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INTRODUCTION

2019 was concluded with a publication of research articles covering a wide range of topics that focus on restoration of cultural and historical landscapes, the research on the 21st century's pace of development bringing with it "revolutionary' winds of change.

One of them also concerns Latvia due to plans of implementation of regional reform and its impact on maintaining the infrastructure balance in residential areas to avoid economic and political undulations, which may result in the disappearance of the identity of the regions. Several articles focus on an in-depth study of the historical heritage in the territory of Latvia related to research of both historic buildings in Latvia (Liepāja, Valmiermuiža, Ķemeri forest park, environmental accessibility issues in 86 churches of Riga) and the culture heritage in other countries of the world (the chapel landscape uniqueness in Klein Vielen manor in Germany, the roof proportion and compositional study data of park pavilions in China). The aesthetic quality, integrity, social importance, functionality and attractiveness of landscape space are important criteria that are reflected in the research descriptions of park areas in urban environment.

One of the publications reflects an important task related to Latvia's new regional reform. The quest of scientists to link rural and urban environments is a complex issue, therefore its successful / unsuccessful solution will undermine the development or decline of national economic policy.

This is particularly true of the issue of redistribution of funding and the wave of small school closures or continuation, which will also affect changes in infrastructure. The same regards the quality of roads of local and national importance, which is the subject of separate research activities on road landscape.

The publication also includes an in-depth study of Lithuanian landscape architects of the intercultural and subcultural perception methodology of landscapes, which summarizes landscape research methods used to analyse the impact of socio-cultural factors on landscape perception. Lithuanian researchers analyse cognitive approaches, which are mostly based on statistical analysis of sociological research results. Researchers offer a scheme for interdisciplinary assessment methodology that integrates landscape research with knowledge of quantitative sociology, seeking links with environmental psychology and geography.

PRIEKŠVĀRDS

2019. gadu noslēdzam ar izdevumu, kurā ir apkopoti pētījumi, kas skar plašu problemātikas spektru gan kultūrvēsturisko ainavtelpu atgūšanā, gan pētījumi par 21. gs. pulsācijas tempu, kas nes līdzi "revolucionāras" vēsmas. Viena no tām skar arī Latviju – reģionālās reformas ietekme uz apdzīvoto vietu infrastruktūras sabalansētības saglabāšanu, lai neradītu valsts ekonomiski politisko viļņošanos, kas var izsaukt reģionu identitātes izzušanu.

Vēsturiskā mantojuma padziļināta izpēte ir raksturīga vairākām publikācijām, kuras ir saistītas gan ar Latvijas vēsturiskās apbūves izpēti (Liepāja, Valmiermuiža, Ķemeru mežaparks, vides pieejamības problemātikas izpēte 86 Rīgas dievnamos), gan ar vēsturisko mantojumu pasaulē (*Klein Vielen* muižas (Vācija) kapellas ainaviskās unikalitātes pētījums, Ķīnas parku paviljonu jumtu proporciju un kompozicionālās uzbūves apkopoto pētījumu dati).

Ainavtelpas estētiskā kvalitāte, integritāte, sociālā nozīme, funkcionalitāte un pievilcība ir svarīgi kritēriji, kas atspoguļoti pētījumos par parku teritorijām urbānā vidē.

Vienā no publikācijām ir atspoguļots svarīgs uzdevums, kas sasitīts ar Latvijas jauno reģionālo reformu. Zinātnieku meklējumi lauku un pilsētvides sasaistei ir sarežģīts jautājums, kura risinājuma veiksmes/neveiksmes gadījumam tiks pakārtota valsts ekonomiskās politikas attīstība vai lejupslīde. Īpaši tas ir attiecināms uz finanšu pārdales jautājumu un esošo skolu saglabāšanas vai likvidēšanas vilni, kas skars arī infrastruktūras izmaiņas. Protams, minētais ir attiecināms arī uz vietēja rakstura un valsts nozīmes ceļu kvalitāti, kas apkopots atsevišķā pētījumā par ceļu ainavu.

Publicējam arī Lietuvas ainavas arhitektu padziļināto pētījumu par ainavu starpkultūru un subkultūru uztveres metodoloģiju, kas apkopo ainavu izpētes metodes, kuras izmantotas, analizējot sociāli kulturālo faktoru ietekmi uz ainavas uztveri. Lietuvas pētnieki analizē kognitīvās pieejas, kas lielākoties balstītas uz socioloģisko pētījumu rezultātu statistisko analīzi. Zinātnieki piedāvā starpdisciplinārās novērtēšanas metodoloģijas shēmu, kas ainavu izpēti integrē ar kvantitatīvās socioloģijas zināšanām, sasaisti meklējot ar vides psiholoģiju un ģeogrāfiju.

Aija Ziemeļniece
Editor in Chief

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How much is a public park worth? An ex ante methodology for impact and cost-benefit analysis on the example of Millenáris Széllkapu in Budapest

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Abstract. Establishing a public park raises a number of methodological issues. The model worked out by HÉTFA Research Institute is suitable for cost-benefit analysis and ex ante viability test of a public park integrated into urban landscape. The paper presents the model by the example of a planned public park at one of the busiest centers of Budapest, the junction of Margit Boulevard and Millennium Park. Such a comprehensive economic evaluation for public parks has not been made in Hungary. First the mechanism of effects was set up, and by using the hedonic price method the project's costs and benefits were presented with national and international statistical indicators and benchmarks. The investment, that has been started in 2016 with in the initial planning and demolition pays for itself by 2019. The results are tested with sensitivity analysis, which has inter alia shown that if we count by the general approach of the project management - costs are expected to increase by 10% and benefits are to reduce by 10% - investment returns for the city and their inhabitants for 2030. Furthermore, without the effect of property appreciation - the investment turns positive by 2061 thanks only to indirect social, economic, environmental benefits. According to our analysis, the park's development, which relaxes a built-in highly populated urban fabric, has become an economically profitable investment as a result of significant beneficial external effects.

