušās šajā pilsētas daļā. Rakstā izvērsta diskusija par pētījumu, kas tika veikts ar mērķi noteikt apbūves augstumu jaunceltnēm vēsturiskajā Viļņas priekšpilsētā. Potenciālā jaunbūvju ietekme uz panorāmu, siluetu, dominantēm un perspektīvu, kā arī esošo telpu konkrētajām ielām vēsturiskajā priekšpilsētā. Raksts atspoguļo urbanizētās ainavas vizuālās ietekmes noteikšanas metodi.

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# Symbolic potential of place and its modelling for management needs

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**Abstract. Knowledge about the symbolic potential of the place (for example, city main square) and the form of presentation of such data is very important for better understanding of cultural memory of place. The article presents examples of symbolic potential descriptions of place using specific symbolic code sets. Code units consists from 1) names of identified easy recognizable objects forming a place and 2) cultural ideas, connotational characteristics of those objects. Some ideas appear as simple cultural connotations of certain objects and are easily identifiable. However, the fuller knowledge of local symbolic potential requires using of data that have more complex connotational structure. Such ideas encourage designers to comprehend the distinctive features of the place more deeply; also they are helping them to take into account personal existential experiences that are essential for the stimulating of original creative design solutions. Data about the place can help to manage it taking into account the symbolic potential only in case when the connotational characteristics are included into that data set. To ensure consensus among all relevant actors, data about place (city square, etc) expressed in codes with more complex connotational structures must be presented in explicit form (as some kind of semantic „reference book“) together with the arguments of their significance. Such codes would help align the positions of all actors involved in the management of certain place. Codes of this kind need to be defined in advance by making the appropriate research activities before and included in the legal documents regulating place management. The article discloses the model of symbolic potential of Kaunas Unity Square (Vienybės aikštė) and its closest environment, formed in period after regaining independence in 1918. In order to protect ourselves from possible unscrupulous modernizations of square, we always have to take into account the symbolic potential of this place when planning even the smallest changes of square. Research of symbolic potential of the place was conducted using theoretical methods: abstraction, analogy, generalization, reasoning (inductive, deductive, and abductive), synthesis. Moreover, the methods of phenomenology and semantic analysis were applied also.**

**Keywords: cultural heritage protection, cultural memory of place, symbolic potential of place, cultural codes based on connotations, legal documents for the management of cultural areas**

## Introduction

Important data about the symbolic potential of the place and the way in which they are presented are important for a better understanding of cultural memory of *Place*. At the same time, such data are significant for the development of culture of poetic thinking, which is now recognized as an important factor in the activities related with reconstruction and renovation of the historically formed cities. According to M. Heidegger, in the context of European rationalism, the ideal of truth seeking was replaced by the *scientistic* ideal of analytic vivisection and rigor of logic: where technology becomes the means of "removing curtains from the secrets of existence," there, appears the individ who is not the „listener“ of immanent and "secret" sound of Existence, but who is trying to set the norms, formulate detailed final definitions. Assuming that truth can be understood through language, Heidegger distinguishes another – a poetic language with which he is opposing to a language that is deformed by the logic. [8] Poetic thinking implies the abandonment of rigorous rationalism, and thus not only allows, but also leads to irrational (intuitive) thinking processes, where symbols take an important place [17].

Symbolic-poetic vision of the world is a specific way of knowing the world, which is also associated with mythological thinking. This way, which has an *esoteric* character (and is actively exploited in the culture of humanities – in phenomenology and hermeneutics), supplements the so-called *scientific* research methods, which are currently overemphasized and, due to that, there is a disproportion in the field of research, which makes the identity of the particular historical parts of the city inadequately investigated. J. Robinson characterized the current state of architecture research as one in which a dichotomous set of paradigms predominated. The terms by which she chooses to describe these two systems of inquiry are *science* and *myth* [12]. Although both science and myth “are used to explain,” the way they do so is quite different. A scientific explanation is typically portrayed as a mathematical description made up of linked fragments; it is thereby atomistic, reductionist, and convergent [12]. These two groups of paradigms sometimes are discussed employng the terms *quantitative* versus *qualitative* [6].

Robinson scheme resembles the theory of famous mathematician egyptologist R. A. Schwaller de Lubicz where the field of research is divided in *exoteric* and the *esoteric* methods and means of interpretation [20]. Both access have to be coordinated because the are in relation of complementarity.

Maybe, the most expressed esoteric moment is in the mythological world view. J. Lotman and B. Uspensky emphasize the imperative of interaction between the mythological and descriptive explanation [14]. What they call *descriptive* can be attributed to the "scientific" (J. Robinson) and also to the "exoteric" (R. Schwaller de Lubicz) way of representing and interpreting. A. Rappaport, who devoted a lot of attention to the architectural form, to the problems of architects creative thinking, as well differentiates scientific and mythological means, emphasizing their complementarity [18].

According V. Fedorov and I. Koval', symbols and myth are in close relation ("Any society has its own system of architectural symbols (ranging from historical monuments and temple complexes to typical national and regional landscapes), that organize and broadcast an emotionally-semantic experience (very often in the form of a myth") [19].

The symbols are actualising certain cultural archetypes. The archetypes are related to the process of transferring the socio-cultural memory. K. G. Jung uses the *numinous* concept helping understand the functioning of archetypes. The meaning of this word for the Romans corresponded to the meaning of the *demon* (in Greek). A *demon* is a deity coming from a supernatural environment and is more powerful than a simple person. Demons do not follow the categories of goodness and evil. In the Greek and Roman mythology, they simply descend into man and govern it as an alien, incomprehensible spirit. This is the power of archetypes. Their effect is *numineous*. Jung mentions examples when a thought, vision, dream, or inner voice comes to consciousness at appropriate time during a critical life moments and helps to make decision [9].

Acquainted with the publications of the last decade devoted to the cognition of the local cultural identity, for the understanding of *genius loci*, we can see that an esoteric moment, which is very important for creative solving the problems of urban renovation on instrumentual level factually is absent in reflections of specialists. The ignorance of esoteric research methods, their extremely limited use when trying to naively put them under the „umbrella" of scientific research methods, impede the adequate use them in field of inquiry, as well as the proper organization of specialists education.

The aim of the article is to emphasize the importance of local symbolic potential for the management of the urban historical environment. The following tasks are planned: to study theoretical assumptions for the research of the symbolic potential of place, to offer the method for symbolic place potential description using specific symbolic code sets, to present examples of such description.

Research of symbolic potential of the place was conducted using theoretical methods: abstraction, analogy, generalization, reasoning (inductive, deductive, and abductive), synthesis. Moreover, the methods of phenomenology and semantic analysis were applied also.

**Theoretical assumptions for the research of the symbolic potential of place**

In talking about architectural symbols, usually the focus on purposefulness and intentionality is often too emphasized in the activities of architects and planners. Even the simplest buildings and structures architecture constantly and spontaneously create emotions and senses that are not always foreseen by its creators, because the meaning of the whole is always greater than the simple sum of the meanings of the elements. This meaning is always not only as an expression of people's livelihoods, but also as a factor in the reproduction and continuity of cultural capital, social ontology. Architecture is one of the incarnations of the spiritual experience of mankind, because everything, that a person creates, belongs to the cultural arsenal. But, even if we do not think (because we do not want or cannot) about the mythical – symbolic content of the architectural environment, it will not repeal the effect that inevitably manifests itself at the level of the subconscious.

We can only agree, when Fiodorov and Koval' are saying, that, impossible to accept the critics of contemporary city planning decisions, saying that "the city is purely functional objects that it has no symbolic load." Any architectural objects are full of symbolic content and are closely linked to the deep layers of human worldview, with his subconscious [19].

Architecture has the utilitarian side, but is also witnessing certain ideas, that are embodying a certain common ideology, for which the architect, according to Umberto Eco, belonged even before the starting of the project. He explains, that in the life of society, the symbolic meaning of architecture is not less utilitarian than its original purpose [21].

The urban environment embodying communication between subjectivities, at the same time also has a certain creative potential, because the true artwork necessarily brings something new to society, expresses itself as an aesthetic and symbolic message. It provides an interpretive reading that expands the informational possibilities. Architecture opens a new things to the degree to which it is able to use the secondary (symbolic) functions to promote new environmental organization variants, different expressions of the environment.

Of course, architecture is based on its own code, but at the same time it uses others that are not related to architecture directly. Namely they largely help to understand the meaning of the message. Information

from the architectural text is perceived on such levels 1) the senses, 2) associations and images. The latter group includes emotional aesthetic and socio-symbolic aspects of human-architectural interaction.

Symbolic and aesthetic content encourages the creation of new items based on past experiences and real-life situations. It helps for people in the new light to see not only the perceived environment, but also the many aspects of their own being. An attempt to understand the meaning of the symbol, what Mamardashvili and Piatigorsky call "the field of symbol force", is often an excitation of a certain impulsive is often an excitation of a certain spontaneous impulse [16]. We can see here an analogy with the game. The competency of seeing, recognizing and understanding symbols only occurs when an individual has a high enough level of culture. The instinctive "sensation" of the symbol and conscious interpretation of the symbol are totally different things. The first thing, apparently, is get from nature, and the second is the result of conscious culture and long work. In order to grasp what is symbolic, within the consciousness a defined "depth of the quality" is required. Primitive consciousness has a narrow spectrum of perception, it understands the world superficially. And the higher the qualitative level is achieved in the development of individual consciousness, the more it becomes sensitive to the symbol.

The symbol can not be deciphered by mental effort as it is in the case of an allegory. Semantic structure of symbol is multi-layered and understanding of it is predetermined by active internal work of perceptor. Through the immanent content of the symbol, the transcendental object is getting a new and later still newer direction. The only condition is "transparency" of the "immanent" content through which you can see the transcendental object. For the symbol to maintain this transparency, it does not need to be understood literally. According to Victor Frankl, only when the light of the intentional act is directed to the symbol, transcendence is manifested in it. With every new intentional act, the symbol is acquired and understood in a different new means. So, the symbol always remains in uncertaint state: it is always something less than an object that it symbolizes, but more than just its image. The meaning of the symbol objectively does not exist in static way, but as a dynamic trend; he is not given but is predetermined [5].

Karl Jung wrote that denying the enormous importance of symbols can only be the one for whom the beginning of the history of the world, is this day. If we recognize the importance of symbols, we give them the status of a conscious motive. It allows us to concentrate on helping the subconscious, looking for her connections with conscious mental work [22]. Symbols can be understood from the qualitative point of view, as images or signs of different types of psychological realities, as transformers of mental energy. Based on the fact that the main function of the symbol is the indirect representation of things that can not be communicated to people directly, R. Assagioli on lower-level distinguishes three functions of symbols: accumulation of mental energy, its transformation and transmission (symbols act as conductors or channels) [1].

Another important aspect is the effect of symbols on the subconsciousness, because communication with it on the logic language is not very effective. In addition, symbols are characterized by integrated action (they integrate the subconscious), they contribute to the unification of conscious and unconscious elements of personality. Many mental phenomena (in particular, altered states of consciousness) have a *numinous* property, that is, they are unintentional, induced by certain experience. According Jung, numinous is independent from will, it governs and controls a personal entity [9]. Numinous state can not be reached on will, you can only open yourself to it.

Unfortunately, in our time, symbols are usually understood as logical or pseudo-logical notions [19].

Understanding symbolic meanings allows a person not only to find new meanings, but also to unite and systematize his fragmented life experience. Knowledge of symbols encourages the formation of a personal relationship of individuum with symbols of perceived architectural environment and enriches his consciousness with new meanings. According the P. Ricoeur, the work of interpretation itself is to overcome the "cultural remoteness", the distance separating the individual from the text, which helps to turn the meaning of that text into the understanding of the present moment [11]. Therefore, the knowledge of symbols and the active focus on the symbol of a particular architectural environment are the basic conditions for the symbolism to be embodied in the individual's inner experience and to acquire the status of a personal property of the individual.

The operation with the symbol implies not the reconstruction of the denotation, but the understanding of the situation. Often, an individual does not realize that he is "in the field of the symbolic force" (in the sense of M. Mamardashvili and A. Piatigorsky [16]), and for this reason, the symbol does not become a conscious impulse to his activity [19]. In this case, the whole character of the symbol is limited to the subconscious level.

Human activity requires objective mediation using signs, symbols. It is supported by technical systems, objects of material culture, language, text systems, behind which there are various socio-cultural meanings. The multifaceted world of myths and human cultural symbols, which exists independently from the will and psychological characteristics of an individual, is precisely the "power" that determines and structures the activities of human thought.

The symbol lies more than what he directly communicates to us, it posess the inherent inexhaustible multiplicity of content. Due to the fact that we have difficulty implying meaning of symbol, in most of us we interpret them too straightforwardly. By learning symbols, we at the same time capture part of his potential. This gives us the benefits of expanding the path to positive change. The expansion of consciousness takes place at the expense of the awakened and developed intuition resources, through the deliberate desire to master the skills of creative activity.

By creating an analogical, symbolic view of everything that happens in a city, mythical thought makes this a more easily comprehensible for us. That is why the cultural symbols and their configuration as certain myth of the city remains in the mass consciousness, along with the scientific elements of knowledge, influencing the behavior of the local community and the individual. The ability to recognize and understand the mythological symbolic meaning of architecture should become another way to better understand the world in which we live.

**Symbolic place potential presentment method using specific symbolic code sets**

The fact that we currently have problems with the perception of the importance of symbolic potential of place shows that the prevailing understanding of cultural heritage is limited. In that is trouble, because namely the symbols are important for cognition of place particuliarities. For the time being, architecturology and cultural heritage theory are dominated by the cultural heritage description categories that are more related to universal qualities of the heritage locality and of the objects found therein, and are actually dissociated from the specific cultural context, from an individual 'biography' of the object. The aforesaid characterisation of objects is grounded on the individual psychology categories that could not be related to the cultural context. For this reason, it is impossible to grasp the significance of cultural archetypes that arranges our perceptions and activities, and at the same time, hinder seeing of an importance of symbols and symbolic potential of the place.

In the Lithuanian legislation on cultural heritage protection, the value of objects that determines their protection is identified statically, in an absolute and contextually closed manner. Specific physical objects are often considered as certain qualities. An object may be a bearer of a certain quality, but it shall not be identified with the quality. Heritage descriptions contain practically no cultural ideas, connotative and denotative references are not adjusted either.

Unfortunately, foreign heritage descriptions contain practically no cultural ideas and cultural connotations as well. The aforesaid can be illustrated by the description of the residential house of Walter Gropius, one of the most prominent modernist architect, located in the USA (Gropius House National Historic Landmark Nomination)[7], and by the description of Casa Batlló, the building additionally attributed to the object 'Works of Antoni Gaudi' by the document of the World Heritage Committee) [3]. The main reason of this attitude towards the cultural heritage is a relict effect of the classical worldview. The principle of spatiality inherent in classical rationalism requires complete articulation of the matter outwards (available for external observation) as the condition of the things that could be generally known about the matter; as if the act of phenomena observation does not change the essence.

The solution grounded on abductive reasoning will be creative, however, only provided that the creator is able to use additional information on relevant 'mindful bodies'. According to M. Mamardashvili, direct determination of thinking is impossible in the interrelationship between consciousness and being. It can be completed only through intermediary links and Mamardashvili was the first to call them 'mindful bodies' [15]. By the function, 'mindful bodies' are analogous to *shifters* known in linguistics, i.e. *shifters* are units the contents whereof is not important, however, the very units are significant for restructuring of perception. In the case under discussion, the function of shifters is carried out by the network of cultural ideas, symbols, connotations, cultural archetypes. Socially significant constructs, i.e. connotations as 'mindful bodies' or 'perception tools', may cover both symbols, metaphors and other conditionalized expert knowledge established in the process of any analysis of the object as well as carry out the function of mythological narratives important for communication of meanings. Hence, the valuable qualities of objects in descriptions should be listed along with the role of the object in the context (this is the thing represented by cultural ideas and connotations). For instance, in possession P, preservation of a group of buildings as they are is desirable due to the following reasons (identifying certain cultural connotations): 1) they represent the industry specific to the region 2) they contribute to the urban development of the quay 3) height of the buildings enables to ensure historically significant visual relations, etc. Being sufficiently clear situationally, these characterisations capture the cultural memory. Such ideas are important to encourage architects to grasp better symbolic features of place, helping them more successfully take into account personal existential experiences

that are essential for the development of original solutions.

In order to ensure consensus among all relevant actors, data of this type, expressed in codes with more complex cohesive symbolic structures, must be presented in an expanded form (explicitly). Such information would be helpful in the field of local design solutions, also and for justification of solutions. One way would be to supplement the current value descriptors with the connotations of the objects.

Code units proposed here consists from 1) names of identified easy recognizable objects forming a place and 2) cultural ideas, connotational characteristics of those objects. High-level professionals are usually able to operate with this kind of knowledge intuitively, but their communication with other persons, who are involved into the process of management of that territory due to their job functions but have lower level of competency, may be complicated. To ensure consensus among all relevant actors, data about place (city square, etc) expressed in codes with more complex connotational structures must be presented in explicit form (as some kind of semantic „reference book“) together with the arguments of their significance. Codes of this kind need to be defined in advance by making the appropriate research activities before and included in the legal documents regulating place management.

Descriptions combining denotative and connotative semantics (the latter is especially important for promoting creative thinking) might contribute to the existential experience actualisation of an architect for solving creative tasks as well as might play the role of a solution catalyst; informational support organised as mentioned above is the only way enabling the development of new original architectural pieces taking into account the social cultural memory.

**Examples of description: Symbolic potential of Vytautas Magnus Museum Complex in Kaunas Unity Square**

The example of Kaunas Vytautas Magnus Museum's complex of buildings and elements of garden related with them will show how to present the symbolic potential of the place using the connotational characterisation. Most symbols related to this place will be discussed, their position in the universe of Unity square symbols will be explained, and their symbolic and connotative meanings will be presented.

Originally Vytautas Magnus Museum was established in 1921 but later it was decided to move

*Fig 1. General view of western part of Unity square – Main palace of Vytautas Magnus musem and bell tover. Photo by the author, 2003.*

to a larger location. A part of the new museum was opened in 1930, at the 500th anniversary of Vytautas the Great, Grand Duke of Lithuania, the namesake of the museum. In Figure 1, we see the west side of Unity Square.

As the basis for creating of the network of symbols, connotations let‘s use the metaphor ‘Kauno Naujamiestis – Katedra’ (Kaunas New Town – Cathedral). Once, being in Laisvės alėja (Freedom Avenue), I felt that I solved of Kaunas's New Town's riddle: I recognized that Laisvės alėja, as well as Kęstutis and Donelaitis streets, are three naves of imaginable Cathedral basilica. Daukanto street embodies transept. A Sobor (St. Michael the Archangel Garrison Church, built in 19th century) serves as altar. It seems that Unity Square in this vision positioned in the northern end of ‘transept’ can be identified as chapel of heroes. This my accidental experience really was esoteric phenomenological insight.

Schematic representation of symbols groups related with cultural idea „The Cathedral“ we can see in Figure 2.

For a better understanding of the "The Cathedral" idea, let's take a look at the overall schematic picture of Kaunas's Naujamiestis (Kaunas New Sity) – Fig. 3.

In the following, we will examine in more detail the Vytautas Magnus Museum garden with memorial and symbolic monuments as important part of "Chapel of Heroes". For the tematical places and objects related with them look Figure 4.

Several tematical places and objects related with them are presented more detaily (Fig. 5, 6, 7).

I wrote earlier that in the environment of Unity Square, which includes the territory of the complex of Kaunas Vytautas Magnus Museum, significant societal cultural ideas are manifested. Among them – Idea of Unity and the abstract idea of symbolic totemic being – Precursor [10]. Various objects in the territory of the complex of the museum and

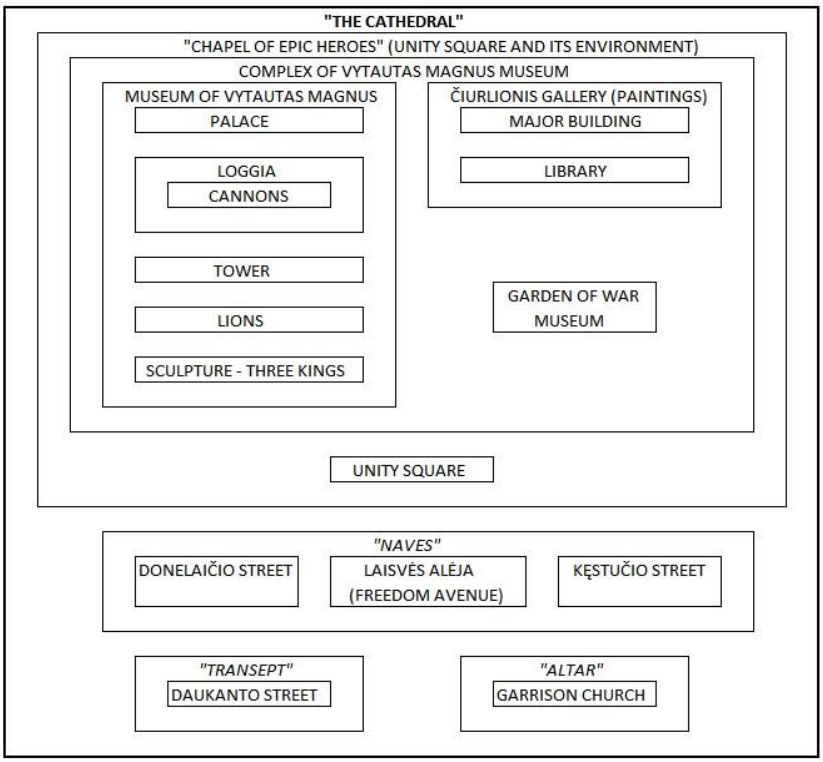


*Fig. 2. Schematic representation of symbols groups related with cultural idea „The Cathedral"*

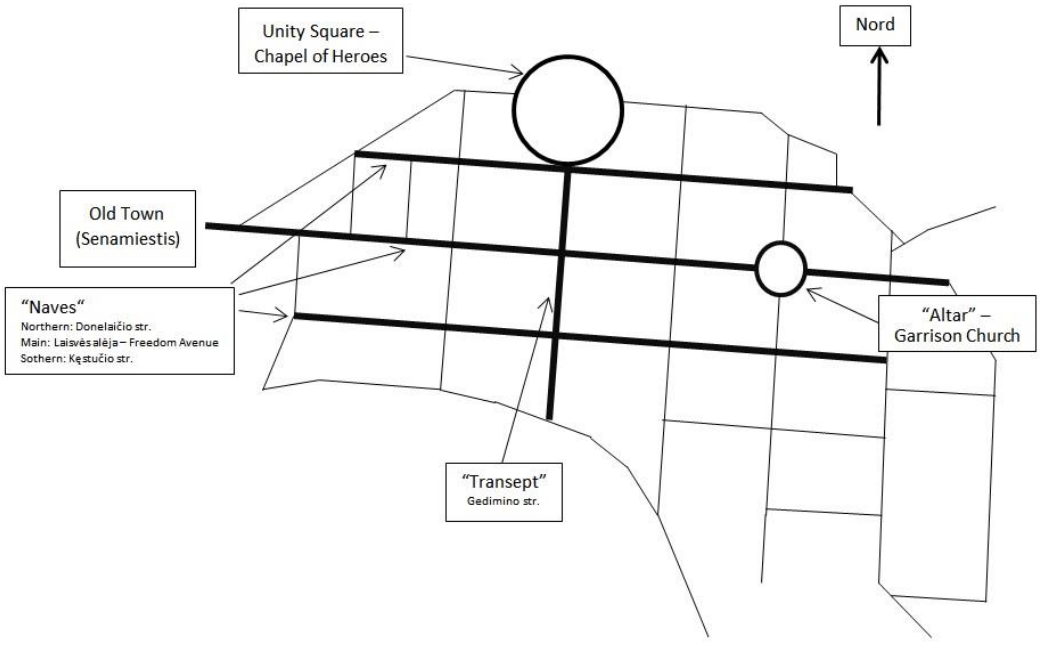


*Fig. 3. The more general symbolic context: Kaunas Naujamiestis – "The Cathedral"*

easily recognizable cultural connotations determines the expression of ideas of Unity and Precursor's. The Precursor is a totemic figure of a definite community, a collective cultural hero. Such person – collective hero who is formed from many manifestations: semi-historical, semi-divine persons: priests, kings, soldiers, emperors, in general political and cultural figures. The location of the Precursor ussualy is in special sacred centers – mostly in the main squares of the capitals. The Precursor is inseparable from the certain *genius loci*.

His figure appears unwittingly in our consciousness by observing various signs that act as keys to hinting. The environment of the Vytautas Magnus Museum complex is very suitable for the recognizing, feeling of National Precursor person (here we are faced with a certain *numinous* effect). This place include hints, symptoms resembling

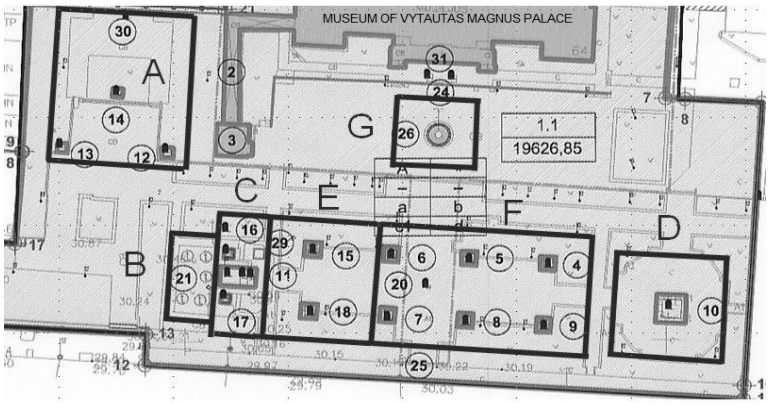


*Fig. 4. Western part of Unity square (garden of Vytautas Magnus museum). Tematical places and objects related with them. Tematic places:* ***A*** *– Place of appreciation for the nation's cultivation,* ***B*** *– Place for Lithuania's independence honouring,* ***C*** *– Place for honouring of fallen war heroes,* ***D*** *– Freedom monument,* ***E, F*** *– Nation's Fame Alley (****E*** *– Place for war heroes honouring,* ***F*** *– Place for honouring of political and cultural celebrities – Lithuanian national renaissance figures),* ***G*** *– Fountain with statue of Gnome. Complex components (objects related with places; numbers taken from heritage management project [19]):* ***2****. Loggia,* ***3****. Carillon and clock tower,* ***4****. Petras Vileišis monument,* ***5.*** *Maironis monument,* ***6.*** *Vincas Kudirka monument,* ***7.*** *Jonas Basanavičius monument,* ***8.*** *Simonas Daukantas monument,* ***9.*** *Martynas Jankus monument,* ***10.*** *Freedom monument,* ***11.*** *Monument to the victims of Lithuanian freedom, Tomb of the Unknown Soldier,* ***12.*** *Sculpture "Knygnešys" (The illegal book smuggler and spreader),* ***13.*** *Sculpture "Sower",* ***14.*** *Sculpture "School of Lithuania 1864–1904",* ***15.*** *Vladas Putvinskis monument,* ***16.*** *Povilas Lukšis monument,* ***17.*** *Antanas Juozapavičius monument,* ***18.*** *Silvestras Žukauskas monument,* ***20.*** *Path – Nation's Fame Alley,* ***21.*** *A group of wooden crosses, columns with a statuettes of a saints,* ***26.*** *Fountain with Statue of Gnome,* ***29.*** *Povilas Plechavičius monument,* ***30.*** *Wall of illegal book spreaders,* ***31.*** *Lion sculptures*
*Scheme of tematic places made by the author on map taken from heritage managemnet project [4].*

significant episodes of history related to collective cultural heritage. When we contemplate them, the presence of Precursor in our conscious is guaranteed "here and now". An observer, even a casual visitor to Unity's Square, takes the position of an ancient priest entering into a polemic with chaos. Solving the „riddles“, experiencing the presence of Precursor manifested in different shapes (Precursor is both Maironis, Kudirka, Vytautas the Great and Kęstutis, and cannons taken from the enemies and testifying the heroism of volunteers; he also is and illegal book spreders, and the „Sower“, and historical the coats of arms on the tower), the visitor of the square is creating synthetic image of the Precursor, identifies himself with him.

Observing the Unity Square Ensemble, other city objects associated with Collective Precursor, the unexpected feeling of unity is emerging. It's like remembering. At such a moment, as if the spirit of the general Precursor resides in person. In Kaunas architecture, in its cultural topography, the theme of unity is expressed or encoded in various ways and degrees. In parts of the city's environment, it is expressed indirectly, while others are encoded in figurative. The theme of Unity is directly expressed in the name of Unity's Square.

The Garden of Vytautas Magnus Museum, located next to the Unity Square, can be considered as influenced by ideas of the Romanticism cemetery dedicated to meditation and having symbolic significance. There are all the signs of such cemetery: public figures, monuments to dead heroes, the Unknown soldier monument, and the eternal fire (such interpretation of meditation cemeteries is encouraged by J. Bialostock's ideas [2]) (C in Fig. 4 and 6).

In addition to the heroes' cemetery, in the Garden of Museum there are also signs that can be found in the folk village cemetery. They are embodied in wooden crosses, columns with a statuettes of a saints (B and 21 in Fig. 4). The researchers point out that in the 19th century and in the begining of 20th century rendering the images of vilage cemeteries in paintings, was typical of the nations that fought for independence [2].

In Garden the theme of unity is most prominently expressed by the eternal fire. It is known, that fire is as the paraphrase of the unity, Agni in Sanskrit means both Fire and Unity) [13]. The symbol of the Light (as other manifestation of eternal fire) on the square is activated by towers – „obelisks“: the Freedom Monument (Fig. 7) and the bell tower of the museum (Fig. 1). M. Jampolsky, referring to A. Kircher and L. Bernini, argue that the obelisk "is the divine light falling on chaos“ [23]. So, the Freedom Monument, the Tower of the Museum in this way are regenerating previously in Tsarist Russia times created territory of the Kaunas Center, which can be equated with "chaos".

The data presented in article discloses only part of the symbolic potential of Kaunas Vienybės (Unity) Square and its closest environment. The Unity square was formed in period after regaining independence in 1918. The square in temporal capital of Lithuania in between war period was the place where the symbols of Lithuanian potential statehood have been erected (later demolished by soviets and finally re-erected after collapse of Soviet Union). In order to protect

*Fig. 5.* ***C*** *– Place for honouring of fallen war heroes (at left);* ***A****– Place of appreciation for the nation's cultivation:* ***12.*** *Sculpture "Knygnešys" - The illegal book smuggler and spreader);* ***13.*** *Sculpture "Sower";* ***14.*** *Sculpture "School of Lithuania 1864-1904";* ***30.*** *Wall of illegal book spreaders. Photo by the author, 2018.*

*Fig. 6.* ***B*** *– Place for Lithuania's independence honouring:* ***21.*** *A group of wooden crosses, columns with a statuettes of a saints; ,,vilage cemetery".* ***C*** *– Place for honouring of fallen war heroes:* ***11.*** *Monument to the victims of Lithuanian freedom, Tomb of the Unknown Soldier;* ***16.*** *Povilas Lukšis monument;* ***17.*** *Antanas Juozapavičius monument;* ***29****. Povilas Plechavičius monument. Photo by the author, 2018.*

*Fig. 7.* ***D*** *– Freedom monument. Photo by the author, 2003.*

ourselves from possible unscrupulous modernizations of square, we always have to take into account the symbolic potential of this place when planning even the smallest changes of square.

The representation, description, presentment of symbolic potential on the base of semantic analysis can be equated to model. Semantic complexes „Unity" and „Precursor" presented here are overlapping. They both are working together. At the same time they are embodying an explicit form of semantic 'reference book'. The elements of model – names of places, objects and connotations related with them are explained in article and justified theoretically. The main need is to use model of such kind because namely it can help to guarantee continuity of locus cultural identity in the territory management process, the continuation of symbolic potential of place as whole system.

**Conclusions**

1. Expressions of architectural forms, codes, also primary (denotational) and secondary (connotational) meanings create a certain meaningful universe. Recognition of such universe is important for the interpretation of architectural objects. Acquainted with the publications we can see that an esoteric moment, which is very important for creative solving the problems of urban renovation on instrumentual level and closely related with cognition of local symbols factually is absent in reflections of specialists. The ignorance of esoteric research methods, impede the adequate use them in field of inquiry, as well as the proper organization of specialists education. Human activity requires objective mediation using signs, symbols. It is supported by technical systems, objects of material culture, language, text systems, behind which there are various socio-cultural meanings. The multifaceted world of myths and human cultural symbols, which exists independently from the will and psychological characteristics of an individual, is precisely the "power" that determines and structures the activities of human thought.

2. To the understanding of the mythical-symbolic essence of the architectural environment is still not given the necessary attention. This plane of inquiry helps to join together different levels of reality – mental and spatial. Most architectural elements do not require conscious identification – they appeal directly to the subconscious. Others act by activating symbols that control and direct our behavior and at the same time make sense to our lives. Due to the fact that we have difficulty implying meaning of symbol, we interpret them too straightforwardly.

3. By learning symbols, we at the same time capture part of his potential. This gives us the benefits of expanding the path to positive change. The expansion of consciousness takes place at the expense of the awakened and developed intuition resources, through the deliberate desire to master the skills of creative activity. By creating an analogical, symbolic view of everything that happens in a city, mythical thought makes this a more easily comprehensible for us. That is why the cultural symbols and their configuration as certain myth of the city remains in the mass consciousness, along with the scientific elements of knowledge, influencing the behavior of the local community and the individual. The ability to recognize and

understand the mythological symbolic meaning of architecture should become another way to better understand the world in which we live.

4. To ensure consensus among all relevant actors, data about place (city square, etc) expressed in codes with more complex connotational structures must be presented in explicit form (as some kind of semantic „reference book“) together with the arguments of their significance. Such codes would help align the positions of all actors involved in the management of certain place. Codes of this kind need to be defined in advance by making the appropriate research activities before and included in the legal documents regulating place management. The denotation and connotation characteristics must be combined in the knowledge presented in an explicit form. Delivering knowledge in an accessible form to all interested parties can guarantee the availability of information on the conditions for the implementation of the public interest

5. Unity Square and its environments (including Vytautas Magnus Museum, and its garden) in the center of Kaunas is a creature of an exceptional composition. Its authors are not just specific people. As authors can be understood those who in the third and fourth decades of 20th century, decided conceptually how the square should look, and those who created buildings, sculptures, planted the garden. Also we can name as authors those who even earlier and not even in no Lithuania, but influenced solutions in conceptual way. The Unity square is not a copyrighted work, it is rather a specific "folklore" text, transmitted from generation to generation, which plays an important role in upbringing of community.

6. Addressing to the characteristics of the city, presented here, opens new opportunities for better understanding of the monumental features of the objects of historically formed places. If accidental natural objects that correspond to the cosmological environment are protected, why do not protect complex of cultural objects that testify to the beginning of community. Even if they were formed maybe by chance, for example as the article mentioned the idea of Kaunas Naujamiestis as a „Cathedral“. When evaluating past monuments, we must take into account the role they play in capturing the specific "spirit" of the place, as they in their presence establish the world of ethically defined social harmony. The ethically defined condition of unity is possible only if the relations representing the unity of the square composition (or other sacred space, the same is true of the temples) are based not on the dominance of some subjectivities, but on the cooperation of subjectivities expressed in composition. This cooperation is the best gift for the ancient Precursor that symbolizes that unity.

7. In order to protect ourselves from possible unscrupulous modernizations of square, when we always have to take into account the symbolic potential of this place when planning even the smallest changes of square. Unfortunately, the description of Kaunas Vytautas Magnus Museum complex in the Register of Cultural Property is only a listing of objects. No cultural ideas, no cultural connotations. We can state, that ignorance of cultural ideas, cultural connotatons in representation of heritage objects is common place also and in other countries. The analysis of Walter Gropius house and Antonio Gaudi works collection description is witnessing that sad tendency.

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**Kopsavilkums.** Zināšanas par vietas simbolisko potenciālu (piemēram, pilsētas centrālais laukums) un šādu datu atspoguļošana ir nozīmīga, lai labāk izprastu vietas kultūras vēsturi. Raksts atspoguļo simboliskā potenciāla piemērus, izmantojot simbolisma kodu apkopojumu. Kodu vienības sastāv no 1) vietu veidojošo, identificēto, viegli atpazīstamo objektu nosaukumi un 2) kultūras idejas, kanonizētie raksturojumi šiem objektiem. Informācijas par vietu var palīdzēt to vadīt, ņemot vērā simbolisko potenciālu tikai gadījumā, kad kanonizētie raksturojumi ir ietverti datos. Raksts atklāj simboliskā potenciāla modeli Kauņas Vienotības laukumam (Vienybės aikštė) un tā tuvākajai apkārtnei, kas veidota pēc neatkarības atjaunošanas 1918. gadā. Simboliskā potenciāla pētījums tika veikts izmantojot teorētiskās metodes: abstrakciju, analoģiju, vispārināšanu, pamatošanu (induktīvā, deduktīvā un abduktīvā) un sintēzi.

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# The role of landscape design in Smart Cities

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**Smart cities are not a new phenomenon and it is an interdisciplinary definition that became a popular labelling for modern cities. However, there a is surprisingly little academic research in urban design and planning field that discusses this phenomenon. Smart cities definition is similar to intelligent, creative, sustainable or liveable cities which appears to be considered as a part of a play with words. In most of the technological and social science articles smart cities refer to a smart urban management and development via technologies and infrastructure. Based on the scientific literature overview, there are several factors affecting the city smartness, such as technology, people and communities, economy governance, planning and infrastructure. Overall there is a little information and research on urban design principles and tools in the smart city's creation and contribution to its smartness. The most important thing is to clarify the urban design, planning and landscape design role importance to a smart city context and vice versa. The aim of this paper is to overview the smart cities concept from urban design perspective to find and highlight the important touch points, relation and role of urban design, planning and landscape design in smart cities creation. This would lead to the robust principles for smart European cities that would enable to achieve sustainable development, efficient urban growth and a better urban landscape.**

**Keywords: smart city, smart coding, sustainable city, urban development, landscape, environmental**

## Introduction

The definition of the "smart cities" originally dates the beginning of the 19th century. Writers this definition used to describe a newly build cities with a powerful self-governance, in the west of the United States of America. Despite the early use of timeless term its use shifted to the end of the 20th century. The definition was welcome as a new term for the present urbanisation processes and government control of society and industry in general [10].

Is there an answer to a question what the is a smart city? Even today, there is no clear agreement on the term just several definitions. Smart city definition more than 20 years ago, described the future cities as "global network cities" with interactive "economic nodes" linked to the airports, highways, and other communications [10]. The other term of smart cities states smart cities are defined by the proper management, good residents' entrepreneurship, with multifunctional uses and suitable contemporary facilities.

Nowadays the interdisciplinary and social studies definition of the smart cities link with the digital technologies, software and applications that help to create, manage and control the modern city infrastructure. However, the biggest challenge at this point is the practical issues, how to develop a "smart city," on the basis of the todays city by combining interdisciplinary principles and tools that could activate the infrastructure, but at the same time could benefit to the urban, spatial and landscape structures.

The recent interdisciplinary literature on smart cities, their governance, infrastructure, residents and urban development generate a lot of discussions and attention. At this point we could ask the question is if the smart cities in general and their performance is the focus of the discussion or the technological aspect. The concern on the smart cities definition raises from the dynamic development of digital technologies and interconnection of the mutual scientific disciplines. The main discussions and articles on the small cities are mostly technologically driven, where the main principles of the city and design tool are set back. But how can you create smart city without urban and landscape design and architecture. To bridge the gap between digital and natural and urban environment, the collaboration and integrated design tools must be used in order to achieve functioning and completely smart city concept [14].

The purpose of this paper is to overview the definitions, concept and trends of smart city, urban design and landscape design role in their creation and development. Overview the design principles and scope of the design tools that should be incorporated and emphasized in a smart city creation via urban design and urban landscape, such as future telecommunication, innovative systems ecosystems, etc.

## The main elements of smart city

The simplified definition of a city would be a complex social and interdisciplinary system. However, it is more complexed. According the B. Godal (1987) "/../ any urban form but applied particularly to large urban settlements"; "Originally the term indicated certain socio-political functions and implied predominance in trace-commercial relations" [11]. Lombardi et al. (2012) explains this complexity of interactions between individuals by

TABLE 1

*Smart city characteristics. Construction by Vanolo, A. 2014.*

| Characteristics | |
|---|---|
| Smart economy | An aspect which the authors link to a spirit of innovation, entrepreneurialism, flexibility of the labour market, integration in the international market and the ability of transform |
| Smart mobility | Referred to local and supra-local accessibility, viability of ICT's, modern, sustainable and safe transport |
| Smart governance | Related to participation in decision-making processes, transparency of governance systems, availability of public services and quality of political strategies. |
| Smart environment | Understood in terms of attractiveness of natural conditions, lack of pollution and sustainable management of resources. |
| Smart living | Involving the quality of life, imagined and measured in terms of availability of cultural and educational services, tourist attractions, social cohesion, healthy environment, personal safety and housing. |
| Smart people | Linked to the level of qualification of human and social capital flexibility, creativity, tolerance, cosmopolitanism and participation in public life. |

the variety and unpredictability [21]. Cities are areas where there are different, but inseparable ecosystems, communications and other systems exist. This approach is confirmed by other authors who claim that the city as a political, socio-economic and cultural area [24] with a range of economic, territorial, political, religious, connoisseur and linguistic ties complex system in a given territory [4].

The scientific literature and international practice do not have a single smart city definition. By explaining the content of smart cities or regions, it is necessary to identify the main elements of the urban and regional content structure. The European Council of Self-Governing and Regional Authorities (2005), report points out that internal structure of European countries, their regions and cities are very diverse and it is not possible to find an identical structure. Therefore, their functions performants differ too. Nevertheless, the overall level of development is determined by the results of the development of each structural element and the synergy between them.

One of the first attempts to analyse smart cities was considered by Lipman et al. (1986) in book "Teleports and the Intelligent City" [20]. An intelligent city by that time was then understood as a digital city, with the core was teleports. The following studies by Bruhns [5] did not change the concept and definition of smart city. By analysing the environmental smartness, author also emphasized the importance of information technology [16].

Komninos (2011), differently from the other researchers states that present concept of spatial smartness of the city, describes the ability of the community to use its smartness capital, institutions and material infrastructure to solve problems and cope with the challenges. According to the author, the spatial smartness of the city raises from the three types of smartness: the ingenuity, creativity and smartness capital of the residents; the collective city, its institutions and the social capital of smartness; artificial smart society and urban infrastructure, as well as virtual environment and intellectuals [18].

According to Gruen (2013), in the context of the smart cities, the spatial intelligence covers all components needed for an effectively manage in order to achieve goals of high quality of life in the long term (this is equated with the ability to quickly recover) [12]. The author writes about information and cognitive processes: collecting and processing information in real-time, forecasting, learning, collective intelligence and distributed problem solving. Here it is clearly illustrated that the Information Communication Technologies (ICT) is playing an important role in realising the above-mentioned subjects. Despite the ICT use, the spatial smartness can be understood through the urban design tools, use of geographic information systems (GIS), 3D modelling [24] or even spatial communication ability [24] and other similar things. Thus, it is clearly undeniable the essence of the inevitability of interconnecting both, information technology and the geographical layout of the smart city.

Alberto Vanolo (2014) states, that discussion and debates on the smart city are compared to the „historic urban imaginaries ", that can occur and emerge from the sustainable city and smart-information city concept [1]. These concepts, sustainable – green city and information – smart city are powerful concepts provoking the ideas and thinking on the political choices, economic drivers and triggers that accumulate the new types of businesses and new approaches such as restructuration to the eco-state [13].

In general, smart city concept is considered as very optimistic and generic concept of the future. Despite the fact, that there is no consensus or clear agreement on the concept definition, [1; 9]. and other authors by analysing smart cities distinguish

six smart city characters, urban smartness indicators, such as: smart economy, smart mobility, smart governance, smart environment, smart living and smart people [23].

The urban smartness classification above listing the six characteristics for defining the smart cities from generic, interdisciplinary approach are discussed in scientific literature on smart city [21]. Based on these characteristics it is easy to evaluate cities, however, there are way much more indicators that should be consider by evaluating the degree of smartness in chosen medium or large side cities [1].

**Importance of smartness in Urban Design context**

United Nations (2014) states, that todays our cities are facing the situation when more than 50 % of human population is living in cities rather than villages. By the year 2050, there will be more than 70% of people living metropolitan and large cities. Rapid urbanisation processes are becoming more dynamic in many parts of the world, especially in developing countries. The development and growth of largest cities in around the world raises many challenges such as inappropriate waste management, resource insecurity, air pollution, traffic congestion, health issues, lack of decent housing, inadequate and insufficient public infrastructure, social and economic problems. This implies a great need of managing these processes in order to contribute to the sustainable development and making a better living conditions in the future. The search of modern cities solutions becomes complicated due to their unique management system, multiple structure of interest groups, high degree of interconnectivity and interdependence, social and political complexity. Due to such a high complexity and interrelations of the cities issues, the problem solutions become highly complexed.

According to Sinkiene (2017), in order to reveal the essence and content of the smart city concepts, it is needed to define meaning and content of complex concept elements such as: the "city", "region," smartness"[25]. Smartness is the property of subject, which implies the ability to adapt quickly to the environment in the broadest sense.

Perception of successful development and competition in the global marketplace is a prerequisite for a successful regional and urban development. Despite the modern planning and management concepts, over a decade, new regional and urban development management solutions are being sought. The traditional growth and development theories of the 21st Century explaining and justifying typical trends in the development of society, economy and other areas of life are no longer suitable. New approaches and theories being introduced, explaining these processes and highlighting the close connection with geography and economy. The emphasis is placed not only on the role of human capital and innovation, but also on the agglomeration of institutions, distance and work place [25].

Due to the intensive use of smartness concept in recent decade in the context of social and territorial systems, the implementation of the concept appears to raise some difficulties. Despite that, many European countries, their regions and cities are intensively developing and implementing smart areas, regional and smart urban development strategies. The notion in absence of universal concepts it is important to understand the smart city definition in regions as subnational and territorial systems in the context of their development by emphasising the most important elements of their content and characteristics.

Moving from buildings to districts with a net zero energy concept required holistic integrated approach, in which all the aspects of “green” are considered such as smart technologies, mobility, etc., [17]. Smart ground could be the basis of “smart grid” and “smart city” as part of an efficient energy management system and district in conjunction with power generation and energy demand [19].

The classical urban design principles easily collate with Maslow’s hierarchy of human needs [22]. While rethinking smart city strategies from urban and landscape design perspectives taking in to account ICT’s, political, economic and social and innovation influence it is important to find the interrelation and interconnections to make smart cities operate based not only on technological, social or economic aspects, but interdisciplinary approach. Based on the existing classification and design principles the table 2 illustrates the smart city design considerations along the classical urban design approach.

Smart city design consideration is common to the urban design approach of environmental sustainability and cities resilience, which is debated during past decade. The interdisciplinary questions that architects are trying to find answers to form the 19th century is still relevant today. Questions such as waste reduction, pollution, mobility, renewable energy and its management, natural elements protection are hard to answer and to find the tools how to handle and manage them. The key role of Urban and Landscape design in the creation of the smart city is based on the merge of technological aspects along with the physical city including its residence and public spaces, politics, economy, ecology, etc. Smart technologies (ICT’s) combines with urban design principles and strategies could be a great tool for a proper coordination and management of complex issues. The table 2 Smart city design considerations based on the classical

TABLE 2

*Smart city design considerations based on the classical urban design approach*.
*Construction by Koutra S. (2016), Punter J. and Carmona M. (1997)*.

| Maslow hierarchy of human need | Urban Design and Landscape Design considerations | Smart City (Smart Ground) design considerations |
|---|---|---|
| Physiological (food, shelter, health) | Adequate accommodation, utilities and services<br>Comfort<br>Ecologically sound and stable | Density (Residential and Population)<br>Central to the urban planning of a district:<br>Economise land use.<br>Ecology: waste reduction<br>Climate (and Micro-climate)<br>Natural element management |
| Safety and security (protection from danger, pollution, privacy) | Road safety<br>Surveillance<br>Privacy<br>Accessibility<br>Permeability<br>Robustness | Multi- energy systems and renewable energy<br>Importance at its planning and design<br>Proximity: proximity of services and facilities for the site<br>Compactness: crucial to reduce energy consumption.<br>Mobility: transport efficiency<br>Limit displacements and car dependency, |
| Affiliation (belonging, community) | Community facilities<br>A sense of identity/place<br>Legibility<br>Visual appropriateness | Potential of Natural Resources<br>Orientation: spatial district's urban pattern |
| Esteem (status and recognition) | Ownership<br>Individuality, belonging | - |
| Self-actualisation (creativity) | Opportunities for personalisation and participation in design<br>Variety | Functional Mixing<br>Functional autonomy<br>Hybridization of technologies, |
| Cognitively aesthetic (intellectual and sensual stimulation) | Cultural/recreational opportunities<br>Quality townscape and landscape<br>Richness | - |

TABLE 3

*Environmental and landscape design elements of the Smart city.*
*Construction by Hung P. (2017).*

| Characteristics | Design elements |
|---|---|
| Vertical green | The potential of growing food using a base of unconventional water resources to sustain long term and new generation of water efficient greenhouses. |
| Water energy | ▪ Water recycling and desanitation, treatment.<br>▪ An autonomous supply of heat and also of clear water, that is connecter to building and purifies its residual grey water.<br>▪ Humid-air collector.<br>▪ Solar thermal energy collection.<br>▪ Thermal and fluid dynamics.<br>▪ Passive cooling.<br>▪ Automatic adaptation. |
| Water saving | High-tech solutions for water and chemical crop protection irrigation of crops outdoors. |
| Energy saving | ▪ Energy convertion<br>▪ Solar energy collection<br>▪ Seasonal energy storage. |
| Natural ventilation | Ventilation concepts to cool the buildings down, use wind directions. |
| Technology approach | ▪ Consume only the essential amount of water.<br>▪ Combining energy saving methods.<br>▪ Improve recourses and use control.<br>▪ Renewable energy resources (geothermal, wind and solar, cool water and heat pumps, wind turbines, photovoltaic panels). |

urban design approach clearly illustrates the absence of certain elements in smart cities, that becomes not relevant for the residents or smart communities due to the ICT's and technological paradigms change.

The technological change that shifted and changed classical function to the digital functions, eliminates the meaning of the place to a certain extent which links back to the absents of the esteem as ownership and individuality in a smart city community. Therefore, we could clearly state that digital technologies to a certain extent eliminate individuality and grounds smartness based on the smart communities. In connection to the individuality the absence of the cognitive aesthetics as quality townscape, landscape and richness refers to the ICT's mobility management and accessibility but not the qualitative approach. Which is why the smart city characteristics being so generic managing only the micro processes in comparison the urban design considerations are the macro scale of cities.

Therefore, the issue arises in urban and landscape design fields become generic, answering the questions related to the cities and regions sustainability levels, user friendly innovative economies that could easily operate in present real-life environments [15].

**Smarter City consideration based on the Landscape design**

Landscape design and landscape urbanism today are understood as an interdisciplinary practice in general meaning today are powerless by facing urban realities. However, it managed to emerge and change towards a perception for dealing with strategic, contemporary problems of the urban structure [7]. The majority of contemporary problems relate to the environmentally responsive design, resource efficiency, technologies, and ability to design future cities with quality for the prospective urban communities [15]. By these aspects we see a lot of concepts and strategies are "going greener" and "getting smarter", innovation-driven, trying to become more sustainable. However, the sustainability definitions are more extensive definition than "green". It addresses the long-term goals in the field of built environment, seeking the solutions in order to protect and maintain the balance between ecology and economic aspects [15].

The definition of "sustainable development" appear around the 1980s, but it was a broader term including economic, agricultural, industrial, technological and other aspects [14]. Later, by the World Commission on Environment and Development the sustainable development was defined as [6]: "Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs" [23].

Smart technological incorporation of the ICT's along with the design principles could a next step forward in to the smart community with technical innovations that could implement the technologies and approach on water saving, green energy management, natural ventilation and system integration. This would lead the communities and cities towards progressive approach to a sustainable design, greenhouses and smart green [15]. Environmental and landscape design elements of the Smart city in the table 2 illustrates the principles by which the sustainability could be achieved combining it with a design principles and ICT technology. According to Grabys (2014), implementation of a new smart city principles is based on ICT's sensor use via computation in urban infrastructures together with smart devices in order to achieve greater sustainability [8].

The natural landscape, is considered as the lens, which reflects the tools applied on the smart city. On other hand, the respectation of the natural environment and landscape could become as a design tool and indicator of the sustainable growth. According to Fakiri (2016), these sustainability indicators could control the increasing balance between the natural space and the urban fabric [7]. However, it is not enough to have the indicators, the smart ICT technologies need an implementation which could emerge from the society as "smart city initiatives" [2].

To sum up, the "smart city" concept and "green", "sustainable" concept in landscape design are used for a smart city development. The tools that are used in landscape design to create and develop smart city are on the basis of sustainable materials, ICT's, smart technologies, natural resources, etc. Therefore, the landscape design role in smart city concept and its creation is towards more sustainable cities by improving citizens living environment.

**Conclusions**

With the concept of being "smart" cities are experiencing a lot of pressure to become a "smart city". According to Glasmeier (2016), cities are trying to implement and add additional elements to the definition of being "smart" by extending it beyond technological aspects [10]. However, this phenomenon is the result of the technological corporations, that are pushing the cities by searching new markets for their products so called "smart". This is one of the possibilities for large corporations to establish themselves as "smart" product market leaders, that at the same time attract new investors. Via economic, transport, infrastructure or other city fields ICT product corporations create commercial technological packages (intelligent traffic lights, sensors, self-driven cars, autonomous busses, waste

management, traffic management, etc.) for smart cities. It is important to understand that in the concept of smart cities, there is no one recipe, via technologies or smart management. The smart city concept is much more complex and has a lot of interdisciplinary elements to cover. Therefore, there is no one specific field that can turn cities in to smart cities; all elements that create city should be implementing their smartness in to complete city as a smart city.

Many smart city projects use technologies for synchronising the urban processes. The overall smart city concept from urban design perspective is driven by resource efficiency, management, distribution of services and smart community participation. However, it is very little payed attention to the smart elements implementation via city design process and its adaptation and durability. Modern technologies are focused on the mass consumption, usage, mono design, unification. In this way technologies eliminate the essential urban design principles of the place and unique character. It is important to rethink smart cities via technological ICT's implementation, their adaptation, durability and resilience of cities.

To conclude, smart cities concept according to [3], involve a great variant of aspects such as environmental, social, political and technological, by which cities try to increase energy efficiency, efficient development, mobility, manage infrastructure and this refers to the terms: sustainability, ecology and management that we use in economy, urban and landscape design, etc. Despite the fact, that smart cities are perceived and seen as more generic and uniform by their approach to urban and landscape design, the present examples of smart cities developed viatechnological, economic, political and other ways.

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**Kopsavilkums.** Gudrās pilsētas nav jauna parādība un tā ir starpdisciplinārs jēdziens, kas kļuvis populārs sauklis mūsdienu pilsētām. Tomēr, ir pārsteidzoši maz akadēmisko pētījumu pilsētplānošanā. Gudrās pilsētas definīcija ir līdzīga inteliģentai, radošai, ilgtspējīgai vai dzīvojamai pilsētai, kas šķiet tiek uzskatīta par vārdu spēles daļu. Vairumā tehnoloģiju un sociālo zinātņu rakstos gudrās pilsētas attiecinātas uz gudru pilsētas vadīšanu un attīstību caur tehnoloģijām un infrastruktūru. Balstoties literatūras apskatā, ir vairāki pilsētas gudrumu ietekmējošie faktori, kā, piemēram, tehnoloģijas, cilvēki un sabiedrības, ekonomiskā pārvalde, plānošana un infrastruktūra. Kopumā ir maz informācijas un pētījumu par pilsētvides dizaina principiem un instrumentiem gudro pilsētu veidošanā un ieguldījumu to gudrumā. Svarīgākais ir noskaidrot pilsētas dizaina, plānošanas un ainavas dizaina nozīmīgumu gudrās pilsētas kontekstā un arī pretēji. Raksta mērķis ir pārskatīt gudrās pilsētas jēdzienu no pilsētvides dizaina skatupunkta, lai noskaidrotu nozīmīgus saskares punktus, sasaistes un lomu gudrās pilsētas veidošanā pilsētvides dizainam, plānošanai un ainavas dizainam. Tas vestu pie pamatprincipiem Eiropas gudrajām pilsētām ilgtspējības veidošanā, racionālā pilsētas augšanā un labākā pilsētas ainavā.

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# Re-pedestrianising open spaces through optimising mobility in urban landscape: great importance of the small detail

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**Abstract. Many big, average and even small towns have been dramatically car-invaded through the past twenty years in Eastern Europe. That resulted in fragmented open spaces and endangered mobility through the streets and blocks of the city. The paper addresses the issue of comfortable access to urban open space by bringing the multidimensional approach that includes aesthetical, infrastructural and social tools and applications. On the example of Joniškis town in Lithuania, the paper presents a solution toolkit for assessing the existing mobility situation, developing a re-pedestrianising action plan and programming the impact of the applied measures. The results of the multidimensional approach show that by giving priority for pedestrians against cars in urban open spaces and drive-ins cities can achieve multiple environmental and social-economic benefits. Open spaces become safer, more attractive and pleasing and more people visit them. The proposed model serves as a continuous professional development topic for landscape architects researching, teaching and designing in the private, public and non-governmental sectors.**

**Keywords: landscape architect, urban open space, sustainable mobility, pedestrian walks, multidimensional assessment**

## Background

Many cities suffer the loss of open space that they gave away for extending the driving infrastructure because of the massive car-invasion in the last two decades in Central and Eastern Europe (CEE). In Lithuania, the number of vehicles has tripled in that period, and traffic flows increased accordingly along with extended streets, parking and other infrastructure. As a result, less and less open spaces was available for citizens; in some places deprived areas appeared because new driving infrastructure obstructed walking areas and fragmented public spaces. Currently many cities in Lithuania and the other CEE countries are creating and implementing urban renewal programmes with the substantial European Union (EU) funding and are renewing streets, parks, squares and other urban spaces. Still in many cases, because of errors in design and implementation the abovementioned mobility obstacles that are curbing human access endure, and therefore the goal of having more people walking in the city core remains unachieved.

Current transport and construction technical regulation for planning and design of streets and pedestrian areas in Lithuania still poorly address the new trends in sustainable urban mobility planning [4]. One of strategic Sustainable Urban Mobility Planning (SUMP) measures is prioritising pedestrian and other non-motor mobility against car mobility that encourages more walking in public areas by keeping pedestrian walks as safe and comfortable as possible [1]. The Lithuanian regulation for design and construction of streets and local roads [5] does not regulate this particular situation when driving ways cut through the pedestrian walkways on drive-ins. The Lithuania's national regulation for the barrier-free environment [13] in its 36 p. regulates this conflict situation and says that C type (service) and D type (access) streets at the intersection with the pedestrian walkways should be elevated to the level of these walkways. This is a very progressive requirement; unfortunately, local authorities and landscape architects seldom implemented it in street and open space design practice (Fig. 1-3).

Pedestrian walking on smooth and continuous pavements is easy, comfortable and pleasing activity that has commuting, health promoting, socialising, explorative and other positive effects. However, walking in the open space can be unsafe in some specific points especially when the driving way cuts through the sidewalk in drive-ins into urban quarters, facility sites, internal courtyards and other spaces. If the drive in is dropped and cuts through the pedestrian walkway this is a signal of priority for the driver over the pedestrian therefore the vehicles can speed up and can miss the approaching people in small sheltered and overgrown residential or public spaces. This obstructs the walking in the internal routes of public, residential and even recreational areas. Even if the ramp pairs are provided to make the way of pedestrian down to and up from the driving way level as required by the regulation, the movement becomes uncomfortable and even dangerous, as a person should cope with the kerb-cut ramp pairs getting up and down every interval of the walkway (Fig. 4). It becomes very difficult and sometimes even impossible to cope with the interrupted walkways for many walking pedestrians: for parents with prams, for children, for the elderly

*Fig. 1. Medžiotojų Street in Joniškis: the drive-in to the internal courtyard cuts through the pedestrian walk. Source: Google Street view 4.08.2018...*

*Fig. 2. Žemaičių Street in Joniškis: the drive-in to the local park area cuts through the pedestrian walk. Source: Google Street view 4.08.2018…*

*Fig. 3. Wide drive-in from Livonijos Street in Joniškis: interrupted walkway puts pedestrians in danger. Source: Google Street view 4.08.2018.....*

*Fig. 4. Several drive-ins from Livonijos Street in Joniškis cut through the pedestrian walkway and obstruct walking. Source: Google Street view 4.08.2018……*

who often have walking difficulty, for sight-impaired people, for the wheelchair users and other people of reduced mobility PRM. In different moments, rainwater and snow tends to accumulate on the dropped walkways and they become even less walkable. As an outcome, less people are using the open spaces because of obstructed, uncomfortable, dangerous and unpleasing walking conditions.

Starting with the 70-ties of the 20$^{th}$ c., many countries have installed transport planning and space design regulation as to give more priority for pedestrians by keeping walkways smooth for the users and installing the drive-through ramps for cars. Nevertheless, many open areas in Lithuanian cities still have the cut-through and interrupted walkways and suffer from the outcomes of obstructed walking and limited citizen's access to public spaces. Many streets in Joniškis that still do not have sidewalks sustain this effect (Fig. 1).

**Aim of the paper**

The aim of the paper is to analyse and demonstrate how the method for prioritising pedestrian mobility over car driving on pedestrian areas can improve overall safety, comfort and attractiveness of urban open spaces can encourage more people walking out in open spaces. The paper is investigating the hypothesis that the solution lies in resolving the most conflicting issues arising in the points where pedestrians collide with the vehicles on street crossing intersections and drive-ins into the urban quarters, squares and courtyards. The paper presents the results of re-planned urban environment of Joniškis town in North Lithuania where these issues were resolved by the town planning and design tools and brings the comparison of "before" and "after" situation.

The paper also has several more general goals: to facilitate sustainable mobility development in urban landscapes by implementing special SUMP measures, to increase access of different user's groups to urban open spaces by making pedestrian mobility more safe, comfortable and pleasing. In addition, the paper aims to increase overall mobility safety in open spaces by reducing car-driving speed on internal urban spaces, entrances, courtyards, and squares.

**Methodology**

To achieve the abovementioned goals, the paper employs the set of complimentary research methods. That is background analysis; relevant literature review on mobility impact assessment; estimating state-of-the-art situation; setting the criteria groups and the set of indicators for the multicriteria impact assessment; generating the re-planning proposal for Joniškis City centre; obtaining and discussing the results; and drawing the conclusions for the used methodology. We should mention that obtaining the assessment results for all assessment indicators are based on the personal subjective Author's experience, and this is a usual perceptual experience in urban landscape. The combination of

the used methods allows assessing the impact of the suggested measures in social, economic, environmental and artistic aspects and presenting the diversity of effects on urban landscapes, their users and the overall urban development of small and average cities in the Baltic Sea Region. In this case, Joniškis City serves as an adequate case for the proposed study.

**Literature review**

The way people use urban open spaces and perceive mobility opportunities in urban areas is a complex socio-psychologic phenomenon that depends on the safety, comfort conditions and satisfaction of the users [6]. Therefore, the paper analyse the reasons effecting these aspects as to pave the road to more efficient re-pedestrianising of urban centres by reducing unnecessary intersections, level changes and other obstacles for walking people.

Children are one of the most vulnerable users groups participating in mobility flow, and they tend to behave unexpectedly under unclear traffic conditions. Psychological research show that in LMIC (low- and medium-income countries) children tend to start crossing the street while noticing a gap in the traffic flow and expect drivers slowing down or swerving around them [12]. That puts them in the dangerous situations in the points of intersections with traffic flow: the more crossing they find on their way the higher is the risk of an accident.

Moving around urban open space is more difficult for persons with reduced mobility (PRM); therefore, every curb and ramp increases the needed effort and reduces the safety and comfort of travel for them. Consequently, crossing and ramps decrease the will of a person to go out and use open spaces and increases the will to stay inside at the excluded home environment [14]. For this reason, we may say that more obstacles on the travel route bring more exclusion and isolation for PRM in urban landscapes.

There is a conflict between two trends: to clear any obstacles and other objects including trees from the major city street space for increasing visibility for drivers and pedestrians, and the trend to increase traffic safety. Research show that internal urban streets and open areas that have smaller spaces and enclosed streetscapes encourage slower and more careful driving, consequently less risk with more safety and comfort for pedestrian users [7].

The Pedestrian Environment Data Scan (PEDS) methodology that can evaluate the safety and condition of the pedestrian environment emphasises that continuous and wide enough sidewalks are one of the essential elements of the pedestrian-friendly urban landscape [2]. The essential feature of an open space fit for walking is its levelled connectivity and uninterruptedness [1]. For this reason, keeping sidewalks and other pedestrian walkways continuous and uninterrupted by the driving way is an essential measure to increase the safety and comfort of walking through urban open spaces, streets, squares and parks.

Secured walking comfort helps creating or re-creating the local Genius Loci of the open spaces as people are creating and using them. The research cases of small towns in Slovakia show that people when they are back to the open space help restoring the traditional ways of use and adding the new required activities to these spaces [9]. Altogether, this way leads to re-establishing the local individual character of the public or residential spaces that in its turn attracts other people to attend and use these areas more actively.

Researchers analyse and emphasise importance of the first and the last mile for the overall attractiveness of pedestrian citizens moving around the open spaces. Quality, comfort and pleasure of pedestrians using urban walkways is measured by the pedestrian attractiveness score that evaluates many technical, environmental and ergonomic criteria, and demonstrate that this score greatly depends on the quality of the built environment features along the walkway as easy and uninterrupted travel routes and public preference [10]. In the context of current research, we see multiple quality criteria that have impact on the overall quality of urban open spaces.

Walking in open spaces is an important social and physical activity that has positive impact on public health. The survey of walking citizens in Moss town in Norway has proved that walking has positive effect on health of citizens who more frequently walk from home to work and back and therefore suggests urban planning and transport infrastructure should encourage safe and pleasing walking by easily walkable continuous levelled pedestrian walkways [11]. The study suggests neighbourhoods should treat walking in open urban spaces as an important aspect of health-promoting recreation and transport activity.

Sustainable urban mobility measures are an important aspect of sustainability assessment that is included in all international (BREEAM, LEED, DGNB) and local e. g. The Lithuanian Building's Sustainability Assessment System [8]. Therefore, the measures of improving mobility safety, comfort and satisfaction are the vital instruments for sustainable development of cities as to improve their attractiveness for resident, visitors and investors.

The analysis of research experience in traffic safety, PRM empowerment, health promotion, city aesthetics, sustainability and other interconnected fields show that increasing safety, comfort and pleasure of walking areas can bring multiple positive benefits for the sustainable development of cities of different sizes, and

reinstalling smooth, uninterrupted pedestrian walkways is one of the most important measures in this way.

**Re-Pedestrianising as a Landscape Planning and Design Strategy**

The paper investigates how proper urban space and landscape planning can improve safety, comfort and pleasure of walking in urban open spaces by reducing the number of street intersections (a), drive-ins from the main street to the blocks and internal facilities (b), and making all pedestrian walkways level in the points of intersection with the driving ways (c).

During spontaneous urban growth, many new street intervals were added to access the new buildings and other facilities in cities. Consequently, more drive-ins that are cutting through the pedestrian walks appeared on streets and squares (Fig. 1-4). The confusing discomfort for pedestrians arises on all street crossing and drive-ins that are cutting through the pedestrian walks. From the conceptual perspective, the problem lies in assigning the proper priority right for the pedestrians and the vehicles in mobility line's intersections. The general mobility safety rule says that the weaker party has a priority which means that pedestrians have a priority against cyclers and vehicles, and cyclists have priority against vehicles. Based on that premise, pedestrians have priority in street crossing on designated crossing lines and / or as regulated by the traffic lights and have to give the way to cars in the other driving intervals (Table 1). However, in internal quarter areas and in open urban spaces the situation is different – these areas are for the internal movement, recreation and communication of citizens; therefore the pedestrian travellers should have priority against cars and bikes, and bikes have priority against cars.

Therefore, reducing the number of street intersections by proper space planning can improve the walking conditions as a first measure. Second, reducing the number of drive-ins improves walking conditions as well as it reduces the number of pedestrian walkway interruptions. The third measure is keeping the pedestrian walks on their level as the driving way leads over it. This small detail has a great importance and potential for improving walking conditions as it signals pedestrians having priority against vehicles, for this reason vehicles slow down and let people and bicycles pass first. This rule only applies on drive-in points and not on street intersections and on crossing. Based on these measures, the paper explores the option for optimising space planning and resolving the conflicting intersection points where the drive-in way cuts through the pedestrian walkways (Fig. 5, 6).

TABLE 1

*Priority in person–vehicle route intersection. Self-elaboration.*

| No. | Intersection case | Priority | |
|---|---|---|---|
| 1 | Street intersection | Pedestrians and bike riders on crossing only | Car on the rest driveway |
| 2 | Drive-ins | Pedestrian always<br><br>Bicycle always | Cars shall give way |


*Fig. 5. The good solution for pedestrian way and driving way intersection on drive-ins to urban quarters, open areas and courtyards*
*Source: www.pedestrians.org [online 4.08.2018].*

The central part of Joniškis town was re-planned as to improve the attractiveness of urban open spaces by optimising street network, reducing the number of street intersections and drive-ins and re-designing the remaining drive-ins as to ramp them through the levelled and elevated pedestrian walkways (drawings on Fig. 7 by Tautvilė Džiugytė, supervisor Gintaras Stauskis). We estimate the situation "before" which is a present state and "after" the design intervention by accounting the number of crossing and drive-ins and the number of redesigned drive-ins. As the next step, we estimate the possible impact of implementing the proposed changes by compiling the set of multiple social, economic, environmental and aesthetic assessment criteria. Based on literature analysis and field observation we identified the number of 16 criteria in five criteria groups: comfort of pedestrian walking, traffic safety, resource investment, impact on the environment and impact on the city aesthetics (Fig. 8). Comfort of walking is a critically important for attracting people to open spaces and depends

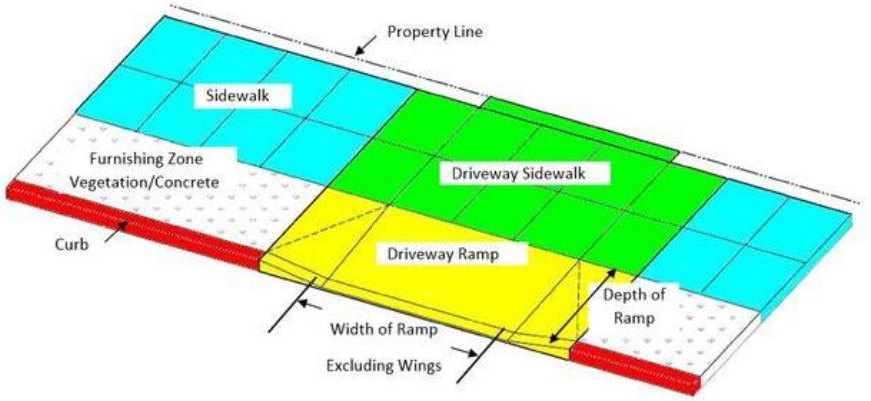


*Fig. 6. The way pedestrian sidewalk should be paved on one level and the driveway is ramped across it. Used on drive-ins intersection with a pedestrian walks*
*Source: https://www.portlandoregon.gov/transportation/64968 [online 4.08.2018].*


*Fig. 7. The existing crossing and plot entrances (a) and the planning proposal (b) in town plan of Joniškis, Lithuania. Elaborated by T. Džiugytė...*

TABLE 2

*The number of crossing and plot entrances in the blocks of Lithuanian cities. Self-elaboration.*

| Activity | Indicators | | | |
|---|---|---|---|---|
| | Crossing number | Drive-ins number | Total: | Ramped drive-ins and levelled walkways |
| Present state (Figure 7a) | 35 | 41 | 76 | 0 |
| Planning proposal (Figure 7b) | 26 | 30 | 56 | 30 |
| Change: | -25,7% | -22,0% | **-26,3%** | **+30** |

how smooth are the walkways and if they have or not any obstacles, if the walking promises shortest and well visible route to the aim of travel. Traffic safety means the probability of accidents between the cars on one hand and the pedestrians and cyclists in a separate or a mixed flow, on the other hand. Economic resources are needed to install the needed mobility infrastructure and looking from the sustainability perspective that covers the construction, refurbishment and maintenance phases. Mobility make considerable impact on the environment, and therefore we should evaluate the impact of proposed measures on noise, air and visual pollution. Finally, city aesthetic in our case is affected by the continuous horizontal surfaces, more natural and less technogenic urban landscape and good visual quality of the city [3]. We evaluated the planning proposal by all these 16 criteria in five interrelated groups by assigning the corresponding grades for the negative, the neutral or the positive impacts (Tab. 3).


*Fig. 8. The complementary set of criteria groups for complex impact assessment. Self-elaboration…*

TABLE 3

*Multicriteria Impact assessment of the proposed measures. Self-elaboration.*

| No. | Criteria group | Indicators | Impact: negative -1, neutral 0, positive 1 | |
|---|---|---|---|---|
| | | | Before – status quo | After |
| 1 | Comfort of pedestrian walking | Increasing:<br>1. smooth mobility<br>2. shorter route and time<br>3. good visibility<br>4. less obstacles for movement | <br>0<br>0<br>0<br>0 | <br>1<br>1<br>1<br>1 |
| 2 | Overall traffic safety | Reducing the probability of accidents between:<br>5. vehicles and pedestrians<br>6. vehicles and cyclists<br>7. pedestrians and cyclists | <br>0<br>0<br>0 | <br>1<br>1<br>1 |
| 3 | Resource investment – impact on economy | Optimising investment of resources for:<br>8. construction<br>9. refurbishment<br>10. maintenance | <br>0<br>0<br>0 | <br>0<br>1<br>1 |
| 4 | Mitigating pollution and impact on the environment | Reducing:<br>11. noise pollution<br>12. air pollution<br>13. visual pollution | <br>0<br>0<br>0 | <br>0<br>0<br>1 |
| 5 | Contributing to city aesthetic | Aesthetics of urban open space<br>14. Connected horizontal surfaces<br>15. Less technogenic urban landscape<br>16. Visual expression | <br>0<br>0<br>0 | <br>1<br>1<br>1 |
| | **Overall impact result:** | | +-0 | **+13** |

## Results and discussion

Analysis of the planning proposal indicate definite reduction of elements that are increasing danger and discomfort of pedestrian mobility in Joniškis town open spaces: if the city implements the plan the number of crossing can be decreased by 25,7% and the number of drive-ins – by 22%, the overall number of risk-posing elements may be reduced by 26,3% (Tab. 2). We could say that safety, comfort and satisfaction of pedestrians in the central part of Joniškis town could increase by the same amount if the city implement the proposals. In addition to that, all remaining drive-ins should be re-designed to ramp the driving way over the elevated pedestrian walkways, and that will delete the risk element and further increase the quality of walking in Joniškis.

Results of the qualitative impact-assessment show that in 13 of 16 indicators the proposed urban refurbishment would have positive impact and only in three indicators (construction resource, noise and air pollution) – neutral impact, no negative impact was observed (Tab. 3). The proposed measures will

definitely increase the comfort of pedestrian walking (positive in four of four indicators) and will positively contribute to the city aesthetics (positive in three of three indicators). Traffic safety for all moving parties would increase in the same way (positive three of three indicators). The economic aspect of resource investment (two of three indicators) and impact on the environment (one of three indicators) show moderate positive impact.

The overall evaluation of the proposed measures shows definite positive impact on walking in urban open spaces as the number of risk-posing infrastructure elements reduces. Looking from the multicriteria perspective, the biggest positive effect is expected in the spheres of pedestrian mobility comfort, traffic safety and city aesthetics. These three aspects are the most important drivers in making urban landscapes and open areas more attractive for the local people and for the visitors. Resource investment and environmental impact are relatively also important but these aspects should be analysed in the wider perspective of economic development and the other environmental measures that the city or the region implements.

## Conclusions

The paper has demonstrated the great positive impact that one technical design detail – ramped drive-in – can have on the attractiveness of the city and quality of life for the citizens. Mobility is recently becoming a critical element in urban development and landscape, and therefore sustainability-based urban mobility solutions should get priority in planning and refurbishing urban open spaces while updating the city master plan, by planning new and upgrading the existing urban districts and landscapes, by designing new buildings and the open areas around or nearby them.

The conceptual measure of SUMP is prioritising pedestrian mobility and cycling against cars transport in the city, and municipal authorities should constantly implement this principle in different available ways. City centres should give priority for pedestrian and other non-motor mobility users as these areas are the most sensitive for the citizen's safety, comfort and pleasure. Empowering this aspect leads the city to the way of sustainable urban development that allows for ensuring higher life quality even with limited material and human resource.

Looking in the wider context, the proposed ramped drive-ins and levelled pedestrian walkways help humanising the city environment and making cities and their landscapes friendlier for the weaker citizens – families with children, people with disabilities and the ageing people whose share is recently growing and will soon make the dominating part of urban residents. These measures help making the cities more attractive for local citizens and visitors and contribute to the growth of social – economic attractiveness of the motivated urban regions.

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**Kopsavilkums.** Pēdējo divdesmit gadu laikā daudzas Austrumeiropas pilsētas ir kritiski pārpildītas ar automašīnām. Rezultātā, brīvā pilsētas telpa ir kļuvusi fragmentāra, bet pārvietošanās pilsētā – nedroša. Pētījumā aprakstītas problēmas, kas saistītas ar komfortablu piekļuvi urbānajai videi, izmantojot multidimensionālu pieeju, iekļaujot estētikas, infrastruktūras un sociālo rīku pielietojumu. Rakstā piedāvāts risinājums Jonišķu pilsētai (Lietuva), izvērtējot esošo mobilitātes situāciju, izstrādājot uz gājējiem akcentētu rīcības plānu un paredzot ietekmi no pielietotajām metodēm. Multidimensionālās pieejas rezultāti rāda, ka izvirzot gājējus kā prioritāti, var panākt vairākus vides un sociālekonomiskus ieguvumus. Urbānā vide kļūst drošāka, pievilcīgāka un patīkamāka. Piedāvātais risinājums kalpo kā pētījumu, projektēšanas un izglītošanas vadlīnija ainavu arhitektiem privātajos, publiskajos un nevalstiskajos sektoros.

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# The age of aesthetic perception of the environment - concept in architecture and historical data

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**Abstract.The object of the research whose findings are presented in the article is on the contact line between two life "elements" – the popular contemporary architectural culture and data of contemporary historical knowledge. In the analysis, it is attempted to disclose how the notion "Aesthetics" is viewed from both sides of that line, seeking to ascertain whether contemporary architectural society sees the duration of an aesthetic attitude of the human being towards its environment in the same way how this make history data.**

**Keywords: view, aesthetics, architecture, historical data**

## Introduction

Why the historical knowledge of age of an aesthetic attitude towards environment could be important for the contemporary architectural culture? Different pictures of the age of aesthetical attitude towards environment support different paradigms – different modes of architectural life.

If man's "aesthetic needs" emerged along with human being, then we should think that they are one of the perpetual elements of his nature. If aesthetic relationship between people and their surroundings is an inevitable characteristic of human nature, then the essential knowledge about this phenomenon is got – all further discussions about "Aesthetics", all the attempts to cast a deeper insight into its essence are, practically, is nothing but a waste of time. The only really important task that survives for the architectural activity in this case is to concentrate on environment and to satisfy this human requirement. The popular definition of function of architectural activity is correct.

But if the aesthetical attitude towards environment has not appeared together with the men, it means it is not the eternal element of human nature. Would it be logical to approve that architecture is activity that fulfills the aesthetic needs, if people did not use it for that purpose for a certain period of time? Can we be sure people will use architecture for fulfilling these needs in future? The popular formulation of the mission of architecture "to satisfy the utilitarian and aesthetical human needs" would look at least questionable in this case. The dominating today undestanding of the mission and content of architectural activity would become the problem.

This is the reason pushing to search for the answer to the question "How long the aesthetical attitude towards environment exists?"

## Methodology of research and materials

An opinion on the age of aesthetic perception of environment is clearly declared in the some talks ofarchitects. The concept of that phenomenon is "visible" also in other details of contemporary culture, for example – in traditional formulations of the tittles of books and the traditional talking about aesthetics in them. These things are sources, allowing "capture" the dominating opinionabout the age of aesthetics in the contemporarry architectural culture.

The historian's description of the lifestyles – concepts of the world structure, values and roles of it's elements (role of men, first of all), lyfe "scenarious", also direct talks in ancient texts about beauty, perception of it, about satisfaction, art e.t.c. are analysed to understand, how the people accepted the most important things that today are associated with category "aesthetics".

After getting the understandings of the age of aesthetics in the both fields (architecture and historical data) are analysed, presented and compared in the article.

## Discussions and results

### *The concept of age of aesthetical attitude towards environment, existing in the popular architectural culture*

There is a widely-accepted viewpoint in contemporary architectural culture that aesthetic intention came into existence along with man and has accompanied him until now.

There are claims that this is the case. For instance, renowned 20th-century architect and theorist A. Rossi states in his book *The Architecture of the City*: "As the first men-built houses to provide favorable surroundings for their life, so they built with aesthetic intention (underlined by E. S.). Architecture came into being along with the first traces of the city; it is deeply rooted in the formation

of civilization and is a permanent (underlined by E. S.), universal, and necessary artifact. Aesthetic intention and the creation of better surroundings for life are the two permanent characteristics of architecture" [12].

There is also indirect evidence of existence of such opinion. Today we have many books, named as "Histories of Architecture". Because architecture today is defined as activity, that meets practical and aesthetical tasks, the readers can easily make the conclusion that these aesthetic tasks have appeared in that deep past.

Let's take a look also at what is very close to architecture. Nowadays it is not uncommon to see books named as "Art Histories" in which the human products from the Paleolithic period are presented [4; 5; 15].

Now art is inseparable from aesthetics. If you think of art as having existed from so ancient times, then, seeing such titles, you can come to conclusion, that an aesthetic relationship between people and their surroundings is the same old too.

There are not only books about very old art, but also there are books directly on the topic of rather old "Aesthetics": on aesthetics of Ancient Greece, on Aesthetics of Middle Ages, e.t.c. [6; 11]. If not to have much time to go deep into those and other books, into this topic in general, it is very easy to form an opinion, that already first environment which the ancient people used for living, was formed with an aesthetic intention.

The presented facts force me to concludeto conclude, that the the contemporary architecture culture[2] sees the aesthetical perception of environment as the very old phenomena – as the element of human life, that exists from the moment, the human human beings began to build their first homes.

*What does historical data say about the age of an aesthetic attitude towards environment?*

It would be irrational to continue to use the word "aesthetic" without clear definition of the word, solving the next task of this research – trying to figure out, what the historical facts say about the age of the aesthetic attitude of the human being towards the environment.

According to encyclopedias "Aesthetics" today is accepted as rather mysterious phenomenon, still any set of associations of that category with other specific phenomena today is unavoidable. (1) "Aesthetics" is accepted today as something impractical. (2) "Aesthetics" is accepted as something associated with man's feelings. It is tightly tied with (3) beauty and (4) art [13; 3]. This set I seeshould be seenas the essence of the contemporary concept of Aesthetics: if not that set of associations, "Aesthetics" would be nothing today.

To answer the question, what the historical data say about the age of an aesthetical attitude, in my opinion, means to answer the question, what does history tell us about the period of the afore-mentioned issues. Did man see both sides – that is, practical and impractical in the formation of his surroundings since his very existence? Were the meanings of words "Aesthetics" and "Beauty" always so closely interconnected as they are now? Did the people always treat creative works as one of the principal means of realizing human aesthetic needs, as an instrument of creating "Beauty?" Did the people always associate aesthetic needs with human feelings? Did the people always regard a man as an addressee of art? – in other words, did his creations always have to satisfy his needs?

Below we want to look at what history data speak of the formation of the man's worldview and examine how he may have answered the above-mentioned questions in different epochs.

*The peculiarities of perception of surroundings in Stone Age*

According to the researcher of the evolution of human thinking O. Freidenberg, "Primitive mentality has three peculiarities. It is concrete, non-differentiated, and picture-related." [17, *19*]. Let us interest about these three features a little more detail.

The insignificance of differentiating the image of the world is noticeable in many spheres of ancient life. According to O. Freidenberg, the primitive consciousness does not distinguish between animate and inanimate, subject and object, between the old and the new. The human features are not perceived – all mankind is represented by the external world. The external world is represented in the form of human beings [17, *25*]. To sum it up, in the primordial worldpictureone object is also another object, in other words, "all equalizes all." [17, *20-63*].

Absence of one difference is especially interesting for us: there is no such point as a cause in a primitive system of world concept [17, *20*]. Not being aware of the existence of causality, a primeval man did not "pose any questions to the nature or seek to answer them" [17, *21*]. He did not value anything. "One is to realize that neither an epithet nor a descriptive name – semantically

[1]*You need to add one thing to what is said. Is falling to the eye, that the words "Aesthetics", "aesthetic" is used rather freely. Having in mind the possible variety of meanings that can be given to the word "Aesthetics", it is correct to state the only thing: this word is used rather often when talking about the very old human past. However, it must be admitted that not always we can know, what about the authors speak exactly.*

referring to the era of myth-making – expresses any qualitative properties, either bad or good." [17, *53*].

Such mentality is visible in all spheres of the life, in primordial formation of environment – too. The earlier the historic period is – the less different from each other the forms of man's-built constructions are. Moving from the Paleolithic to the Neolithic, the man gradually stopped to live in caves and began to construct buildings. He used only one – the oval form building plan. He did so in all cases [1; 8].

He did so, building the functionally different (looking from contemporary positions) buildings. He did so also in all instances of time. Obviously, for one reason or another reason (wandering life, natural disasters, neighboring tribal attacks, etc.) ancient people would reconstruct the buildings; however, they did not change the form of the buildings' plan: a plan for the first buildings (at the Paleolithic-Neolithic juncture) – notwithstanding the purpose they served – was oval. And the buildings of a different plan form have not been built for about four thousand years.

These characteristics of primordial mode of activity make us reflect upon: 1) If a primeval man incorporated all his activities into homogeneous forms, then we can presuppose that for him those activities differed little one from another. 2) If, in the case of reconstructing the buildings, he always built them in one form, then he must had accepted that form as a suitable one.