Keywords: public park, cost-benefit analysis, hedonic pricing, impact analysis, urban green infrastructure

Introduction

The importance of creating urban green spaces in urbanism goes back to the beginning 20th century, and the idea first published by Patric Geddes in Cities in Evolution form 1915 [55]. From now the necessity and positive social [98; 63; 31; 81; 106; 12], ecological [102; 52; 115; 86] and economic [104; 31; 72; 88; 73; 135] effects of green spaces are well known. Despite of this fact, at first sight it is more attractive to build in an empty plot in centrally located, urban environment, than establishing a new park for investors and decision-makers. According to our point of view, the main reason for this is the logic of the investor, who counts on the profit of the built-in site and does not have to take into account the costs and benefits of those who are not directly involved in the investment, like inhabitants from neighbourhood or users of the surrounded public places. Encouraging investments that are useful for society, therefore, are regulatory responsibility.

However several international case study exist for assessing effects socio-environmental and economic impacts and a preliminary cost-benefit analysis of investments [62; 117; 12] also several are sepcialised for parks and green surfaces in urban landscape for example in Tucson (USA) [98], in Joensuu (Finland) [140] in Boston (USA) [134], in Zhuhai (China) [30], in Hongkong (China) [73], in Taiwan [127], in Aalborg (Denmark) [112], in Hungary only few studies deal with the value of green spaces [135; 84]. May be that is the reason for lack of interest from regulatory bodies in Hungary. Taken into account the former mentioned studies, several different aspects exist, but such a complex research was not found during the literature review. The developed new framework of impact and cost-benefit analyses takes into account all aspects of the investment. The methodology can be applied to other domestic and international examples, taking into account specificities, like climate driven benchmarks.

The methodology sets the business as usual (BAU) situation for the basis of the assessment. The set-up mechanism of impacts can generally be used for any public park in any urban landscape, however, severity of the impacts may vary considerably. In the presented example, all effects were evaluated, with one the limitation: not all of them were quantifiable. Some were characterized quantitatively, while others were characterized qualitatively. Quantification was carried out along the hedonic method. A conservative approach was applied: usually the arithmetic average of the benchmark data or the median value of the large deviations were used, but in the case of uncertainty, we used a negative impact with a professional estimate. The effects of abandoned quantification are small, but the result is more positive, so their omission also strengthened our conservative

estimation. We controlled the dependence of the input data through sensitivity analysis.

The methodology was used in the preliminary cost-benefit analysis of the project of Millenáris Széllkapu, in Budapest, Hungary as an illustration of our results. The applied methodology is new in both domestic and international literature, no such work has been done for the construction of a park so far.

Methodology

Mechanism of impacts

Several literatures are dealing with the impact analysis of urban parks. Rodenburg et al. [117] have divided their comprehensive indicator system to four main groups: socio-economic (availability, usability, multifunctionality, training, etc.), environmental (regulation, function preservation), quality (aesthetics, delimiting functions), financial (authorities, funding).

From this grouping it is visible that the impact of the parks is multifaceted, with many stakeholders. Urban green surfaces help reduce air pollution by absorbing environmental pollutants, thereby reducing adverse health effects and improving air quality, and maintaining air purity [101; 107; 49]. Increasing biodiversity and creating a connection with the natural environment [52], contributing to strengthening urban sustainability, creating and sustaining urban ecosystems through the reinforcement of the network system for green spaces, creating opportunities for species richness growth [86]. In addition, it is important to emphasize that the tree to be planted has a value that can be expressed in monetary terms besides the ecosystem services [115].

Due to the dense built-up of downtown areas and the large-scale paved surfaces, the temperature modification effect of urban landscape can be observed both in winter and summer, causing a rise in temperature in relation to outlying and non-urbanized areas [136]. This phenomenon of thermal insulation causes an average temperature difference between urban and rural areas of 2.5 °C [2]. Urban green surfaces contribute to the reduction of thermal insulation and thus result in savings in summer cooling energy partly due to evaporation, partly due to shielding [102; 101].

The unfavourable health impact of overheating was well-perceived during the 2003 European hot flash when there was an order of magnitude 40,000 more deaths among older people due to extreme weather conditions [54]. However, by a park, an average drop in temperature can be demonstrated to help mitigate all and degenerative mortality [111; 58]. Parks have beneficial health effects beyond thermal insulation. The probability of depression and anxiety disorder, the likelihood of stress or behavioural disturbances decreases near the parks [31; 91; 92; 108]. Among hospital patients, 10% faster healing and less painful analgesic use can be reached at the park-facing room [9]. The park also contributes to the reduction of average treatment costs [108], reduces the average health costs, the effects depend on the difference between the park and the distance between the parks [61].

A proximity of the parks also contributes to the healthy lifestyle, and measurable health benefits have been demonstrated due to active physical activity [64]. Analyses have highlighted that the use of urban green spaces is therapeutic: the recreational impact of the time spent in a natural environment, as well as the movement, sport and walking [31; 12].

Parks in dense urban landscape have a significant sociocultural and recreational impact. According to a survey in Helsinki, easy access of high-quality parks greatly increased the number of visits and park traffic [106]. In Amsterdam, respondents raised the relaxation, the natural environment, the city outgrowth, and the common times spent with children as the main cause of park use [31].