Hence primitive mentality is non-differentiated; besides, one should add that a primeval man could not generalize, abstract: primitive mentality is straightforward and pictorial [17]. Here dominates one mental image. In the totem world outlook, it is dealt with searching for food that is, for an animal, fighting with it, killing it, eating, and worshiping it. Probably because it was all that a primeval man could perceive, historians treat the primeval man's perceived activity as "cosmogony".

Such is mythological mentality. It encompasses the earlier period, which is called the age of "totems" (when an animal was predominating in the image of "everything" and "anything"), and the later period (which is complemented by a subject of reproduction in the image of "everything" and "anything").

Now let us try to answer the question "could the present-day notion of "Aesthetics" (the set of the above-mentioned associations – as something as something associated with man's feelings, as something good, as something impractical, e.t.c.) have been incorporated into such world outlook?" No, it could not. Solely because of the fact that man could not see himself (i.e. he did not discern himself from the animal, tribe or nature in general); that is, he could not live thinking that he was satisfying his unique (human) needs. He could not understand that in existence one can recognize certain needs and their satisfaction. Improper (for men) form of environment did not exist in the primordial mentality: either a primeval man did not concentrate his attention on its quality or he created it thinking not about its quality but something else.

*On the human attitude towards the environment in concepts of later époques*

In the course of activity (lasting several thousands of years) the man's ability to separate more clearly the image of the world has developed. It (especially the ability to distinguish details from totality) created preconditions for the development of abstract thinking (generalizations, removed from specific examples or facts). Historians state that in turn it was a precondition for the next changes in the worldpicture – for distinguishing the causes from the consequencesof various phenomena [20].

One starts to notice the existence of cause and effect relationship, but not immediately in the same way as we see it now. During Antiquity and the Middle ages people thought that the cause of everything lied in the will of Gods (later – God). In essence, they (the Gods) become the most powerful ones being resurged through death. With such kind of life "drama" transformations, (human) life is to play a secondary role. A human person in that image of the world is neither a central figure nor a consumer of life. And such distribution of meanings is growing stronger. Several hundred years ago (let us say in the Middle Ages), if one had heard that architecture must meet human needs, he would be resolutely opposed, saying that if it is to meet certain needs, then they are certainly not human, but God ones. In the Middle Ages, all human needs were ignored – practical and impractical ones, as well as his feelings.

Both in Antiquity and in the Middle Ages the letterings "Beauty" and "Art" – nowadays closely interlaced with aesthetical needs – were used; however, they had entirely different meanings. If to take "Beauty", historians state that one can identify three versions of "Beauty" in the Middle Ages.

The first one deals with the continuation of Plato's conception of "Beauty". According to it, "Beauty" lies within God's work. Historians state that "the authors of the Middle Ages would constantly speak of the "Beauty" of the <u>whole existence</u> (underlined by E. S.). Although the history of this epoch is full of obscurantism and contradictions, an image of the universe which the (medieval) theorists in their works depicted, is always covered with enlightenment and optimism." [6, *32*].

Here we must come up with an idea: if a medieval man could have envisaged "Beauty" in God's creation, that is, not in things created by men (as it happens today). Let us move along the second conception of beauty in the Middle Ages.

Referring to the second version of understanding of "Beauty" in the Middle Ages, "Beauty" is God Himself (directly) [6, *38, 39, 40*; 16]; furthermore, it is the only one. There is no other "Beauty" than this one. U. Eco in one of his books gives such fragment from the medieval texts: "God is called good, for He breathes life into everything and provides corresponding goodness, enhances and develops it; He is called beautiful, for He creates the harmony of identity with Himself in all things, together and separately" [6, *38, 39, 40*]. Alcuin of York (an English scholar, clergy, poet and teacher) and other medieval thinkers call God an "eternal beauty, tenderness, and happiness" [6, *131*]. In the margin, we could write the same remark as in the first version of the concept of beauty: if beauty is God, then it is not the works of man (not that, what we today call "art").

The third medieval version of the concept of "Beauty" is probably the closest to today's concept of "Beauty". Some medieval people could see "Beauty" in those things in which it is most often visible today, that is, in beautiful creatures, in pleasant smells, in soft sounds. But not all people saw it in this way. Those who did so, were faced with a huge challenge: how to justify such "Beauty". Those who acknowledged its existence thought that to admire beautiful creatures, pleasant smells and sounds would only be possible on the condition that they enjoyed these things in order to love God even more (not satisfy any human need).

The position of "Art" in the medieval life drama had to correspond to the same understanding of the world. If God or His work was regarded as "Beauty", then there was no human activity (whatever we would call it) that may have been treated as the creation of that "Beauty". The notions of "Beauty" and "Art" had nothing in common. The word "Art" was used to denote a masterly accomplished work and name its produce [14]. Referring to medieval "Art, "historians state that "*Ars*" (now it is translated as "art") was a broad notion embracing those areas which we could name today as craftsmanship or technique. At that time the theory of "Art" was primarily perceived as the theory of mastership" [6, *150, 151*]. In the Middle Ages, according to Umberto Eco "/../ one would hardly comprehend what was specifically artistic. The Middle Ages "lacked /../ the conception of art in today's understanding when art is perceived as the creation of things whose prime objective is to evoke an aesthetic gratification, enfolding with sublimity that is endowed by such purpose" [6, *155*].

The division of phenomena into practical and non-practical ones was difficult task in the Middle Ages. We say "phenomena" but not human needs, because, as it has already been mentioned, human needs were regarded as worthless or even reprehensible.Medieval theorists, according to U. Eco, tried to distinguish what is beautiful and what is beneficial, "Beauty" and "Goodness;" yet, they found it difficult to realize [6, *30*]. If God is considered "Beauty", then it is really hard to determine whether He pleases us aesthetically or He is practical and not sinful. In general, no matter how He can be classified. Dionysius the Areopagite defines divinity as follows: "/../ the brightest and lightest nebula of silence /../ the brightest of the translucent darkness," which is "neither a body nor a figure nor a form; it has no quantity or quality or weight; /../ it is neither a being nor eternity nor time /../ it is neither darkness nor light; it is neither an error nor the truth." [6, *87*].

If "Beauty" is considered not as God himself, buo as as God's creation – the universe, the problem of setting it as practical or not, is more or less similar: it makes it difficult to discern what is practical and what is impractical.

The human feelings – how they were seen in Middle Ages?

Historians say that the Middle Ages were a period of extremely hectic experiences. But the medieval man divided the feelings into types and treated them differently. The feling of pleasure was most often considered negatively. See when he came up with the aforementioned medievalconcepts of beauty.

1) Moralists and ascetics believed that the greatest good was to relinquish one's "earthly" feelings [6, *16*].

2) The concept of the "Beauty"as beauty of the Gods creation (universe), or the beauty of the God himself accepted feelings, however these were not experiences when thinking of yourself as a free and autonomous being and considering your feelings. "There was not a single medieval author who would not have elaborated upon the world's polyphony, and often just along with temperate, precise, and philosophical descriptions …rapturous infatuation /../" [6, *34*].

U. Eco gives the fragment of medieval text, illustrating such cases: "When reflecting upon the beauty of the universe /../ it will appear to you /../ that this universe is as if it were the most beautiful song /../" [6, *34*].

3) Only the third variant of the interpretation of the Holy Bible saw and recognized the human reaction to more usual environment, the right to admire what radiates, sounds pleasant on the ear, and smells sweet. But that was also not the right to enjoy the pleasure of oneself. This was justified only

in one case – if it was the form (the way) of love toward God. Deriving pleasure from refulgence, pleasant sounds and delicious smell was acceptable only as a means of faith.

We can think that ignoring one's emotional experiences while observing the works of people must have hindered the development of the emotional interpretation of environment in general. The medieval man's sensuous experiences which he did not allow himself to undergo must have become stagnant. The historical facts confirm this. Historian Johann Huizinga writes that the ability to perceive and express in words an aesthetic pleasure (of usual for nowadays environment, works of art) emerges relatively late. A man of the fifteenth century was able to express his admiration for a work of art only in general phrases [9].

*The emergence of a modern approach to the environment*

The more abstractly God was observed, the more questions were raised in relation to his nature. In the eighteenth century, it seems to have been fundamentally examined. The existence of God casts some considerable doubt in Western world in general [2]. The image of God begins to blur. The former content of the notion of "Beauty" vanishes: if there is no God, then there is not beauty in the form of himself or his creation. Belief in the existence of God weakens, but there is no emptiness – it transforms into belief into the laws of the world and into the ability of man to discover them [19]. Man starts to view himself as a central figure in the drama of life – not only as a revealer of its secrets but also as their user.

In the mid of the eighteenth century, A. Baumgarten's proposal to pay more attention to what is related to human feelings (and it is what he suggests calling "Aesthetics" and linking it with "Beauty") [7] appears to be very timely. Some decades later, Immanuel Kant endows human feelings with a new high importance [10]. He distinguishes unequivocally what is a practical and impractical human relationship with the surroundings and defines the latter one as "Aesthetics" (which is inextricably interwoven with the contemporary concept of "Beauty"). The category of "Beauty" (now associated with the category of "Aesthetics") has a new content. It is a degree of satisfying man's impractical needs.

The concept of a human "Aesthetic" relationship with the surroundings assumes all the main features inherent to that of today: one turns satisfaction of the needs in the meaning of human life and identifies both what is practical and impractical in these needs; the concepts of "Aesthetics" and "Beauty" become very close in essence; and "Art" becomes considered as one of the crucial means of realizing "Aesthetic" needs, as an instrument of creating "Beauty."

**Conclusions**

In the case "Aesthetics" is accepted as the set of nowadays wel known associations (as something impractical, as something associated with man's feelings and tightly tied with beauty and art) the popular in the contemporary architectural culture thought, that an aesthetic attitude of the human being towards its environment exists from the times, when the first men built houses, contradicts the historical data. This data show that the people started to interest in their feelings, to accept this interest as not practical one, to connect it with beauty and relate the satisfaction of it with the human artistic activity relatively not so long ago.

The historical data puts the modern concept of architecture into a complicated situation. If we want to consider architecture as an aesthetic activity, it should be necessary to refuse to call as architecture the construction activity roughly to the XVIII century. If anybody had the wish to leavename "Architecture" for calling construction activity up to this time, it should refuse to define architecture as the aesthetical activity – activity, fulfilling the practical and aesthetical human needs.

The historical lessons raise also such question: is it not to courageous to define the formation of an environment as aesthetic activity, not knowing how long the contemporary way of the human approach towards environment will last.

Such thoughts place architectural theory and the way of practical life in to dramatic (but interesting) situation: we should recognize that the „foothold" of contemporarry mode of architecture – popular formulation of the mission of architecture "to satisfy the utilitarian and aesthetical human needs" is probably not correct.

Of course, the question "how the mission of architecture should be formulated correctly?" appears immediately. Still it is not necessary to hurry to answer the question. Fast and simple additions to the popular definition of architecture here can be not enough and may be even dangerous. The presented material displays the necessity of deeper rethinking of the popular concept of the mission of architecture.

However, the necessity of one change in the "construction" of contemporary concept of architectural life seems clear already now: architectural culture should not close it selfonly into the looking to the form of environment. Not only the form of environment should be accepted as the object of architectural activity. Our way of life (also our understanding of essence of architecture) – is not less interesting and topical thing.

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# Urban transformations in state squares of the Baltic Sea region

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**Abstract. The square is a traditional element of urban fabric and, as a rule, a focal point of its urban spatial structure. It is not only an element that reflects the maturity of an urban structure but also transcends the socio-cultural experience of society (heritage). It has been almost 30 years since the restoration of Baltic states independence, but the squares in the central parts of towns and cities have not acquired a complete result. The development of squares remains a burning issue in the structural aspect (the form, the ratio of a square and surrounding build-up), in the compositional aspect (formation of continuous building frontage, respective principles of the build-up, etc.), in the functional aspect (the rank of a square among other urban public spaces, etc.). This question is frequently raised at various levels (professional, political, social), just like the issue of status (both physical and social). This is especially true for the capital Vilnius of Lithuania, which still does not have the image of the stately representative square. The assumption is made that the comparative method can provide more information and will look at the topicality from another point. Therefore, this article presents a comparative study of the 4 countries of Baltic Sea region – Estonia, Latvia Lithuania and Poland. The capital cities of countries from a pre-defined region with similar culture, have been selected. They have a common feature – post socialist status in the Europe. The above discusses the main aspects of the formation of squares, reveals certain parallels between the main items of the capitals of Baltic Sea region countries and discusses the possible further development of the paths.**

**Keywords: state square, central part of the city, Baltic Sea region, post-socialist city**

## Introduction

In case of urban development in Lithuania, the period until 1990 can be described as the most intensive phase of spatial transformations, including alterations of inner public spaces. It progressed despite the fact that at that time the priority was laid on the territorial expansion of cities and towns. However, since 1990, although the goal of inner urban redevelopment is officially declared, the redevelopment process of urban public spaces is stagnating. The major squares of larger cities are perfect examples of this situation. Although the need to transform urban squares has been a frequently discussed topic for almost three decades, majority of already completed projects of redevelopment of major squares in smaller towns and, to some extent, rehabilitation of secondary urban public spaces in larger cities highlight a strange trend. Primarily, it's a sign of shifting approach towards redevelopment of public spaces, which emphasises smaller aesthetical interventions (e.g. new sculptures, other technical improvements) over solving fundamental issues of frequently deformed urban tissue of post-socialist cities. Although ideological monuments were dismantled in all major squares of Lithuanian cities, the morphology of these public spaces, as well as their spatial configuration retain some properties of previous socio-political order. During recent decades these urban spaces didn't acquire new spatial qualities. Furthermore, their spatial unity and compositional arrangement was violated by the removal of former elements.

Given the fact that changes in the transformation of squares have been experienced by all post-Soviet and socialism-marked countries, the scale of such change is very different, however. In the case of Lithuania, the most vivid example of such a square in major cities is the Lukiškės square in Vilnius, where, after a long debate, disagreements and a period of contests, today, for the first time after 1990, changes are finally taking place – the square is about to be transformed (alas, perhaps only aesthetically, but not in terms of space morphology). As during this period much attention has been devoted to research of the historical development of the Lukiškės square (and it is obvious that knowledge of history alone does not guarantee qualitative transformation), practical examples and know-how are referred to. An ambitious goal has been set to compare squares of similar evolution in the context of common European culture, focusing more on the character of the form of the squares, their identity reflecting contemporary social, economic and political situation. The assumption is made that the comparative method can provide more information and will look at the topicality from urban transformation point, highlighting their main spatial and social qualities as possible factors of their redevelopment.

## Platform for evaluation of squares

### *Concept of a city square*

From a physical point of view, urban spatial structure of cities is formed out of three major components: built-up spaces (blocks and quarters),

*Fig. 1. The plan of the hierarchy of the city parts and the urban structure of separate parts Created by the author.*

open spaces (public and green spaces) and urban-architectural complexes. The overall impact of these three elements is defined as urban fabric. Its intrinsic spatial qualities are an indicator of maturity of cities. Through differences in the relationship between built-up and open spaces, urban places acquire their unique character (identity). However, the system of open urban spaces plays an essential role, acting as a spatial framework, which bound all the other elements into complex urban tissue. Consequently, the urban squares receive most of the attention, because of their exceptional spatial features (nodal element of urban system) and socio-cultural potential (places of representation of political or cultural ideals, as well as expression of social ideas). As a result, for the purpose of this article, the urban square is defined as an element of a city's public relations that performs a significant role as a city's focal point in the network of its public spaces. It is a place for various social, economic, political interchange.

*Importance of the hierarchy of city parts*

There are several common criteria characterizing a square [1]. Seeking to understand the element of a square, it is important to note that it is inevitably connected and blends into the surrounding environment. Thus one of its major aspects is its *spatial location.* In the hierarchy of different city parts, every part has its public space structure pertaining to it (Fig. 1). Among others are city squares that reflect the present character of public spaces as well as the status of a certain city part. In spite of that, squares remain nodal points of infrastructural, social and economic intersections that can be entered from different sides. But located in different parts of cities, squares differ from place to place. The second criterion in understanding the character of a square is its *physical dimensions.* It is closely connected to the structural parts of a city that differ in their built-up character and its parameters. The third criterion in understanding the character of a square is its *social content.* Just like the two previous criteria, this one is also closely related to a city's structural parts that differ from each other in their socio-cultural content.

Thus, based on the three criteria, the presence of a square as a public, integrate element testifies of the maturity of the urban morphostructure and public spaces system. Precisely that determines the variety of city squares.

*Criteria for a square formulated in professional literature*

Even though a square can be singled out as a separate element of the urbanistic structure, in the literature it is usually researched and evaluated as an integrate part of a city's public spaces. Thus the research usually focuses on the development principles of the urbanistic space, specific compositional-structural solutions. In literature, studies of the square phenomenon can be divided according to the aspects of the evaluation of a square (historical, morphological, structural, social, visual-psychological) with criteria that make them more specific [1].

*Selection of squares and the era*

The capitals of the countries from the same geographically defined cultural region, also named as the Central Europe[3], have been chosen. This article presents a comparative study among capital cities of the closest neighbouring countries – Estonia, Latvia, Poland, and Lithuania. The above-mentioned countries are united by the restoration of their independence (that most often happened in the squares located in the central parts of the city), the acquisition of the post-socialist status, economic circumstances, etc. The totality of these conditions is mostly reflected in squares in the central parts of the city, which today are recognized as representative spaces of the state.

[1] *This is Prague (Czech Republic), Tallinn (Estonia), Riga (Latvia), Warsaw (Poland), Vilnius (Lithuania), Bucharest (Romania), Bratislava (Slovakia), Ljubljana (Slovenia), Budapest (Hungary), East Berlin (Germany).*

TABLE 1

*The main historical facts of the squares in the 1st transformation stage. Created by the author.*

| Liberty square in Tallinn (Estonia) |
|---|
| The square formed as approaches to the old town, as a nodal point which is accessed after passing the old town defensive wall (preserved from the Middle Ages) with a separately forming distinctive town, called the town of Estonians. In the centre of the current square, there was the Harju Tower that has maintained the medieval defensive wall [2], [3]. |
| Freedom Monument square in Riga (Latvia) |
| Until the 15th century, the territory of the square was behind the defensive wall. Since the beginning of the 15th century, many little villages settled around the fortress walls. Gradually they merged and formed the suburbs. In the period from 1559 to 1812, for example, the Riga suburbs burned eight times, once every 30 years. At the end of the 18th century Riga greatly expanded, absorbing the surrounding villages [4], [5], [6]. |
| Lukiškės square in Vilnius (Lithuania) |
| Since the middle of the 15th century, it was a field of grass for a long time and, until about the 19th century, it was used as an intersection of roads and paths and a poor pasture. At the end of the 18th century, a striking accent was built in the northern part of the square – a complex that consisted of the Church of St. Apostles Philip and Jacob, a monastery and a hospital [7], [8]. |
| J. Pilsudski square in Warsaw (Poland) |
| Since the 15th century, the territory was dominated by forest areas. From the north to the south, there was an old road (the present Wierzbowa and Mazowiecka streets), and the area was called the suburb of Kraków, which was connected by the so-called Saxon Axis (its formation started in 1713 and it is divided into three stages of formation [9]). The direction of this axis is from east to west. It started with the gates of the Krakow suburb to the garden and pavilions, barracks, which had such functions as residential, military and public [10]. |

*Square study sections*

The studied squares are outside the old towns, but in the territory of the central part of a city. Urban transformations of a square are studied in two sections – historical and urban. The study of urban transformations is carried out at 3 levels of urban structure research:

1. in the city context – in which district of the city the square is located;
2. in the system of public spaces of the city district (whether the analysed square is a part of this system);
3. in the local context of the square – in the plan, in the construction of spatial form and in the section.

**Transformation of squares from the historical point of view**

Evaluating separately, the urban development of a square can be viewed as contained within a series of sequential phases, namely, initiation, formation, maturity and reformation.

By tracing main innovations and trends, the preliminary length of these stages is identified.

Stage I – *the initiative stage* (from the 15th century to the end of the 18th century) – it is the beginning of the development of the territory, it records the first events related to the use of the territory. The situation of the future squares of all the four cities is similar: the location of a square is in the suburban area: in the case of Warsaw and Vilnius, it is more distant from the kernel of the city and is mainly used as the intersection of roads and paths; in the case of Riga and Tallinn, the space of the current square used to mark the entrance to the city performing the function of the city gate, where some of it is situated on boundary of the fortifications. As a city expanded beyond the gate, the square became an integral spatial element of the territory. The accents important for the territory emerged at the approaches to all the 4 future squares (in Tallinn, the Harju Tower, in Riga, the city gate to the then town, in Vilnius, St. Jacob's Church, in Warsaw, the complexes highlighting the Saxon Axis) (Table 1).

Stage II – *the formative stage* (the 19th century) – it is an ever-growing use of the territory, where there is a need to perform both social (marketplaces) and cultural (exhibitions, pavilions) and state (parades) activities. These activities are closely linked to the evolution of cities and of the state itself. Both in the case of Riga and Tallinn, the square performed the function of accessing the city surrounded by the defensive wall. This access, in the case of Riga, was reinforced by a bridge over a fragment of defensive fortifications (the latter were dismantled and turned into a park in accordance with the tendencies prevailing at that time in Europe), and in the case of Tallinn it became a hay and timber market, because the volumes of such goods were an obstacle to trade in them in the town itself (in its inner squares). The trading function formed in the case of Vilnius, too. Alongside it, other social-cultural activities were also developed (exhibitions of agricultural produce, pavilions were built for the crowding function – circus, showing movies). In the case of Warsaw, the significance of the Saxon Axis that considerably grew for political considerations was respected by construction of a new palace and reconstruction of the old one,

TABLE 2

*The main historical facts of the squares in the 2nd transformation stage. Created by the author*.

| Liberty square in Tallinn (Estonia) |
|---|
| In the middle of the 19th century, the site of the hay and timber market was settled behind the medieval defensive wall. The territory was increasingly resembling a transit area from the Old Town to the New Town. In 1860, a significant building – St. John's Church – was built in the perimeter of the square [3], [11]. |
| Freedom Monument square in Riga (Latvia) |
| In the 19th century, the removal of defensive fortifications already became a usual procedure in other European cities. Therefore, after cancellation of the fortress status in 1857, the defensive fortifications became a protective old town area and were converted into a park (according to the examples of Gothenburg, Bremen, Vienna, Krakow). By 1863, land mounds, bastions were demolished, the water ditch was narrowed. A bridge was built that linked a newly built modern district (today's New Town) with the main street – the boulevard and the dominant 19th century buildings [5], [6]. |
| Lukiškės square in Vilnius (Lithuania) |
| At the beginning of the 19th century, the Lukiškės territory was a suburb with an essential and distinctive feature – a vast territory with rarely urbanized spaces. In 1860, the territory was transformed into a big marketplace and started to be integrated into the city. At the end of the 19th century, exhibitions of agricultural produce started to be organised in the square, a pavilion was built, where circus performances, demonstration of movies took place. Lukiškės marketplace was used for various purposes. During the uprising of 1863-1864, death executions were publicly performed in the square [7], [8]. |
| J. Pilsudski square in Warsaw (Poland) |
| In the plan of the 19th century, it was the central point of the Warsaw city territory, making it the basis for expansion of the city to the west. In 1815-1816, the square was paved for the purpose of organizing parades. In 1839-1842, the Saxon Palace was restored – the central part of the building was replaced by a colonnade of Classicism style, which turned into a connection between the square and the Saxon garden. In 1841-1894, a monument to the Poles was erected on the square. New buildings emerged in the approaches to the square. At the end of the 19th century, a cathedral (in Byzantine style) was built on the square, and a separate bell tower was located near it. After 1890, in the eastern part of the square, a building of the Russian regional headquarters was built, later the headquarters of military courts were constructed [9], [10]. |

TABLE 3

*The main historical facts of the squares in the 3rd transformation stage. Created by the author*.

| Liberty square in Tallinn (Estonia) |
|---|
| To celebrate the 200th anniversary of the Russian rule in 1910, the square was named Peetri plats (Peter Square) and a bronze statue of Peter the Great was erected. Peter was pulled down during the early years of Estonian independence (in 1922), and that is when the square was renamed the Liberty square. Most of the built-up around the square is dated 1920-1930: Gloria Palace Cinema (1926), The grimy Palace Hotel (1925). Parades and other big events started to be organised on the square. Buildings of Stalinism style appeared on the northern side of the square. During the Soviet period, the Liberty square was known as the Victory square [3], [11]. |
| Freedom Monument square in Riga (Latvia) |
| The remains of the city's fortification system were turned into a park – called the Bastion Park on one side, the National Gallery Park on the other side (although it is also built on the remains of the fortification system). The bronze statue of the Russian Emperor Peter the Great was built on the site of the current square as a sign of the Russian Empire. After dismantling it, in 1935, the symbol of unity and freedom of the Latvian nation was unveiled – a sculpture 42 meters high, as a sign of the commemoration of the fallen in the fight for freedom. In Soviet times, the meaning of the Freedom Monument was interpreted according to the system of the then government [6]. |
| Lukiškės square in Vilnius (Lithuania) |
| At the beginning of the 20th century, the square shrank significantly. The avenue of St. George (currently, Gedimino Ave.) that started to be formed in 1836 was finally formed at the beginning of the 20th century. In the approaches to the square, built-up of the Secession style emerged forming the perimeter of the square. In 1939, the marketplace was moved out of the square and was settled next to the Church of St. Jacob and Philippe. The southern part of the square began to be used for parades. In the post-war period, in 1949-1952, according to the design of the architect V. Mikučianis, the square was reconstructed, incorporating the paths and other landscaping elements formed before the war. In 1920, during the Polish occupation, the square was renamed after J. Pilsudskis, and in the Soviet occupation period it became the Soviet square, later the Lenin square with a Lenin monument [7], [8], [12]. |
| J. Pilsudski square in Warsaw (Poland) |
| The square was always a composite element on the Saxon Axis from west to east, from the west side it was separated from the Saxon gardens (1666-1939) by the Saxon Palace (which was the Warsaw Lyceum in the 19th century, the Polish General Headquarters during World War I), and from side of the main street, two structures of atrium type were formed, where 1 building corresponded to 1 block. The tower and the cathedral were demolished during World War I and the Saxon Palace was demolished during World War II. The remaining fragment of the colonnade of the palace dated 1925 contains the Tomb of the Unknown Soldier dedicated to the fallen in the fight for the independence of Poland. The square was to be called the Saxon Square, it was renamed after J. Pilsudski after World War I, and it became the Victory Square after World War II. In 1979, the Pope St. John Paul II held the Holy Mass here [9], [10], [14]. |

TABLE 4

*The main historical facts of the squares in the 4th transformation stage. Created by the author*.

| Liberty square in Tallinn (Estonia) |
|---|
| After the restoration of Estonia's independence in 1990, the square was essentially used as a public parking lot [13]. In 2007, the Bronze Soldier monument located here was moved near the cemetery of the soldiers of the Soviet Army. In 2008, the reconstruction of the square began, where in 2009 on the western side of the square the Liberty Cross commemorating the Estonian War of Independence in 1918-1920 was unveiled. The name of the square used in the interwar period was restored – the Liberty square [11]. |
| Freedom Monument square in Riga (Latvia) |
| After 1992 the version of the meaning of the monument was restored on the Latvian scale. The former bridge was admitted to be part of the square only after 1990, when a part of the street around the monument, which is about 200 m long/wide, was turned into a pedestrian street [6]. |
| Lukiškės square in Vilnius (Lithuania) |
| After dismantling Lenin's monument in 1991, there has been a lot of discussion in the society about the purpose of this space. Since 1999, there have been eight contests for the square reconstruction designs and monument ideas. In 1999, the Seimas passed a resolution that recognized the Lukiškės square as a representative square. On 2 November 2017, after a year and a half of reconstruction, a renovated Lukiškės square was opened, where a landscape design of the territory was implemented, replacing the composition established in the Soviet era. However, no monument still exists as a mark to commemorate the past and the present [7], [8], [12]. |
| J. Pilsudski square in Warsaw (Poland) |
| After 1990, excavations were carried out on the square – the remains of the Saxon Palace were uncovered, but everything was covered again in the wake of the global economic crisis. It is planned to restore the building as the Warsaw city hall, but works have been stopped indefinitely [14]. After 2006, a monument was built – a cross. After 1989, the interwar name of the square was restored – Jozef Pilsudski square. |

changing its function. By completing this axis from east to west, a cathedral of Byzantine style with a bell tower was built in the very space of the square, in the case of Tallinn, St. John's Church was built at the approaches to the square (Table 2).

This stage is one of the wider stages in the development of the squares under consideration. The function developing in this stage and the emerging accents in the future squares seem to have formed the basis for the identity of the territory, and compared with the future squares of Vilnius, Tallinn and Riga, this stage in the Warsaw case was the most active and most mature in the formation of voluminous spatial composition. In both the case of Riga and Tallinn, the space itself was more of a transit nodal point, and in the case of Warsaw and Vilnius, it was the focal point of the emerging new part of the city.

Stage III – *the maturity stage* (from the beginning of the 20th century to the 1990) – it is one of the most active periods in the evolution of the squares in various aspects of activities (social, cultural, political, etc.). At this stage, the volumetric-spatial features of the territory are finally consolidated, the image of the future representative space on the national scale is formed, especially in the cases of Riga, Tallinn and Vilnius. Individual buildings emerge as organizers of the territory, which establish a significant role of the space in urban fabric. Like other stages, this maturity stage is similar, but is not the same for the chosen squares in the Baltic Sea region: in the case of Tallinn, the formation of the perimeter of the square ends with built-up framing the space, and, in the case of Riga, the space of the square begins to be marked with monuments related to the political situation of the state; in the case of Warsaw, the volumetric spatial composition of the square is most radically altered, although the axial composition is preserved, but it no longer has its main accents – the tower and the cathedral and the Saxon Palace (both of which, that became signs of the maturity of the state, were demolished during wars); in the case of Vilnius, the perimeter of the square is consolidated by laying of the adjacent representative street, groups of buildings forming it and the dominant element on the Tauras' Hill which fixes the north-south axis, while the space of the square, as in the case of Riga and Tallinn, is marked with political symbols (Table 3).

Stage IV – *crisis followed by reformation or dissolution* (from 1990 to the present day) – it is a stage during which criticism about the representative nature of the squares has grown, and the theoretical foundations of the squares are being redefined. The latter are becoming another beginning in the further development of the squares by consolidating the formed cultural heritage. This stage in the formation of the image of the squares can be described as a period of crisis, which ends with the dissolution or reformation of the previous situation (political vacuum) – the need to become liberated and eliminate imposed clichés (marking the political regime) on the democratic path of the country. One of the signs of maturity in a square is the continuity of its formation, which is happening in all the four countries. In the case of Riga, the version of the meaning of the monument was restored on the Latvian scale and the space of the bridge was recognized as a representative space, and behind that space, as in the case of Tallinn and Vilnius, monuments by their essence alien to the nation were

dismantled. Reconstruction of the space in the representative squares of the latter cities has been performed: during the reconstruction in Tallinn, the volumetric spatial composition of the square was substantially revised – it was decided to mark the significant signs (fragments of the defensive wall and the Harju Tower) that had vanished in the evolution of the territory and add a sign signifying events important for the statehood; which is the opposite in the Vilnius case where the volumetric spatial composition remains unchanged, and the signs have become a never-ending object of the dispute. In the case of Warsaw, the volumetric spatial composition of the square was planned to be restored, but the plan of radical reconstruction of the square was halted by the global economic crisis, therefore the compositional quality of the square space remains unchanged, a sign marking events significant for the nation has appeared. All squares have recovered their names that gained meaning in the evolution period important for a relevant country (Table 4).

**Transformations of the squares from the point of view of urban analysis**

*In the context of a city*

Two aspects are important for assessing the current situation in the context of a city – the location of the square in the urban structure of the city and the category of the square in the system of city squares. According to the *location*, all the squares in question are located in the central parts of the city, only in the case of Riga and Tallinn, the squares in question are along the boundary of the Old and New Town districts, in the case of Warsaw and Vilnius – in the central part of the city New Town district. According to *the status of the square in the city* – all the four squares have the state representative status (the main square of the city) (Fig. 2).

Studying the squares in the system of public spaces of the city's district, the study involves three aspects: historical consistency, functions, and connections to other public spaces. According to historical consistency, all the squares under consideration are a methodically formed structure based on the principles of regularity: in the case of Riga and Tallinn, the square from the old town's side is an independently formed structure, an irregular network of streets; from the new town's side – it is a methodically formed structure based on the principles of regularity. The square is regular, close to the form of a rectangular. In the case of Warsaw and Vilnius, the square was methodically formed according to the 18th century (in Warsaw) and 19th century (in Vilnius) principles of regularity with remnants of suburban structures on the inside. The area is a regular, square shape close to the trapezium (Table 5).

When examining the aspect of the function, attention is paid to what kind of square it is according to its function, what possibilities the approaches to it give, since multi-functionality of a square is a prerequisite these days. The Freedom Monument square does not have this feature because it is a mono-functional, transitional space of a street type that connects the old and new town parts, and parks with a public function make up to 75% of the perimeter. In the case of the other three squares – the squares do not have the exact function (private and public interests interconnect in the environment restricting the squire, forming a code of multi-functionality and signs of cultural life), sometimes the city citizens' events take place in the squares: in the Liberty square the public function makes up to 60% of the perimeter, the largest part of the perimeter is the territory of St. John's Church, there are remnants of the old tower under protective glass blocks; in J. Pilsudski square – it makes up to 63% of the perimeter, and the remaining 37% form adjacency to the State park; in the Lukiškės square there is both the public function – 43% of the perimeter, and the recreational one (this is determined by the alleys of trees growing along the perimeter of the square), besides one of the sides of the square meets the complex of St. Jacob's Church.

The connection of the square with other public spaces (or with important elements/adjacencies of the city such as the river, other focal points, etc.) is a very important condition for the multi functionality of the square. In the case of Riga, the Freedom Monument square is a transitional street-type space that connects the network of the old town's public spaces with the new town's network. It leads into the main composition axes of different city structures. In the case of Tallinn, the Liberty square is a nodal point focusing on the old town's public spaces and partially continuing towards the new town. 8 streets and routes converge into the square. In the case of Warsaw, J. Pilsudski square is neither a nodal point nor a transit area. The space of this square, by its compositional structure, corresponded to the function of a yard, which could be accessed passing through the buildings, and was an integral part of the ensemble of both the park and the palace. Therefore, having evaluated this fact, the absence of an enclosed perimeter of the square makes it more a brownfield land that a nodal point, where action is only episodic (8 streets converge into the square). In the case of Vilnius, the Lukiškės square is positioned next to the representative street of the city, the axis of which has objects of state importance. 11 streets converge into the square (Fig. 3).

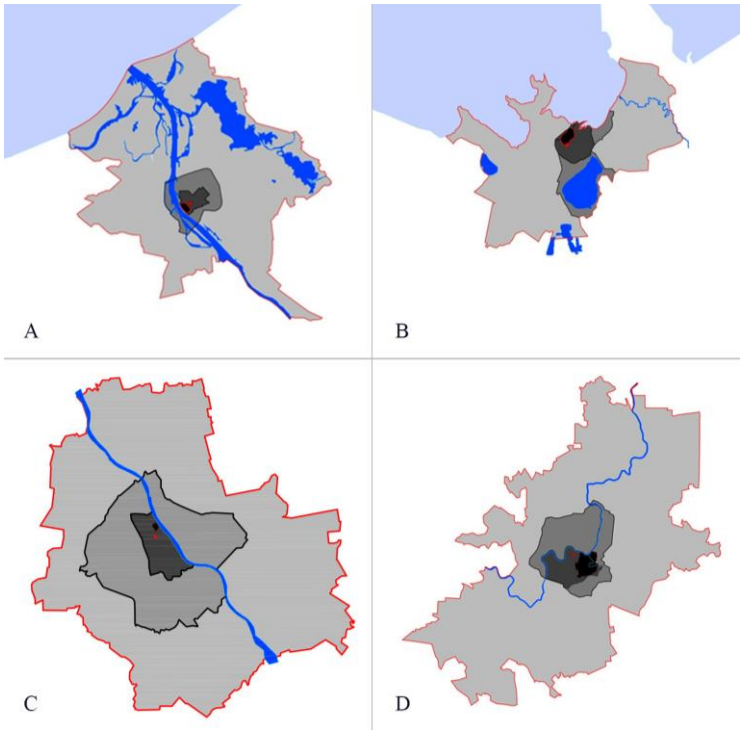


*Fig. 2. Location of the squares in the context of the city: A-Riga, B-Tallinn, C-Warsaw, D-Vilnius. Created by the author.*

TABLE 5

*Sizes and proportions of the squares in question. Created by the author.*

| Liberty square in Tallinn (Estonia) | Freedom Monument square in Riga (Latvia) | Lukiškės square in Vilnius (Lithuania) | J. Pilsudski square in Warsaw (Poland) |
|---|---|---|---|
| Size 75 m × 110 m→ 0.83 km² (proportion 1 ÷ 1.5) | Size 181 m × 72 m → 1.30 km² (proportion 2.5 ÷ 1) | Size 190 m × 210 m → 3.9 km² (proportion 1 ÷ 1.1) | Size 100 m × 175 m→ 1.75 km² (proportion 1 ÷ 1.8) |

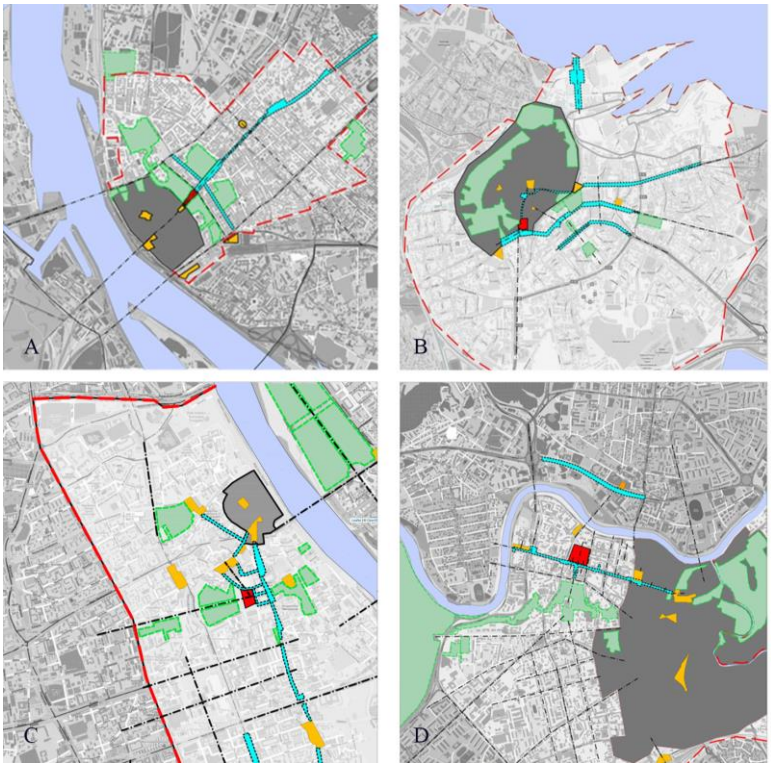


*Fig. 3. Squares in the system of public spaces of the district: A-Riga, B-Tallinn, C-Warsaw, D-Vilnius. Created by the author.*

*Physical parameters of the square in the plan*

When comparing physical parameters in the plan of the square, the scale of modular network, visual relations and volumetric-spatial composition are distinguished. The first aspect is determined by the module of the land plot, in some places it is even referred to as a modular unit, which has the scale of the built-up type from the spatial point of view. It is determined not only by the natural laws of the land market, but also by the boundaries of the land plots themselves. In the case of Riga, in the Freedom Monument square, the avenues of access are dominated by planned perimetrical built-up (medium and large scale buildings). The square's scale partially fits the present scale of the modular network. Proportions are those of a street, not a square (the average size of blocks is 1.2 km², the territory is 1.3 km²). In the case of Tallinn, in the Liberty square, planned, methodological perimetrical built-up (medium and large scale buildings) is dominating. The square's scale is adequate to the settled structure and matches the space that is not built up (av. size – 1.3 km², square's size – 0.83 km²). In the other two squares, planned, methodological built-up with large buildings (in J. Pilsudski square) and with large and small scale buildings (in the Lukiškės square) is dominating, which is divided into small / medium – private and large – state built-up. The space exceeds average scale of modular network in J. Pilsudski square for ~2 times (av. size – 1.2 km², square's size – 2.4 km²), and in the Lukiškės square for ~1.8 times (average size of blocks is 1.7 km², the square's territory is 3.9 km²).

The second aspect is the assessment of visual connections from the square (variety of perspective, visual pictures). According to it, in the case of Riga, 2 dominating multi-plane perspectives from the Freedom Monument square prevail: 1 – towards the old town with towers in the background; 2 – towards the New Town with "Radisson Blue" hotel. In the case of Tallinn, 4 dominating perspectives from the Liberty square prevail: 1 – single-plane open nominal perspective with clearly expressed compositional connection towards the other side; 2 – multiple-plane nominal perspective with the Liberty statue and a defence tower in the background; 3 – two frontal perspectives. In the case of Warsaw, there are several perspectives from J. Pilsudski square: 1 – an open nominal perspective with a potentially clear compositional connection with the surrounding area from the west to the east (the Saxon Axis), as well as the high-rise buildings in the southwest; 2 – an open nominal perspective without clear compositional connections with the surrounding area. In the case of Vilnius, two dominating perspectives from the Lukiškės square prevail: 1 – single-plane open perspective with no clear compositional connections with the surrounding area; 2 – frontal nominal perspective (Fig. 4).

The third physical parameter is the volumetric-spatial composition of the square – it is the character of nominal spaces, the presence of a dominant or important structure in the square, respected axes, etc. In the case of Riga, the dominating axis-type composition with mono-dominant and a space with the Freedom Monument in the middle of square prevail. Park trees make a natural formant and nominal frame with "Radisson Blue" hotel in the background (towards the New Town). In the case of Tallinn, there are several spatial dominants: 1 - St. John's; 2 – Liberty Cross statue with a defence tower as the axis; 3 – one segment of the square is formed by a ramp to the mall thus strengthening the nominal perspective of the buildings on the other side of Carl's boulevard. In the case of Warsaw: dominating axis-type composition from the east to the west with the remaining small fragment of the former built-up (with the Tomb of the Unknown Soldier) between the park and the space of the square; on the eastern side of the square there is a public establishment (Warsaw Garrison Command) and Europe hotel; on the northern side there is a commercial building Metropolitan with the National Grand Opera Theatre, behind which one can see the City Hall tower; on the southern side there is the Polish Association of Building Managers and the Zachęta National Gallery of Art, behind which one can see the Holy Trinity Church. In the case of Vilnius, there is a couple of spatial dominants: 1 – the Church of St. Jacob and St. Philip of late Baroque style; 2 – the Court, the Music Academy, the former Trade Union building on Tauras' Hill make up one compositional complex.