International studies have shown a positive willingness to pay for parks, which draws attention to the strong influence of parks on surrounding urban landscape and its important role in everyday life [85; 9; 127]. Parks also contribute to increasing the attractiveness of the city, which generates economic benefits [31]. The proximity of urban green spaces has a strong impact on the value of nearby real estate, and the urban spaces and parks that have been developed in a qualitative way have a role to play in price management [40]. There is a negative relationship between the price of the property and the distance from the park: the closer we get to the park, the stronger the enhancing effect on the property value [104]. It also has a positive effect when the apartment looks directly at the park [88; 73; 72,]. In Budapest Takács [135] also demonstrated the influence of parks and urban green spaces on real estate value in domestic conditions.

Based on the above-mentioned literature, we have set up the impacts that can be expected from the establishment of the park and their correlations.

Approbation of the method

The methodology can be traced back to five steps according to the following:

1. Basis of the assessment: stating position for the comparative assessment of investment
2. Mechanism of impacts: Setting up economic, social and environmental impacts and impact mechanism
3. Evaluation methodology: Definition of impact assessment and quantification methodologies
4. Cost-benefit analysis: Comparison of planned expenditures and expected benefits
5. Sensitivity analysis: dependence control of input data (Figure 4).

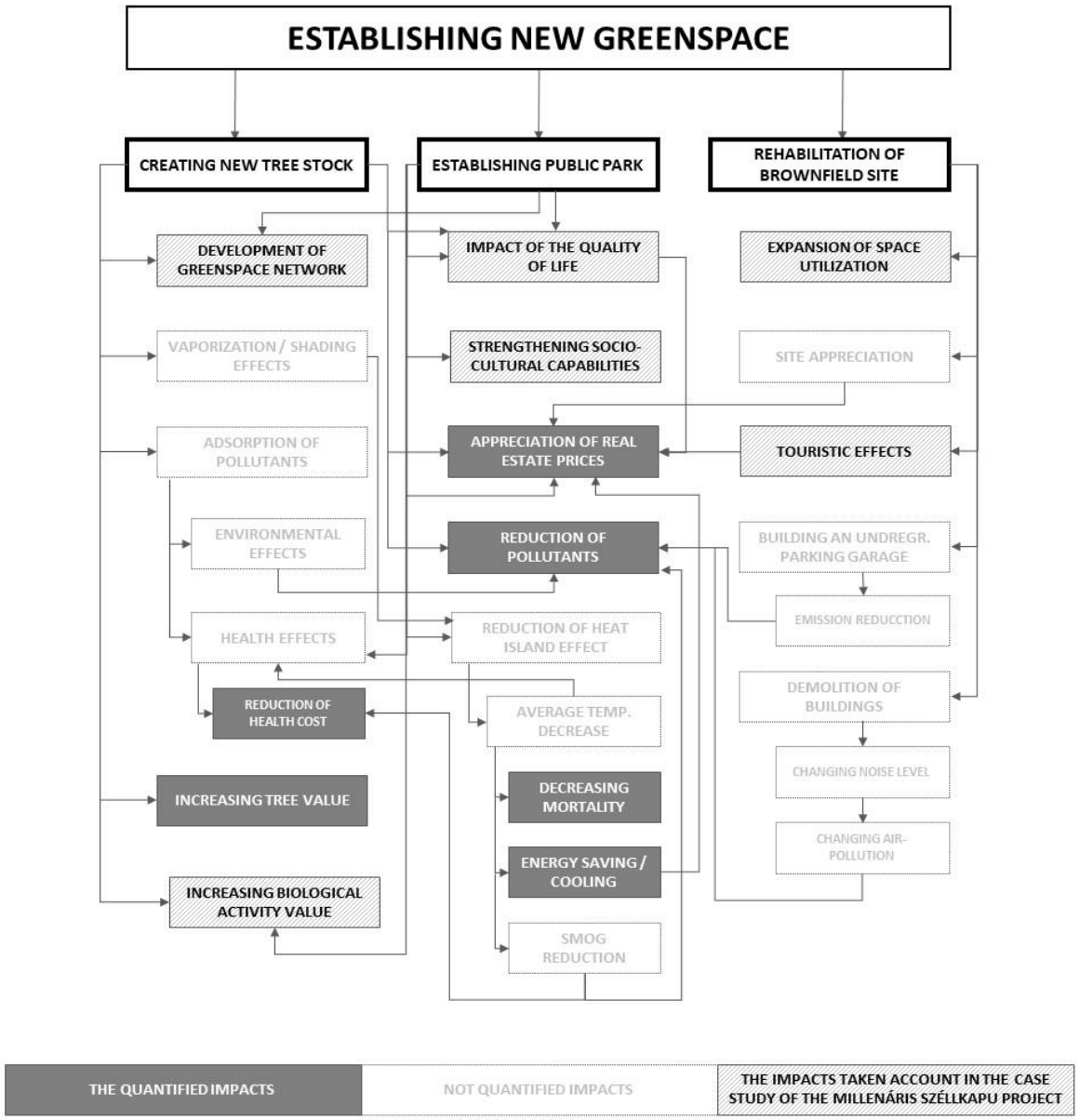

Fig. 1. Impacts and mechanisms considered [authors material]

Development area

Millenáris Széllkapu is located in the immediate vicinity of Széll Kálmán Square in the center of Budapest. Its area is 2.4 ha, similar to Central Park Zoo, Manhattan, New York or Square Louise-Michel at Montmartre in Paris, France. In the neighbouring plot on the Margit Boulevard, the outdated building of the ministry was previously dismantled in the initial steps of the investment in 2016. The park to be built on empty land contains the following functions [139]:

- Surface: park, two catering units, BUBI bicycle storage, green wall lookout.

Underground: 500 parking spaces, lowering Fény Street, and other equipment. The plans of the park were known to our study – these were input data –, the demolition and site preparation work has begun.