*Physical parameters of the square in a spatial structure and in a section*

When comparing physical parameters in the spatial structure and section of a square, the compositional ratio of space and dominants and psycho-emotional charge (field) are relevant. Frequently, the ratio of width to height as a certain golden section for identifying the scale of the square is given when examining square proportions in the professional literature, especially in the old town parts of cities [1]. Examining squares in the central part of a city (between the old town and new districts) – it is an element of a semi-formed morphostructural system, which is often not complete. It is not the shape of the square that is changing, but its physical parameters in the perimeter of the square built-up, both on the layouts and in the inner spaces of the blocks – approaches to the square. In the case of Riga and Tallinn,

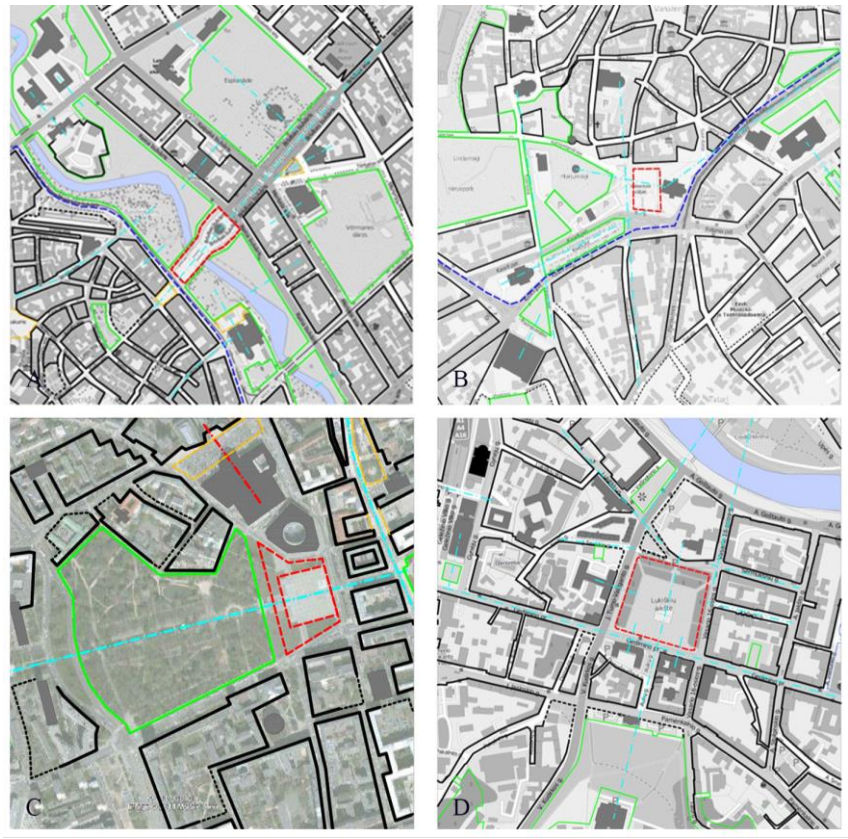


*Fig. 4. Squares in the local context – on the plan: A-Riga, B-Tallinn, C-Warsaw, D-Vilnius. Created by the author.*


*Fig. 5. Squares in the local context – in the construction of spatial form: A-Riga, B-Tallinn, C-Warsaw, D-Vilnius Created by the author.*

formation of the perimeter is complete (the Freedom Monument square and monument proportions are 1÷1.2; the Liberty square and formant proportions are 1÷2.5 and 1÷1.2). In the case of Warsaw and Vilnius, the formation of the perimeter is incomplete (J. Pilsudski square and formant proportions are from 1÷4 to 1÷10; the Lukiškės square and formant proportions are 1÷12) (Fig. 5).

For the physical parameters of a square in the spatial structure, the psycho-emotional charge is also relevant, which is treated as a physical factor. In the case of Riga, boulevard, that in 1990 was turned into a square, restored significance of the monument on the scale of the country. In the case of Tallinn, the name changed (Victory → Liberty), the Liberty Cross was unveiled in 2009. The monument of the Bronze Soldier was dismounted (2007). In the case of Warsaw, the creation of the vision of the square was halted indefinitely, a cross memorial to commemorate the Pope John Paul II was erected in the space of the square, and the name of J. Pilsudski was restored. In the case of Vilnius, the symbol of the Soviet period was dismounted, there is a clear vision of further development, but still no new elements.

**Conclusions and discussion**

The presented sections of the study with separate aspects of evaluation make it possible to compare the squares and make various conclusions about the morphology of the space formed in them. However, it is obvious from the presented study that the content of these squares reflects the history not only of the city but also of each country. As elsewhere, it is clear that squares can be regarded as a certain phenomenon that accumulates various social phenomena or events, and therefore they represent much more than the physical function or purpose of a city space, also conveying the semantic content of events. The transformation process required for a square of this scope is also reflected in aspects of the assessment of the urban space.

The built-up of the central part is mostly determined by the regular planned structure with intensive built-up, high quality of public spaces, accompanied by a visually completed (transformed according to a single aesthetic-compositional ideology) urban structure with built-up proportions characteristic to it. In the central parts, a great deal of both public and private interests are often intertwined. The square in the central part (between the Old Town structure and the new districts) is an element of the semi-formed morphostructural system, which is still being improved as the case studies show. It is not the shape of the square that is changing, because it is usually an undeveloped block (unless spatial semantics is disrupted as in the case of Warsaw), but its physical parameters in the perimeter of the square built-up.

The performed study of transformations makes it possible to compare the quality of the selected squares. Historically, in the case of Warsaw, the space of the square began to form much earlier than in the cases of Riga, Tallinn and Vilnius. From the urban point of view, both in terms of location, its modular network scale, and its connection with other public spaces and the compositional relationship of space and dominant elements, the squares can be grouped into two groups: 1 – Riga and Tallinn squares; 2 – Vilnius and Warsaw squares. If, in the case of Tallinn, the Liberty square is a nodal point in the urban structure, in the case of Riga, the Freedom Monument square is a transit area from the Old Town to the New Town. Meanwhile, in the case of J. Pilsudski square in Warsaw and the Lukiškės square in Vilnius, these are focal points of the new district. Both the latter cases are also close in the size of the square, which exceeds the area of the average surrounding block.

Thus, all the four cases of squares have many similarities, but they also have differences in both the historical and urban study sections. These squares with the representative status are exceptional not only on the city scale but also on the scale of the whole country, therefore, they should reflect not only the local morphology of the spaces, but also the cultural national consciousness. It is also a sign of a nation's identity, it is necessary to recognize it eliminating defects in common and well-formulated criteria. From this perspective, the Lukiškės square is no exception in this context. The path of its transformation shows that it should become a significant spatial nodal point both in terms of its status (state square) and in the overall system of urban public spaces of the city. The adjacency of Gedimino avenue represents the whole historical path (from the beginning of the formation of the state and the city to the present day), and the Lukiškės square is just a part of this history, where in order to give it its final meaning, a sign symbolizing a certain historical stage is required.

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**Kopsavilkums.** Laukums ir tradicionāls pilsētas uzbūves elements un, kā likums, fokālais punkts pilsētas telpiskajā struktūrā. Tas ir ne tikai elements, kas atspoguļo pilsētvides briedumu, bet arī atspoguļo socio-kulturālās sabiedrības pieredzes. Ir gandrīz 30 gadi kopš Baltijas valstu neatkarības atjaunošanas, bet laukumi pilsētu centrālajās daļās nav guvuši pilnīgu apjomu. Laukumu veidošana palikusi kā karsts jautājums strukturālā skatījumā (forma, novietojums, ietverošā apbūve), kompozicionālā skatījumā (perimetrālās apbūves veidošana, respektējoši principi jaunbūvēm, utt.) funkcionālā skatījumā (laukuma nozīmīgums salīdzinājumā ar citām pilsētas publiskajām telpām, utt.). Jo īpaši šis ir attiecināms uz Lietuvas galvaspilsētu Viļņu, kurai vēl joprojām nav reprezentatīvais laukums ar cēlu izskatu. Raksts atspoguļo četru Baltijas jūras valstu – Igaunijas, Latvijas, Lietuvas un Polijas – salīdzinājumu.

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# Intuitive design potential for optimization of material environment

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**Abstract. The exploration of a relationship between the material environment design and the society is an important research topic in achieving environmental, economic and social sustainability. The main subject of the article is the interaction between the material environment and society. Research of the material environment coherence problems is based on an innate human right to live in a cohesive environment. Aesthetic and creative criteria are important in order to understand nature – man – environment system bonds embodied in forms of the material environment. Therefore, society, material environment, and the urban spaces should be understood as an integral whole and their relations must be clarified on all possible levels to ensure human space integrity. The reflection of harmony has many forms which are related to the artistic upbringing, social life, household aesthetic, environmental sustainability, and etc.**

**The article is exploring contexts for the material environment optimization and the integration of an intuitive interaction principles by the method of literature review and survey. The goal of this article is to reveal the potential of the new methodical approach which may provide more opportunities for the material environment enhancement. According to the contemporary cognitive and design studies, an effective tool can be intuitive interaction forming techniques. The intuitive interaction may be optimized by integrating principles of the world's mechanical causality, human sensory and cognitive abilities. These agents can be effectively linked to convey information and to create intuitively perceived, suggestive interaction scenarios, hence, providing more universal applications to add aesthetical and functional value to the spatial expression of the material environment design.**

**Keywords: intuitive design, human coexistence, design criteria, social harmony, urban ecology**

## Introduction

Research in the urban material environment exposes aesthetic quality definition as a problem since it is a complex creative process of an architect, designer, engineer and the society. *Material environment* in this article is perceived as the result of anthropogenic activities [24] and in itself covers space, time, form, culture, society, economy, personal experience, etc. All these elements can be dealt with separately, but they reflect aesthetic and functional characteristics of the object as a whole [15]. Compatibility of every material object coexisting in urban space, emanating from human items and returning embodied in materials again, reveal the live process which defines coherence of the material environment [14]. This creative work has to be properly organized for us to develop functional relationships, appreciate aesthetic forms of the objects (walls of houses, street furniture, light poles, landscape elements, public art, etc.) and to create a cohesive coexistence between them and urban environment.

The purpose of this study is to explore the human ability to perceive spatial formations and interact with them on an intuitive level. The goal is to examine cultural, social and psychological contexts and their correlation with the spatial expression of the material environment on an intuitive interaction level. Interdisciplinary scientific studies would provide with the opportunity to explore the potential of intuitive interaction formation for the optimization of material environment.

When in the second half of the 19th-century modernity (based on morality, justice, and nature values recognition) raised interest in sensuous aesthetics, subjectivism and philosophic conception of existence, entire cultural and artistic spheres permeated with the ideas of rationality, efficiency, versatility and secular humanism [20]. Arts split into figurative and applied, and as a result, today, urban spaces and material environment interactions, due to the complexity and multi-functionality, are perceived as a field of applied art.

Aesthetics is defined as the science of the senses, exploring the beauty and art as fiction [1]. Methodological basis for art is formed by employing applied spheres of research, cultural tradition, and certain beauty criteria. So, the aesthetics are inherent in the process of an artistic creation and as a result creating emotional feelings, although, contemporary art can have a value by not achieving criteria of beauty. However, the authors, in accordance with the provision of art "measurement" opportunity, set by aesthetic, functional, environmental coherence and other criteria of material environmental design, defines the aesthetic term as corresponding to the requirements of beauty criteria and functional integrity [34].

Aesthetic combines a number of systemic values: beauty, pleasure, cultural and social values, history, i.e. All valuable expressions. In phenomenology term 'value' is understood as innate, it is the criterion of thinking and the cause of experience [25].

Cognitive doctrine is determined by a phenomenological statement about the world's spatial perception [18; 16; 26], which is based on the interpretation how the field of human perception is spatially oriented: here, all items are organized according to the principle of depth. If depth is perceived as the "environment" (condition) of an object, it is easy to understand that the world is apparently constructed by means of proximity and remoteness or other systematic criteria. In this context, human comfort is usually determined by the spatial (location) causality of the material environment interactions.

Universal perception of the environment manifests throughout generalities such as a physical and mental constitution of the people, and also acquired education, experience, and cultural similarities. Human space is not objectively immutable, but more or less the same for all the people and mankind at the same time [16].

Each person is creative in one or another sphere of interest and can learn to use his creative potential in a complex and rapidly changing conditions [14]. Document for European cooperation in education and training "Education and Training 2020" highlighted an emphasis on requirements of creativity, innovation, and entrepreneurship at all educational and training levels [10]. It is clear that creative skills must be formed focusing on the consumer and creator (architect, designer) would be educated to understand and assess the specific features and criteria of the urban space material environment in a context of aesthetic, economic, and social coexistence. So, living in a culturally diverse society, it is possible to find means to share cultural resources and enjoy the diversity and high-quality of urban space material environment. The cultural and creative sectors have the capacity and are considered to be areas of growth [11].

**Methodology of research and materials**

Research methodology is based on a method of an interdisciplinary literature review and experimental survey. Literature review provides with the opportunity to analyze the contemporary scientific context of the intuitive interaction formation and the methodological provision to form the intuitive interaction of the material environment.

Experimental survey is allowing to create the hypothetical situations of the material environment value and its spatial organization to reveal the intuitive design potential for the optimization of material environment.

Concepts of urban space and environment are often used in various contexts of social life, as well as between planners, architects, designers, engineers or artists. Generally, the concept of environment is referring to the physical, social and domestic conditions as a whole [31]. These conditions must be taken into account in order to create secure, cozy, and attractive spaces (areas). Therefore, when describing the concept of environment, in contrast to space, an own specific set of conditions, but not the location, have to be evaluated: environment – as natural and social conditions of the whole household, urban space – as a material environment and human physical location.

So, in the particular urban spaces, the problem of harmonic coexistence emerges between environmental conditions and the factors shaping it. Creators often understand this coexistence as the cityscape. The concept of the cityscape is referring not only to the city's image, silhouette, scene, panorama sense, but also to the layout of items in the city spaces and their coexistence, as it is described by numerous researchers in their work contexts, such as: in conservation of the historical heritage [37] or humanistic idea based urban space planning [13]. The latter does not automatically create harmonious material environment coexistence because these indications are not legally regulated due to the informal and subjective factors. The perception of urban areas, in the context of shaping, is usually defined by the specific criteria: a distinctive silhouette of the city, scenic panoramas, individuality of inner spaces, or quality of the natural environment. However, a material coexistence of urban space can be perceived in another context – feeling the change of the city's trends, political, social, and economic conditions. Therefore, it does not mean that urban space can be just an aesthetic site of action and spectacle [32].

We have to evaluate urban spaces in relation of consistency and continuity in time and space as network of urban structures, surrounded by streets and paths and other anthropogenic components, such as: undeveloped urban spaces, restricting engineering and communication corridors, and natural barriers: landforms, bodies of water and green areas [5]. The lifespan of the latter is sometimes significantly greater than their surrounding material environment – the natural barriers may be periodically reconfigured, but their defined areas in the city usually remain [12]. So, they can be attributed to the city's most important structural elements that support the applied creativity.

City or region is seen as a complex, evolving spatial unit, with the local tensions, operating and exploration opportunities. In order to form sustainable urban environment strategies, it is important to identify interrelated system ecology to ensure harmonious coexistence.

Contemporary city vision and urban planning requirements acquire additional directions, such as "City without Borders", social healing, values of

liberation and integration, a function of social education – a city as a way of life. Urban areas are intertwined with many public interests that function as structural elements of the system and its integrity is directly linked with quality or possibility of life in the city [22].

Phenomenologist Elizabeth Ströker is using the concept of *Place*, where human and physical space meets. This Place is significant space, where human may live not only as a body but as a soul and mind. Individual must have living environment organically coupled with its complex being, therefore through social and cultural activities a new space is created, consisting of the signifiers embodied into objects – forms [36]. A new creation is often intuitively readable by the principle of comparison with physical, mathematical and cultural experiences [2].

Christian von Ehrenfels, one of the Gestalt theory pioneers, emphasized that the perceived image is not identical to the sum of elements [9] and that a person psychologically comprehends environment as a whole – sum of all perceivable things subconsciously supplemented with the missing elements. Today, this fundamental discovery of the Gestalt psychology school provides us with a special tool for the harmonization of the material environment. Gestalt principles allowing to shape practically the urban space material environment coexistence through human ability to aggregate objects of a complex material environment into certain forms [15]. The latter depends on the coexistence of existing and new artistic ideas, the artist's moral attitude, and skills to convey a thought. Harmony and completeness of urban space and material environment, become a consolidating factor in society, often the cause of pride of its own environment [21].

According to the author's research [23], nine-tenths of the respondents say that the clarity of urban space, the shape of objects and their mutual coexistence are the most important psychophysiological comfort determining criteria of urban space. Therefore, material environment coexistence planning process, should not only analyze impact of particular shapes, structures or materials to each other and understand operation patterns of each structure, but also to complement human coexistence quality by bringing the world of human harmony emanating from things out and embody it into new things again, returning to the same man as a material environment.

Urban planning, design, and art create dynamic systems that question and complement each other. As an example in today's cultural context, public art survival problems became particularly acute, especially as evidenced in the post-Soviet countries, never the less similar phenomena can be observed in other post-authoritarian societies when particular public art aesthetics were developed to strengthen ideological model [6]. Clearly, this can be seen in the context of Lithuania, when urban space art crisis appeared in the first years of restored independence. The change of the political system and social values have changed art appreciation, when ideological content became irrelevant or even offensive in today's cultural environment. The perceived crisis of values, manifesting as an opposition to changes, often was accompanied by the older generation's lifestyle or habits, as a result, creating difficulties for social cohesion [27].

To ensure material environment coexistence effectiveness, decisions must be clarified on all levels of interaction, including sensory, cultural and demographic context, as well as region's development vision that meets the needs of the population.

Identification of intuitive interaction research problematics in design and psychology, reveal possibilities to explore human cognition and environment interaction, developing more intuitive (less knowledge demanding) and as a result, more culturally and socially universal communication means [17].

Term *Intuition* in classical understanding means "insight, direct or immediate cognition, spiritual perception", originally theological, from Late Latin *Intuitionem* (nominative *intuitio*) "a looking at, consideration" [28]. The issue of intuition studies rests on the aspects of the cognitive architecture, sensory abilities, psychology and cultural links [8]. A human perceives the world via his senses and classifies the following data into the environment context (including cultural). "The better material environment structure/function linked with the user senses the more natural – more intuitive relationship with it" [19].

Modern cognitive sciences implying that human cognition framework is based on the thermodynamic principles [2; 14; 33; 35], therefore intuitive interaction may be optimized by employing human and environment mechanical interaction specifics, such as energy saving psychophysiological aspects, shape physical expression, sensory and anthropometric data. These elements can be effectively organized, creating a suggestive, intuitively readable, seamless interaction scenarios [3]. On this basis a conception for the material environment intuitive interaction optimization is proposed.

**Discussions and results**

Perceived expression elements of the physical shape are very diverse and their interrelation states (proximity, separation, center, joint, closure, balance, etc.). These material environment participants obtain values in a particular physical,

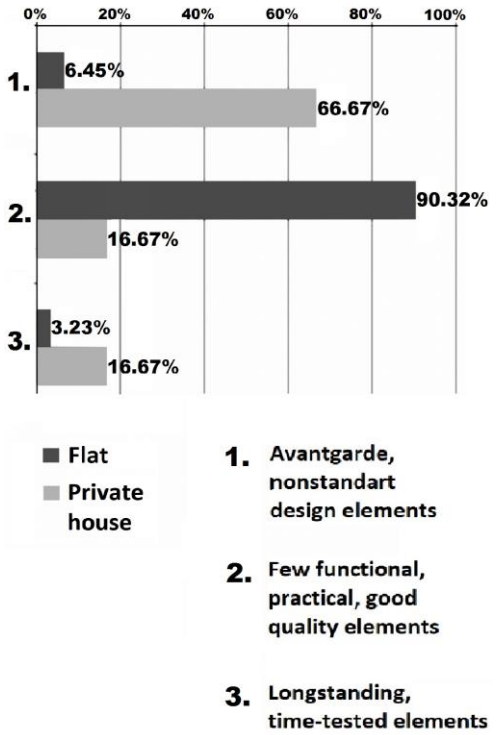


*Fig. 1. What is more important in your neighborhood material environment quality?*
*Created by the authors, 2018.*

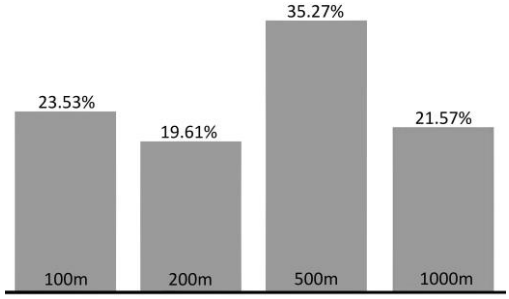


*Fig. 2. What is the minimum distance from your home you would prefer national significance monument (in meters)?*
*Created by the authors, 2018.*

cultural, or social environment context [7; 4]. These values may be encoded on many levels, hence invoking intuitive communication methods by integrating mechanical causality principles to the aesthetical and functional content of the material environment, would provide more applicability for the particular function and user [14]. This approach would allow developing innovative techniques for the optimization of the material environment design.

In March of 2017, the authors conducted a survey on behalf of Vilnius Gediminas Technical University, where Vilnius city residents were asked to assess particular object's proximity (one of five key principles of perceptual organization for interaction design derived from Gestalt theory [29] which could also be perceived as an object mechanical arrangement condition) from their home environment in an attempt to establish personal, social and cultural priorities. According to the survey, the majority of the responded Vilnius city house owners clearly have a more positive attitude towards experimental design solutions near their residence area (Fig. 1). This might be attributed to the stronger sense of personalism, the perception of their home space extent, more allied communal relations, and self-confidence in forming material environment quality. However, the apartment owners tend to choose more practical, functional and good quality objects and this might be attributed to the social factors as well. When the public interest is represented by many different opinions there are fewer possibilities for agreement among them. Presumably avoiding conflict of subjective (taste) factors and focusing on material and functional quality gives more reliable value judgement.

When respondents were asked regarding the distance from their home of the national significance monument, the majority gave priority for the greater distance (Fig. 2).

As a result, it can be assumed, that the social weight of such an object would intervene with the personal home space/environment.

There is a correlation with a spatial type of the area people living in, housing, their demographics and the preference of the material environment design. Therefore, it could be beneficial to integrate intuitive aspects of material environment spatial design to form more cohesive environment on various levels – personal, social, and economical.

Definitely, there are regional cultural and social identity specifics but it is possible to optimize material environment coexistence by integrating district/local demographic and general preferences survey data, and employing appropriate design techniques to improve its aesthetical and functional qualities. There is an opportunity to establish effective communication when in a dialogue members of university research teams, city municipality, and community act on their own level of competence [30]. On the other hand, there is a possibility to enhance the material environment design of a specific demographic area by applying generalized conditions even if the residents of the area are socially passive.

## Conclusions

Urban areas, especially public ones, have no other intended purpose besides to ensure human communication, social, cultural needs and fulfill safety objectives. Therefore, in a context of these criteria, quality of the surrounding material environment (aspirational and psychophysiological conditions) of urban areas is essential to human coexistence. A human is receptive to urban area's size, shape, color, function and the sum of objects as a whole. A material environment is often close and

well known, thus its cultural, social and economic coexistence is understood as an expression of the identity.

Interdisciplinary studies and their comparative analysis allow to identify principles for integration and optimization of an intuitive interaction. It can be implemented by exploring the environment and human spatial interaction specifics, revealing the creative and methodical possibility to relate environmental mechanical causality with the human cognitive abilities to enhance the functional and aesthetical design of the material environment. This researched and integrated methodic would create opportunities for the innovative material environment design.

Methodology for the integration of the intuitive interaction principles into the material environment elements should investigate specifics in terms of contemporary cultural, social, psychological and physical contexts. These contexts would provide value conditions for the material environment functional and aesthetical qualities to optimize personal, cultural and social communication.

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Fields of interest: principles of the intuitive design, spatial aesthetics, industrial design and sculpture.

**Kopsavilkums.** Sasaistes pētīšana starp materiālās vides dizainu un sabiedrību ir nozīmīga pētījuma tēma, lai panāktu vides, ekonomikas un sabiedrības ilgtspējību. Galvenais pētījuma objekts ir mijiedarbība starp materiālo vidi un sabiedrību. Pētījums par materiālās vides saskaņotības problēmām balstās iedzimtajās cilvēku tiesībās dzīvot vienotā vidē.

Estētiskie un radošie kritēriji ir svarīgi, lai saprastu sistēmas daba-cilvēks-vide sasaistes, kas ir ietvertas formās un materiālajā vidē. Tādēļ sabiedrība, materiālā vide, un pilsētvide ir jāsaprot kā ietverošs veselums.

Raksts atspoguļo konteksta meklējumus materiālās vides uzlabošanai un intuitīvu iesaistīšanās principu integrēšanu. Pētījums veikts, izmantojot literatūras apskatu metodi un aptauju. Raksta mērķis ir atklāt jaunas metodiskās pieejas potenciālu, kas varētu sniegt vairāk iespēju materiālās vides uzlabošanai. Saskaņā ar mūsdienu izziņas un dizaina pētījumiem, efektīvs veids var būt intuitīvās iesaistes veidošanas tehnika.

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# 3D printing technology as a method for discovering new creative opportunities for architecture and design

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**Abstract. 3D printing technology has been in existence for several decades and has long been used exclusively for industrial manufacturing or product prototyping, and today this rapidly progressing technology penetrates more and more effectively into creativity fields. It encourages re-evaluation of the possibilities and methods that every person today can create, model, change their living environment. Opens up new possibilities for customized architectural and product design. The world-wide technological experiments provide new and still untapped tools for future developers.**

**The article analyzes the current situation of recent decade in the Western world regarding the use of three-dimensional (3D) press in relation to the living environment. The study highlights emerging trends and new opportunities for creativity for architects and designers. From printing complex geometrical structures to practical application in product design. The research analyzes the research of different authors, and some significant technological innovations. All this makes it possible to concentrate and effectively evaluate the direction of the development of this industry and the expected result for the future development of architecture in contemporary digital age. Since 3D printing in architecture and landscape design is not yet widely used, the article discusses the most recent experiments conducted by various researchers in recent years, reflecting the trends of the fourth industrial revolution and which can influence further architectural development.**

**The research methodology is based on historical research, analogical descriptive and comparative methods. The results of the research suggest that, as the 3d printing technology grows and develops, architecture and the design of the environment will acquire a wider variety of artistic expression.**

**Keywords: Contemporary architecture, industrial design, 3D printing, Contemporary art**

## Technological trends

Three-dimensional printing technology (*3DP, 3D printing*) appeared in the 1970's. Originally, this type of manufacturing was used only in the field of industrial production, where the advantages of this technology were revealed. Since then, production has been classified into two main directions. The first is subtractive *(from English – to subtract)*, which is the traditional way of machine-making, when obtaining a product from a raw material by drilling, cutting, milling, turning, etc. The second method is called additive *(from English – to add)*, when the material is used as much as it is needed. Prior to the emergence of 3DP, this production technique was represented by various products made by casting – reinforced concrete, plaster items, etc. However, additive 3DP has also moved on to the creation of a real-life residential environment. The ability to quickly create prototype items based on pre-existing digital information models has significantly accelerated the creative process of developing industrial products. Moreover, a new paradigm on the production of goods started to emerge in all modern industrial production. Jeremy Rifkin, US Economics and Sociology theorist, in the year 2012 argued that 3DP will bring about such changes in the industry in the near future, which could be compared to the Third Industrial Revolution [1].

Architect Michael Hansmeyer also considers an add-on production as a future inevitability in architecture and design. According to him, "the potential of additive production in architecture is enormous. Architectural details (transmitted by this technology) can reach the limits of human perception. The complexity of the forms in this case is no longer a cost determining factor, since printing of the complex forms of the object costs as much as printing a primitive cube. <...> Ornaments (of this kind) are no longer a luxury feature, and three-dimensional printing will legitimize them again *(Grotesque)".*

Aaron Silver of the Softkill Design team says that 3DP can lead to cheaper building construction with using less material. In his view, saving money, material efficiency – these are the matters that are most relevant to architects [2].

According to J. Rifkin, five industry performance advancing criteria are needed in order for the industry to move in the following revolution: (1) Transition to renewable energy; (2) Providing energy generation function in each building; (3) Installing autonomous tanks of hydrogen and other fuels in buildings as prevention of interruptions in energy supply; (4) Creation of a global interconnecting energy sharing network, where consumers who generate excess energy could transmit energy to consumers in need;

(5) Shifting transportation to electricity or fuel cell vehicles. These infrastructure components, according to Rifkin, should be embraced by a global data network connecting residential houses, businesses, cars, and household appliances [2].

Technology analysts are seeing the beginnings of these processes today. With the advance of 3DP technology, the foundations of "Internet of things" are being formed. It is not only electronic communication between devices, but also intellectual information about the same things, their virtual models. Using 3DP, the required item can be printed using the purchased digital model. This principle saves not only time but also transportation costs and ensures that the necessary items are produced to the extent that they are needed by their consumers.

3DP popularity among home users has been driven by the well-known RepRap project, when 3D printers are purchased as a set of components that are easy to assemble at home. And some details can be multiplied by the same 3DP method. The cost of this type of equipment has become affordable to many home users in recent years. This has resulted in the availability of ready-to-print models on specialized web portals such as *Thingiverse* or *Cubify*. Moreover, this area is also being promoted by users actively engaged in social networking environments.

All this, as predicted by Rifkin, opens up new opportunities for people to express themselves in a creative way. The real environment in the living space can be developed in a more user-friendly way, when the user can create the things he needs using the CAD software himself or by using the ready-made digital models to materialize them with 3DP [3]. Therefore, this article will focus on what tendencies unfold in the fast-growing 3DP technology to create elements of the human residential environment.

Timothy Wolf, an explorer of 3D trends in the United States, points out that this technology can also have a devastating effect on the industry. In the book "3Dd Printing Industry – Concise Guide: Technologies, Markets, and Players" this author claims that 3DP will respond to the job market in industry, reduce the need for staff in the field of prototyping, and competition among companies will be decided by successes of smaller numbers of employees who are more knowledgeable about technology and innovation. According to Wolf, the market should become more dynamic, more engaging social networks [4].

In the recent years, technology science has increasingly been discussing the true 3DP perspectives for creating spatial objects. This technology is promised a brilliant future, but it is much more important to explore and evaluate what achievements are already reached. This, in its turn, can help reveal further guidelines for the development and efficient use of technology. Only with proper knowledge and development of promising areas based on 3DP, long-term intellectual and material benefits to science and industry can be expected.

This article discusses the three emerging trends of 3DP technology, that are identified by analyzing the sources of research, and are based on the academic practice of the author of this text at the Vilnius Gediminas Technical University. These typological directions consist of: experimental and applied research of materials; studies of reproduction of calculated volumes and spaces; multi-purpose functional adaptation experiments.

It is important to discuss each of these areas in more detail. These three areas include architectural, landscape, and object design scopes and complement each other. This text does not cover those three-dimensional printing areas that are not related to the formation of the residential environment and its aesthetic qualities.

**Experimental and applied research of materials**

The progress of 3D printing technology in both industry and home use is supported by the growing supply of new printing materials on the market. It has long been known for the possibility of printing things from plastic beads, various metal powders, etc. Items printed from these materials are used in many areas of life: industrial production, design, architecture, medicine, robotics, mechanotronics, etc. Small consumers which have so far traditionally been using ABS (acrylo-nitrile-butadiene-styrene) or PLA (Poly-lactide) type thermoplastic fillers, can already create wood-like plastic material that contains genuine wood pulp and also can use various elastic, rubber or silicone-like fillers, such as TPE (thermoplastic elastomer), etc. It expands the ability of individual consumers to successfully realize creative intentions, ideas, and to test them functionally. As a result, for the 3D printing users it has become popular to develop and print various, small prototype elements of the environment.

Along with this, there is a number of significant researches and experiments designed to detect 3D printing capabilities with non-traditional materials for this technology, in order to expand there the usability of the 3D print. An excellent example of this is the British study of the use of ceramic filler in 3D printing. Researchers at the University of West England (UWE) prof. Stephen Hoskins, along with doctoral student David Huson, have carried out research in 2012–2015, in which they sought to replicate the technique of Egyptian faience (kind of ceramic production) with 3D press. According to the researchers, it is possible to create a modern,

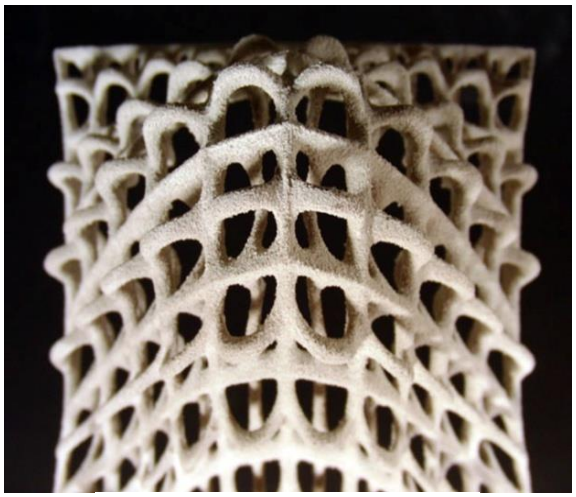

*Fig. 1. 3D printed ceramic products, 2008. Source 10.07.2018.*

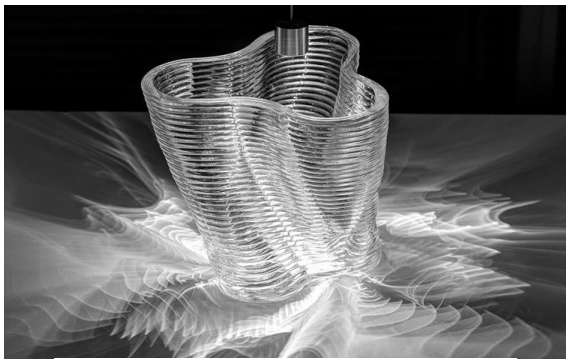

*Fig. 2. Lighting efects of 3D printed glass structure, Neri Oxman (MIT Media Lab, 2015 m.) Source: http://robotika.lt/pirmasis-3d-spausdintuvas-kuriuo-galima-gaminti-stiklo-dirbinius-video/ [accessed 11.07.2018].*

print-suitable, glossy (self-glazed) ceramic material that would look like the Egyptian faience by its appearance and quality [5].

Even more spectacular results could be achieved with many other natural materials together with usage of sophisticated CAD software. Some extraordinary examples are displayed in a book *Earth Architecture* (Princeton Architectural Press 2008). It presents the most widely used building material on the planet –earth (soil, clay, gravel and sand) – as relevant to contemporary and modern architecture and dissolves preconceptions that it is a fragile material in use only in poorer, developing nations (Fig. 1) [6].

The validity of the goals set by these investigators is demonstrated by the fact that in 2011–2012, the team of the same researchers, led by S. Hoskins in partnership with Denby Pottery, have developed and patented 3D printing technology for ceramics, where a printed product can be burned and glazed at once [7]. Earlier in 2010 researchers at UWE University, Peter Walters, together with Jonathan Rossiter and Ioannis Ieropoulos, received funding for 3D research on prestigious materials. In the course of the study, the applications of materials that are sensitive to contact with other external stimuli, for use in 3D printing were investigated. The use of such materials is possible in interactive and robotic design areas and in many other engineering, design or contemporary arts areas [8].

3D printing using ceramic fillers has a wide range of applications in architecture. This trend is illustrated by the presentation "Data Clay: Digital Strategies for Parsing the Earth" at the San Francisco Museum of Crafts and Design (2015). A large group of researchers and practitioners experimenting with digital technologies and their applications in ceramics gathered here [9]. The use of clay for the three-dimensional printing poses a significant challenge, because it is difficult to control the shrinkage of this material by drying or deflation at a soft consistency. Nevertheless, the exposition contains a large number of high artistic quality ceramic products. Mostly modular interior decoration solutions, paved interior, decorative interior partitions, ceiling decoration solutions, etc., are displayed.

As for other traditional materials that can be used in the 3DP, perhaps the most worthy of attention are the MIT (Massachusetts Institute of Technology) experiments on hot-glass 3D printing. In a pilot project led by Neri Oxman, the scientist of the Institute, there the right technological conditions for the use of glass as a printing material were successfully created. When heated up to more than one thousand degrees Celsius, the glass has gained a tonic, honey-like consistency. This allowed the use of additional robotic equipment to form spatial objects from a liquid glass jet. Compared with the traditional glass blowing technique, the printed glass objects were geometrically more precise, with a distinctive surface texture both on the outside and inside of the object. With use of the light, a highly diffractive light diffraction effect has been observed that is not typical of traditional glass products [10]. This glass printing technology has potential in the field of architecture, interior design and the design of objects. The interaction of spatial forms and reflections of light would allow the appearance of new decorative solutions in a real environment (Fig. 2). Moreover, in some cases this method of production would allow for tailor-made, individualized solutions.

Researchers of “LinkMenų fabrikas” in Vilnius Gediminas Technical University (VGTU), in cooperation with their partners, in year 2017 have carried out a different 3DP experiment. The aim was to test and demonstrate the advanced 3DP and 3D scanning technology capabilities. The idea of creating a very small copy of the Biblical Crib, reproduced by 3DP methods, was set forth in order to meet the coming yearly feasting period. The

project participants have created the world's smallest nano-crib, which has already been presented to the Guinness World Records book. The implementation of the idea of the nano-crib lasted for three months, with the team of 30 people working – VGTU students and scientists, researchers of the VU Laser Research Center and UAB "Femtika" and 3D technology company UAB "Idea 3D". The size of the nano-crib is just 300 micrometers (0.3 mm). The entire crib patch is easy to fit on the eyelash, and the smallest printed figure of the baby Jesus is smaller than the human cell [11]. Although this project was focused on the prospect of popularizing technology in society, it also illustrates the broad perspectives of 3DP application in a practical environment.

**Research of computational architecture and space**

Architectural theoretical and practical studies are increasingly exploring the more and more diverse 3DP applications in architectural creativity. The imagination of researchers inspires not only the development of shapes, but also the constructive perspectives of the metal, allowing the creation of extremely sophisticated, complex forms, volumes and surfaces. They are assisted by advanced software and hardware. Quite often, artificial intelligence is also being discussed in the development of urban space. Conveying digital data, models in tangible form, enables realization of objects with mathematical accuracy.

This is well illustrated by the Swiss-based "Digital-Grotesque" team of architects Michael Hansmeyer and Benjamin Dillenburger. Interestingly, the fact is that the developers call themselves architects – programmers. The creative direction of this collective is directly linked to the development of architectural forms based on mathematical fractal algorithms. The main goals of their analytical work are to create architectural solutions that reject the usual criteria for classification and typological reduction; explore new, unseen surfaces and geometric forms of digitization, topological analysis methods [12]. In their projects, the authors use special algorithms for mathematical analysis and geometric transformation. The shape-creation process itself balances subtleties between controlled and random forms of transformation. The applied simulation algorithms are deterministic on the one hand, and on the other hand the results are not always predictable. The most famous work of this group of creators is the Spatial Installation "Printing Architecture" (Fig. 3). In this project, the architects have modelled an extremely complex interior design of a small space installation. It's a kind of gypsum cube, with complex reliefs based on the negative principle of terrain carving, but in fact it is a composition of futuristic architectural elements produced by powder 3D printing technology.

*Fig. 3. „Printing Architecture" space fragment , archit.: Michael Hansmeyer, Benjamin Dillenburger (Digital Grotesque, Switzerland, 2013) Source: https://inhabitat.com/digital-grotesque-architecture-duo-set-to-unveil-entirely-3d-printed-room-next-month/ [accessed 11.07.2017].*

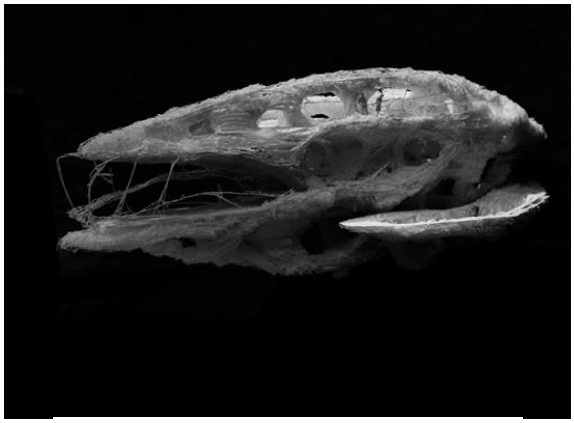

*Fig. 4. ProtoHouse 2.0 – First 3D Printed Dwelling by Softkill Design, London, 2012. Source: https://www.treehugger.com/green-architecture/softkill-design-joins-race-build-first-3d-printed-house.html/ [accessed 05.07.2017]..*

The plasticity of the forms reflects the architectural decoration of the Baroque period with the intense surface partitions, but here we do not see illustrations of the usual objects or forms, and only the realization of a purely synthetic, digital form is shown. However, this is enough to make the observer become space compelled or even enticed. The installation was created by printing 120x120 cm blocks and combining them into a single composition.

The conceptual, 3DP-based architecture topics are considered also by a team of architects from London, named *Softkill Design*. Their built-in home concept, "ProtoHouse 2.0", is based on the principle of printable and installable components (Fig. 4). This architectural work is designed as a self-attaching agglomeration, linking to the natural landscape or to already existing buildings. It embodies some of the concepts of bio-mimetics that are popular nowadays, such as the notion that nature creates its own architecture by developing an organic form. It is emphasized therefore, that the

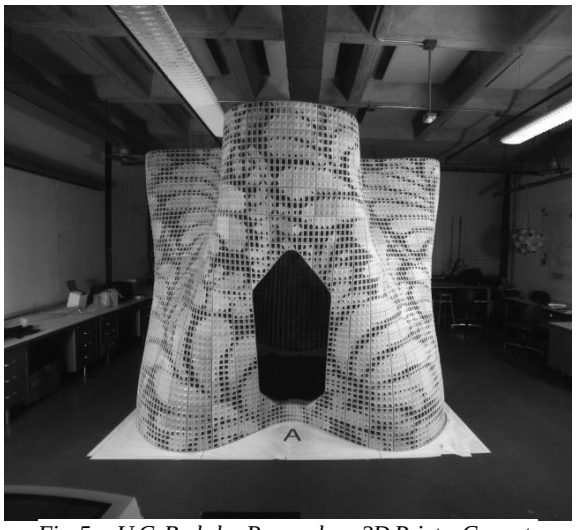

*Fig. 5. U.C. Berkeley Researchers 3D Print a Cement-Powder Pavilion. USA. 2015. Source: https://www.architectmagazine.com/technology/uc-berkeley-researchers-3d-print-a-cement-powder-pavilion_o/ [accessed 05.07.2017].*

*Fig. 6. 3D printed pedestrian bridge. Amsterdam. 2016. Source: https://www.popsci.com/bridge-printer/ [accessed 05.07.2017].*

straight lines of things are alien to the natural environment. The authors of this project used a numerical algorithm that simulates the natural mechanism of growth of bone structure in nature [2]. The volume is created not as a full bubble filling, but rather as a weave of individual structural strands, merging into one spatial network. In this way, a light weight but robust architectural structure is created. The silhouette of the object resembles a skull of prehistoric lizard. The purpose of this conceptual model was to explore the possibilities of three-dimensional printing in accordance with the SLS (Selective Laser Sintering) technology with high-level spatial structures. Developers predict that in the future, using this technology, it will be possible to print the buildings in one day [13]. On the other hand, it has to be admitted that this concept is still in the form of a reduced model; it seems that the researchers have not performed yet the real-scale tests.

The printing of architectural objects or their parts from concrete or various other experimental fillings is increasingly popular in the three-dimensional printing industry. For example, the University of California-based Environmental Design College (Berkeley) students developed an experimental pavilion, called "Bloom", using 3DP technology and cement powder (Fig. 5). It is a freestanding, portable, spatial structure with a height of about 2.7 m. It consists of 840 printed interconnected blocks, made of non-ferrous oxide cementitious polymer. Therefore, this material is lighter than the conventional cement. The whole structure of the pavilion is supported by a stainless steel frame and the latter is supported by printed components of the building. According to the authors of the project, this architectural structure is by far the largest printed architectural area of this kind [14]. When designing this pavilion, the young architects have set the task of using a realistic, able to withstand in the market conditions constructional process. In their opinion, this should change the attitude of people towards the tectonic construction of conventional buildings. "Bloom" pavilion's shell is made of a uniform shape, with the upper edge of the volume being rotated 45 degrees. This form of plastic makes it possible to create light play in the interior space. The architectural expression of the object is inspired by the famous Uruguayan architect Eladio Dieste impressive masonry architecture, and one can also see the features of Richard Serra "Torqed Ellipse" [14].

3DP technology has been applied in the field of landscape architecture in recent years. Even in several parts of the world, real-scale testing is being made to build bridges for pedestrians. First considerable achievement in this field has been obtained by Spanish scientists from the Institute of Advanced Architecture of Catalonia (IAAC). There was created the 12 m long and 1.75 m wide pedestrian bridge, printed on robotized machines using micro-reinforced concrete [15]. The proportions and the plastic expression of this bridge form raises a lot of doubts, but considering the fact that it is the first object implemented, this in itself can be regarded as a significant achievement by the developers.

Nevertheless, in recent years, the focus of the architectural community has been fixed on the prototype of the Dutch starter MX3D's pedestrian bridge over the Amsterdam Canal (Fig. 6). The latter promises a big breakthrough both in artistic and technological terms. The bridge printers are moving on their own printed designs, so designers Joris Laarman and Tim Geurtjens have designed an organic-shaped bridge frame structure that is printed out of metal with the help of an industrial six-axis robot and metal-welding equipment [21]. The construction of the pedestrian bridge is expected to be completed in 2019.

These and other 3DP technology-based projects show that, in the very near future, environmental

design and architecture will acquire new forms of expression that are closer to nature. And at the same time, it will allow to save more resources.

*Multifunctional 3DP use in residential space*

Since its very outset, 3DP has been focused on meeting the needs of a wide range of people, and it is not surprising that the growing popularity of this technology makes printing products change the human environment or even the entire genesis of contemporary realm of tangible environment. Sometimes this technology offers revolutionary furniture or decoration solutions, but sometimes even simple 3D products are enough to open up new possibilities to create things.

One example of this is the series of universal plastic connections made by the Hungarian designer Ollé Gellért. They are designed to form furniture (shelves) from glued laminated sheets by interconnecting them. These connectors can be printed in a 3D printer at home (Fig. 7). By using elements of the various configuration connections, it is possible to create both regular and irregular-type shelves. The authors of the idea at the project presentation demonstrate the products printed in the SLS way, when the form is obtained by selectively hardening the special printing powders. The details have a plastic shape and a smooth surface, making the structure of the modeling furniture an extra tectonic impression. In developing this design solution, Gellért sought to give the consumer the opportunity to create and experiment with furniture design [16].

Similarly, the furniture connector design was developed by Minale-Maeda design bureau in Milan. In this case, the plastic hinge joins the table legs and the transverse structures with each other. In this way, the furniture item can be constructed using wooden bars of any suitable cross-section area and the chosen table-top board. The structural strength of printed joints is sufficient to withstand typical table loads. The designed connector module allows to create tables of various sizes and configurations [17].

In the area of 3D-printed furniture, it's important to mention Janne Kyttanen, one of Finland's best-known enthusiasts in this field. He presents himself as a digital sculptor, whose work combines 3D printing and the synthesis of virtual or expanded reality. The works of this designer are characterized by sculpture and expressed tectonics. One of his latest works is the dynamic shape "Metsidian" table, developed using 3D printing and explosive welding techniques. Working with this method involves the use of explosives that help to blend materials that cannot be combined with traditional welding techniques [18]. In this way, Kyttanen has combined a metal with a volcanic rock. Another piece of the

*Fig. 7. 3D printed furniture joints by designer Ollé Gellért, 2015. Source: https://www.designboom.com/technology/olle-gellert-3d-printed-joints-07-29-2015/ [accessed 07.07.2017].*

work of this creator – a metal network couch – leaves no less impression. The industrial 3D metal printing technology is also used here. The design of this furniture has been developed by the designer on the basis of naturally occurring cobweb or silk-cocoon weaving patterns [19].

*Multiple use of 3D printing in the context of contemporary living area*

Formerly discussed 3DP application examples only reflect a small part of trend, how fast this technology penetrates into the field of design and architecture. Undoubtedly, this is a positive phenomenon that allows us to go beyond the usual constraints of manufacturing processes, while helping to rationalize the production of materials. Nevertheless, there are factors limiting the popularity of 3DP technology. The biggest of them is the lack of knowledge and skills in working with CAD programs. Only those who are capable of creating virtual models of future items will be able to fully and effectively use the benefits of 3DP technology. In Australia, New Zealand and some European countries, 3D lessons are already included in curricula [20]. So far, it has been assumed that the work of 3D computer simulation programs is only required for those seeking engineering education. Such a provision is no longer correct, as 3DP technology encompasses an ever wider range of users, and it is therefore necessary to take this into account when refining and updating school curricula. The basics of computer 3D simulation should be made part of basic computer literacy.

Looking at Lithuania's context, Vilnius Gediminas Technical University was one of the first in Lithuania to promote active 3DP technology at various stages of education levels. The various non-formal education partnerships with secondary schools provide practical training sessions for the promotion of mathematics, natural sciences and technology (STEM). Students learn about 3D modelling and 3DP. The experience of recent years has shown that such classes significantly

increase students' interest in engineering and technological sciences.

More intensively 3DP is being used to implement engineering study programs. Hence, students of the Industrial Design study program begin to deepen their knowledge of computer simulation (CAD) from the very first semester in the Solidworks program. It is highly rated on the job market. Already after the first semester, the basic skills of using this program are acquired, and they are developed further during all studies. For several years now, using this practice, it has been noticed that early implementation of CAD knowledge not only positively motivates students to learn. It also enables them to deal with more complex design and engineering tasks. Moreover, by including 3DP-based product prototyping into the process, better performance efficiency and time planning indicators are obtainable.

**Conclusions**

1. The rapid expansion of three-dimensional printing technology shows that in the future understanding of the creation of things will change cardinally the design process. Work with materials will more and more shift to work with data and information. And the comprehensive rapid data sharing with the help of the Internet will allow even faster development of future products, with especially low financial and time costs.

2. The advantages of the additive production before the subtractive one, that are being observed today, make it possible to predict that in the near future the share of additive production in local Western European manufacturing industries will grow. However, this growth requires several conditions, namely: (1) Innovative data creation, transmission and legal protection measures; (2) Targeted education and training in the educational institutions of specialists capable of operating 3D modelling and prototyping; (3) Consumer education and encouraging them in the field of new technologies.

3. The use of new materials in the field of 3D printing undoubtedly contributes to the popularization of these technologies among professional and as well as at home users. Examples of analysis have shown that 3D printing can carry out extremely complex and high-precision jobs such as ceramic printing, furniture components and interior design. This is how it approaches the practice of home-made things.

4. Architecture in this era of technology transformation also reveals new realization areas. The use of 3DP in construction would not only significantly alter the process and duration of construction works, but would also significantly affect the thinking of architects in designing such type buildings. Such construction would save a lot of money, as there would be no need to use a large number of different equipment. Material costs would be significantly lower, as it can evidently be expected in case of additive production.

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**Kopsavilkums.** Trīsdimensionālā drukāšana pastāv jau vairākas desmitgades, un ilgu laiku tiek izmantota industriālā ražošanā un izstrādājumu prototipēšanā, un mūsdienās šī strauji progresējošā tehnoloģija aizvien efektīvāk iesaistās radošajās sfērās. Tas iedvesmo iespēju un metožu pārvērtēšanu, kā ikviens var radīt, modelēt, mainīt savu dzīvesvidi. Paveras jaunas iespējas pielāgotajā arhitektūras un produktu dizainā.

Raksts analizē esošo situāciju trīsdimensionālās preses sasaisti ar dzīvesvidi pēdējā desmitgadē Rietumu pasaulē. Pētījums izceļ jaunas tendences un iespējas arhitektiem un dizaineriem radošumam. No sarežģītu ģeometrisko struktūru drukāšanas līdz praktisku izmantošanu produktu izveidē. Raksts atspoguļo dažādus zinātniskos pētījumus un nozīmīgas tehnoloģiskās inovācijas. Tas sniedz iespēju koncentrēt un efektīvi novērtēt industrijas attīstības virzienu un sagaidāmos rezultātus. Ņemot vērā, ka trīsdimensionālā drukāšana arhitektūrā un ainavu arhitektūrā pagaidām nav plaši izmantota, raksts atspoguļo nesenākos dažādu zinātnieku veiktos eksperimentus, atspoguļojot ceturtās industriālās revolūcijas tendences.

Pētījumu metodoloģija balstās vēsturiskos pētījumos, salīdzinoši aprakstošajā un salīdzinošajā metodē. Pētījuma rezultāti rāda, attīstoties trīsdimensiju drukāšanai, arhitektūras un dizaina vide apgūs plašāku mākslinieciskās izpausmes veidu klāstu.

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# Partnership as meaningful tool of the material environment design formation in the context of education process

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**Abstract. This paper explores the process of practical Industrial product design education peculiarities at Vilnius Gediminas Technical University, by examining it from Problem-Based Service-Learning (PBSL) perspectives. The author's viewpoint is developed from conceptual idea to prototype and used as a basis for debate about the following question: How well does design education prepare students for real practical activity? In fact, the historically dominant model in design education, which focuses mainly on vocational skills without real practical adaptation, is investigated. On the one hand, the author observes that this model is still not suitable to provide designers with the critical skills and knowledge required for practical-based projects. On the other hand, the author identifies that traditional teaching can result in a procedural, technical and cognitive limitation. Equilibrating design-based skills with real practical-based skills is an interesting challenge for Industrial Product Design teachers. Discussion around PBSL method issues will be introduced in the case study format and wider influence of real practical-based projects in industrial product design education. Additionally, we could study from similar case studies of vocational disciplines (such as Architecture or Design) that are moving towards a real practical-based approach to their education.**

**Keywords: material environment design, Problem-Based Service-Learning, creativity studies**

## Introduction

*"... good societies produced good people and good people produced good design."*

*Augustus Pugin*

Using the innovative education methods that are being implemented in Lithuanian higher education and study programmes, such as *Problem-Based Service-Learning* (PBSL), is inevitable if education environment is to be brought closer to solving of the real problems. The aspects of PBSL education in the study process are discussed in the context of theoretical and practical interactions and problem solving in industrial design taking place in VGTU in cooperation with the social partners. The purpose of this paper is to review the practical peculiarities of the education in the applied material environment design formation, exploring them as well as considering the matter from the point of view of applicability of Problem-Based Service-Learning (PBSL) method. The problems of PBSL method implementation is studied in consideration of theory, literature, practical knowledge and analogue comparative analysis, survey and process monitoring methods. The analysis of practical aspects of partnerships involving the Problem-Based Service-Learning reveals that in the education process the integrated conceptual methods for affinity diagramming of ideas allow students understanding, in an interaction with practical problem solving, the laws of harmonious coexistence of material entirety. The practical application of the PBSL method, well known in the Western countries, [1] demonstrates that this is a creative process of a complex nature which depends on many global and local social, cultural, historical and educational concept factors that determine the mutual benefit brought by an integrated cooperation of education and business. The application of this method is not only objectively inevitable but also necessary in order to train a more competitive free market 'player'. Undoubtedly, it is necessary in applying theoretical knowledge to link it to a creative education, operating in an interdisciplinary context of real challenges. The ability to liberate individual creative skills conferring them an applied nature becomes a challenge to all institutions involved in education, including universities. Modern universities face challenges in developing students' ability to apply knowledge in practice as well as in implementing their students' ideas, often of a futuristic nature. Participation in solving specific problems – from ideas to prototypes – in the context of formation of a changing material environment is paramount to students as a learning stimulating factor. Therefore, there is an increasing recognition among the academic community of the need for education oriented towards creative, targeted (means being valid for solving real problems – author's note) and smart thinking as this forms the basis of a creative society.

Thus, a today's society based on creativity in many activity areas is called a 'smart' society and this is a priority objective of many countries' political decisions. On the contrary, if the society is not smart, it cannot be neither a civil society, nor a society actively participating in the formation of a safe and sustainable material environment. The priorities defined in the Lithuania's Progress Strategy 'Lithuania 2030' and the implementation of this Strategy are associated with the necessity of developing a smart society, in other words, the concept of a *smart society* is understood as encompassing not only knowledge and its creative management, but the concept is also generally associated to a systematic coherence in the information management and mentality culture, to society's skills as well as to its engagement (means participation in the creative processes – author's note) [2]. However, discussions are still under way on how to educate a creative person, recognise the valuable features of a creative result and maintain the engagement of the members of the creative society [3], since part of the creative manifestations of consciousness disappear due to the fact that they have not been recognized.

**The methodological foundations of the Problem-Based Service-Learning stem from post-modern culture origins**

Future specialists that will work in a macro architectural-urban environment and in a micro material environment (ME) not only need accumulating the knowledge acquired in the ordinary education process but also developing practical skills through creative implementation of this knowledge. In this paper the material environment (ME) is understood as the entirety of objects of anthropogenic activity and elements of natural environment, objects that constantly surround people and their components. The ME serves purpose and fulfills a decorative function, it includes stationary or movable objects as well as objects featuring not only a high aesthetic expression: household accessories, household items, architectural [4], urban engineering, recreational and other infrastructure objects, landscape architecture details, furniture, lighting ... and other details of the material entirety.

Humans are sensitive to the space, the forms of the surrounding environment, therefore the material environment is subject to social, functional, economic, environmental harmony, ergonomic, aesthetic, design and sustainability requirements. The surrounding ME affects the psychophysiological state of a person, highly influences the quality of everyday life and the primary focus of object formation is undoubtedly linked to the improvement of quality of life criteria. Experience gained in other countries demonstrates that PBSL education, based also on the result applicability methods, is viable and meaningful. A clear proof of it is the discourse on innovative and Problem-Based Service-Learning methods and tn applicability of results (using inclusive design principles – author's note). The PBSL method has been debated in various aspects in the scientific literature since the second half of the 20th century [5; 6; 7; 8; 9]. Nevertheless, the contemporary research on ways to implement meaningful learning in specific study programs such as Industrial Design (technology science – auth. note), Urbanism, Architecture, Formation of landscape material environment in urban areas, in association with design activities, is not very abundant in Lithuania. However, after 2011, when a discourse launched by the European Union at a political level [10] discussed the recommendations made by the Industrial Design Council, how to strengthen European innovation policy at different levels and how to develop a common vision making environmental design an integral part of pan-European innovation policy, the problem was especially actualized.

Following the world's experience, it is evident that for example the US interest in the PBSL method in higher education institutions increased in the late 20th century when American schools lost the public's confidence. It was aimed to establish universities as a tool for citizenship, enabling the most democratic approach to addressing real problems of society through cooperation and partnership [11]. The PBSL method was aimed at bringing teaching and learning closer to real life problems and solving them. The application of the method shows that this is a creative process of a complex nature, which depends on many global and local social, cultural, historical and teaching factors, which underpin mutual benefit in the science and business integrated cooperation. The current experience of using the PBSL method in the United States shows that teaching / learning focused on collaborating with public sector institutions, local communities, social partners and businesses is an effective basis for meaningful teaching/learning.

Discourse in the context of ontological values today is important in the context of the subject matter. Studies show that the most commonly used teaching is limited to theoretical knowledge, which is usually futile and difficult to apply in practice. Theoretical knowledge does not guarantee the right application of knowledge in real life situations. However, there is a lack of innovative creativity and motivation to do so. Students are well-versed in the

knowledge that is most relevant to their needs, knowledge that is discussed in their environment with like-minded people. And most of what students learn theoretically does not seem to be personally important to them. [6]. Obviously, there is a need for innovations in the training / learning area to help students deliver meaningful, practically applicable learning. It can help in the most effective way to achieve the results of creative and meaningful, practical teaching and learning.

In this context, the relevance of the problem sed teaching method in part is revealed by the studies of the *World Intellectual Property Organization* (WIPO), which emphasize the need to develop partnerships in terms of solutions to practical problems and is one of the many, but the priority directions for the development of education. Studies discuss the cooperation between the WIPO and the State Patent Bureau of the Republic of Lithuania, as the state institutions are partly responsible for the creative activity and the formation of the material environment copyright policies, by awarding annual awards to the most creative Lithuanian developers of applied art and design [112]. However, the European Commission document [13] shows a lack of cooperation in the education sector. 2009 EU Parliaments document "Education and Training 2020" highlighted one of the most important tasks – to emphasize the importance of increasing scientific innovation and entrepreneurship at all levels of education. In 2010, with a need to advance innovation and creativity in the field of development, the government approved the Lithuanian Innovation Strategy [14], whose vision is related to the strengthening of the Lithuanian economy and the practical application of education. The strategy addresses the development of high value-added products and the enhancement of service competitiveness on the global market. Obviously, the skills of adaptability must be developed by communicating, exchanging knowledge, and complexly addressing the aesthetic, economic or social coexistence problems of the material environment in urban spaces.

Lithuanian higher education development trends are improving, but the country still does not show a rapid development of innovations. From 2014, Lithuania has remained at the top of fifty, out of 127 world-ranked states, in terms of innovation development and has hit the relatively stable world ranking of countries together with Malta (26), Belgium (27), Spain (28), Italy (29), Portugal (31), Slovenia (32), Latvia (33), Slovakia (34), Bulgaria (36), Poland (38), Hungary (39), Lithuania (40) Croatia (41), Romania (42), Greece (44), Russian Federation (45), Montenegro (48) [15]. It can be

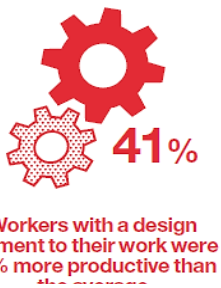


*Fig. 1. Using the principles of design of the material environment, the productivity of manufacturing enterprises increases by 41% compared to those who did not use that Source: http://www.sumani2020.lt/ naujienos/70-ka-reiskia-investuoti-i-dizaina [accesed 10.04.2018].*

assumed that the reason for this stagnation is the poor development of the partnership by using a design tool in the development of innovation. 2016 EC Innovation Barometer data reveals that 63% of Lithuanian companies in 2015 have not used design as an innovative solution tool, thus losing not only the momentum of the development of applied innovations, but also the growth of economic potential. (Fig. 1)

At either stage of the product development (product strategy development, analysis, concept or conceptual stylistics, design or prototype production and testing), neither applied design nor PBSL methods were sufficiently developed. Thus, the Lithuanian innovation development indicator is below the EU average, where almost half of all company design decisions are based on the principles of design thinking. Moreover, studies by the UK Design Council indicate that Lithuania, in terms of design, is one of the few European countries that has no design policy [16].

Regarding the application of the PBSL method in Lithuanian higher education institutions [9], the PBSL method, in conjunction with practical needs, allows students to deepen their practical knowledge and offer realistic solutions to problems. According to student surveys of the VGTU Design Department, about 90% respondents acknowledged that teaching/learning, using real problems, promotes a sense of responsibility, adaptation to local needs, develops the skills of communicating with communities or businesses and the ability to find the best solutions. Solutions that can be competitive on the market and are attractive to the public by their engineering solutions. Practice where problems of designing urban, engineering, technological or material environment are investigated often become realistic challenges for students in practical cognition and complex design objects. Practice when urban, engineering, technological or material environments problems are investigated

often become students' practical knowledge challenges and complex design objects. Thus, the ability to solve real problems in a collaborative environment today is one of the most effective measures in order to develop practical skills.

The idea of a humanistic theorist [17] states that it is impossible to teach a person, we can only help him study creatively. This basically corresponds to the latest demands of Problem-Based Service-Learning ideas. And this is a fundamental part of the content of a good design in the material environment - to create the added value of the qualitative welfare of the material environment. The quality of life in the article is understood as defined by the World Health Organization (WHO) - as an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns. It is a broad ranging concept affected in a complex way by the person's physical health, psychological state, personal beliefs, social relationships and their relationship to salient features of their environment (World Health Organization). Thus, examination of the material environment coexistence, aesthetic harmonization is an important aspect of human coexistence and quality of life.

**Modern-day partnership oriented PBSL method applicability case studies**

The ability to solve problems and formulate applied ideas (to be creative) in an interdisciplinary environment is the primary focus of the PBSL education. Having ideas, as to being creatively and innovatively rich, integrating new information and innovations into the existing knowledge is the main task for human creativity [18]. In the creative process, not only are objects being developed, the environment of their material entirety, but also is formed the user of the objects, which finds a connection with people and society [19]. In other words, reflecting on the process of everyday things, the aesthetic, creative requirements are brought forward for the learner, helping to understand the environment and themselves in this context, to become aware of the nature-human-environment system, to formulate and coordinate rational and irrational ways of solving problem [20] in relation to the needs of a particular subject. The quality of the surrounding material environment in urban spaces is an essential purpose of the harmonious coexistence of people with the environment and a condition of a positive psychophysiological state. It is close to the learner or discouraging, well-known or foreign, perceived or repulsive as a dimension of harmonious cohabitation with the environment, in which the formation of local identity reflects the aspect of the creative adaptability of our activities. Under these circumstances and conditions, students of the Department of Design each year become accustomed to solving practical problems.

The PBSL education method was adopted by the author of this paper when working with the students at the Faculty of Environmental Engineering, later in the Institute of Architecture, later at the Department of Design. The methodological principles of the PBSL together with the problematic education method were developed by evaluating the experience of the application of PBSL when preparing the project 'Renewal of programs in the field of sustainable living environment study, using innovative learning methods to strengthen interdisciplinary interconnections and introducing the concept of sustainable development' [21]. In the project, the creative two-way (old and PBSL) dialectical search methods for the harmonization of interconnection were focused on highlighting education methods, although each constituent obviously has an independent purpose. In the context of the previously mentioned project, the author's study book [22] and later in the monograph [23], focuses on both the problematic education method and the PBSL method analysis. By applying them to the complex design of the city's spatial, landscape architectural and transport systems, the activity of designing the real estate environment was aimed at solving the applied tasks. In this way, the implementation of the study programs gradually formed a specific educational technique and the culture of communication between the academic community and the producers-practitioners. Investigating, for example, the reasons that led to the psychophysiological sensation of people in the surroundings of specific objects, the ways of improving the existing quality of the realm of the environment, are suggested for the continuous design studies future designers, prospective urbanists, manufacturing engineers, design engineers. Qualitative data in both cases was offered in a set of observational process, photo fixation, unstructured interviews, analysis of objects and analogues of objects and documents and literature. Summarizing the data, it is recommended as the result of the research to prepare a real prototype M1:1. Testing and improving it, in the event of success, as an intermediate result of the design mind-set, would continue at another stage in the formation of the material environment.

**Learning by doing - the foundation of the studies at the Department of Design**

The abundance of applicability and the endless field of today's problems allow students to study in detail the tasks of harmonizing various objects of

household design (Fig. 2) or the urban material environment [24].

The choice of the object depended on the fact that the work manager proposed the design of the conditioning system, addressing the current issue of interdisciplinary. In consultation with 'UAB Amalva' engineers, producing already existing product the student was given an opportunity to study the compatibility of the principles of aesthetics, production engineering, functionality and production, and, in the final result, obtain a prototype very close to the real product. When designing and choosing a concept, the student preferred the minimalist, rigid form design adapted to the environment and other technical equipment. Objects of such style are usually eye-catching, but they do not tarnish or hamper the daily routine of a person.

In addition to the already mentioned PBSL method, some of the final thesis assignments were formulated by the VGTU Design Department. Based on the principle of informal partnership, a business entity, in this case, JSC Amalva, in cooperation with the Design department lecturer Donaldas Andziulis, formulated relevant topics for the activities of the chosen company and its needs. Considering the fact that the requirements for energy efficiency of modern residential buildings are constantly increasing, the integration of heating, ventilation and air conditioning systems in the interiors of buildings is becoming increasingly important. There is a need for aesthetical integration of this engineering utilitarian equipment and its management blocks into the architectural spaces. For this purpose, the diplomat student Sandra Mažeikaitė has prepared the diploma work project "Glacier II" (led by D. Andziulis) for the design of the heating and ventilation cabinets. The PBSL method was developed by the student directly consulting with engineers of the company that delegated the assignment and using their technological production base for making the prototype. The problem of the project was defined not only by the delegated task, but also by the company's manufacturing capabilities. Despite these restrictive factors, a very successful result has been achieved, a functional, contemporary, minimalist design product has been designed. The prototype of a real-sized product fully met the requirements of the task.


*Fig. 2. S. Mažeikaitė Bachelor's final work using the PBSL method. 'Design of the body of the heating, ventilation and air conditioning system. 2017' (head - Lect. D.Andziulis, Consultant – Assistant Professor A.Chereška). Photo: the Department of Design's archive.*


*Fig. 3. A. Tylaitė Bachelor's final work using the PBSL method. 'Design of the body of the compact heating, ventilation and air conditioning system. 2018' (head – Lect. D. Andziulis) Photo: the Department of Design's archive.*

Similarly, the other design graduate student Auksė Tylaitė, in 2018, solved the same task. For the same company, this time the design of the control panel for smaller heating and ventilation systems. The project, titled Domekt, successfully implemented another ambitious goal – to create aesthetic exterior of the stationary heating and ventilation device using modular mounting details (Fig. 3). Designed metal sheet panels, frames, and handles for the device greatly simplify and speeds up the production and assembly of such a product. And most importantly – maintaining a high functional and aesthetical level. The basis for these two examples will be the application of the PBSL method, involving both the process and the client. However, in this case, there is a prerequisite: the customer must contribute in the process to technical information, consultation, and the use of production equipment in the form of prototype production. Only through the development of a mutually productive partnership, the PBSL method can produce the best results.

In some cases academic partnership by PBSL method could be developed between various types of partners. Not necessary with private companies, but also with public research institutions. Graduate student of VGTU Design department Ieva Strelkauskaite created project of Automatic fish feeder (Fig. 4). During the design process student collaborated with Lithuania fishery department at Lithuania Agricultural ministry senior specialist Rolandas Morkūnas. As a final result student designed an ergonomic, digitally programmable fish feed disperser. Exterior design was inspired by contemporary architectural and environmental trends. Purpose of the designed object – to ensure fish feeding process for small outdoor ponds or recirculating aquaculture systems. Researching the problematic territory aspects of a part of Vilnius city, the members of the "Žirmūnai Community" as partners of the Institute of Architecture participated not only in the formulation of tasks but also in the assessment of solutions. In this way, the ideas of student projects developed at the Institute gradually became the basis of real decisions. Investigating qualitative parameters of the 1940-1990 formed Žirmūnai residential area's territory development and material environment, it has been determined that this living space of the type of free planning, and in particular its northern part, has a building density of 60% and a building intensity of 1.2. According to the data of the respondents in the surveys conducted in 2013-2016 (n = 375), green spaces, urban composition, building form quality, the forms of material environment were partially satisfactory at 40,8 %, 18,3 % were unsatisfactory and 39.4% of the building areas were evaluated positively.

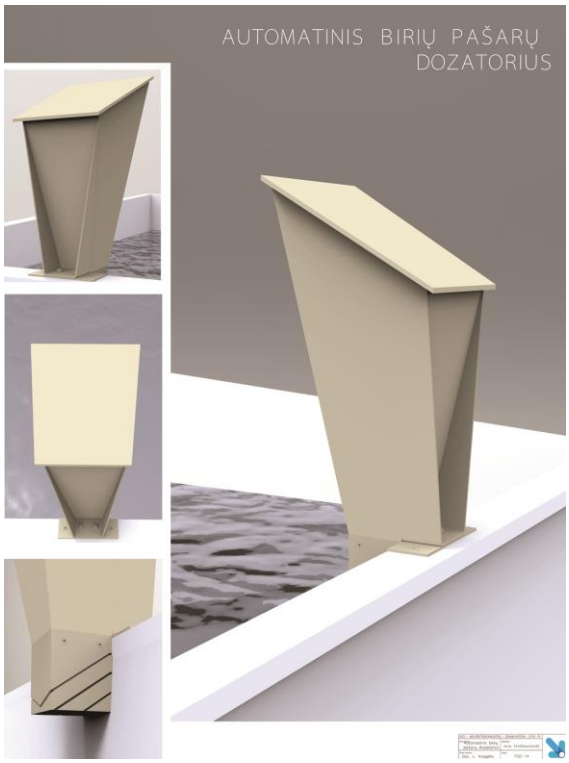


*Fig. 4. I. Strelkauskaitė, Bachelor's final work using the PBSL method. "Automaticfish feeder", 2018 (head – Assoc. prof. L. Krūgelis) Photo: the Department of Design's archive.*

However, positive respondents judged the residential area's geographical convenience of the location of the district's urban space advantage, communication with the centre and the protected areas (Verkiai regional parks) as an advantage, but not the material environment and the quality of residential and public spaces (in the case study, the material environment has not changed substantially since the Soviet times – author's note.) Thus, in this case, the material environment of the residential area was positively evaluated by just 20,4 % of the Žirmūnai residents [18]. This allowed students to form the concept of Landscape Architecture of Žirmūnai northern area "Neris Valley Žirmūnai Park" [25; 26]. Today, on the initiative of the Žirmūnai community, this project is developed with professionals at the level of technical projects and real solutions.

Implementation of another cooperation project conducted between the VGTU Design Department and the Lithuanian Road Administration (LKAD) under the Ministry of Transport and Communications was determined by the paradigm of the Industrial Product Design study program that the newly created objects of the material environment must improve the quality of the environment, have a clear purpose and function, create and reflect the uniqueness of the site, which received the support of the Lithuanian Road Administration's


*Fig. 5. 2017 J. Plockytė's bachelor's degree project, applying the PBSL method. "Electromobility Charging Station". 2017 (supervisor Dr. L. Krūgelis, consultant Dr. A. Rotman)*
*Source: the Department of Design's archive.*


*Fig. 6. 2017 V. Benešis' bachelor's degree project, using the PBSL method. "Outdoor Furniture Project". 2017 (supervisor Dr. L. Krūgelis, consultant Dr. A. Rotman)*
*Source: the Department of Design's archive.*

*Fig. 7. 2016 Conceptual work of a third-year student (under the direction of M. Užkuraitis, Doctor Dr. A. Rotman), project for the arrangement of Neries quays in Vilnius, using the PBSL method.*
*Photo: the Department of Design's archive.*

management. In 2016 a mutual cooperation project was developed, which led to the signing of the VGTU and LAKD Partnership Agreement. VGTU Industrial Product Design second, third and fourth year students' involvement in solving specific problems, resulted in approximately 50 student road infrastructure object design solutions (Fig. 5; Fig. 6).

In assessing the experience of this process, it has been observed that students feel motivated by creating design objects that brings some technological and aesthetical advances to the surrounding environment. This is reflected not only in the desire to follow the good practices of the Western countries, but also in the desire to create new, innovative environmental solutions. As a result, in academic projects, we see successful development of topics like electric vehicle charging stations and its infrastructure elements, also street lighting units, outdoor furniture or even bus stops. All of this shows that successful updating of the real issues of the material environment, it is possible to achieve high-quality results.

With the coordination of the study program committee, Professors D. Anziulis, L. Krūgelis, M. Užkuraitis with the Consultants of the Mechanical Engineering and Materials Department successfully implemented the tasks assigned to the students (formulated in the conditions of the Lithuanian Road Administration – author's note). They have developed conceptual variants of several engineering infrastructure objects. The application of the PBSL method has led to the development of functional and aesthetic ideas, which commune with a particular landscape and meet the current social comfort and quality expectations. The decision was made to make the roadside islands of public areas of the suburban roads would gain distinctive features, not only to be visible, but also comfortable to use. Students exhibited prototype objects created at the exhibition, opened in the premises of LKAD. Looking in general at the PBSL methodology, similar collaborative initiatives could achieve even better results if the actual implementation of design prototypes in the real area was intensified and the data on the functionality of the object were collected from real users. Undoubtedly, such an event requires a greater involvement of the client in the implementation of the process.

In the course of 2015-2016, another very important city of Vilnius Municipality and VGTU partnership project, was associated with the upgrade of the Neris quay in Vilnius. To solve the project's problems, the municipality invited VGTU Department of Design students to create ideas for the recreational use of Neris quay public areas and engineering infrastructure objects (Fig. 7).

For some students, this was the first challenge of practical experience, therefore, Vilnius city Mayor Remigijus Šimašius's wishes were very important to them. "*First of all, Neris is a very important city's artery, which the city begins to habituate with. The great reconstruction of the quay, renovation works are already visible to residents and guests of the city, but these works are just the beginning. No less important projects are still waiting - these are elements of small architectural design that give the quay a distinctive face, which is why I am very pleased that young people are joining into this "face" search*", – said the head of the capital. Thus, the students created concepts for designing modern, contemporary, tailor-made, environmentally-friendly, and practical objects. The results reflect the involvement of students, their enthusiasm and their willingness to contribute to the restoration of the Neris quay, the creation of distinctive and interesting public spaces of the capital and the formation of a better quality of life for the citizens. If this real-life design and development process continues to include local manufacturers and daily users, even more advanced technical and engineering skills could be achieved. And at the same time, many created prototypes or conceptual projects could become a real object of the city's environment. Students have already mastered the experience and project ideas in their final works.

In another 2017 international cooperation INTERG-V project "Raising Competitiveness at the PL_LT Border Through the Development of Clustering Services", the Department of Design third-year students received a particularly favorable attention [27]. The aim of the project was related to the development of innovations and the enhancement of the competitiveness of the border region in relation to the development of contemporary applied material environment design objects that students enthusiastically implemented. Therefore, the use of design as a creative tool to achieve these goals was timely. The Industrial Design students had a special task on the project – to prepare the design concept of a material environment design object in a specific area of Alytus city with the possibility to produce a prototype M1:1 and to implement it in a mass production, which proved to be substantially done. The idea itself has successfully expanded to Vilnius city public spaces as well. A successful discourse has taken place with employees of the National Art Gallery (Fig. 8).


*Fig. 8. 2017 INTERG project "Raising Competitiveness at the Border of PL-LT Through the Development of Clustering Services", using the PBSL method, was prepared by J. Judžentis, third-year student of the Design Department; D. Česokaitė (supervisors: Associate Professor J. Jakaitis, Lecturer M. Užkuraitis, Consultant Dr. A. Rotmanas) Source: the Department of Design's archive.*

Integrating the various fields of activity: education (project participants Vilnius Gediminas Technical University, Bialystok University of Technology – author's note), business, social partners, production and services sector competences, skills and experience of natural and legal persons, competences of vocational education institutions, developed in the project partnership network. A cooperation agreement signed by 12 partners for a five-year period illustrates the success of this phenomenon. The project was aimed at increasing added value and increasing its competitive advantage by further promoting cross-sectoral integration of increasingly widespread design solutions. Aesthetic, functional and meaningful object – is the result of design thinking, that manifests itself in innovative solutions. Thus, the achievement of Problem-Based Service-Learning method - to bring the education conditions closer to the solving of the real problems - has fully proved to be functional. The application of the method has revealed that in the process of co-operation, the partners experience mutual benefits oriented to meaningful learning. For example, with the continuation of the partnership, an exhibition of conceptual material environment design objects created in the framework if the INTEREG V project by the third-year Industrial Design students of Vilnius Gedimino Technical University opened at the Alytus City Municipality. A meeting with Alytus Municipal Council members and business representatives was held in order to reach a further partnership. During this project, the experience of the implemented project regarding the improvement of the quality of education was discussed (Fig. 9).

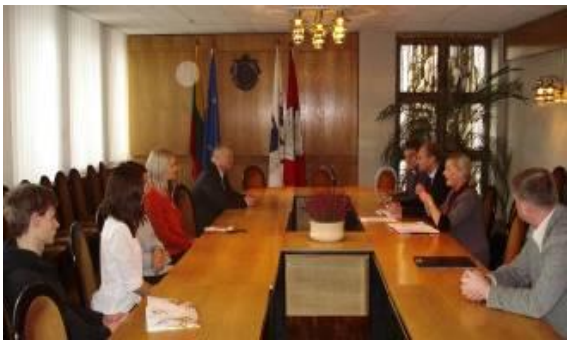

*Fig. 9. During the implementation of the INTEREF V project, an analysis of Alytus City material environment quality and needs were assessed: a problematic discussion between the representative of VGTU and Alytus City Mayor V. Grigaravičius. Photo: the Department of Design's archive.*

In regards of the practical implementation of the PBSL method, the choice of appropriate technological tools becomes a crucial factor. For example, an integral part of this process is the deployment of computer simulation programs and their management skills. For this purpose, one of the most advanced engineering computers' design programs – Solidworks was introduced at the Industrial design study program of VGTU Design Department five years ago. The teaching of Solidworks basic skills have been started for the very first year students and continued to more advanced level. In this way, during the three semesters of studies, students form the necessary skills not only to design complex products in the virtual space, but also to represent them in aesthetical way. Moreover, in order to ensure the future quality of the product, Solidworks allows the product to be simulated in terms of structural strength, thermal management and etc. This is especially useful when delivering design ideas to project partners. In the course of this practice, it has been observed that good engineering design skills are highly valued in the labor market, and for students this gives motivation and confidence in the creative process.

Experience has shown that using the PBSL method and using more efficient technological process solutions, as well as combining the principles of design thinking, integrity and interdimensionality, it is possible to create a better environment for learning, oriented towards practical solutions, and more diverse (inclusive design – author's note) of the material environment design options.

**Conclusions**

In the conditions of the consumer society in the global world, it is necessary to apply measures promoting creativity. Innovative teaching methods, based on partnership and real problem solving, which create preconditions for more effective design use in shaping the aesthetics, purpose or function of a material environment in public or private spaces.

Urban areas, and especially public spaces, have no other purpose than those intended to serve people's social, cultural, or economic needs. Therefore, teaching / learning in unconventional, partnership-based ways is important for the harmonious coexistence of the material environment and people in urban areas.

Studies have revealed that *Problem-Based Service-Learning* (PBSL) is particularly useful for addressing real issues. The more problematic the situation is, the higher the probability of creativity and motivation in the education process. Consequently, the PBSL methodology based on knowledge and skills through solving real problems in industrial product design studies is highly motivating the students. Through real research cases, it can be argued that this can be used as a teaching / learning strategy to address contextualized, real issues of harmonization of design in the material environment. Problem-solving resources can be focused not only on optimized management and marketing tasks, but also on strategic planning for the harmonization of the material environment. This is nothing more than an integrated, interdisciplinary teaching / learning direction and a design policy making tool. PBSL method, used to fill the gaps of traditional teaching/learning, is not only focused on the student, but also focused on the producer and the society, i.e. the formation of an inclusive design tradition. Thus, the partnership between the study subjects, the producer and the public is a viable tool for the development of inclusive design.

The achievement of the *Problem-Based Service-Learning* method, to bring the teaching / learning conditions closer to solving actual problems, fully proved its implementation in the particular VGTU Industrial Product Design study program. The application of the method has revealed that in the process of co-operation, the partners experience mutual benefits oriented to meaningful learning. It is concluded that the PBSL method is an effective and meaningful tool for teaching / learning and designing, developing the material environment.

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**Kopsavilkums.** Rakstā pētītas industriālā produktu dizaina mācību procesa īpatnības Viļņas Gediminas Tehniskajā universitātē. Autora skatījums ir attīstījies no konceptuālas idejas līdz prototipam un ir pamatā diskusijām par jautājumu: cik labi dizaina izglītība spēj sagatavot studentus reālām praktiskajām darbībām? Faktiski, tiek pētīts vēsturiski dominējošais dizaina izglītības modelis, kas balstās uz profesionālām prasmēm bez reālas praktiskas adaptācijas.

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# Learning Environment by the Future Society: Development of School Grounds in Lithuania

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**Abstract. This paper presents particular aspects of educational function of the schoolyard, and argues that such a space could be used for educating the young generation, collaboration and interaction in creating the living environment.**

**Research of Lithuanian schools' architecture during the last few decades has indicated the practice of using the school courtyard that could be described as "Forgotten Space". Education scholars pay exclusive attention to the interaction between learning and playing. Urban gardening, environmental monitoring, design-build studios become integral parts of secondary or even primary education. These activities need proper environment.**

**The majority of Lithuanian youth attends schools built in the interwar and soviet periods that rarely fit the up-to-date paradigm of education and spatial needs. This makes the school environment problematic but, at the same time, perfect as a transformation laboratory for communities as the non-generic "commissioners", potential driving force of such actions. Architects, landscape architects, urban designers and planners occasionally look at the cooperation with communities as an obstacle or formal "must". Since 2014, the Faculty of Architecture, VGTU, started to act as a catalyst activating discussions and alternative visions for changes of school spaces, mostly anticipating that the youth (students and school-children) involved would accustom themselves to active and constant co-creation and maintenance of their environment.**

**The overview of the school grounds development in Lithuania during the last century was performed by consistent analysis of different functions. The study of each possible function of school outdoor area was done by applying the three-aspect correlation method: the education theory, legal building regulations and school environment practice. The study of school ground as the contemporary collectively developed playscape presented the results of experimental practices on participatory design and community engagement.**

**Keywords: school grounds, landscape architecture of schools, educational environment, outdoor learning, participatory design, community engagement**

## Introduction

Contemporary urban development is increasingly based on inhabitants' participation [1, 9, 12], but the communities desperately need encouragement, support and know-how manuals from experts, including architects and landscape architects. Nowadays, the majority of young people in Lithuania attend schools that were built during the interwar and soviet periods. It is understandable, but still disappointing, because this environment can hardly fit the up-to-date educational paradigm and meet contemporary spatial needs. Although it is emerging as a major problem, but at the same time provides for the opportunities to use the school environment as perfect transformation laboratory. It is anticipated that the youth (students and schoolchildren) involved would accustom themselves to active and constant co-creation and maintenance of their environment.

The *objective* of the research is to discover the particular aspects of educational function in the school grounds and to highlight the actual methods how to achieve the up-to-date learning environment by involving students and schools' communities (teachers, pupils, parents) into the environment developing process. Participatory design mode of operation has an ambitious goal – to educate the young generation to become the co-creators of their living environment.

The *assignments* of the paper are to make the review of the centenary development of the school grounds in Lithuania (1918–2018) observing the theoretical views, legal instructions and architectural practices; to analyse the results of experimental research and participatory practices oriented towards the modernisation of outside learning spaces; to highlight the proven methods and tools for creating or converting up-to-date educational landscape.

This paper is a part of the larger research on the educational architecture. In it, we focus on one aspect – schools' landscape, which becomes more and more important in the realm of contemporary educational theory. The study contributes to further understanding of Lithuania's educational environment development from the restoration of the statehood 100 years ago, through the soviet occupation period and up to these days.

The study provides useful insights on the methods and tools that can be used in various contexts for community engagement in the development of the built environment.

## Materials and Methods

The object of the research is the school's outdoor space, which is understood as the landscape architectural and educational object. Mainly it can be named as a school plot, area, yard, playground or ground. The most comprehensive and appropriate for this research concept is that of the school ground. It can be defined as an area used for school functions (physical and mental education, recreation, representation, service). The structure of the object is dualistic, links the matter and thought, form and content, which directly refers to the landscape architecture and education. The object varies depending on the historical and cultural conditions.