Basis of the assessment

It is easy to compare the expected consequences of the project with the business as usual, (BAU) case. However, if there are several possibilities for utilizing an area, more accurate decision can be made by comparing them.

The BAU case, against which we evaluated the positive and negative impacts, has the following characteristics:

- the demolition of the ministry building and Kis Rókus Street buildings will not be realized (related expenses, such as maintenance, are not considered in the analysis);
- the development of the plant stock will not be realised;
- the area is underutilized, it is functionally empty;
- the underground garage will not be realised;

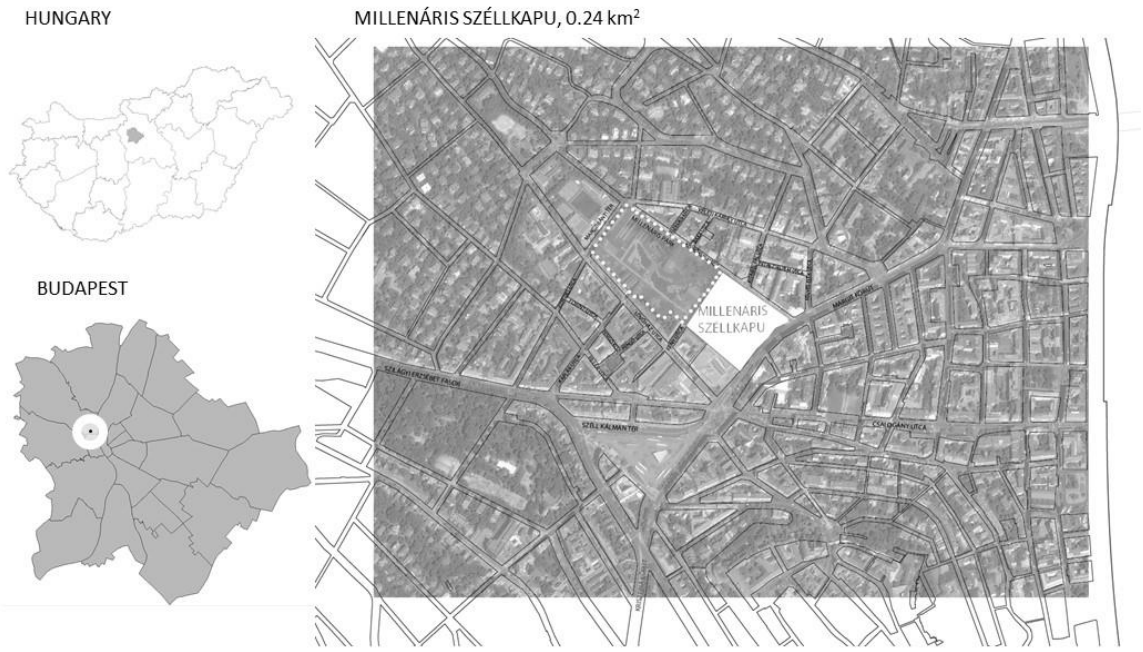

Fig. 2. The development area and its neighbourhood [authors material]

Fig. 3. Business as usual state with the existing ministry building and underutilised sites around it [google.com, just before the demolition]

- no new functions are created, no revenue generating activity is foreseen;
- there is no appreciation for renewal, affecting the area and surrounding city.

Evaluation methodology

The selection of quantified effects was based on the estimated magnitude of the impact and the uncertainty of its estimation. The effects of which magnitude was negligible or were significant based on the literature were characterized qualitatively. The absence of comparative data could only have been assumed to have an uncertain effect. Since in each case different impacts are being evaluated, it is worth making a survey about the magnitude of the impacts. The survey includes environmental characteristics, people's needs and cultural differences.

There are a number of ways to estimate and quantify the effects of green surfaces. The three most commonly used approaches are travel cost, willingness to pay, and hedonic pricing [98]. In order to quantify the data, we rely primarily on studies using the hedonic method. The method is based on benefits of each object, so it consists of all of their features. For the future park, the expected impact was interpreted as a whole [66].

TABLE 1

Indicators and benchmarks used to the calculation of ex ante assessment of Millenáris Széllkapu project [authors material]

Indicator	Benchmark	Source
Real estate appreciation	12.22 % (with a direct view)	88, 73, 73, 112
	5.9 % (from 5 minutes' walk zone)	88, 73, 104 23, 73 94, 84
	1.9 % (catchment area)	94
Heating and cooling effects and energy consumption	3 °C temperature drop in the summer	109, 122, 59, 18, 107, 9, 20, 131, 96
	-0.65 °C temperature drop in winter	own estimates based on 59
	60 m expansion of cooling effect	56, 69, 22, 122, 59
	3 °C effect on cooling energy consumption at 1 °C temperature drop in the summer	2, 120, 121, 95
	3.5% growth effect on cooling energy consumption at 1 °C temperature drop in winter	95, 46
Health effects	1.2% increase in the mortality at 1°C temperature change	111, 58
	3% decrease of public health cost	108
Tree value	Calculated with precious tree species in a favourable location in the centre and 10% amortisation in 5 years.	133, own estimates
Reduction of pollutant	4.5 kg/m^3 A tree average carbon absorption	114
	5528.22 Ft social marginal value of one ton of carbon dioxide emissions	51, 143
	16 kg/tree annual average dust control	8, 93
	5.25 million Ft/t impact of PM_{10} emission	47
	15 g savings from emissions reduction of car startup	80

Different benchmark data were used to quantify impacts from domestic and international literature (methodological description see for example [129; 128]). In present study, data analysis and community benchmarking were conducted based on Stapenhurst [129], which consisted of data collection and literature processing that came from domestic or foreign publications. Functionality was taken into account, where the parks play an equal role in this respect in cities and regions, as the Millenáris Széllkapu park will in Budapest, thus ensuring comparability (this is known as the external validity of comparability). International examples were considered with same size, climatic characteristics, environmental features of the park to be constructed (this is referred to as the internal validity of the comparison).