The evolutionary overview of school grounds in Lithuania during the last century has been performed by consistent analysis of different functions of school grounds: sports fields, educational-experimental zones, recreation areas, service zones and representation spaces. The study of each function of school outdoor area has been performed by applying the three-aspect correlation method starting with the education theory background, then linking it with the legal regulations and correlating with the school environment practice (design projects and/or realised schools). The data for this analysis includes bibliography, iconography, drawings, archive documents. The second part of the study deals with the results of experimental practices on participatory design and community engagement.

## The Centenary Development of School Grounds in Lithuania

Interview of pupils, students, teachers and empirical studies carried out during the project have shown that school outdoor spaces do not bring any memories or associations with the daily life of the school. However, a few cases in the country have shown that school communities have been actively fighting for the reduction of school grounds and their adaptation to other, non-educational needs. Therefore, it can be argued these spaces are important for school communities, but for different reasons they are "forgotten". This has been confirmed by other scholars' research as well [5]. In order to grasp the trends and opportunities in the development of school areas, it is worth looking at the historical origins of different activities in the schoolyard. In general, the following areas can be distinguished in the territory of the school: sports, recreation, educational-experimental, service and representational.

**Plot.** At the beginning of the 20 c., the Historic Revival style dominated the schools' architecture [19], therefore it was customary to build urban school buildings on the red line of the street, thus forming the perimeter line of the block (Fig. 1). Early century's school parcels were relatively small.

Therefore, their usage was very intense and variety of activities limited. In the architecture of the 1930's, there was a tendency to slightly distract the school building from the street and to install the green zone in-between. School areas were planned much bigger; it began to be enclosed with fences. Buildings still often formed the crossroad's space, but stood freely in space and did not form the perimeter of the block anymore (Fig. 2). Such design approach prevailed until the 1960s. Rural schools were built mostly in accordance with the homestead tradition. The environment of the manor schools, schools located in former manor houses, other schools located in former manor garden areas varied considerably in comparison to others. Similar to the practice of the neighbouring countries [10], schools were integrated into the manors' landscapes, adapted parts of existing welfare, but also some changes were introduced.

Construction and design normative documents (SNiP) of the 60's [27] and 70's [28] started strictly regulate the composition of outdoor spaces, sizes of different functional areas, their location and relation to the building. To understand these changing requirements, we have compared the regulations of different periods of Kaunas' high school "Saulė", built at different stages in 1914, 1925 and 1974, and used for educational needs up to these days. In 1925 the school used 7.900 m² area [14]. According to the regulations of the 60's, the area in size of 14.700 m² had to be given to the school. The Contemporary Hygiene Norm [17] states just approximate quantity of the greenery (40%) and general function zones (sports, recreation, educational-experimental, servicing) that need to be planned in the area.

*Sports fields.* One of the earliest known schools with a separate gym building and sports ground [26] in the present Lithuania was the Queen Louise High School (archit. Luthje) built in 1891 in Klaipėda. Then the discipline of physical education was introduced in the schools of Prussia, to which Klaipėda belonged at that time.

The major breakthrough in the country's sport and physical education history occurred after regaining the statehood in 1918: the first public sports ground was constructed in 1922; in 1925 the schools' gymnastics contest was held in Kaunas [14]; in 1927, textbooks and tutorials on physical education in schools [7, 8] were first published; in 1929, the discipline of military training was introduced in the curriculum; in 1932, the Law on Physical Culture was adopted; in 1934, the first state Sports University was opened and one of the earliest methodical recommendations for the construction of sports fields was prepared [13];

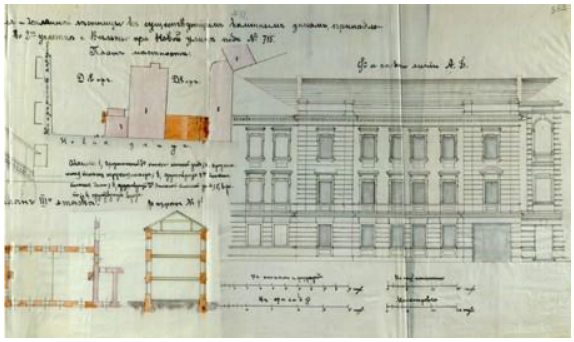

*Fig. 1. Talmud-Tora Vocational School, Islandijos Str., Vilnius, 1890, 1899–1901, archit. Kiprijonas Maculevičius, Konstantin Korojedov. Source: LVIA_F.938.Ap.4.B.1977.*

*Fig. 2. Jonas Jablonskis Primary school for children of blue-collar workers, Aušros Str. 3, Kaunas, 1931, archit. Antanas Jokimas. Photo: L. Nekrošius, 2016.*

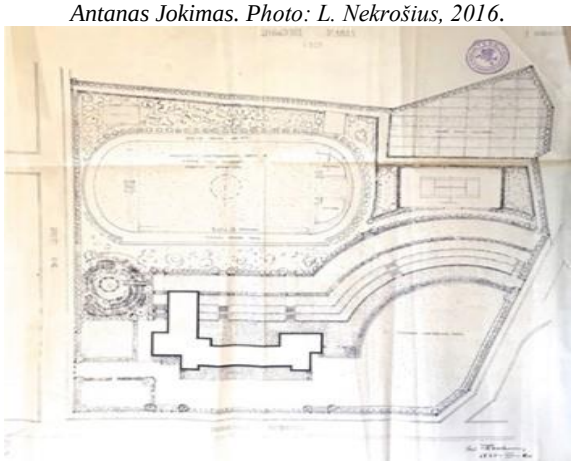

*Fig. 3. High School in Kėdainiai, 1935 (exploded in 1944), masterplan, archit. F. Bielinskis. Source: LCVA 1622 4 525 l 8.*

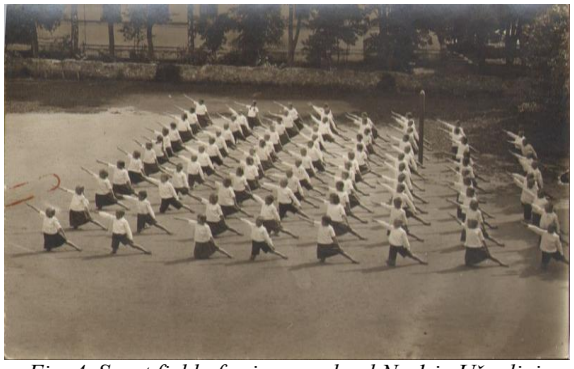

*Fig. 4. Sport field of primary school No 1 in Užpaliai, Utena district, 1935. Source: © Lithuania's Education History Museum, photographer unknown.*

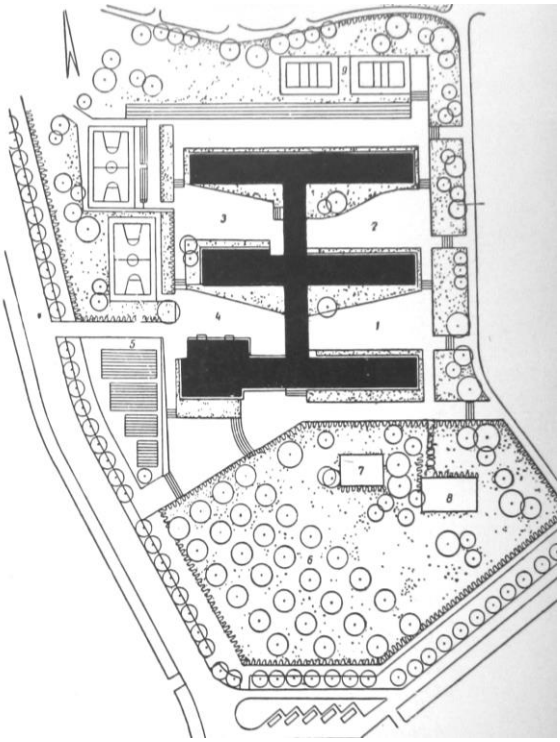

*Fig. 5. Typical project of the secondary school for 964 pupils, 1962–63, master plan, archit. Leonas Mardosas. Source: Sovietskaja architektura ezegodnik. Moskva, 1967, [2]*

*Fig. 6. Secondary school No 40 in Lazdynai, Erfurto Str. 23, Vilnius, 1974, archit. Česlovas Mazūras. Photo: L. Nekrošius, 2011.*

*Fig. 7. Chemistry Technical School, Naugarduko gatvė 24, Vilnius, 1901–1902, archit. Aleksandr Bykovsky, postcard.*

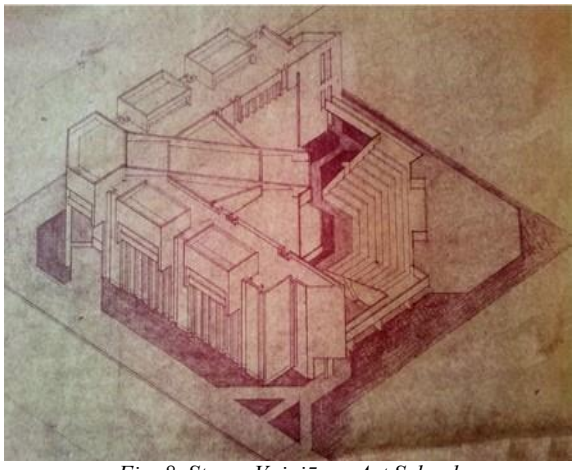

*Fig. 8. Stasys Vainiūnas Art School (unimplemented amphitheatre in the courtyard), Maironio St. 8, Palanga, 1981–1982, archit. Irena Likšienė. Source: I. Likšienė's personal archive.*

in 1940, the PhD thesis on *"The Role of Motion in the Educational Process"* by Lithuanian scholar Jonas Laužikas was defended at Zurich University [4].

Sports halls and fields, in exceptional cases, even swimming pools [23] in the school projects of the 30's were already planned (Fig. 3). But some of these ideas were ahead of time, consequently were not realised or postponed. However, often schools provided for the possibility for physical activities (Fig. 4) much earlier than the political decisions were 1960's and 70's, more than 70% of the school area had to be allocated to sports. All schools had to contain the athletics, gymnastics, multifunctional (basketball, volleyball, pioneerball) playgrounds (Fig. 5). made [14]. In the 1950s, a few schools without the sports facilities were built, but situation was changing rapidly. According to the design standards of the In addition to this, larger schools were obligated to construct their football fields. The contemporary norms are not so strict. They refer that 35–40% of the plot area need to be designed for sports [17].

Establishment of the *educational-experimental zone* in the schoolyard is likely to be linked to the country's agricultural policy of the third decade. Then various initiatives were introduced aimed to teach the younger generation for advanced farming. One of the most prominent political projects of the time was establishment of the youth organization Young Farmers' Clubs in 1929 [20].

Vegetable, fruit, berry and flower gardens, seed-plot, plant breeding, zoology, meteorological observation zones, greenhouses, gazebo for open-air classes were precisely defined by the norms of the 1960's and 70's. These zones were designed, but the results of their implementation varied a lot.

The early schools' active **recreation areas** coincided with the sports grounds, passive – with the educational-experimental zone. The obligation to form 3–4 separate active rest zones for different age groups and 1 for teenagers' calm rest were set up in the regulations of the1960's. In most cases, such zoning was formal and with some exceptions (Fig. 6) it is difficult to identify them in the courtyards of nowadays schools. Current legislation also provides for mandatory rest areas separate for primary and secondary school students.

*Service zone* is used for the maintenance transport, storage of waste and, back in the past, also for outdoor toilets. Beams for tethering horses of the first half of the 20 c. were changed into the small asphalted parking lots, mainly intended for catering areas. Improved cycling and pedestrian infrastructures of the school's surrounding neighbourhood today means not only the sustainable urban communication but is understood as the promotion of students' physical activity [15]. Customary for rural schools, bicycle racks started to be installed in urban schools at the end of the 20th century and slightly began to create a new typological element – covered bike parking – in the 21st century.

*Representation spaces* usually coincide with other functional zones; however, we would like to draw attention to some aspects of such spaces.

According to the principle of homestead planning, a decorative flower garden was usually cultivated between the street and the building in rural schools. Urban school's gardening area traditionally was in the backyard. When at the beginning of 20th century, the main entrance was distracted from the street and small public space was formed in front of it, flower garden was moved from the backyard in here and changed its primary function from educational-experimental to representational (Fig. 7).

Official events (such as the beginning of the academic year), ceremonies (graduation) as well as community photo sessions often take place outside the building. Historical school located in the traditional city block usually uses its courtyard. Architects of the second half of the 20th century paid exclusive attention on the entrance space design. It became usual for schools in the free-plan neighbourhoods to have an exceptional entrance space working as a stage during events with a piazza in front, which can accommodate more people than the inside hall. However, there are some experimental solutions combining historical and modernist design approaches (Fig. 8).

## Community Needs in the Light of Building History, Education Theory and City Policy

The demographic processes of the last decades and the country's economic opportunities have not stimulated the construction of new schools in Lithuania. Most of the schools used today were built in the 20th century. After the restoration of the Independence (1990), the national education system was reformed shifting from the unified secondary education to the three-part structure (primary, basic,

gymnasium education). These changes substantially corrected the needs of school communities and the requirements of the education system for learning spaces. The educational legislation "encourages school communities to "invent" the school by developing its working patterns, environments and ways of education." [18].

Contemporary urban and architectural development is increasingly based on inhabitants' participation, but the communities still desperately need encouragement, support and know-how manuals from experts, including architects and landscape architects. Having identified the need for methodology, the researchers of the Faculty of Architecture, VGTU, have started experimental activities in order to form the theoretical model of the transformation of educational spaces.

A series of creative workshops have been set up to shape the guidelines for architects and school communities to focus on finding and implementing the common solutions.

Five workshops were organized on different aspects of transformation of educational environment. Three of them focused on schools of different levels and typologies (curators: Dolf Broekhuizen, Edita Riaubienė, Liutauras Nekrošius): "Contemporary Conception of Primary School" (2015), "The School Teenagers Want to Go" (2016), "Redesigning Technical Schools of Old Vilnius" (2017). These events were based on similar structure, stages and methodologies.

First of all, we appealed to architecture students' empathy for the topic and problem through the auto-reflections (sensual reminiscences and experiences of their primary school; digging up teenagers' memories of their schooling; personal reflecting on the craft).

The second step was concerned with providing and collecting various kinds of information on the problem: bibliography, lectures on related topics, excursions to particular objects, meetings with members of school communities.

The third step was the articulation of the initial insights into the problem, and, finally, the last step – the elaboration of the idea, the presentation of the solution.

The actual issues of primary school architecture were discussed at the workshop "Contemporary Conception of Primary School [24] (2015) considering the fact that physical environment has the greatest influence on an ever-evolving personality.

The area of the mass housing residential district Lazdynai in Vilnius (built in 1974, architects Vytautas Edmundas Čekanauskas, Vytautas Brėdikis) was chosen for the research aiming to analyse the transformation of its educational infrastructure and to discuss possible changes.

The additional argument to investigate the area of Lazdynai was the fact that this mass building structure is the only one recognised as modernist urban heritage in Lithuania. The preservation aspect here was a secondary one, but it allowed for a more comprehensive look at the values of the planned infrastructure and transformations determined by the changing needs of society.

The deeper analysis was performed focusing on five primary schools of the district. These objects are located in different architectural environments: a few are situated in the buildings of former kindergartens; others – in the structure of secondary school.

During the study visits to the objects, representatives of school communities presented in detail the school buildings, usage, processes and emerging needs in them, provided for the necessary materials, but their participation in the creative process has been little and episodic.

The workshop participants contextualised the selected information by asking three questions. What concepts and recommendations does the modern educational theory provide? What does the municipality, as the establisher of the school, anticipate? What does the school community expect, what dreams and ambitions do they have? Having assessed all this, they made architectural suggestions on how the space could be changed.

Empirical studies, conversations with schoolchildren highlighted the school outdoors as extinct from the memory of people, and hardly used today. Referring to safety at school, children are rarely allowed to enter the schoolyard; the outdoor space is used for education only when the internal temperature in the classes reaches unbearable level.

The physical condition of sports grounds often does not encourage their intensive use. However, there are a few surprising and encouraging examples. Some schools located in dense urban environment have minimal outdoor spaces, but they use it intensively and in different ways.

Such insights led the participants of the workshop to focus on rethinking of school landscapes and their integration in educational process. Each particular school situation is unique and therefore the scenarios for conversion and use of their outdoor spaces for teaching and learning purposes can vary widely. The workshop participants identified a few solutions oriented towards integrating the outdoor spaces adjacent to classrooms into the educational process. Following the logic of Herman Hertzberger [11], it was suggested to provide an additional transit space to the classroom – an outdoor patio or loggia tailored for education. Assuming that unexpected spaces can attract and motivate the learners, stimulate their cognitive abilities, it was proposed to use the existing roofs for recreation and education and restore the disappeared connections between inner and outer spaces (Fig. 9).

It has been observed that the successful combination of school priorities can stimulate operational programs that improve the use of outdoor area. The primary school "Svaja" is overcrowded, so its outdoor territory is intensively used for games and recreation. The school is proud of its theatre club, so it has been suggested to install an amphitheatre, that can be used for occasional events, for children's games and communication, also to strengthen the school identity (Fig. 10).

The participants of the workshop clearly understood the challenges faced by a primary school situated in a large secondary school building. They perceived the extraordinary need for a green, safe, pleasant and interesting outdoor environment for the young pupils and imagined it like "Oasis" in a large unstructured school ground. It was suggested therefore to construct a wooden terrace close to the classes, articulated with flower beds and other plants. The semi-open school yard could provide for different functional zones that meet different moods, experiences and needs: grass and other greenery – to be in nature and with nature; amphitheatre – to be above, to feel visible; equipped playground – to enjoy physical activity, movement and being with others; multifunctional area – to be free to choose the way of being there (Fig. 11).

The other group of students suggested to arrange the outdoor area by providing the most suitable place for each purpose, interest or activity.

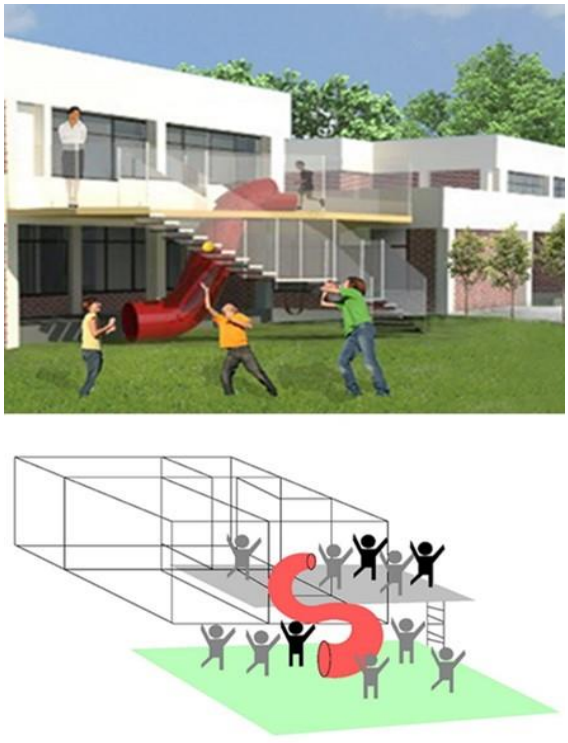

*Fig. 9. The restoration of disappeared connections between inner and outer spaces, "Chaos in the box"*
*Created by K. Galvydytė, I. Kundreckas, 2015.*

*Fig. 10. Curator D. Broekhuizen consult student near the model of the primary school "Svaja"*
*A. Šlepikaitė, V. Mankevičiūtė, 2015.*

*Fig. 11. "Oasis", Lazdynų secondary school.*
*Created by J. Jaruševičiūtė, G. Ribikauskaitė, K. Burbaitė, 2015.*

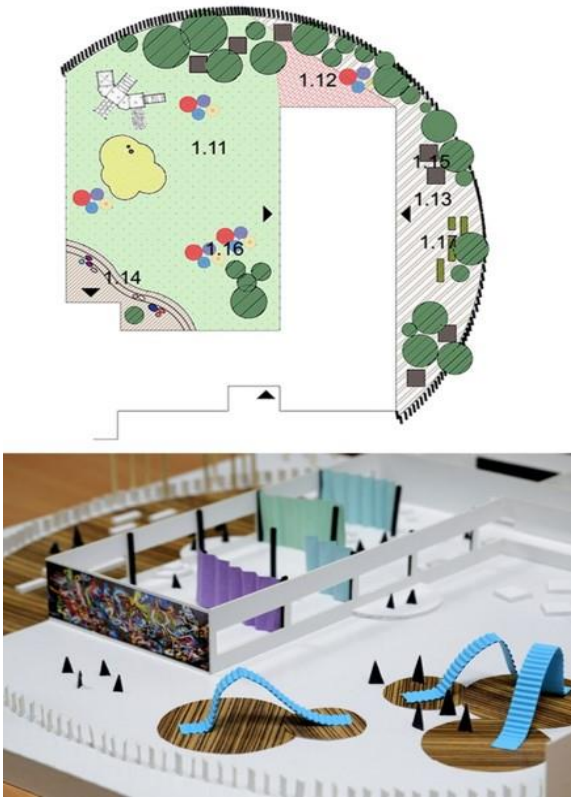


*Fig. 12. "The Open up", Sausio 13-osios school, S. Subačiūtė, A. Janulaitis, 2015. 1.11 playground, 1.12 art playground, 1.13 science playground, 1.14 amphitheatre, 1.15 pavilions and pergolas, 1.16 outdoor furniture, 1.17 vegetable beds.*

The school territory was understood as universe, still unfamiliar and frightening to a child. The arrangement of the outdoor area for the primary school pupils was suggested as detached by natural and architectural elements in order to define clearly the boundaries of the safe children's world. The complexity of this "world" was expressed by various places, spaces and functions: playground, art ground, science ground, amphitheatre, pavilions and pergolas, outdoor furniture, vegetable beds, etc. (Fig. 12).

The results of architectural workshops that analysed primary education environment confirmed the hypothesis that the universal solutions fit for everyone are not suitable for the individual-oriented modern education. The proposals for the transformation of school outer space allowed to see some guidelines for change but denied the possibility of a unified solution. The uniqueness of each situation is determined by the identity of each school and its community. This insight strongly indicates the importance of school community in the process of design and re-creation of educational environment. Along with the research on educational architecture, the direction of the design-build studio approach [25] was started and the first project implemented in the courtyard of VGTU Architectural faculty [21]. The gained experience of design and implementation [16] was applied in the workshop at the catholic high school in Lazdynai in 2016.

**School Ground as a Collectively Developed Play-scape**

The paper is focused on the participatory design cases developed in cooperation with schools mainly located in the post-socialist residential district Lazdynai in Vilnius, which is an example displaying the current considerations on adaptation of the modernist architectural legacy to nowadays and future society's needs.

Lazdynai is the first district in Vilnius, where the concept of *rayon* or "sleeping" district was implemented at an almost complete scope. In 1974 the design team of Lazdynai was awarded the highest state prize of the time – the Lenin's Prize. Thus later on the district was promoted as an etalon of soviet urban design, but today its mono functionality and structural rigidity towards the change is one of the main issues in terms of buildings and urban public spaces. Although the inhabitants of Lazdynai themselves attempted to transform the semi-public spaces on their own initiative trying to personalize and fragment them or adapt to informal functions, but these initiatives did not reach the main public spaces of the district due to financing issues and, most importantly, the lack of visions and impulses from the community itself.

As soon as the trends of participatory processes reached Lithuania in 2010, the idea that the community itself with support of experts should engage in, initiate and maintain the transformation of its environment and the specifics of Lazdynai district led to a noticeable concentration of activist projects carried out by NGOs and academic institutions aiming to activate rethinking of alternative programs of the public space together with the community. In this context architects also took a chance not only at testing the participatory design in theory, but also putting it into professional practice. Full community's involvement in the participatory design led by architects as the mediators; understanding the urban space from the perspective of its users before making any changes; exercising the imagination as the catalyst of rethinking and rediscovering the everyday urban spaces were the key goals of an international summer school "Play East!" (2016) in Lazdynai.

The summer school was organized by the Faculty of Architecture VGTU and curators Barbara Pampe and Vittoria Capresi (*baladilab*, Germany), who had contributed the methods and expertise in improving the courtyards of schools and transforming them into playing landscape (*playscape*) through "Learning-Move-Play-Ground" summer schools series in Germany and Egypt. The summer school was hosted by the Blessed Teofilius Matulionis High School

(former Vilnius *Versmė* High School) itself matching the philosophy of the school: education in this school is based on the tradition of St. Marie-Eugénie, according to which the quality education should be based on responsibility and social action, challenges and current issues, community feeling and cooperation.

The school's aspirations to encourage children spending more time outdoors and the need of proper infrastructure for outdoor education necessitated the changes of the school ground. The user's involvement with the school grounds is a tangible expression of the school's philosophy and educational practice – the philosophy and practice create the landscape [2]. Following this idea, the school's community and architects' team strived to create a multifunctional landscape representing the philosophy of the school. Landscape as functional sculpture; as a set of game elements; as learning space; as inspiring amorphous shape in a monotonous setting of mass-housing meets the expectations of the school community members in anticipation that diversity would have a lasting supportive effect on children's activity outdoors [3].

Understanding before making changes. The curators of the summer school "Play East!" adapted the methods of the participatory design, which covered several stages: input phase; workshop with children and teachers; design phase; implementation phase; inauguration. During the workshop the needs of the school were explored from the perspective of teachers as experts, who know their students and spaces of the school the best, are aware of the educational process and its improvement.

*Fig. 13. Workshop with children and models of Atmospheres.Source: "Play East!" team, 2016.*

*Fig. 14. Elements of the playscape: "Brick-Work"( transferring the atmosphere of Obstacles), "Wall" (Observing and Safety), "Tents" (Perpetual Movement), "Hidden Elements"*
(*Changing Perspective*) *Source: "Play East!" team, 2016.*

Understanding the present condition and expectations from the perspective of school community is one of the essential aspects of the participatory process. "Like the caution to understand before interpreting the social world of school grounds, many commentators strongly urge thorough understanding before adjusting it to make changes on the school grounds" [6]. Exploration of the school together with its community may reveal the hidden potential and identity of the school, therefore the context-aware transformations rather than pre-designed solutions are more appropriate and match the identity of the school's community.

*Imagination exercises*. The workshop with children aimed at shifting away from the everyday processes and spaces of the school, therefore the exploration of the desirable atmospheres was chosen as participatory design tactics, helping to escape the ready-made images of the school ground and allowing some space for uncertainties and contingencies in design. Communication through atmospheres, in the forms of models, installations, drawings, collages and storytelling avoids the fixed code needs and ideas that are often difficult to communicate or implement [22]. On the other hand, the abstract thesaurus of the atmosphere, and the unleashed imagination trigger the unexpected forms and functions of the space. The Atmospheres workshop in Lazdynai was focused on revealing the mood and scenario of The Dream Day. Assisted by the architecture students, children visualised their own dream days through the models and storytelling (Fig. 13) thus uncovering the wide range of auras and activities of their leisure.

*Architect as mediator*. The design phase set the architecture students to extract the main keywords of children dreams (e.g. safety, observation, perpetual movement, changing perspective, obstacles) and transfer them into the design of the playing landscape, which in the end resulted as five landscape elements integrated into the school ground – *Wall, Brick-Work, Balancing Track, Hidden Elements* and *Tents.* The design and building phases introduced the architecture students as the future professionals to the currently changing role of the architect as they were prompted to act rather as creative links or moderators between the architecture and its users, taking the responsibility to perceive, synthesize and transfer the expectations and needs of the community into architectural form; furthermore, the students worked in groups and collectively elaborated the elements of the landscape, that resulted in the absence of the authorship and put all the persons involved on the same level of co-creatorship. On the other hand, involvement into

the full scope of school ground transformations was crucial experience for the school's community too, as they went through all the *design-build* stages rethinking the school, imagining, discussing the project, finding the sponsors, building the landscape elements themselves. Therefore, the architects had to design the simple, low-cost playscape feasible to efforts of the community itself and the sponsors involved (Fig. 14), and showcase this pilot project hoping to inspire other communities to act "horizontally" and in anticipation that residents – especially children and students as the upcoming future society – will become the creative partners and co-creators of the urban spaces.

## Conclusions

The strict functional zoning of school territories built in the 1930's–1980's has lost its relevance today due to the changed mode of use. There is a need to optimize the use of these spaces by adapting them to several functions, seeking polyfunctionality. This is a particularly welcome trend, when schools are located on smaller parcels.

The analysis of development of school grounds has discovered that a school territory in various periods was used for physical activities and training. Other functions emerged as complementary and diversifying.

The historic research and results of the workshops have shown that importance, scope and spatial positions of functions of school grounds have been changing; the recreation and representation [functions] are close related and using the same area, the representation and experimental learning (gardening) have been matched; physical training and sports function can be transferred into relaxation. These exchanges and mergers indicate that school grounds respond to the changing needs.

The research has highlighted that various functions of the school outdoor territories have been planned, have not been implemented or become viable. Contemporary education theory advocates outdoor learning, learning in unexpected spaces as a tool for better knowledge absorption. Therefore, the restoration of the disappeared and development of new connections between the outer and inner recreational spaces is a priority.

Representative greenery lost its primary educational function, but it has a potential to be a tool not only for basics of biology, but also plant design and landscape architecture studies.

The occurrence of bicycle parkings in school yards, re-establishment of links between schools and adjacent parks should be understood as a part of policy for sustainable mobility and healthy environment.

Construction of open and covered outdoor amphitheaters in the yard can lead to wider engagement of schools as well neighborhood communities into school life.

Participatory design-build studio is one of the methods to achieve the up-to-date learning environment that is collectively developed by the students and schools' communities. The case of Blessed Teofilius Matulionis High School design-build has revealed three main aspects: (1) collectively developed playing landscape as functional sculpture; as a set of game elements; as learning space; as inspiring amorphous shape in a monotonous setting of mass-housing meets the diverse expectations of the school community, thus the diversity of landscape has a lasting supportive effect on children's activity outdoors. (2) Understanding of spaces and processes of school together with its community reveal the hidden potential and identity of the school, therefore the context-aware transformations rather than pre-designed solutions are more acceptable to the community. (3) Community's participation at all stages of the design-build process preconditions the permanent maintenance and further development of school grounds by the community itself.

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**Kopsavilkums.** Rakstā izklāstīta skolu pagalmu izglītojošā nozīme un pierādīts apgalvojums, ka šīs teritorijas ir izmantojamas, lai izglītotu jaunās paaudzes, veicinot sadarbību apkārtējās vides veidošanā. Lietuvas skolu arhitektūras izpēte pēdējā desmitgadē liecina par skolu pagalmu izmantošanu, kas varētu tikt raksturota kā "Aizmirstā Telpa". Izglītojošais personāls pievērš īpašu uzmanību mijiedarbībai starp mācīšanos un spēlēšanos. Urbānā dārzkopība, vides novērošana, īpaši veidotas studijas ir kļuvušas par neatņemamu daļu no sekundārās un pat primārās izglītības sistēmas. Šāda veida izglītojošām aktivitātēm ir nepieciešama atbilstoša vide. Lielākā daļa skolu Lietuvā ir būvētas starpkaru un padomju periodos un ne vienmēr tās spēj apmierināt mūsdienu izglītības vides prasības. Arhitekti, ainavu arhitekti un pilsētplānotāji, saistībā ar izglītībai piemērotas vides projektēšanu, raugās uz sadarbību ar sabiedrību kā šķērsli vai formālu nepieciešamību. Kopš 2014 gada VGTU Arhitektūras fakultāte ir uzsākusi darbību kā katalizators, veicinot diskusijas un alternatīvus redzējumus, saistībā ar skolu telpu pārmaiņām.

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# Beginnings of Landscape Architecture in Poland

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**Abstract. The article describes the period from the end of the nineteenth century to the 1950's. It presents the achievements of the pioneers of Polish landscape architecture, associated with various aspects of the design, planning and protection of the landscape, in addition to professional education.**

**In the majority of European countries, the development of landscape architecture as a separate profession is dated to the interbellum period. In Poland there is currently no doubt as to the fact that landscape architecture is an independent professional discipline. However, several decades ago this topic was the subject of spirited discussion among Polish specialists, which took place on the pages of specialist periodicals. The discussions that took place at the time between outstanding garden planners, practitioners, scientists, didactics and popularisers who came from various different fields concerned the profession and the preparation of specialists, in addition to the name itself. One of the pioneers – Zygmunt Hellwig, wrote: "I believe that the shaping of the landscape is an art and science that is currently completely independent, one that has grown equally well from the foundations of horticulture, architecture and a number of similar disciplines, one that can absolutely no longer fit within the framework of the professional preparation and qualifications of an architect-builder."(1935). The landscape architecture profession developed very dynamically. Significant projects, now considered icons, were being developed, e.g. Żelazowa Wola, a monument park dedicated to Chopin or Skaryszewski Park in Warsaw. At horticultural fairs one of the more important sections was garden planning, where individual cities prided themselves in their achievements in the design of public parks. University education started to be provided in this speciality. Franciszek Krzywda-Polkowski, who had obtained an education in architecture, was the first to introduce landscape architecture to a university curriculum and organised and supervised the Landscape Architecture and Park Science Division at the University of Life Sciences starting from 1928. He also taught at the Warsaw University of Technology. His diploma candidates, Alina Scholtz and Gerard Ciołek, made significant contributions to the development of landscape architecture in Poland. A. Scholtz, an outstanding designer, became one of the founding members of the International Federation of Landscape Architecture (IFLA) in 1948. G. Ciołek was the creator of the Polish school of the revalorisation of historical garden layouts. His comprehensive scientific works on the history of garden design had a pioneering character. He is the author of the fundamental work Ogrody polskie (1954).**

**Keywords: landscape design, development of profession, landscape education**

## Introduction

In most countries of Europe the development of landscape architecture as an independent discipline took place during the interwar period. No one in Poland currently has any doubt that it is indeed a separate professional specialisation, which has, since the middle of the nineteenth century, changed the image of many cities, focusing on beautiful surroundings, harmonious space and satisfying the need for recreation. However, several decades ago, as far back as in partition-era Poland and after 1918, when the country regained its independence, this subject caused heated debates among specialists. Discussions that went on between outstanding garden planners, practitioners, researchers, educators and popularisers from various fields pertained to the profession itself and the preparing of specialists, as well as to the name itself [48]. Polemics were exchanged on the pages of the contemporary press, while the profession itself enjoyed dynamic development. One of the most important sections at garden fairs was garden planning, in which each city boasted of its achievements in terms of designing public parks and areas of greenery, in which architects, urban and garden planners played a significant role. Sites like parks and squares, the surroundings of institutions or memorials were established. The regaining of independence by Poland in 1918 was conducive to the development of public areas, with sites that highlighted national identity – often expressed through the language of design – being built. Modernism was often making itself seen. The perspectives of the well-developing discipline were shattered by the Second World War and the long period of the elimination of landscape architects from both participating in designing Polish space and the landscape and university education. Since 1995, on the basis of the Ordinance of the Minister of Employment and Social Policy, "Landscape Architects" have been on the list of professions and included in group "216. Architects, surveyors and designers", and marked with the symbol "2162". The consequence of this decision has been the opening of Master's level studies courses at several state and private universities. A review of contemporary curricula in Poland shows that landscape architecture is an interdisciplinary field and its pedigree is usually associated with a given university's specialisation – be it agricultural, technical or artistic.

The basis for the deliberations contained in this article were Polish publications in which works of landscape architecture had been presented. Due to the interdisciplinary character of the specialisation, as well as the formation of the scope of its activities, the works focus on horticulture, architecture, urban design and environmental protection. They include specialist and popular publications that were issued from the second half of the nineteenth century up to the year 1939 and during the first years after the Second World War, as well as handbooks on garden design and gardening fair reports and guides. Their large number proves that it was an important and popular subject. Periodicals, mainly monthlies and bi-weeklies, were published, including "Ogrodnik Polski" (1879–1905, Warsaw), "Ogrodnik" (1911–1939, Warsaw), "Ogrodnictwo" (1897, Krakow), "Przegląd Ogrodniczy" (Lviv 1922–1939; Warsaw 1946–1961), "Miesięcznik Ogrodniczy" (1919–1922), "Gospodarz" (1902–1915, Warsaw), "Ogrodnik zawodowy" (1900–1903, Lviv), "Rocznik Polskiego Towarzystwa Dendrologicznego" (1927–1939, Lviv), as well as "Architekt" (1903–1929), "Czasopismo Techniczne" (1883–1939, Lviv), "Dom, Osiedle, Mieszkanie" (1929–1948, Warsaw; previously as "Osiedle, Dom, Mieszkanie"), and "Architektura i Budownictwo" (1925–1939, Warsaw). Periodicals propagating the subject matter of landscape architecture focused on two fundamental disciplines: gardening and architectural and urban design. They of course discussed the full spectrum of subjects typical for the disciplines. However, for the landscape architecture specialisation, the important ones in terms of gardening were, in particular: garden planning, the types of gardens and parks, aesthetics and styles, matters of design. Similarly, in the other group, closer to architecture and urban planning, here these were primarily: parks and public spaces, sports grounds, the greenery of housing estates, the surroundings of the home, areas of urban greenery, ranging from the scale of the detail to that of planning. The publications published texts by specialists, scholars and designers.

The education of gardeners and garden planners in Poland took place both domestically and abroad, often through practical training. Teaching traditions reach back to private gardening schools established by wealthy landowners, with the school in Medyka at the Pawlikowski family estate, at which a four-year course under the supervision of the Czech gardener Józef Blaszek was establsihed in 1835, being a prominent one. In partition-era Poland there were several such schools. 1855 saw the founding of a gardening school in Galicia, in Lviv, at the city's botanical garden, although it operated only briefly and left no lasting impact on gardening. In 1868, in the Prussian partition, Gustav Stoll founded the Pomological Institute in Prószków, in Silesia, with the school's higher department being relocated in 1878 to the University in Wrocław. In Warsaw, in the Russian partition, there functioned a gardening school founded by, among others, Jerzy Alexandrowicz and Piotr Hoser. The Warsaw Garden Society was established in 1884 in this circle as well. In 1913 the Society of Scientific Courses in Warsaw opened its Gardening Faculty, with Piotr F. Hoser as dean. In 1916 the Faculty was converted into an independent facility operating as a part of the Society of Scientific Courses – the Higher Gardening School, which in turn was later incorporated into the Gardening Faculty of the Warsaw University of Life Sciences after the country regained its independence. In the Austrian partition the first gardening courses were held in the 1890's at the Jagiellonian University's experimental garden. After the First World War in 1919 a Chair of Gardening was established at the Agricultural Study of the Jagiellonian University. Architects practicing garden planning, garden estates or areas of greenery also educated themselves at polytechnic schools abroad (in, among other places, Vienna, Berlin or Moscow), as well as in the country. The Technical Academy operated in Lviv (1844–1877) and was later converted into the Polytechnic School, where architecture was taught already during the nineteenth century. In Warsaw architecture was taught at the Warsaw University of Technology which was opened in 1915. In Krakow, architecture and mechanics, as sciences, were taught at the Krakow University already in the seventeenth century, being later taught at the Academy of Fine Arts and at the School of the Arts and Industry.

Works in the field of the history of garden design, in which their authors showcased the achievements of the modern planning of areas of greenery and presented problems from the disciplines of the history, theory and practice of historical landscape layouts, are also of significance [14]. These are primarily publications by garden design historians: Józef Drége (1904) [12], Kazimierz Buczkowski (1924) [2] and Edmund Jankowski (1923, 1938) [22, 23] as well as the architect and urban planner Tadeusz Tołwiński (1937) [44]. Gerard Ciołek who went on to become a historian of garden design and a tireless surveyor of Polish gardens, the founder of the Polish school of the renewal of historical garden layouts, but also a scholar of regionalism – of rural architecture and settlements, who placed matters of the protection and shaping of the landscape first, and a particularly distinguished person during the post-war period – was just beginning his professional career [5, 4].

**The leading designers of the turn of the nineteenth and the twentieth century and of the interwar period**

Similarly, to the situation in other countries, the development of the new profession in Poland was closely tied with the landscape gardening boom of the eighteenth and nineteenth centuries. Both Polish and foreign gardeners were active here after 1772, with numerous guidebooks and handbooks on the establishment of gardens being published. Those that became famous included, among others, the architect Szymon Bogumił Zug (1733–1809), whose description of the gardens of Warsaw and its surroundings was included by C.C.L. Hirschfeld in his work [53, 19], Dionizy Mikler (D. McClair, 1762–1853) from Ireland, who was invited to Poland by Izabela Czartoryska, the author of the acclaimed book on English gardening entitled *Myśli różne o sposobie zakładania ogrodów* (*Various thoughts on the manner of establishing gardens* in English, 1805) [10], or Augustyn Denizot (1836–1910) from Switzerland, who was active in Greater Poland during a later period.

The leading garden designers of the start of the twentieth century were gardeners and garden planners by education: Teodor Chrząński (1854–1932), Walerian Kronenberg (1859–1934), Franciszek Szanior (1853–1945), Stefan Celichowski (1874–1961), Leon Danielewicz (1878–1970), Stanisław Schönfeld (1882–after 1938), Stefan Rogowicz (1885–1934), Edmund Jankowski (1849–1938) and Edward Ciszkiewicz. They were very often educated abroad or practiced there [7, 31]. Kronenberg, Jankowski, Chrząński and Szanior studied in France, while Tański – in Belgium and Germany. The biographies of these planners are quite varied and point to the knowledge and experience that they had gained. For instance, Walerian Kronenberg practiced at the nursery of Ch./ Ulrich and at Warsaw's Pomological Garden, afterwards working at the nurseries of Ludwig Späth at Neu-Britz near Berlin (1878–79), followed by working for Franz and Nicolaus Siesmayer in Bockenheim near Frankfurt. He gained a solid foundation of planning experience while working for Franz Heinrigh Siesmayer, the continuator of the work of Peter Joseph Lenné, gaining botanical knowledge from his brother, Nicolaus. During his practical training while working for the Siesmayers he established gardens under the supervision of the experienced gardener Sennholz, including such works like Rotschild's garden in Frankfurt. After finishing his practical training, he studied at the Higher Gardening School at Versailles. Kronenberg also travelled a lot, visiting well-known gardening nurseries. Another planner, Franciszek Szanior, praciced at the Warsaw pomological and botanical gardens, after which he passed an exam to be certified as a gardener, while in 1874 he graduated

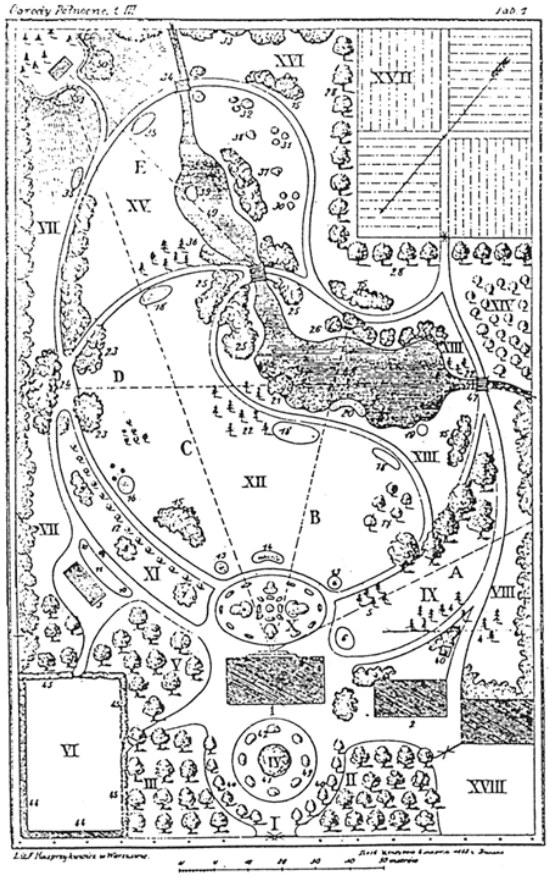


*Fig. 1. Plan of the landscape garden.*
*Source: J. Strumiłło, Ogrody północne, ed. W. Tyniecki 1883.*

*Fig. 2. Siary, palace garden, 1935, attributed to A. Röhring.*
*Source: archives of A. Zachariasz.*

from the l'École théorique et pratique d'arboriculture de la ville de Paris, which was founded in 1867 by the prefect Haussmann. Edmund Jankowski also graduated from this school. Stefan Celichowski underwent practical training at the Hoser Brothers' Facility in Warsaw, graduating from the Pomological Institute in Silesia and practicing in Dresden, Erfurt, Vienna and Paris. Some of the designs from the beginning of the twentieth century were still influenced by nineteenth-century historicism, "ornamental horticulture", the calligraphic style, as Janusz Bogdanowski called it [1], with engineer-like layouts and carpet flower beds drawn using draughtsmanship tools. We can see clear influence of

E. Andre, J. Alphand, J.P. Barillet-Deschamps, as well as the grandeur of P. J. Lenne in the work of this first group of planners. However, modern, architectural forms developed over time – with a greater layout regularity and functionalism – as well as plant-based ones – e.g. the fashionable perennial beds. Those who have particularly significantly contributed to the development of modernist garden design and landscape architecture were active later: Franciszek Krzywda-Polkowski (1881-1949), Romuald Gutt (1888-1974), Zygmunt Hellwig (1899-1958), Alina Scholtz (1908-1996), Alfons Zielonko (1907–1999), Władysław Niemirski (1914-2001) [5, 7, 21, 35] and Władysław Czarnecki (1895-1983) [8, 9]. In the group of modernists, Anglo-Saxon landscape architecture was a significant influence, which is evident in the experience of the designers and their completed projects. Krzywda-Polkowski was on a scholarship in England and practiced in the United States, while Hellwig practiced in England and also resided in the United States. Scholtz was on an internship in England. Their designs, competition entrees and publications are proof of the dynamic development of garden planning. They also show the coalescence of the profession and how views collided – views that were sometimes closer to gardening, while at others to architecture. From among the abovementioned designers, Polkowski, Gutt, Niemirski and Czarnecki obtained an architectural education, which is clear in the layouts that they designed, as well as in the composition and form, the designs of architecture and its surroundings, parks, cemeteries and conceptual urban designs. The remaining ones were gardeners who had their own garden and green areas design studios, as well as plant nurseries (including S. Rogowicz, W. Tański, S. Schönfeld, F. Szanior, Z. Hellwig, S. Celichowski) and thus imposed certain patterns and introduced fashions for specific plant material, while also usually participating in the training of new staff.

Another aspect of landscape architecture associated with the conservation of historical sites appeared already prior to the First World War due to the establishment of public or state organisations. In the Austrian partition in 1888 there emerged the Western Galicia Conservators Group, while in 1906 the Russian partition saw the establishment of the Society for the Care of the Monuments of the Past. The oldest institutions that had the character of government administration existed in the Prussian State, where a conservation office has existed since 1843 [32, 49]. Research work aiding in the conservation of historical sites – sometimes associated with the conservation of gardens – started already before the First World War. During the interwar period there was further development in research directed at saving destroyed gardens. This was naturally linked with the general need to rebuild the country and safeguard the reclaimed national heritage. This is why sites that were public property and that could fulfil representative functions were preferred, such as the surroundings of the Royal Castle on Wawel Hill in Krakow, as well as the garden terraces of the Royal Castle in Warsaw, the Royal Baths, the Saxon Garden, the garden in Natolin, the park in Białystok. At the Faculty of Architecture of the Warsaw University of Technology, Professor Oskar Sosnowski (1880–1939) organised systematic efforts that focused on gardens at the Polish Architecture Division, while in the years 1937–1939 Gerard Ciołek (1909–1966) along with Krystyna Żelechowska, supervised the Historical Parks Study [32, 51]. These were the beginnings of modern surveying, archival queries, studies and designs in this field. The nascent Polish school of studying and saving historical gardens would be confronted with the massive scale of wartime destruction after 1945. In addition, the sites that survived were under threat from secondary devastation resulting from far-reaching property changes introduced by the new political system in Poland.

**Professional titles used by representatives of the new profession in Poland**

Conflicts concerning the name of the profession resulted not only from the need of the nascent profession itself, but also from the discussions that were then taking place between architects and gardeners due to the changes that were taking place in the very subject of the designs – the garden itself – as well as the expansion of the scope of the work that needed to be featured in designs. In Poland the problem of naming, the scope of education and professional skills was often discussed in professional journals. E. Jankowski wrote in 1911: "In the previous issue we discussed ornamental gardening, often mentioning garden artists, garden designers. They are called here, in short, planners, while detractors claim that there are many stain makers among them (transl. note: a play on words was used in the original, in the Polish language: *plamista* – a person that causes stains to appear, is similar to *planista* – a planner). They claim the overall number of these planners to be over a hundred. There is no organisation, nor any agreement between them, however, they could form a serious professional association" [24]. Later on he criticised the inappropriate preparation of many designers as he believed that "Such work, performed in a reckless and unskilled manner, leaves behind a permanent trace in the form of an ornamental garden or park, which lasts several decades and sometimes even centuries" [24]. However, garden designers used many names for their profession and thus Jankowski, among others, used the term "gardener-naturalist"[33], Kronenberg used "gardener-landscapist", Rogowicz – "gardener-architect", Tański employed the term

"garden planner" and "gardener-landscapist" [48], while Alfons Zielonko – "gardener-architect" [52]. The problem of naming was a result of the philosophy of design and the type of education of each of the specialists, which was in the field of gardening in the case of the examples above, while also stemming from their professional activity and continental European education.

The problem of naming and the scope of professional work remained a matter of discussion over twenty years later. The subject was discussed, with perfect knowledge, by Zygmunt Hellwig in his article "Zawód bez nazwy i definicji" [18] ("A profession without name and definition" in English) – "Horticulturalist-landscapist, horticulturalist-architect, architect of greenery, garden draughtsman, architect of the landscape, planner, horticultural architect, landscape architect. All these names, both individually and in various combinations, are used around the world in order to describe the artist-technician who shapes areas covered by the economic activity of man. Who designs and construes certain elements of the current cultural landscape, such as gardens, parks, sports and recreational grounds [18]" Z. Hellwig wrote in 1934 of a new discipline – landscape architecture", "for 30 years the profession of landscape architecture has had an outstanding and well-founded position in the United States /../. It owes this to two "dynasties" /../ of great artists, writers and pioneers – the dynasties of the Eliots and Olmsteds [18]". He discussed the nomenclature of the new profession in England and Germany in detail. Further, he noted "In Poland, unfortunately, all of the titles listed in the introduction have been used. The official name of the "Planners' Circle" professional association, which still exists (in a lethargic state), does not communicate much, as nearly all of its members use the title architect-gardener in their professional practice (an irrational translation of Garten-Architekt), or something similar. We can choose from three more or less identical rational and justified terms: planner, garden architect (or of gardens) and landscape architect. The first name already has a historical reason to exist in our country... Besides it reflects the modern broad professional competence of land and regional planning quite well. The second and third name are good, logical translations of appropriate titles from English and German". He asks "Does the profession of the landscape architect in the modern understanding of the term has a future in Poland?" and answered that at the time it had appeared that it did not. He assumed, however, that soon "the perspective of the future for this new profession will fundamentally change. The matters of the construction of park systems, planting roads and railways, streets, boulevards and sports grounds, river and marine waterfronts, the conservation of National parks and making them accessible, cannot be solved and decided upon without causing damage by anybody but a competent landscape architect specialist who loves his profession" [18]. He believed that landscape architects should cooperate with gardeners and urbanists and work in regional offices, city regulation offices and gardening departments [17, 18].

**Major trends of the end of the nineteenth century and the first half of the twentieth century in Poland**

The end of the nineteenth and the first half of the twentieth century was a period when stylistic changes in gardens occurred faster than ever. Gardens were increasingly often being designed by professionally prepared specialists. The eclectic styles of the beginning of the twentieth century were being replaced by new forms – modernist ones, with architects who treated the garden as an extension of the home leaving a strong mark on garden design. Significant influence on the shaping of gardens was also exerted by the developing horticulture of newly introduced plants, supported by experiments in their acclimatisation. New strains were being developed, adapted to local conditions. Garden designs, including their modern perception and various functional and stylistic analyses became the domain of the dynamically developing discipline that was landscape architecture.

Transformations in the arts were important to the modern movement both in Europe and in Poland, starting from Arts and Crafts, through the Secession, De Stijl and art déco. Technical capabilities arrived later, along with the modern aesthetic of the Age of the Machine with its refreshingly innovative and elegant geometry of the international style. During this time there was a constant conflict in the field of gardens between three basic movements: naturalist, eclectic and modernist, which often blended with each other. However, in modernism, due to the pursuit of new forms of artistic expression, the transformation of the form of the garden was particularly visible [50]. Modernist solutions were characterised by simplicity and functionalism, while new forms found their expression in strong architecturalisation, modern materials and various forms of flower beds – either strongly geometricised or biomorphic. Changes that were taking place in architecture also had a significant effect. Garden and park design was seen as one of the tools of democracy in social transformations. This thesis had a fundamental impact on the development of modernism.

Landscape architecture, integrally linked with garden design, as any form of creative work, takes on current fashions and tendencies in the arts. Garden design has always been a reflection of a country's culture and the standard of living and tastes of its

citizens. The garden historian, horticulturalist and garden planner, the author of several dozen books, Edmund Jankowski, ascribes an important role to gardens. He highlighted this in 1911 on the pages of "Ogrodnik": "What matters is not only the decoration of a given home, but also a certain mark of civilisation that parks make on a country. The more beautiful they are, the more ornament there is in the surroundings, the more exceptionally do they bear the signs of a nation's culture. Creating a beautiful ornamental garden was difficult in the past as well. Today, when requirements have increased, when an entirely new style is being born, in which plant units and groups become the supplementation of architectural ideas, when artistic and colourful wholes are created out of buildings and plants, when plant, tree and flower material has increased in a unique manner, it is not easy to be a good planner today" [24]. The beginning of the century was a period when styles and fashions changed rapidly in garden design, as they did in the arts in general, which affected the gardens being built. In 1937 Jankowski showed the transformations that "The modern style, which formed a couple of decades ago and has still not sufficiently matured into clear forms, has been taken by architects. They do not, in principle, consider gardeners as capable of planting gardens near houses themselves, acting on the assumption that a garden is only a necessary supplementation and extension of a home, that it must be adapted to it not only in style, but in dimensions of both space and the trees planted there as well [25]". Meanwhile the architect Antoni Porczyński, on the pages of "Ogrodnik", wrote – "Gardening and architecture – they are sisters by birth, mutually supporting themselves and increasing their beauty – they are necessary to each other" [38]. Changes dictated by modern art were taking place increasingly fast. They entered Poland and were adapted to garden designs as well: "Stone, iron, lush greenery and colourful flowers, these are the fundamental elements of modern architectural gardens [39]". Publications show that gardeners and architects had conflicting views.

**Garden fairs**

Garden fairs, which were often organised at the time, typically featured a garden planning section, where designers presented their designs, were awarded medals, gained popularity and commissions. Directors of municipal plantations and municipal gardeners also presented their designs. The exhibitions presented new tendencies in garden design, they were discussed in the press and sometimes had their own publications [46, 37]. The "Exhibition of architecture and interiors in garden surroundings" of 1912 in Krakow was a significant event, organised on post-military grounds of the Krakow Fortress near Błonia and Park Jordana, and whose practical goal was to showcase typical houses against the background of the contemporary state of urban planning, that were described as "both practical and beautiful to residents of both town and country, and thus a type of a suburban manor house, small houses for a worker or craftsman, a farmhouse" [46]. The houses were presented in garden surroundings. The Krakow fair was visited by Ebenezer Howard in connection with the Eighth World Esperantist Congress. He delivered a lecture at the fair on the 14th of July 1912, and, as it was written, "Admired quite uncritically the wonderful layout of Krakow with its great amount of greenery, greens, plantations, a ring plan system, etc. and called Krakow a naturally developed garden-city [34]".

The Anniversary Horticultural Fair in Poznań that took place between the 25th of September and the 3rd of October 1926 became famous and was visited by around 185 thousand people [36]. It was decided that it was at a truly European level. It provided an image of the condition of garden design from all over Poland, gathering numerous exhibitors. The site of the fair, the International Poznań Fair Grounds, which existed from 1921 (although they had older partition-era traditions, as in 1911 the Eastern German Fair was held here). The fair of 1926 had a substantial publication and promoted the achievements of cities and towns. Franciszek Szanior, when commenting on the achievements of Polish planning, wrote: "Anyway, it should be highlighted that our larger cities are moving ever forward in terms of establishing new parks, green squares, sports pitches and overall in terms of structuring and decorating their plantations [43]". He later added: "Finishing the comments addressed at the Poznań Fair, I express my concern for this beautiful branch of gardening ornamentation that is the planning of parks and the establishment of ornamental gardens not to disappear in our country completely. It is the duty of young specialists to uphold this beautiful art and to make efforts so that young Poland can bloom anew with a love of the beauty of gardens and maintain its past traditions in this direction [43]".

Between the 28th of July and the 4th of October 1928 a fair was held in Toruń which, through showcasing examples of completed projects, was meant to shape modern taste. When reporting on this event, Marian Guntzel described the changes that took place in post-war art and the emergence of modern movements: futurism, expressionism and cubism. He wrote that gardening was subjected to them as well. He presented two designs that were exhibited by the city of Bydgoszcz which showed the state of modern garden planning in the west, which he described as such: "The distinct characteristic of the post-war period is the desire to use and the constant pursuit of changing sensations /.../ The art of construction or architecture, as a visual art, has transformed most significantly during the post-war period,

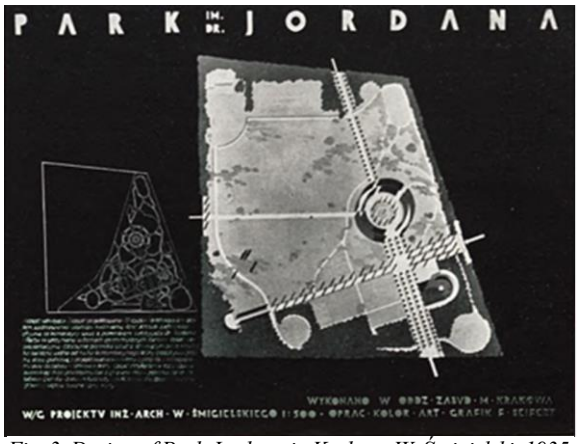


*Fig. 3. Design of Park Jordana in Krakow, W. Śmigielski, 1935. Source: W. Śmigielski, Funkcjonalizm nowoczesnego parku, "Dom Osiedle Mieszkanie", December 12 1935, p. 33.*

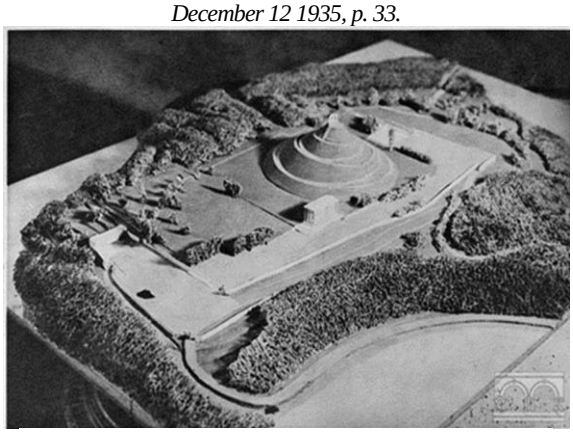

*Fig. 4. The surroundings of the Piłsudski Mound in Krakow, according to a design by R. Gutt and A. Scholtz, which received first prize in a competition organised in 1936 b/ mock up, 1937, MHK-4950/N.*

with garden architecture closely following it. The modern villa garden is an extension of the building, which means that it is organically connected with a dwelling and stylishly adapted to a building's architecture /../ Efforts are constantly made to highlight the perpendicular line everywhere, contrary to past methods, in which the horizontal line and plane were dominant [15]".

In 1935, at the III Congress of Gardeners in Poznań, an exhibition of Municipal Greenery was presented, organised under the direction of Władysław Marciniec, while Stanisław Schönfeld presented the condition of greenery in Polish cities, which, as he believed, left much to be desired, which was in part the result of low budgets [16].

**Achievements in the design of greenery in cities**

The traditions of taking care of greenery and the public space of the city can be seen in the activity of the Commissions for Good Order. The first Commissions of Good Order (*boni ordinis*) – collegial institutions of municipal administration, were established in 1764 as a result of the decision of the Convocational Sejm. In 1765 king Stanisław Poniatowski established such a commission for Warsaw, while in 1768 the Sejm decided to establish them for all royal cities. The commissions oversaw, among others, municipal finances and issued ordnances for individual cities, making spatial planning decisions. Thanks to their activity many cities saw the planting of trees along streets, the establishment of parks and greens while care for the surroundings of cities, including Krakow, Poznań, Lublin and Kalisz, increased. The first parks for use by the wider public in Poland were made accessible by aristocrats. The Saxon Garden was opened in Warsaw in 1727, while the garden of the Krasiński family (1768) and the Royal Baths were opened later. From the end of the eighteenth century and over the course of the nineteenth centuries cities included so-called pleasure gardens (German Volkspark). In partition-era Poland there were public parks being built in, among other places, Kalisz (1798), with the Saxon Garden being built in Lublin (1837), while Krakow saw the establishment of "plantations" that surrounded the city with a green ring in place of tits dismantled fortifications, as well as Marksmen's Park (1837). This later became a wide-reaching phenomenon that excellently fitted in with the park movement. Many excellent public parks and areas of greenery were established, often featuring an innovative programme. These were, among others, in Łódź: Poniatowski Park (T. Chrząński, 1904–1910), Piłsudski Park (E. Ciszkiewicz, the Zajkowski's, 1929), in Warsaw it was Skaryszewski Park (F. Szanior 1906–1915) [5], in Katowice – Kościuszko Park (expanded in 1926–31) [45], while in Krakow – the Park of doctor Jordan (on the grounds of an agricultural and industrial fair, K. Zaremba, 1885, B. Malecki, 1887) – a park for children and the youth (a model for future gardens of this type in Poland), Bednarski Park (1896) on the grounds of a former quarry or the surroundings of the Piłsudski Mound (R. Gutt, A. Scholtz, 1936). The transformations in the form of the sites being designed could be clearly seen. Eclecticism and calligraphic layouts gave way to simple geometricised and modernist forms. A sports programme: pitches, playgrounds (often areas for the practicing of gymnastics, running or tennis), usually in the form of a rectangle, circle or hippodrome, became mandatory. In the group of the examples presented above, their designers were primarily gardeners and garden planners by education. The architects among them include Karol Zaremba, whose calligraphic design was developed by the gardener Bolesław Malecki, and Romuald Gutt (he studied at the Winterthur Technical School and at the School of the Fine Arts in Zurich in the years 1905–1908), who cooperated with the gardener Alina Scholtz numerous times, together creating advanced, modernist works, including the famous villa and garden in Warsaw, at Kielecka Street, or the design of

a pavilion with a garden for the Paris exhibition in 1937, which was rejected by the competition jury.

After regaining independence in 1918, numerous efforts were made in Poland in order to rebuild its cities and the country [13, 41]. Parks and areas of greenery were among the mandatory elements of the programme implemented by municipal authorities. Proposals were made to create systems of greenery and regional systems. The concept of Poznań's system of areas of urban greenery was important. The ring-based layout of urban open spaces by Joseph Stübben (1903), considered one of the first examples of modern urban planning, was developed by Władysław Czarnecki (1932) [8, 9]. He used green river wedges (the so-called Maltese cross), formed by naturally shaped river valleys: of the Warta, Bogdanka and Cybina rivers, which exit from the interior of the city in an east-west and north-south layout. Ebenezer Howard's concept of the garden-city was also well received. In Poland it was described in *Tygodnik Polski* (1899) in the article *Miasto-Ogród* by Wojciech Szukiewicz. In 1909 dr Władysław Dobrzyński founded the *Delegation for matters of garden-cities* at the Warsaw Hygienic Society. Dobrzyński, along with Howard, was the co-founder of the International Garden Cities and Town Planning Association and a member of its board of directors. Despite the fact that Howard had called Krakow a "naturally developed garden-city", it was not Krakow, but areas near Warsaw that became the site of the construction of garden-cities. Around a dozen settlements called garden-cities were built at the time, including Ząbki (T. Tołwiński, 1912), Miasto-Ogród Podkowa Leśna (A. Jawornicki, 1927). Earlier, this type of industrial housing estates was also being built in Silesia, e.g. Giszowiec (G. and E. Zillmann, 1906–1910) or Knurów – III Kolonia (K. Henrici, 1904–1910) [50]. Greenery – public parks, home gardens, avenues and the landscape co-created the *genius loci* of these complexes.

Comprehensive surveys of greenery in cities were performed, e.g. in Zakopane [42] and Katowice [45]. Comprehensive and modern analyses were undertaken, also covering participative actions, cf. e.g. *Kwestionariusz lustracyjny do objazdów miast obrazujący stan i rozwój plantacji publicznych…* (*Inspection questionnaire for city review trips. The condition and development of public plantations* in English) written by the Plantation Committee of the Cities of the Republic [30].

The *Inspection questionnaire for city review trips. The condition and development of public plantations* (1922) included 46 detailed questions, among which, part from basic statistical data and that concerning land use, also included:

- **in the first, general part: 17.** Institutions or circles particularly interested in the establishment and development of municipal plantations; /../ **19.** Local manifestations of interest in gardening: aesthetic efforts: a) by the magistrate; b) various institutions, c) residents; **20.** The state of the propagation and popularisation of gardening and respect for plants, e.g. by schools, sporadic lectures, municipal holidays, tree plantings, posters, etc.; **21.** Visible and confirmed beneficial influences on the development of gardens and municipal plantations, e.g. a) general interest of residents; b) the prosperity of the city and backing from the magistrate; c) particular influence of local activists; d) gardening societies; d) beneficial local placement; **22.** Creative influence of wartime operations, e.g. military gardens and green squares, ornamental cemeteries, etc. /../ **27.** Budget positions concerning the maintenance of gardens and plantations.
- **in the second, special part: 34**. Areas of tree stands and municipal plantations; **35.** Type, age and current condition of public plantations: a) parks and gardens, b) green squares and riverside boulevards; c) forested areas and avenues, streets and roadways (dimensions, planting method); d) burial cemeteries; e) and located near churches; f) hospital and sanatorium gardens; g) school gardens; h) station plantations; i) and gardens near other public buildings; **36.** Type, age and current condition of private gardens and home gardens in front of residential villas and suburban holiday homes; **37.** Sports and game squares, pitches, stadiums, etc.; **38.** Municipal tree nurseries and forests; **39**. Private tree nurseries and forests; **40.** Private gardening companies; **41.** Desired current plantation general development; **42.** Plantation care and maintenance procedure; **43.** Places inside the city with a striking lack of plantations and that are suitable for this purpose, their size and type of desired ornamental elements; 44. Suburban sites well-suited for the establishment of public plantations and sports areas; their actual area and desired type of arrangement; **45.** The types and species of trees, bushes and plants that stand out through their health and lush growth; **46.** Species and types of plants that have been inappropriately selected in terms of local conditions [30].

Apart from plantations, municipal parks and cemeteries, gardens funded by industrial plants were also being built, e.g. the designs of gardens near mines, e.g. Saturn in in Czeladź, by Celichowski. Rest and recreation were appreciated, with folk pleasure parks being built, for instance for the Niwka factory settlement (Będzin powiat), which had a population of five thousand [40]. Stefan Rogowicz promoted the educational benefits of didactic gardens addressed to the youth, which could serve to educate and improve physical fitness.

Many efforts were undertaken in order to improve the situation, e.g. the initiative of the Minister of Interior Affairs dr Felicjan Sławoj-Składkowski, who published Circulaire (2.11.1927): "I recommend that during the months of March and April 1927 the squares and streets of cities, towns and villages be planted with trees. /../ To this end, appropriate sums for this purpose should be included in the budgets of local governments and preparatory work should be performed during winter, such as: placing orders for young trees, fertilising earth, contracting specialists, etc. /../ It would also be desirable to create a "Tree Planting Commission" in each locality and for them to develop plans for approval by Starosts or Voivods. The guidelines for the work of the Commissions should be the planting of trees, bushes or flowers, or otherwise vines in every place where such is possible."

**The Master and his students – Franciszek Krzywda-Polkowski as well as Alina Scholtz and Gerard Ciołek**

The architect Franciszek Krzywda-Polkowski (1881-1949) was one of the more important persons among the propagators of landscape architecture and garden planners. He graduated from Wawelberg and Rotwand's mechanical and technical school in Warsaw, afterwards completing studies in the visual arts at the School of Painting, Sculpture and Architecture in Moscow, which he had to constantly put on hold in order to earn small sums of money in Warsaw's architectural studios to cover the cost of his education. He completed his studies in Moscow in 1912. At the turn of 1913 and 1914 he was on a scholarship in England, and in the years 1924-25 he worked at the American design practice McKim, Mead & White in New York [47]. During his stay he visited Boston, familiarised himself with the Arnold Arboretum [11], which constituted an element of the "Emerald Necklace" park system (designed by F. L. Olmsted senior and Ch. Eliot). He observed the development of landscape gardening in its various forms, the currents of modernism and naturalism, as well as the sheer scope of landscape architecture, which provided him with knowledge in this field. Krzywda-Polkowski was the first to introduce the landscape architecture specialisation to university-level education. From 1928 onwards, he organised and directed the Landscape Architecture and Park Studies Division at the University of Life Sciences in Warsaw. He also worked at the Academy of Fine Arts in Krakow. In 1932 he was given the post of *profesor nadzwyczajn* – equivalent to an associate professor, at the Chair of Interiors and the Landscape at the Faculty of Architecture of the Warsaw University of Technology, where he was named *profesor zwyczajny* of the Chair of Garden and Landscape Design (*profesor nadzwyczajny* is a professorial rank used in

a

b

c

*Fig. 5. Żelazowa Wola, design by F. Krzywda Polkowski, a) pergola; b) Czarny Staw (Black Pond); c) detail Photo by A. Zachariasz.*

Poland that is below that of *profesor zwyczajny* – full professor) [26, *47*]. He influenced the education of garden planners, and among his diploma students there were, among others, Alina Scholtz [20] and Gerard Ciołek (at the Warsaw University of Technology) [4].

Alina Scholtz (1908–1996) was Polkowski's student and later assistant and co-designer. In 1932 she defended her diploma project entitled *Design of a decorative park near the Royal Castle in Warsaw* at the Landscape and Park Studies Division of the University of Life Sciences in Warsaw. Scholtz was a prolific designer, by 1939 she designed, among others, numerous private gardens and the Horseracing Track in Służewiec (the park surroundings) and Niebieskie Źródła Park in Tomaszów Mazowiecki. She also cooperated with the architect Romuald Gutt. The private home with a garden at Kielecka Street in Warsaw (1934) designed by this duo was awarded a silver medal at the Arts and Technology exhibition in Paris in 1937 [20]. They also won two competitions that were important to national identity – for the design of the surroundings of the Piłsudski family manor and park in Zułów (1935, built up to 1938), as well s the surroundings of Marshal Piłsudski Mound on Sowiniec Hill in Krakow (1937, construction halted by the outbreak of the war). She was very active after the war. She designed, among other projects, the areas of greenery near the W-Z Route, the design of the reconstruction and refurbishment of the Saxon Garden (with R. Gutt), the design of People's Park, numerous greenery designs for housing estates and the garden of the Embassy of the People's Republic of China. In 1948 she became a founding member of the International Federation of Landscape Architecture (IFLA) and was a delegate of the Polish Architects' Association to the IFLA for many years.

The most famous of Krzywda-Polkowski's completed garden projects is the park "in the memory of Chopin" in Żelazowa Wola. A. Scholtz cooperated with him on the design. A park-monument was built, surrounding a manorial complex – the place of Chopin's birth, with the programme featuring, among other elements, a mausoleum and a stage for music performances. The complex was designed in the current of preserving national heritage. Polkowski paid particular attention to creating an appropriate atmosphere. He fully used the possibilities provided by the slightly sloping terrain with the picturesquely regulated Utrata River. A unique modernist garden was established, designed while utilising knowledge of contemporary trends in landscape architecture. Polkowski programmatically departed from the then-current tradition of the rural landscape park. He designed diagonal layouts, perfectly using rhythm and asymmetry. He used pergolas, terraces, small masonry walls and pools of water with an architectural frame – a rectangular pool in front of the entrance – in order to obtain a mirror-like effect, and the recessed Czarny pond. Loose shapes of greenery were superimposed on the rather regular layout. Plants from many Polish nurseries were used in the design, with most of them being donations. Several or perhaps even around a dozen thousand plants were collected, with the garden becoming an arboretum [11, *47*]. Quite a lot of coniferous plants, cover plants, as well as perennial and rose plant beds were used, with cut forms used alongside colourful fields of naturalist plantings. The architectural details in Żelazowa Wola are unique, including gazebos, small stone walls, columns, pergolas, the fence, the stage, the bench with a sitting space, but primarily various types of paved surfaces. They feature excellent material solutions. The masterful combination of a multitude of materials that produced a harmonious effect of a coherent whole is truly amazing. Traditional craftsmanship and construction work is at its peak here. Many of the elements were built on-site. Polkowski used, among other things, thick field granite, fired sand and lime brick, clinker and cement [27]. The park furniture has contrasting colours, e.g. brick set against a white concrete floor surface in front of the manor, brick set against the grey of flushed concrete or the painted details of the gazebos and the stage for music performances (ultramarine-coloured grout). Polkowski also strived to give structures a picturesqueness through the tectonics of their massings and various material combinations that are visible on the curbs surrounding the paths, in the fence (built out of various materials that is very visually expressive thanks to the shadows cast by its complex shape) as well as in the massings of the gazebos [47].

These modernist park-monuments were highly praised by Gerard Ciołek. When reporting his stay at the Essen horticultural fair of 1938 he regretted that Żelazowa Wola, Sowiniec and Zułów had not been exhibited there, stating that they "would have undoubtedly been hailed as outstanding against its background" [6].

Gerard Ciołek (1909–1966) – an architect and planner, historian and conservator – played an outstanding role in the protection and conservation of monuments of garden design, as well as of the cultural and natural landscape during the post-war period. He graduated from the Faculty of Architecture of the Warsaw University of Technology in 1936 on the basis of his diploma project: *Design of a park of cultural entertainment and recreation*. He started working on surveying Polish gardens already before the war. Ciołek amassed an immense archive: hundreds of plans, copies, measurement annotations, excerpts and notes, photographs, etc. collected in the so-called Ciołek Files (with over 7000 entries, including around 2000 plans of historical parks and gardens). He started gathering materials during the

war. After the Second World War he became the head of the Department of the Protection of the Landscape and the Home Lands at the General Directorate of Museums and the Protection of Historical Monuments. A campaign of the registering and documentation of garden layouts was set in motion thanks to him. The archive constituted an excellent research toolset for the investigation of historical garden layouts in Poland against the background of European art. The studies were crowned with his most famous work, *Ogrody polskie* (1954). Ciołek created the methodological foundations of the refurbishment and reconstruction of historical gardens – "The conservation of gardens is a novelty here and the work that is being done today is pioneering, both in terms of research and study methods, as well as in terms of actual work /../ In a historical garden, regardless of its style, the most important value is its composition, its intended spatial layout, within which the plant material constitutes but one of many elements that together form a harmonious, complete whole [3]". Ciołek was the author of refurbishment designs of around a hundred historical gardens, including, among others, Arkadia, Baranów, Jabłonna, Łańcut, Nieborów, Wilanów, Puławy, Rogalin. In the post-war period manorial and park gardens were, due to political changes, an uncomfortable subject. They were perceived as a symbol of predatory landownership and often left to be destroyed. Many of them did not survive, with only the charts in Ciołek's File recording their fleeting beauty.

Ciołek was assigned to Krakow in 1948 as a deputy to a professor at the Faculty of Architecture of the Polytechnic Faculties of the AGH University of Technology, from which the Cracow University of Technology and its Faculty of Architecture separated themselves in 1946. In 1954 he was appointed *profesor nadzwyczajny* and the director of the Chair of Spatial Planning of the Cracow University of Technology, and after the reorganisation of the chairs and divisions he took the post of the newly established Chair of the Planning of the Landscape and Green Areas. Professor Janusz Bogdanowski was one of his students.

**The problem of education and the scope of the work of landscape architects in Poland**

The problem of the education of landscape architects was mentioned several times in pre-war publications, in addition to publications on the subject. Teaching garden design and the broadly understood gardening department were also treated with much care. Edmund Jankowski had particular contributions in the latter. The problem became more prominent after Poland regained its independence. Z. Hellwig and F. Krzywda-Polkowski [37, *17, 28*] expressed their views on the matter of landscape architects.

F. Krzywda-Polkowski was the first to introduce landscape architecture into university-level education at the University of Life Sciences in Warsaw. During the 1930/1931 academic year the Gardening Faculty Council of the University of Life Sciences commissioned F. Krzywda-Polkowski, a professor of architecture, to establish a Division. Previously, during the 1929/1930 academic year, the Faculty of Gardening formed a specialisation in the arrangement of parks and gardens, whose beginnings were the lectures and classes on park studies as a part of mandatory practical classes for students during the 1928/1929 academic year. The legal basis for the establishment of the specialisation was the ordinance of the Minister of Religious Denominations and Public Enlightenment of the 26.IX.1923 § 5, which called for there to be two primary study courses at the Faculty of Gardening of the University of Life Sciences: a utilitarian and decorative one. The classes of the decorative course included: detailed park studies, establishing and maintaining ornamental gardens, urban horticulture, garden architecture, plan draughtsmanship with perspective drawing and painting. During the 1935/1936 academic year the landscape architecture specialisation found a building for itself in Warsaw at Rakowiecka Street. Up to 1939 its lecturers were: professor Krzywda-Polkowski – Division director, R. Gutt, R. Adwentowicz, K. Tomorowicz and A. Scholtz, one of the first female graduates of this specialisation [20]. As we can see, the specialisation developed quite well up to the Second World War.

There was also observable activity in the community to improve the then-current state of knowledge on landscape architecture. Addressing the gaps in the education of municipal gardeners and assuming that the matter of plantations was not duly appreciated and poorly handled, attempts were made to change this by running supplementary education courses. The Society of Polish Urban Planners organised the "First supplementary education course for municipal gardeners" in 1935. Its curriculum shows that outstanding designers and practitioners who cared about the beauty of greenery in the city were involved, expressing this care through improving the qualifications of municipal gardeners [29].

**Conclusions**

A brief and incomplete overview of the beginnings of landscape architecture in Poland has been presented here, as well as a review of works across all scales – from planning to architectural detail. It was a time when landscape architecture built up and reinforced its position among the design arts. The designers who represented it were finding their place between architecture and urban planning and the main subjects of their designs were parks, gardens and

various types of areas of greenery, the external surroundings of buildings and areas of rest and recreation. It is clear that landscape architecture is one of the most diverse and multi-threaded disciplines, in which two strong and equally important currents exist: the natural and cultural one. The search for the name of the profession and the design experiences of practitioners coming from different specialisations confirm the complexity of the profession and show its interdisciplinary character.

Landscape architecture developed along with new design tendencies, technologies, new plant strains and species, new construction materials. Works of interwar-period architecture in Poland represent a high level of artistry, innovative solutions and perfect craftsmanship. There is a group of designs in which national identity became particularly important, building symbols through forms and the relations between architecture, urban design and plant material. It was believed that graduates educated in landscape architecture, upon finishing their studies, would be able to "put an end to the further dominance of ugliness and senselessness in our civilisational system [18]".

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**Kopsavilkums.** Pētījumā aplūkots laika periods no 19. gs. beigām līdz 20. gs. 50. gadiem. Rakstā atspoguļoti poļu ainavu arhitektūras pionieru panākumi, kas tiek asociēti ar vairākiem dizaina, plānošanas, vides aizsardzības un profesionālās izglītības aspektiem.

Lielākajā daļā Eiropas valstu ainavu arhitektūras attīstība kā atsevišķu profesija ir datējama ar starpkaru periodu. Mūsdienās ainavu arhitektūra kā atsevišķa nozare Polijā netiek apšaubīta, tomēr vēl salīdzinoši nesen šis temats starp poļu speciālistiem bija ļoti diskutabls. Diskusijās iesaistījās dārzkopji, praktiķi, zinātnieki un populisti no dažādākajām nozarēm, lai debatētu par profesiju un speciālistu sagatavošanu. Viens no pionieriem - Zigmunts Helvigs (*Zygmunt Hellwig*), rakstīja: "Es ticu, ka ainavas veidošana ir māksla un zinātne, kas šobrīd ir pilnīgi patstāvīga, izaugusi līdzvērtīgi no dārzkopības, arhitektūras un citām līdzīgām nozarēm, kas vairs nevar ietilpt ēku arhitektūras profesionālās sagatavošanas un kvalifikācijas rāmjos." (1935. g.) Ainavu arhitektūra kā profesija attīstījās ļoti dinamiski. Tika izstrādāti nozīmīgi projekti, kas šobrīd tiek uzskatīti par ikoniskiem, piemēram, Železova Vola (*Żelazowa Wola*), pieminekļu parks un Skarijsževki Parks (*Skaryszewski Park*) Varšavā. Dārzkopības gadatirgos lielu nozīmi ieņēma dārzu plānošana. Pilsētas lepojās ar sasniegumiem, veidojot publiskos parkus. Universitātes izglītības programmā iekļāva ainavu arhitektūru kā atsevišķu profesiju. Franciszeks Krzivda-Polkovkis (*Franciszek Krzywda-Polkowski*), kas bija guvis izglītību kā arhitekts, bija pirmais, kas iekļāva aianvu arhitektūru universitātes mācību programmā, organizēja un pārvaldīja Ainavu Arhitektūras un Parku Zinātnes nodaļu Dabaszinātņu Universitātē no 1928, gada. Viņš pasniedza lekcijas Varšavas Tehnoloģiju Universitātē. Viņa studenti Alina Šoltza (*Alina Scholtz*) un Gerards Cioļeks (*Gerard Ciołek*) deva ievērojamu ieguldījumu Polijas ainavu arhitektūras attīstībā.

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# Landscape conservation in the research and development of the Krakow School of landscape architecture from 1970s to 2017 – from Jurassic landscape parks to cultural parks in Krakow

Urszula Forczek-Brataniec, Zbigniew Myczkowski, *Cracow University of Technology*

**Abstract. It has been almost 70 years since, when "atlantis" of the Cracow's School of Landscape Architecture professor Zygmunt Novák put forward the first idea of creating a Jurassic Landscape Park as an area where the landscape is protected in order to ensure a rest for people in the beautiful nature and culture of the surrounding great cities. Since then, his pupils and successors have created a school based on a characteristic methodology, approach to the landscape. The idea was continued in conjunction with the changing technologies and possibilities. As a result, a set of good practices was created that characterized Krakow's school of landscape architecture and emphasized its pragmatic nature.**

**Keywords: Krakow's school of landscape architecture, landscape parks, cultural parks, cultural landscape**

It is already close to 1970s from the time when the "atlantes" of "Krakow School of landscape architecture" Professor Zygmunt Novák [6] put first the idea of creation of a Jurassic landscape parks, as an area in which protects a landscape to provide leisure in beautiful nature and culture in an environment of big cities. Alluded to the world sources of landscape architecture, the "father" of F. L. Olmsted Sr., whether the definition of Ch. Eliot, who said, that the priority of the function of landscape architecture, which is "to create and protect beauty."

Landscape, according to statements by Zygmunt Novák [6] is a synthesis of all the developments in the human environment; natural and cultural heritage. This includes "the face of the Earth" [10] – "new heritage a new civilization", which we will leave to the next generations.

Landscape is the physiognomy – the expression of environment, the reflection of all phenomena occurring on the surface of the Earth [1]. The environment-both natural cultural-is about the identity of the place, and its external expression is landscape. You cannot, or hide, or to see the landscape, although it can be for its beauty, or at least, more or less sensitive. It always press on human beings, even if only in the realm of the subconscious mind. It is difficult to us to remain indifferent to the beauty of the mountains, the village or the historic town. After all, just knowing that somewhere in the country is beautiful – we take a trip there and the de facto is in things hits to its landscape, for example, the

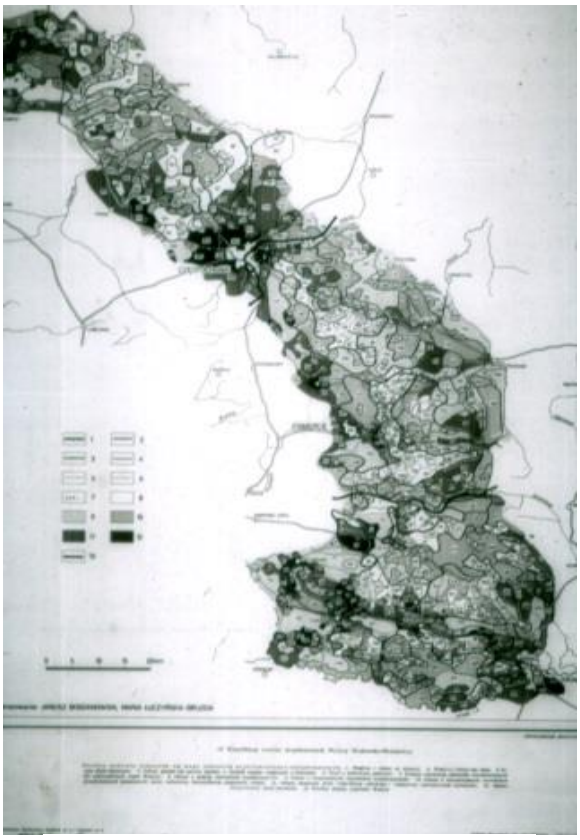

*Fig. 1. Pioneering vision plan Jurassic landscape parks stretching 150 km north of Kraków. Created by Z. Novák, M. Łuczyńska-Bruzda and J. Bogdanowski, 1970.*

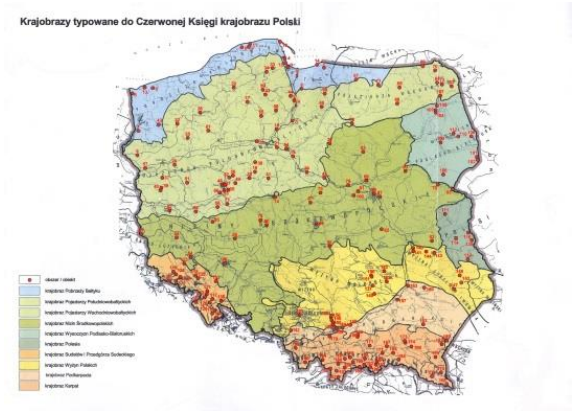


*Fig. 2. The arrangement of the predefined typed landscapes to be included in the Red Book of Landscapes Polish. M. Baranowska-Janota, R. Marcinek, Z. Myczkowski, Kraków, 2004.*

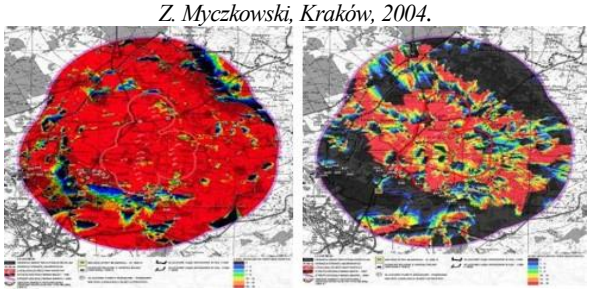

*Fig. 3. Comparison of exposure potential and actual team proposed wind towers in the municipality of Wieczfnia. U. Forczek-Brataniec, P. Nosalska , 2008.*

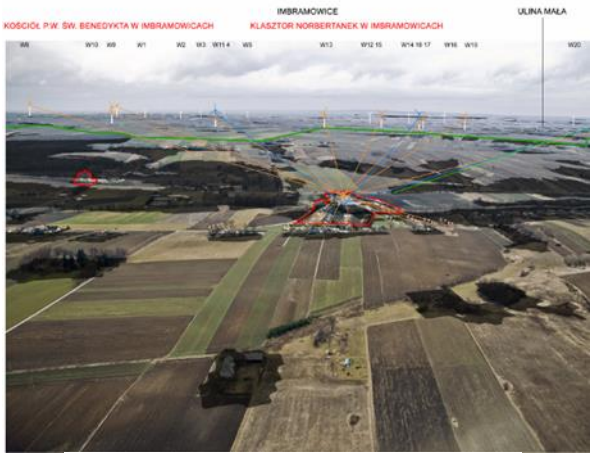


*Fig. 4. An example of visualization of the guidelines for the proposed wind towers [U. Forczek-Brataniec, P. Nosalska 2008].*

Baltic coast, the Tatra mountains or the historic town of Toruń, Krakow or Krakow–Częstochowa Jurrasic Highlands and harmoniously formed extensive agricultural countryside of Opole region or lower Silesia. You should also realize that the natural monument or historic building, which so we value is the only element of the landscape [8]. In our environment we are dealing with the natural landscape, which is the work of nature, and of the cultural landscape, which is be creation thought and human hands but most often, with mix of sorts of their good or bad interfere. Aptly had recognized it Gutherson [2], writing that landscape is the expression of the human economy. Therefore, the good economy is the basis for harmonious landscape, evil is devastated, and vice versa: devastation of the landscape is an expression of bad economy. This statement is completed by Professor Kostrowicki [4], saying that: "you can false the statistics, reports, documentation – in case of landscape it is not possible – he always tells the truth about us and our economy and management."