As benchmarks generally refer to other countries' estimated impacts at other times, it was important and feasible to create equivalent indicators for the year and location of the survey. Two directions were followed: where the data of the study could be formulated as a proportional parameter, those values were used, where not, Hungarian forint, the common domestic currency, in the value of 2016, was calculated using the appropriate exchange rate and GDP deflator. Since the examination was ex ante and a significant part of the benefits and costs are going to be generated in the future, we discounted the 3.25 % interest of the Premium Hungarian State Bond (2016. 11. 25.).

In our example, the effects were divided into two groups: quantifiable and non-quantifiable. Although it was considered important to quantify the impact of the park on the quality of life due to its significant impact, it was nevertheless considered to be an endogenous effect built into a real estate property. Thus, to avoid duplication of the same effects, quantification was not done separately. The quantifiable impacts include the following benchmark-based estimate (Table 1).

ASSESSMENT OF PROPERTIES: an increase in the value of real estate within the "5 minutes walk" or in the wider environment as a one-off revenue (2016 rates).

HEATING AND COOLING ENERGY CONSUMPTION: the decrease in the cooling energy consumption observed due to the summer average temperature decrease and the pricing of the heating energy increase observed in the winter due to the lower temperature decrease (2016 rates).

HEALTH EFFECTS: decreases in public health, voluntary and household health expenditure in the park, and a decrease in mortality due to the reduction of thermal insulation (2016 rates).

TREE VALUE: the initial value of the planted tree stock and its annual growth.

ENVIRONMENTAL SAVINGS: the role of trees in reducing air pollution, the parking benefits of parking and savings from the PM_{10} mitigation.
The characterization of non-quantifiable effects is excluded in our study.

Among the calculated effects (assessment of properties, heating and energy consumption, health effects, tree value, environmental savings) several indicators were identified according to literature review to describe the social effects of the planned development. Three types of indicators were included:

- Once occurred income: Calculated once, at the end of the project, e.g. real estate appreciation.
- Current income: Occur every year in the same amount, e.g. reduction of energy consumption, health expenditures, CO_2 and dust control savings.
- Continuously growing income: The planted trees are growing every year, so the effects of ecosystem services are also growing. Calculated at CO_2 absorption and tree value.

The basis of the projection

The spatial position of the effects is significantly reduced away from the park. This decreasing effect is true for both real estates and people living there. In present study, surrounding properties and thus the people were divided to different categories: (1) with direct look to the park, (2) who live range of 60 meters, (3) 100 meters or (4) 300-400 meters (5) further catchment area of the park. Apart from a few factors, only the most directly were concerned (1) and (1+2) because of the cautiousness of the estimation results.

Real estate appreciation

A number of studies have confirmed the positive impact of urban spaces, parks and green spaces on real estate. The most important influencing factor is distance [104; 87; 40; 73; 135; 84], the view [72; 88; 73], the nature and conservation of the green surface [89], the green space ratio [105], the increase in park size [112], the street image and public security [87].

We have found empirical results for real estate appreciation between 1.9 and 2.9 %, but also between 10 and 16.88 %. In the calculations, extreme cases were ignored. As a result, a median value was chosen that was compared to local trends – in our case from Budapest [135].

Heat island effect and energy consumption

According to the mentioned studies the following effects can be named. In the development of thermal insulation, low vegetation, better heat storage capacity of urban building blocks [70; 32], urban spaces, waste heat emission – building heat and heat of buildings and vehicles [58; 32; 77; 100; 110] and the proliferating nature of cities play significant role. The local microclimate [123] influences the development of energy consumption [2] and human health [11]. Higher temperatures have more health risks [13; 77; 132; 146; 26]. To reduce this, trees and green infrastructure elements contribute significantly [144; 30]. The vegetation shadows [7; 60] and has better albedo [1] reducing the temperature even from hundreds of meters [59; 45; 150]. The temperature decrease reduces the risk of death [125; 111], and the health expenditures [11].

The lower temperature caused by shadowing and evaporating trees in parks [100; 53], the winding effect and the increase in surface albedo value plays significant role in the decrease of energy consumption of neighbouring properties decreases [67; 1; 2; 7]. The cooling effect of the environment is nearly 3 °C in the summer [2], which results a noticeable decrease in energy consumption [77]. In contrast, in winter, it has a smaller negative effect, resulting in a cooling effect of less than 1 ° C, causing a slight increase in energy consumption [59; 101; 28]. The reason for the lower cooling effect observed in winter is the lower the shading ability [36] and evaporative effect of deciduous trees.

Health effects

The presence of a park encompasses a number of health benefits for the surrounding population and the people who use the park, which has social and monetary economic benefits as well. Many studies have demonstrated the positive correlation between human health and the proximity or use of parks [90; 103; 41; 57; 145; 42; 71; 63; 50; 19; 37].

Air pollution is absorbed by vegetation in the park [107], the proximity of the parks is favourable for social life [41], sports [3; 35; 6; 10; 1; 9; 39; 113]. Their effects are measurable in the prevention of psychological illnesses [149; 76; 116] helps to recover from a stressful state [79; 119; 44] and prevent its formation [142; 118]. The proximity of parks also reduces average health spending [108; 61].

Tree value appreciation

The theoretical value of a tree goes beyond the direct price, taking into account the ecosystem services and contributions for the social well-being. The applied method, developed by the Hungarian Tree Care Association [133] expresses the economic value and the positive externals also. The most important aspect to calculate the theoretical value is the viability and the condition. In Hungary the evaluation method is based on the Radó-method [115], developed further by the Hungarian Tree Care Association [133].

Reduction of pollutant

Rehabilitation of a former brownfield site creates a healthier and better urban environment.

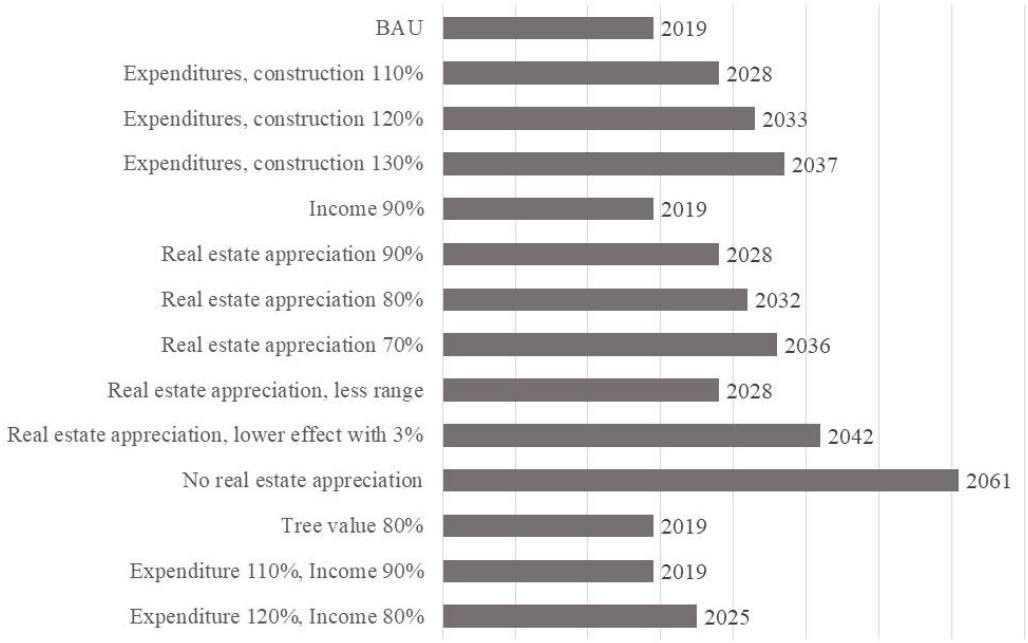

Fig. 4. Results of the sensitivity analysis, foreseeable return of the project in different scenarios [authors material]

In our case, the flow conditions are influenced in the first place. The CO_2 concentration can be reduced by up to 16 %, as previously reported by Margit Boulevard [4]. After the demolition of the building the ventilation of the area was solved, the distribution of air pollution concentration was also transformed, resulting in a small improvement in air quality [16].

The UFORE (Urban Forest Effects) model [143], used for USA determination, estimates a $ 20.3 / tC unit, which includes the marginal social value of carbon dioxide emissions [51]. For other air pollutants it has an accepted market value for social impacts: [NO_2: 6752 $ / t, PM_{10}: 4508 $ / t, SO_2: 1653 $ / t, CO: 959 $ / t [105]. The trees in the park have a growing carbon capture and absorption capacity [114; 8; 93] and the dust binding effects [98]. The underground garage also contributes to the reduction of environmental burden, cars are warmed up, which means nearly 50 % less emissions than the cold start [80; 97; 65]. In addition, the surface parking time reduction is reduced, leading to further emission reductions [65].

Further impacts

The following effects were not used in our estimation, although their qualitative evaluation projected positive effects. However, these effects have been incorporated into the model quantifically:

- Sociocultural relations [14; 147; 138; 78; 5; 38; 24; 148; 130; 74; 91; 137].
- Impact on quality of life [15; 79; 119; 44; 141; 41; 75; 27; 126; 82; 83; 116; 25].
- New opportunities for space use.
- Development of the green space network [21].
- Increase in the value of biological activity (based on the values given in Table 2 of Annex 1 of the ÖTM Decree 9/2007 (IV.3).
- Touristic impact [17; 34; 124; 43; 29; 79].
- Noise and air pollution [68].

Cost-benefit analysis

Following the impact evaluation, we have prepared our table of yearly costs and profits of the investment, discounted by the year of 2016. Certain items, of course, have been generated as a one-off effect (e.g. investment cost or property valuation), while others are constantly present during the period under review due to their annual growth. Thus, it was estimated in which year the value of the projected investment will turn into positive, and how many years will it return to society? It is important to see that the return is just the same for the investor with the return, because the investor is the state itself, which is represents the whole society. A market investor would not have a significant part of the benefits of the investment, so without investing in the state, such an investment would probably never be returned to the investor.

Sensitivity analysis

The impact assessment provides a preliminary estimate and relies on comparative data and benchmarks derived from studies. Therefore, there is a risk of mistake. In such cases, it is common practice to determine the parameters whose erroneous estimation may have the greatest impact on the outcome of the impact assessment. This sensitivity analysis therefore basically serves to

determine the validity of the estimate and its possible estimation error. It is important to see that sensitivity is two-way. Reality may differ from the estimated value both down and up, but obviously, for a community decision, the higher the risk is the overestimated benefits and underestimated costs. As we have shown above, we have consistently striven for a conservative estimation.

Depending on the types of effects or the risks involved, there are many possibilities for calibrating the sensitivity test. When the possible range of interpretations of some of the known parameters can be used, they can also be used for sensitivity analysis, but we have chosen a simpler approach in our case study: in three steps, we examined whether the difference between ± 10 % ± 20 % and ± 30 % of each parameter would influence the results. The most influencing effects were tested and presented separately (Figure 4).