One of the primary tasks facing the modern hosting landscape – Government authorities and local self-government seems to be taking care of his harmonious, Marks half a century since the position of the foundations for the formulation of one the most original and the most durable methods of registration, evaluation and the formulation of guidelines for landscaping. This is the method of architectural and landscape architectural and interior design-units-landscapers (JARK and WAK). Designed and developed in a team of landscape architecture at the Faculty of architecture, under the direction of Prof. Janusz Bogdanowski, Prof. Maria Łuczyńska-Bruzda – was before 40 years implemented and checked various tasks and scales the spatial Method of 1970s . was also an element of didactics-first at the level of the theses, and over the 1990s, also on the design landscape architecture range exercises foreign exchange at the Technical University of Cracow, AGH University and at the University of Agricultural in Krakow.

In the 1970s the professors Z. Novák, M. Łuczyńska-Bruzda and J. Bogdanowski developed the first plans – functional Jurassic landscape parks at the Faculty of Architecture of Technical University of Cracow. In the 1990s J. Bogdanowski, M. Łuczyńska-Bruzda and Z. Myczkowski are co-authors of the Government statement for security plans of national parks, and then are the main authors of the documentation for the Bieszczady National Park, the Tatra NP, Pieniny NP (with the U. Forczek-Brataniec). Breakthrough of the 20th and 21st centuries resulted in, inter alia, A National Programme of Landscape Protection Historical (maintained by J. Bogdanowskiego) and monograph cultural landscape of Małopolska region [9].

Almost parallel to the ratification by Poland in the year 2005 the European Landscape Convention from the year 2000 – 2008 year in the National Centre of Research and Documentation Monuments was launched for the implementation by the year 2015 the program protection landscape Polish culture. It is in part a continuation of the national programme "protection and maintenance of the historic cultural landscape" carried out in the years 1996-2000 by the professor Janusz Bogdanowski, which recognized approx. 88.5% of the country [5]. At the same time, are at the beginning of the 21st century, records an entry in the list of UNESCO and their projects

(m.in. Gothic wooden churches of lesser Poland (J. Bogdanowski, M. Kornecki, Z. Myczkowski. Marcinek, A. Siwek, 2003).

In the year 2005 in the pilot project "Red Book of the Polish Countryside"/M. Baranowska-Janota, Z. Myczkowski, R. Marcinek/at the State Council for the Conservation of Nature by the Minister for the Environment were the most valuable areas 198 landscape on the background of the more than 400 at issue. Can be assessed, at least 50% of a high value and distinctive cultural landscape in Poland is at risk of intense transformation.

Consists of no first of all: very low security areas in local land-use plans that do not cover even 80% of the country. Consequently, dispersion and freedom of action on the basis of the decisions of the land.

At the turn of the first and second decades of the 21st century, the authors of this speech did numerous landscaped expertise in Visual impact of wind farms and other infrastructure facilities in the landscape. The distinctive factors in these analyses is the exposure potential and actual, active and passive [3].

For the detailed examination of the impact of observation under the strongest impact of the investment shall be made digital terrain models with a range of 5 km, which allows you to assess the potential and actual observation range objects and check for interference with the view of the most valuable areas. Very interesting effect was obtained by comparing the map visibility towers made for exposure potential is based on the terrain of the real exposure-taking into account the elements of the cover in the form of wooded areas and buildings. A summary of these maps allows you to see the clear differences in the degree of interference with the observation made in the size of the red and black stains.

Studies have shown that exposure to wind towers with a height of 140 meters nacelles axis objects beyond a certain distance become essential elements of the cover in the form of wooded areas and buildings. Even so, a significant difference in altitude does not diminish the role mask of tree stands. Work on the model made it possible to convert the cartographic data to numeric data. The visualizations are the level of wind towers to be interfered with in the landscape.

You can confirm that a more appropriate place for spatial structures in the form of team's wind towers are sites with diverse topography. On the flat areas of the windmills are seen from the large areas, which presents a lot less aggressively than those located above, for example on the highland. The surrounding extensive landscape provides a context, soothing the actual dimensions of the objects. Infrastructure elements visible within 35 km take over the main role of display. Become the so-called the visual element of the main roads, hiking trails, bike paths and any surrounding strings. Windmills are taking in this context, the role of landscape character area.

In June 1993 year came a message from UNESCO, to serve a known "World Heritage list" also cultural landscapes on the CSCE Conference in Krakow, 1991 year, at the request of the Polish typed was first postulate about the need for the inclusion in the scope of concern for European heritage.

When today we talk in Europe about the homeland regions, closer to the familiarly known as vernacular forms as in the more generally as local and topical, what better this example and write. Today also, when floods us cities beautiful-the sophistication of bizarre shapes often architecture, passive and ugliness is replaced by aggressive, brutal forms, it's time to realize the relevance of the idea of "fighting a real culture against quasi culture". The protection of the cultural landscape in the form of 22 existing cultural parks provides for the establishment of a further 250 in provincial programs and strategies for the preservation of historical monuments including more than 150 initiatives.

In the following years are also exemplary, award-winning Cultural Parks protection plans (Downtown in Krakow, K. Wielgus, U. Forczek-Brataniec, Z. Myczkowski and others, 2013), Nowa Huta (2016) and currently Work in Zakopane (2017). Cultural Park protection plan "Downtown" in Krakow was established on the basis of the best-known development of historical, archaeological, architectural, planning, nature and landscape, which was made for the same area [10].

Cultural Park protection plan greatly expands the controlled statutory character and contents of the plan, therefore, the study uses a different method of allocation, valuation and define guidelines, than starting materials plan the local. In the first place, in the development of a security plan, the division of the old town was based on criteria taking into account the record of past and ongoing process here. The division has allowed to identify areas with consistent characteristics, however, the various components of the urban landscape. In place of the mechanical breakdown on the streets, blocks and green areas-areas was obtained consistent in terms of origin, use, form, size of objects – and hence, with similar conditions and problems not only conservatory-protective or the scenic, but also for example. social, or associated with the intensity of tourism.

The complexes with similar characteristics are combined in larger areas, named landscape models of the old town. About their identity and distinctiveness are both differences in the structure of the building, as well as various scale and scenic aspects of the meanings. Exposé means the most important openings and viewing links is another feature specific


*Fig. 5. Park protection plan Cultural Park of Downtown in Krakow*
*Created by Z. Myczkowski, K. Wielgus, U. Forczek-Brataniec, K. Latusek, K. Chajdys, P. Nosalska, W. Rymsza-Mazur, O. Zapolska, 2011.*

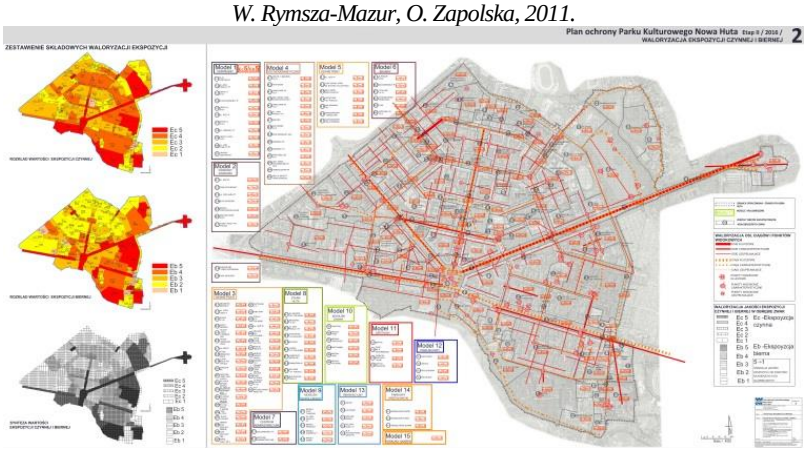


*Fig. 6. Protection plan of the Cultural Park of Nowa Huta in Kraków. Created by Z. Myczkowski, K. Wielgus, U. Forczek-Brataniec, K. Latusek, K. Chajdys, R. Marcinek, A. Siwek, P. Nosalska, W. Rymsza-Mazur, 2016.*

*Fig. 7. Protection plan of the Cultural Park of Nowa Huta in Kraków,*
*the concept tree stand reconstruction in order to uneveiling the frontage of the square.*

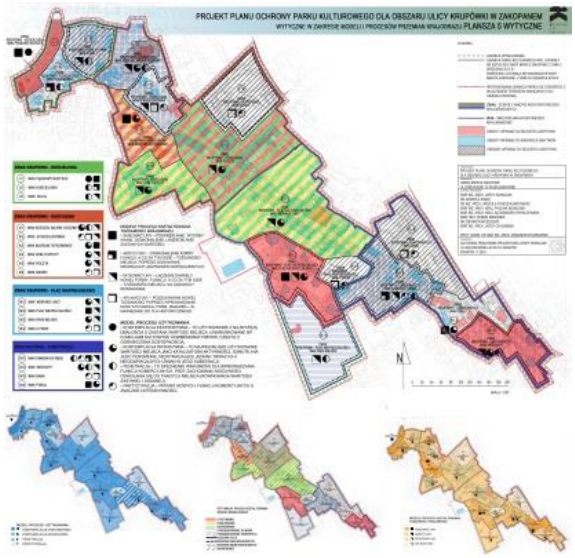

*Fig. 8. A Cultural Park in Zakopane Krupówki. The Protection Plan. Guidelines by Z. Myczkowski. J. Wowczak, U. Forczek-Bratanec, R. Marcinek, A. Siwek, P. Nosalska and A. Rykaczewska, 2017.*

*Fig. 9. A cultural Park in Zakopane Krupówki Protection Plan Visualizations of the current status and proposed after regeneration. By U. Forczek-Bratanec, P. Nosalska 2017.*

Cultural Park protection plan, to differentiate it from other documents, for example – the local spatial plan.

Based on the valorization, directional guidance landscaping for individual teams decor architectural and landscape, by specifying for each type (such as courtyards, courtyards, streets, gardens), occurring in the Assembly. Guidelines for individual teams' decor and landscape models compared then with the detailed provisions of the local plan and assigned individual, as defined by the plan of action is to specific, individual portions of the city. It was formed in this way a kind of "dictionary" activities, reaching more precisely in the problems and needs of the city, divided into easier in the diagnosis, management and monitoring of the operational areas.

Cultural Park protection plan captures great detail trends of use of, data part of the transformation, the scale of risks and potential investment pressures but the directions of the active use of the best, and often untapped aspects of attractiveness. This tool can develop and updated at the level of the management plan for the Park. Ways to manage are particularly important for the management of protected areas in the highest values, covered by the entry in the list of monuments of history and heritage.

The Krakow cartridge research workshop and methodical landscape architecture is leading both in terms of documentation, as well as deployments of these pioneering implementation of regional, national and international scale.

Observing what is happening in the field of the protection of the landscape in the world, in Europe and in Poland – it can be stated that, as it were, in front of the landscape diversity "comes out" the plurality and diversity of forms of protection. Nature protection, which, as it were, "ahead" in Poland to protect historical sites identified in the last version of the Act on Nature Protection act of 16 April 2004 year – the scenic landscape, as the value of the ecological, aesthetic or cultural area and the related sculpture the site, from and nature shaped by the forces of nature or human activity. For their protection in article 16 confirmed laid down from the beginning of the eighties the landscape protection area is a landscape park, which according to the statutory definition includes a protected area due to natural values, historical and the cultural and scenic landscape in order to preserve, promote these values in terms of sustainable development. Currently we have in Poland more than 120 of landscape parks, which account for more than 7 percent of the country.

In turn, the Act on the protection of monuments and the care of monuments from 23 July 2003 defines the cultural landscape as historically shaped as a result of human activity, including the creations of civilization and natural elements in many environments, there have been a great interest in creating this type of tool, used both the renewal of the values of cultural heritage and their use for economic stimulation, especially for the development of tourism. To meet the increasing social demand of.

Institute of Landscape Architecture Cracow University of Technology, undertook the development "principles of creating cultural Park, its management and draw up a plan for its protection". It was indicated in the proposals for action do not constitute a provision specifying the need to develop a set of specific documents or take the necessary steps required by law.

At this stage, putting the first steps by both the local and regional authorities, as well as restorers and cooperating in creating cultural parks professionals and social groups, difficult or even impossible to predict what problems retained, the social, economic and organizational need to face. In the "Rules" indicated was the scenario of issues and activities developed on the principle of "step by step", which probably will further improve in the next few years, as you gain experience, which will bring the process of creating cultural parks Poland.

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**Kopsavilkums.** Ir pagājuši gandrīz septiņdesmit gadi kopš Krakovas Ainavu Arhitektūras skolas leģenda un profesors Zigmunds Novāks (*Zygmunt Novák*) radīja ideju par Juras Laikmeta Ainavu parka izveidi, paredzot to kā vidi, kurā ainava ir pasargāta un baudot kultūru, nodrošinot cilvēkiem mierīgu atpūtu dabā. Kopš tā laika viņa mācekļi un pēcteči ir izveidojuši skolu, kas ir balstīta uz ainavām raksturīgām metodoloģijām. Ideja ir radusi turpinājumu, izmantojot mūsdienu attīstītās tehnoloģijas un iespējas. Rezultātā ir iegūti veiksmīgas prakses piemēri, kas raksturo Krakovas Ainavu Arhitektūras skolu un izceļ tās pragmatisko dabu.

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# Exploration of tourism potential doing concepts of development and heritage preservation issues of Zonouz city

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**Abstract. Zonouz city and its neighboring counties, including three counties and eleven areas, are located in the southern area of the Araz River in Azerbaijan and northwest of Iran. This city has many capabilities in terms of geography, civilization, and tourism, which can be considered as an advantage in urban development.**

**The development in the city is a process occurs by relying on introversion and utilizing extraversion, among which urban regeneration can be highlighted. Thus, recognizing the components of empowerment is one of the main purposes. Applying the rules and observing the necessary principles reduce costs and increase productivity in development.**

**The present study aims to study and compare the advantages of the city, which have more centrality and relative abilities than the peripheral cities, with those cities having the same geographical and cultural characteristics, and the least distance from the city, in an integrated and complementary collection in the tourism industry.**

**Considering that different multi-city managers should similarly play a role, the appropriate reason for their participation can be balanced development and utilization from common interests. This benefit can be achieved based on the management and exploitation of natural and historical attractions, the results of which are synergy and improved performance and exploitation power from the interests.**

**To this aim, the tourist abilities and natural and tourist attractions of the complex are identified and studied, and the results of the analysis are analyzed. The conclusion can be made based on using natural geography and cultural heritage advantages to protect historical buildings and textures better, along with a balanced development of a series of neighboring cities.**

**Keywords: Zonouz, tourism development, architectural theories, architectural conservation, central district**

## Introduction

Historical cities that possess architectural and urbanization works, have been created due to the presence of geographical and human conditions, playing urban and extramural roles during their lifetime. Cities are not independent elements. Following interactions as well as give-and-takes with other population points, they can always develop. City potentialities are not merely limited to the possessions within its territory, it rather depends on meeting other points' demands and its influence is more on the possessions within the city. This feature depends on urban management, professional and efficient human force, service centers, ad geographical area, also being influenced by metropolitan management.

Zonouz is a city in East Azerbaijan Province with a millennia-old history [16]. Meanwhile, the city possesses much natural wealth with its historical landmarks being quite considerable and abundant. Its historical tissue, historical villages, and cultural landscape, which independently are candidates of being registered in UNESCO's world list, allow the city to turn into a powerful tourism center [14]. However, something that has not received any attention so far and every now and again has damaged its set of geographical and artificial possessions. While we can expect that the existing potentials of the city are capable of its growth and development and through necessary interaction with its surrounding cities helps their simultaneous development, too.

The present study tries to find out that in which conditions can rely on its geographical richness as well as surrounding settlements and – along with architectural and urbanization works – make tourism the axis of its development. Can geographical abilities in terms of tourism supply the beginning goals of the city's economy and by means of that restoration of the damages inflicted on historical tissue so that the main economic axis of the city is based on tourism income? And do surrounding cities possess the necessary position and interest for convergence and formation of a powerful center? In this case, how will be design management as well as the distribution of costs and profits among cities, for which Zonouz plays the role of a hub?

Since Zonouz will play the role of the hub for the surrounding cities, it should have necessary conditions in terms of powerfulness along with tools and instruments, for its possessions should be in a way that surrounding cities' managers will gain the necessary profits from convergence [17]. As a result, identification and analysis of tourism as well as evaluation of Zonouz's potentialities need to be studied so that the assumption of playing the role of the tourism metropolis, which is in the present research structure, is proven. Afterwards, motivating

and giving trust to the managers of cities that participate in the design is another step of the present study, since the independence of surrounding cities' management along with their motivation to take part in the design, by itself, needs analysis and evaluation of utilizing the results of participation by surrounding city's managers. This requires studies on convergence and convergence-based synergy. It also needs making sure about economic interests as well as maintenance of architectural works, located in that area and will supply the necessary infrastructures such as communicative axes. The final section of the study will concern an analysis of the study's findings and results and will state their advantages and disadvantages along with the implementation methodology.

**Research Methodology**

There was necessary to collect data via survey of city and geographical potentials since there is impossible to collect data by library study in several seasons. In order to answer the research's main question, i.e. utilization of tourism development in maintenance of cultural heritage of Zonouz and its surrounding cities, and answer secondary questions, it is needed to conduct library-based studies and field data-collection in order to make the necessary identification and, through data analysis, reasoning, and deduction gain the expected results, in which a comparative method can also be useful for further enrichment.

As this is first study about Zonouz city in tourism purposes, all information presented about the city are collected by authors directly from Surveying in different parts of city.

**Tourism potentials of area**

According to development planners and policy makers, tourism industry is the main pillar of sustainable development. Due to its extensive use, the term “sustainable development” has been described in various approaches [3]. In general, development is the transformational process of relations between governments, on one hand, and social, economic, and natural systems, on the other [5].

Given the importance of tourism industry, not only the social, cultural, and political factors, but natural and environmental factors play an important role, developing tourism industry and tourist attraction. In fact, tourists use a geographic space with a physical and natural structure, including the biological factors such as climate, geology, topography, and flora and fauna, as well as factors, created by human activities including construction and pilgrimage facilities. The arrival of tourists to any area leads to the creation of a series of jobs at the macro-level, causing social and cultural development.

In today's world, tourism industry has gained many countries’ attention as a clean industry which is the third dynamic, thriving, and developing economic phenomenon after oil and automotive industries [3].

Tourism is an industry, the development of which requires enough awareness and knowledge of the effective economic, social, and cultural factors. Without knowing about available facilities in each area, it would not be possible to make plans and predictions, scientifically. Indeed, knowing the social, economic, and natural potentials of each area enables the policy makers to identify its development and direction, based on the current situation and capacities of the region [19].

Considering the practical nature of tourism industry, and in spite of technological improvements in the world, this industry is still based on the significant role of manpower, which becomes still more important in countries with high rates of unemployment that possess the requirements (such as social, historical, and natural resources) to develop its tourism industry. Therefore, we can consider tourism industry a solution to deal with unemployment crisis and in turn reduce inequality and challenge poverty. By improving the local economy, increasing job opportunities, improving investment policies, developing proper infrastructures, increasing tax income, etc., tourism industry can have a huge influence on economic development [7].

Sustainability and development of tourism requires a proper system of education in each country. Using the significant role of human resources for the purpose of tourism industry development, which results from appropriate education, national and local economy of each country can grow rapidly through raising skill and knowledge levels of the local residents. Management training and appropriate use of the environment are some factors to gain sustainable development. Additionally, it will be quite useful to develop a management major in universities in order to scientifically reinforce this industry and motivate the private sector through establishment of colleges and professional institutes, offering tourism and hospitality courses for the sake of developing human resources in this sector [15].

The addition of sustainable features to city tourism is due to the extensive side effects of the tourism development plans in the cities. This issue is efficient only when the four directions of the development, i.e. cultural, environmental, social, and economic development, are defined in national and international levels and in mutual relations between cities and citizens. Alongside social and economic effects of this industry on cities and citizens, what is crucial for sustainable tourism development is the importance of continuing tourism programs over time (for future generations), not to mention the impacts of its development on the geographical location (for the environment).

Cities are the symbols of civilization in human environment. They evolve, as time passes, based on their territorial phenomenon in a dynamic yet balanced way. They have historical values and their historical structures are regarded as a valuable heritage, alongside their modern structures. Because of the nostalgic, architectural, and cultural attractions as well as historical values which are the symbols of social, religious, and economic conditions of that time, historical structures are among important tourist destinations.

Through presentation of tourist attractions, tourism industry attempts to introduce natural landscapes, while maintaining the local identification. Considering the mutual relation between tourism development and reconstruction of historical structures, utilization of cultural and historical heritage includes many economic, social, and cultural interests for the countries involved. Since the most essential condition of development in any society is security, peace, and stability, they are the first criterion to attract tourists, their related components [15] including national and social security, healthcare, environmental cleanness, and other tourism standards. The standard tourism services are meant to achieve tourists' well-being and convenience during their stay. Therefore, by designing some accommodation complexes in historical contexts, we can attracts a great number of tourists and by re-identifying historical and architectural patterns and using them in modern architectures, we can obtain a plan to revive our ancestors' culture, saving it from destruction. For this purpose, the paper firstly deals with the main concepts, related to this issue, then, in addition to state the importance of the residential locations in the historical contexts for development of tourism industry, the relation between these places and tourism development is studied.

In terms of regional construction, making tourist poles in regions with sufficient resources and attraction significantly helps developing tourism industry there. Accordingly, by creating new jobs and adding resources, we can make income and enrich regions that have high tourism potential yet are experiencing a recession [4]. This, in turn, will reduce rural-urban migrations. Furthermore, by transferring cities' purchasing power to other regions, tourism industry can balance the economic income. It can also increase the local and regional businesses. Despite abundant natural and tourist attractions and sufficient resources, the places, studied in the present paper, could not be identified as tourism center; mainly due to different kinds of problems, including lack of familiarity with tourism industry, inappropriate residential places, problems related to access paths, insufficient investment to develop and equip tourism-related facilities and implement worthwhile tourism projects, and lack of appropriate advertisements. Identification and introduction of tourism attractions in this region are primary steps to develop ecotourism and, consequently, achieve sustainable development.

The presence of 26 perfect natural tourist attractions and natural history monuments (Fig 1); dozens of rare species of plants; a variety of animal species, some of them quite rare; suitable climatic conditions; worthwhile geographical situations, and developed culture of Zonouz City makes it a perfect tourist resort, all of which have been placed together. From the historical stepped village of Zonuzaq (Fig. 2) to civil context of the Zonouz and Mahar phenomenon, all are capable of attracting domestic and foreign tourists (Fig. 3). In this regard, historical context and monuments and various archaeological sites possess considerable capacity that needs planning.

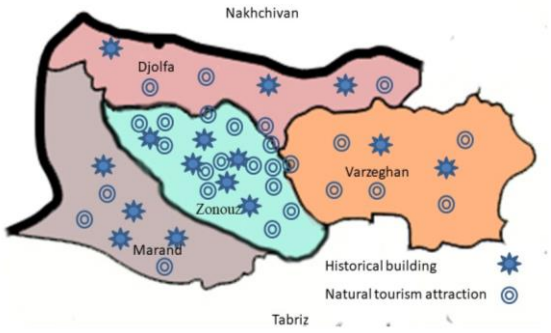


*Fig. 1. The Phenomenon's in research area*
*Created by the authors, 2018.*

*Fig. 2. A panorama view of a part of Zonouzaq village.*
*Photo by Reza Abdorrahimi, 2018.*

*Fig. 3. A panorama view of Mahar*
*Photo by Reza Abdorrahimi, 2018.*

**Some tourism aspects of Zonouz City**

In order to present a clear imagination about zonouz city and its ability in playing a role on development of tourism purposes and be come on hub on adjacent cities have to list some potentials.

Although some sections of the Garden-city of Zonuoz have been severely damaged, the remaining sections and, in particular, the original one can be used as tourism attraction. The city's avenues contain historical landscape.

There is unique civil landscape and historical context in different neighborhoods, located south of the city.

The city features hundred hectares of stepped gardens that are considered a natural monument at national and international level and can be a proper candidate for being registered on UNESCO World Heritage List (Fig. 4).

Alongside the three archeological sites, belonging to old Bronze Age up to Iron Age, and showing cultural material of Yaniqe Civilization (Koura-Araxes culture), this monument incorporates natural, historical, and cultural heritage, gracefully.

Zonouzaq is the largest historical stepped village that can be a candidate for global record in world heritage list of pristine villages such as Daraq, Darndash, KuKamar, Miab, and Horouz, making a unique natural complex in Azerbaijan region to become a reliable pillar in Iranian tourism industry.

Thanks to the mountainous climate and geo-tourism of Zonouz valley, some mountains of Qara Daq, and the natural rocks, Zonouz has great tourism potential. The most significacnt tourist attractions are Sultan Zencir Mountain and Kiyamky Mountain, both with beautiful valleys.

Natural attractions and phenomena such as Aghdash and Mahar along with fertile hillsides of Sultan Zencir Mountain, called Soyouk bulaq, which is hundreds of hectares vast, attract thousands of tourists during the spring. Although tourists come from near or far cities, there is a lack of expert botanists and zoologists. What is more, it is required to preserve the rare species of plants and animals, such as Nagorno-cock, wild goat, and urinal, which takes long-term planning in the region.

Enrichment of sport-related tourism attractions, e.g. mountaineering, rock climbing, kite surfing, grass skiing, and snow skiing are some of the most important steps to attract tourists. Moreover, Zonouz Chay Dam and Chokhourzami Dam make it possible to do some water sports. Although the tourism role of these dams has been reduced, compared to other trends of economy they still can still be useful to be chosen as a nice region for economic activities.

In addition to the mentioned potentials, there are many tourist attractions, some of them serving as the global brand of this city. Although due to the lack of required management, the tourism value of some

*Fig. 4. A panorama view of stepped gardens and their architectural elements. Photo by the authors.*

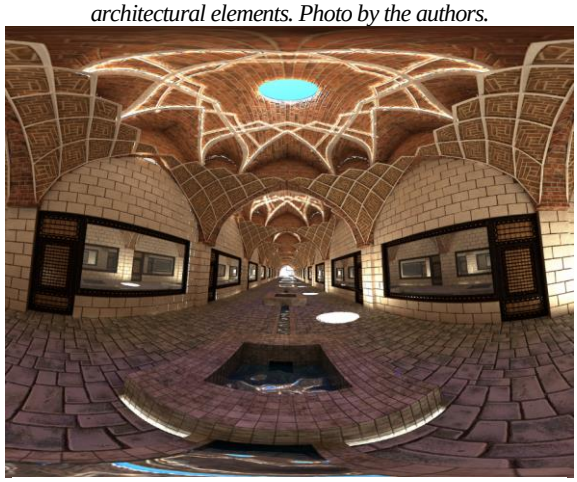

*Fig. 5. Reconstruction of Bazar aims at implying the memories and Restoring the city economic status by relying on the economic activities of the market and its historical role in the activities of the city and surrounding cities where Zonouz market was the field ofcommercial activities as traditionally or historically. Skeleton of bazar parameters can be considered as identity of city too. Meantime it is a part of tourism and city development plan. Created by the authors.*

tourist attractions such as handicrafts and religious and traditional customs have been reduced, especially in villages and their developed culture has been diminished, they still have the required characteristics to promote tourism industry in this city.

The potentiality of job creation and achievement of economic goals; (Fig.5) hence, the numerous potentialities inside and outside Zonouz city can raise it to the first place in tourism industry. This city also possesses the necessary characteristics to attract foreign tourists. Unfortunately, no proper attention has been paid to this subject, so far. Many tourists have selected this city as the final destination, but some visit it while route on Djolfa-Marand transit route, meaning that despite the almost perfect economic, commercial, and tourism investment in DJolfa city, especially in its ruined Church and Mill, it has not been able to succeed as much as Zonouz tourism industry; therefore, we can conclude that Zonouz plays an important role in economic markets of the region, able to obtain a suitable status in the vicinity of the free zone.

Ideal distribution of extensive natural attractions encourages the implementation and acceleration of this plan, whose view for the next 20 years can be described below:

Despite the high potentials of tourism industry, not only does Zonouz profit from this industry, but because of the large number of tourists as well as lack of the required facilities, its tourist attractions are being damaged. It can be claimed if this city had not been introduced as a tourism center, it could have been prepared; nonetheless, with regards to its present status we should try to protect its national wealth as quick as possible [11].

Civil projects and plans with physical nature can have both positive and negative effects on civil culture. Previous experience has shown that any physical project is capable of presenting some sort of social function that may be even more obvious than their physical achievements.

For this purpose, by using a number of criteria the appropriate conditions are developed to identify the gap between the present situation and the appropriate one. There are four main methods to determine the latter: In the first, by means of the senior managers' planning the individual standards are provided; while in the second method, the global standards are chosen practically. The third method compares the cities, whereas the final one uses the indicators of the previous years as a suitable criterion for planning and circumstantial changes.

Citizens are pleased with the betterment of tourism; on the other hand, it has caused some concerns among the citizens, which involves the impacts of tourism on the social behavior and interactions of the city. Zonouz has a developed culture and cannot accept the social anomalies, the tourists bring there. Another concern of the citizens' concerns the damage to their orchards and farms. Although the orchards have not been damaged very much, the farms around the city, especially the ones in Aghdash and Mahar, have been destroyed drastically. Moreover, the provided services, offered by the citizens, seeks to obtain more income. Decision-makers have not been taken this expectation seriously. Finally, in the view of the tourists, necessary facilities have not been implemented in this city.

The concept of development has a broad meaning in different aspects, like economy, society, culture, and policy [5]. Owing to the entanglement of the economic, social, political, and cultural issues in current societies, along with their mutual effects, it seems incorrect to overdevelop one of these aspects more than the others. Then, many of the social and economic theorists believe that economic development has a close relation to other aspects of development [5]. In total, development is a process that includes some changes, performed to flourish and fulfill the latent capacity of the society; however, the concept of development is a subjective concept, for which we cannot present a united definition.

In modern theories of development, it is considered as a concept beyond economic growth, for it is a multi-dimensional process, including different orientations of the economic-social system, totally. In addition to improvement of the product level and income, development includes fundamental changes in the official, social bodies and even people's opinions. In many cases, it includes the customs and beliefs of the people, based on which, all dimensions of human life should be known in order to determine the developmental goals. According to sociologists and political scientists, development is an aspect of reconstruction that establishes the social and political bodies [6]; in other words, it is a transition to a worthwhile situation that might be created in a social system.

By studying the concepts of development, we can find that today there is a systematic definition of the concept. To achieve these goals, there is a coordination between components. Unlike biological systems in which the structure determines the functions, in a developmental system we do not need to accept a structure conclusively, rather the structure of a system can be adjusted in such a way that the system is in accordance with the developmental process. We can claim that the process is more determinative than the structure in the analysis of the system goals, system resources, system details, and strategic planning.

Two sets of external and internal factors are involved in a developmental system. Wealth distribution, organizations, and motivations are the internal factors, which are related to the external ones, such as international, national, urban, and rural factors. Internal factors have mutual relation with each other, too [10].

Based on what has been mentioned, we can say that development is a phenomenon with differing dimensions, each presented in the human life. Generally, all these dimensions have contributed to the improvement process of the human life; however, each aspect of development is important by itself, thus requires a separate analysis.

**The Influence of Tourism in Conservation of Architectural elements:**

Tourism could be regarded as the balanced distribution of economic profits of industrial population centers in target tourism regions. Accumulation of the income from industrial activities in developed regions can be an appropriate source of income for regions that supply tourists' required services and make them have recreational, resting, and refreshing time during their stay. The host society make investments in order to pay for supplying facilities and infrastructures, while expecting return of

the capital in addition to an acceptable interest. Such an expectation in case of more attractions and more convenient services will be fulfilled in shorter time and with higher interest. In regions like Zonouz and the surrounding population centers natural talents and architectural works provide the opportunity for tourists to benefit from their leisure time more. The opportunity of urban actors' programming to achieve city development goals from tourism income brings about some [9] sustainable income as well as the necessary certainty to support and run short-term and long-term programs and thanks to the social welfare from its income, guarantees people participation to a large extent; even though, sometimes conflicts can be observed between the host society and the tourists. As a result, cultural assiduity training for establishment of behavioral balance in the host society can dismiss the mentioned conflicts.

Sustainable income on the first step can deal with issues such as hard and soft infrastructures, meanwhile architectural attractions, capable of increasing tourist attractions, willy-nilly receive urban managers' attention. On one hand, such riches will increase the tourist's interest in those places and, on the other hand, make him pay extra than his journey in order to arrive at that place.

On the other hand, citizens will have necessary sensitivities to maintain geographical possessions and will understand direct impacts of their own national wealth, since business improvement, just distribution of job opportunities, and value added of their investments will realize under its influence.

Thanks to persistent activities of different public and private sectors, the government will be specifically attentive of these regions, facilitating necessary credit facilities through banks and on the other hand, it will incorporate necessary systems and regulations in its design and programs. It will also implement the infrastructures, able to be implemented only by the government, like communicational axes or connection infrastructures.

These three sectors of actors are the ones that believe historical works belong to them and they are responsible to maintain them [20]. When both the circumstances of paying attention to those works and financial capability becomes possible, all three of them will be interested in playing the role of repairing, maintaining, and operating historical buildings and profiting from them. The result will be renovation of some works which had been forgotten once and were going to be destroyed or damaged.

Now, if we take a brief look at tourism potentials of the cities of Varzaqan in the east, Jolfa in the north, and Marand in the south of Zonouz, we will understand that items like its tourist attractions of Sultan Sanjar with Varzaqan, ruined mill and Kurdash bath with Jolfa, and Sanboran attractions and Laleh plains with Marand are currently administered collectively and such cooperation is due to national divisions and none of the towns are able to manage them as well as other shared attractions alone. On one hand, due to their close proximity to Zonouz, being located around Zonouz's geographical area, these towns can expect shared interests with Zonouz from this plan. On the other hand, the attractions, in accordance to single management can be used by tourists entering Zonouz, hence developing the plan's area, in which case the resultant interests as well as the rate of tourist attraction will increase and, simultaneously, the infrastructures for all four towns will be provided, too. This is the very historical reality of the region, too, that the towns around Zonouz had always interacted with one another and had the expectation of synergy in presenting services to tourism as well as benefits for the cities in case of convergence. The group and its surroundings are a dynamic field, the sustainability of which is determined by social factors, like high pressure, barriers' resistance, and the pursuit of certain goals [8].

**Convergence of the Surrounding Towns of Zonouz**

Ernst Haas believes that convergence is a process in which the political representatives of separate units are encouraged to change their loyalty and expectations to a new center. During this process, units move from the relative or total isolation towards the relative or absolute alliance, with their interactions having different dimensions. To determine the center, some notes have the determinant importance. Geographical location of the center is the most important factor, so that all convergent units can be connected to the center. With this analysis, we can say that neighborhood–based selective areas are essential, making it possible overlap different tasks. On the other hand, through convergence, the units can benefit from the management alignment and create larger geographical areas in favor of physical and economic development. In this particular case, geography should be potential for common programming and all units should be located in one province to provide easier access.

In the case study, three counties of East Azerbaijan Province can form convergent units: Marand County with five, DJolfa County with three (Fig. 6), and Varzaghan with two subset towns. These cities have the necessary conditions to become a unified set. The area is limited in the north to Azerbaijan country, in the east to the cities of Aahar and Kaleybar, in the South to Tabriz and Shabestar, and in the West to the city of Khoy.

Considering all tourism potentials, cultural heritage of the Zonouz, and insignificant potentials of Varzaghan in the East, DJolfa in the North, Marand in the West, and South of Zonouz, these cities are able to

promote tourism industry and use the tourism potentials of Zunouz. Therefore, development of

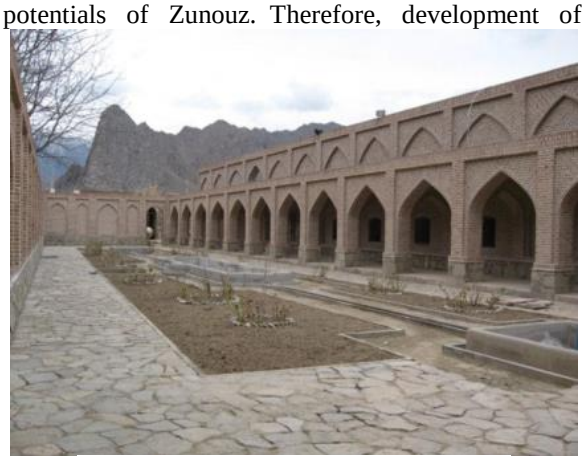

*Fig. 6. Bathroom of Djolfa. Photo by the author.*

*Fig. 7. Allah Allah cupola. Photo by the authors.*

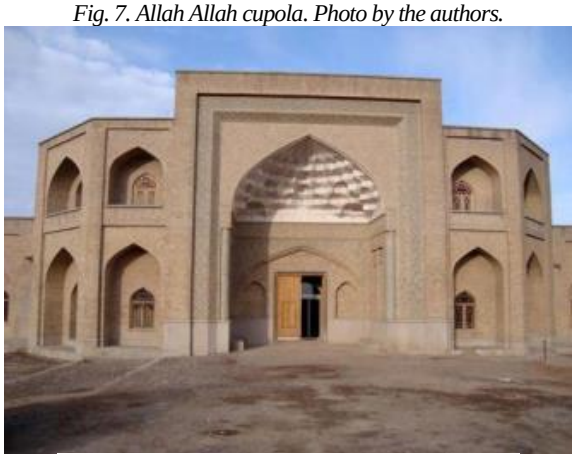

*Fig. 8. Marand Caravansary. Photo by the authors.*

planning and preservation of the cultural heritage offers specific privileges to any authority and citizen in these cities. Some of these privileges include development of the infrastructures and making communication and transport routes between the cities [18], increases the cities' abilities to stabilize tourism industry.

These cities are located from 30 to 45 Km off Zonouz. Varzaghan has nine tourist attractions, (Fig. 7), DJolfa has six, and Marand has nine tourist attractions (Fig. 8). An integrated management plan for 44 tourist attractions, including natural and historical landmarks of these cities will result in synergy, boosting their economic growth, causing proper protection of the environmental area consequently. It can also assist economic empowerment in different forms, attracting special attention to the historical context of these cities.

**Conclusion**

Cultural heritage is a vast and complicated concept. According to the definition, presented by United Nations Cultural Organization (UNESCO), it is "a set of symbolic or artistic shows, inherited to people from their past culture" [1]. As a matter of fact, heritage includes monuments, ancient buildings, landscapes, and customs. For some people, it poses a positive image of the past [12], causing a group of people take pride in their past culture; however, in tourism's point of view, heritage can create cultural development. What is of high account in cultural development and tourism, is the fact that not only does it depend on the correlation between people and things or monuments, but it also relies on intercultural supersensible and spiritual relations, such as behaviors and lifestyle, human relations, and cultures. Travels and connections among people with different cultures play a very valuable role in development of different nations' cultures [13]. If tourism industry pays any attention to the culture, it can help develop cultures, making societies aware of their local and native values. Indeed, cultural tourism creates opportunities for people from different cultures to communicate with one another and find the richness, present in other cultures. Currently, with globalization being taken so seriously, the native and cultural subjects should be protected and introduced. Generally, it can be said that mutual relations between values of cultural heritage and tourism industry are changing and developing. Based on inherent contradictions, this relation brings about either opportunities or threats.

Cultural tourism plans and projects in the heritage field should create opportunities; however, the set of actions that can be done in order to meet visitors' requirements should have minimum negative effects on the host communities along with their heritage [2]. This requires total awareness of the potentials and values of both monuments and cultural heritage.

Feilden & Jokilehto pointed out the principles of cultural tourism as well as the mutual relations between the values cultural heritage and tourism industry; however, there has not yet been a direct

research on the relation among cultural heritage values as the most important components to boost tourism industry, its development with regards to the available potentialities and abilities in this area, and architectural and urban heritage as a tourism center.

Our study showed that it is necessary to pay attention to the following issues: (1) The necessity of preserving cultural and historical heritage for sustainable tourism; (2) Cultural activities to introduce cultural heritage in order to attract tourists; (3) Historical landmarks of famous cities are being reconstructed with regards to the economy so that it is culturally sustainable and strengthened by the "idea of sustainable development" of resources, built on human thoughts, talents, and competence. In fact, for historical cities we should consider economic revitalization of the city, based on its cultural sustainability. The income from tourism industry can support the conservational charges of historical buildings and city textures constitute the heart of Zonouz tourism, which allows the managers of these cities to improve tourism-based goals of the cities, so that they can be prepared to plan the conservation of architectural monuments and cultural heritage.

Since all aspects of tourist attractions play a direct role in achieving this goal, they can benefit from its economic distribution as well. We can consider an executive approach by synergy, distributing the convergence benefits among the cities, around their tourism centers to protect the civil context along with other tourist attractions.

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