Results

Cost-benefit analysis

The project of Millenáris Széllkapu, the new park in the centre of Budapest, Hungary, turns to positive to 2024. The incomes that occur once are 16.54 billion HUF (real estate appreciation). The current income and continuously growing income are 259.17 million HUF in the first year. The detailed results are described as follows:

- Real estate appreciation in the case study: The calculated real estate appreciation is 16,535 billion HUF. Former real estate appreciations to the site and its neighbourhood were involved [48; 135; 66].
- Heating and cooling effects and energy consumption: For residential buildings the calculated plus in the summer, thanks to shading effects is 153,000 HUF, calculated minus in winter 538,000 HUF. (In Hungary the proportion of cooling is low.) For office buildings 4.37 million HUF plus and 3.32 million HUF minus is shown. To sum up, annual profit is 672,000 HUF.
- Health effects: The fiscal profit of the reduced mortality thanks to reduction of heat island effect is 7.83 million HUF annually. The positive effects of the new park produce health savings, 11.52 million HUF for state health care, 808,000 HUF for voluntary health care, 4.85 million HUF for household expenditure. Altogether 25 million HUF annual savings are calculated.
- Tree value: The value of the planned 250 pieces is growing annually, thanks to their ecosystem services growing by age. The value in the first year, after plantation is 840 million HUF. This will grow per year 210 million HUF in the first 10 year.
- Environmental savings: The price of carbon dioxide per tonne is relatively low, the tree absorption (163.08 HUF in the first year) and saving with parking (26.54 HUF in the first year) has low return. However, after 20 years a planted trees absorb the yearly CO_2 production of 6 people (calculated with 332 kg/capita/year by Radó, 2001]. More significant is the saving from dust control. Altogether 23.5 million HUF savings annual is calculated.

The results of the cost-benefit analysis are surprising, because the public return is short, however all benchmarks were calculated in a conservative way (the less ambitious values were chosen to calculate the median of international benchmarks and these were adapted to Hungarian circumstances). For that reason, sensitivity analysis was needed, to see how these results change in different scenarios.

Sensitivity analysis

The sensitivity analysis tested all parameters of our model in three stages (±10 %, ±20 % and ±30 % cost reduction or expenditure growth annual in a pessimistic way). The most significant effect is seen with real estate appreciation, so the influenced area was also reduced in our test.

As a result, 10 % change of our parameters did not cause relevant change in our results and the calculated return remained the same. The 20 % change led to remarkable effects at real estate appreciation (return is calculated for 2032) and increase of construction costs (return is calculated for 2033). All other parameters were unaffected. The reduction of range of real estate appreciation increased the return to/for 2028. The moderate level of real estate appreciation (3 %, instead of calculated 5.9 %) resulted a return for 2042. If the real estate appreciation is not included in the cost-benefit analyses, the return delayed to 2062. With the decrease of all income value by 10 %, the prognosed return is 2019. If we calculate the increase of expenditures and decrease of all income in the same time the return is expected to 2019 (±10 %) and 2025 (±20 %).

Discussion

The above described model is based on the idea, that not establishing a public park results more risk for the society, because of the underestimated revenues. According to this all advantages of a public park mentioned in the literature were collected and the expectable revenues were calculated in all possible cases. Some advantageous but hardly predictable effects, like benefits of tourism were not considered. Calculation were based on the values mentioned in literature in all case. The benchmarks were adapted to Hungarian circumstances, were calculated in a pessimistic way

(lower than median/average values, according to experts' estimations).

As it is an ex ante study some information were not available, however the permission plans were already finished. For example, precise parameters of trees were unknown, so we calculated with the planned 250 species, from the best quality of 4-year old nursery product. Older trees were not used in the calculation, however in a park in the centre it would be also reasonable, it would also have a positive impact to our results. In addition to the trees, the value of the shrub stocks or the uniformity of avenue trees can also be expressed in cash, but this was also avoided in our conservative calculations.

In case of BAU costs of maintenance and the positive airing effects of demolishing works were neglected. The site remediation was only included in the calculation of costs, the property value increase after the remediation was also neglected.

Some questions were also faced in connection with the existing park (Millenáris Park) directly next to the investment plot. According to our estimations this does not influence our results, because it has a different function, it is an open space for different events, not a park for recreation. The negative effects of this are printed in the real estate prices. The planned investment will corrugate this effect. However, the real estate appreciation is the most important influencer in our model, as reflected on in the sensitivity analysis. The effect of the existing park is manifested in heat island effects also – it has a remarkable water surface. In the calculations the benchmark value was reduced according to this. Positive health effects away from the plot were not considered, only residents directly neighbourhood of the park were involved.

Such a calculation is applicable to other planned investments, taking account the circumstances of the site and its neighbourhood. These calculations were made in Hungarian Forint (HUF), however, any other currency is suitable for this.

Considering the limitations of our calculations the results go against expectations. The investment of such a park has several positive effects to the society, those were known, but not priced yet. The results are promising, and it would be worth making more calculations to green surface development in built in areas to convince decision makers investors of the competitiveness of establishing public parks in a high-density urban landscape.

Conclusions

The model and the case study of Millenáris Széllkapu investment is a pioneering work in estimating the effects of public parks. It is well known, that an existing park has several positive effects to the society. Mechanism of this effects was mapped, and an evaluation was carried out. Most of them cannot be estimated because of lack of proper measured data or methodology. In the ex-ante cost-benefit analysis the authors focused on the calculatable ones and estimated the long-term incomes in currency (HUF) to get the benefits of the project. The results were compared to expenditures, calculated ex ante by the project management. To validate our results, sensitivity analysis was also performed.

The results are surprising regarding the returns, furthermore several consequences can be made in connection to establishing public parks. In contrast to invertor's attitude, the advantages of a public establishment are realized in wide range. In the case of a public park, this wide range contains all person and economic society uses the catchment area. The finance of a public park is also different, because public money is invested. Externals cannot be understood in the classic way, because all citizen is a stakeholder of the project. In the case of private park, the spread of revenues is limited. According to our estimations, establishing a public park will pay back, if it is situated in an urban landscape with high density, and high property value. In our example the real estate appreciation had the most remarkable influence. That also means that it is worth establishing a park only for real estate appreciation. In a high-density urban landscape, a park establishment do not mean lost revenue for the investor because it increases the value of the plot and appear in the property prices. Several other examples confirm this, like High Lane in Manhattan (NYC) or the success of Kopaszi gát in Budapest, Hungary. Our ex ante analysis confirms this with calculations, according to the model the investment produces a return to 2019.

It is also surprising that the environmental effects are almost neglectable in estimating the effects of a public park. The extent of air pollution is not influenced by the investment, because the source of the emission stays the same, however the absorption of trees is an important element. Another conclusion that the temperature-balancing effect is remarkable on warmer climate, like in Mediterranean regions. On cooler climate the advantages of shading effect are not so appreciable.

From methodological point of view, we would like to highlight the importance of sensitivity analysis. In the case of ex ante assessments, the identification of predictable effects and the risks of the investment are needed. In parallel with this the calculations based on benchmark values are needed to be prudent, pessimistic and accurate to the local circumstances. These are the key factors of successful assessment.

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Kopsavilkums. Publiskā parka izveidošana rada vairākus metodiskus jautājumus. Pētniecības institūta izstrādātais modelis ir piemērots pilsētu ainavā integrēta publiskā parka izmaksu, ieguvumu analīzei un dzīvotspējas pārbaudei. Rakstā atspoguļots plānotā publiskā parka piemērs vienā no aktīvākajiem Budapeštas centriem – Margitas bulvāra un Tūkstošgades parka krustojumā. Ungārijā nav veikts šāds visaptverošs publisko parku ekonomiskais novērtējums. Vispirms tika izveidots vides ietekmes mehānisms, un, izmantojot izmaksu aprēķinus, tika salīdzināti nacionālie un starptautiskie statistikas rādītāji un etaloni. Ieguldījums, kas tika uzsākts 2016. gadā līdz 2019. gadam, atmaksās. Rezultāti tika pārbaudīti ar pētījuma analīzi, kas parādīja, ka, saglabājot esošo vispārējo projekta vadības pieeju – projekta realizācijas izmaksas palielināsies par 10 %, un ieguvumi samazināsies par 10 %. Līdz ar to investīciju atdeve pilsētai un tās iedzīvotājiem veidosies tikai 2030. gadā. Pie nosacījuma, ka nepieaugs īpašuma vērtība, tad līdz 2061. gadam ieguldījums kļūs pozitīvs, pateicoties netieši pakārtotiem sociālajiem, ekonomiskiem un vides ieguvumiem. Saskaņā ar pētījuma analīzi par parka attīstību, kas slāpē pilsētas blīvās apbūves slodzi, parks kļūst par ekonomiski izdevīgu ieguldījumu labvēlīgas pilsēttelpas izveidē.

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Intuitive spatial interaction in landscape design

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Abstract. Research in landscape architecture (LA) is an important area to improve natural, anthropogenic, social and economic sustainability. The focus point of the article is territory of historical greenery (THG) of LA, which originates as a result of interaction between material environment design and society. The study of THG problems today is based on the innate human right to live in a harmonious space of both aesthetic material and natural environment. Environmental quality criteria are important to understand the nature and human interaction embodied in LA as an expression of applied art. Therefore, urban spaces formed by the anthropogenic objects of LA, require studies of the systemic relationship between the material and natural environment and its function as a whole. Based on heuristic, qualitative and quantitative research methods and literature review of case studies, the article discusses the problems of interaction between contemporary society, historic legacy and natural processes. In this article, authors explore the natural human abilities to perceive and interact with the environment on the intuitive level. Universal design aims provide a value basis for social, cultural and functional interaction harmonization of the environment on the intuitive level. More universal and intuitive approach reveals the potential to enhance spatial interaction with the THG and to improve quality of its future management and development scenarios.

Keywords: landscape architecture; intuitive design; historical urban greenery; park art; interaction of anthropogenic and natural components

Introduction

The article focuses on the society's role analysis in the development of landscape architecture, especially of historical greenery. Main discussion is about the interaction between anthropogenic and the natural environment in context of contemporary development in intuitive design and societal activism. LA design issues are discussed in terms of aesthetics, functionality, psychological comfort, public performance, participation, etc. Investigation into these aspects is based on the scientific literature analysis, results of sociological research and surveys, conception of intuition and methods of the statistical analysis. Attention is directed towards the process of formulating, designing and implementing creative ideas for the spatial environments. The big interest in the interaction studies between anthropogenic and natural environments is revealed by the enormous variety of scientific publications and interpretations of formalized documents in the context of postmodern society. Thus, research into context of LA contemporary anthropocentric development, is of great importance, both from the point of view of cultural heritage value and community welfare [61].

Clearly, the architectural activity of landscape formation and the reinterpretation of the concept of historical greenery, requires a systematic approach and clearer definitions of the interaction between man-made and natural environment. The Lithuanian laws [39] defines historical greenery as part of a greenery system, but de facto, often it is disintegrated interaction of natural and anthropogenic components in urbanized structures.

When discussing the duality of interaction between the anthropogenic and the natural environment of Lithuanian green areas, it should be noted that the methodological analysis of LA object restoration is an area of isolated and narrow research [32; 10; 28].

The heritage and especially anthropogenic uniqueness of the historical greenery is often underestimated in the formation of the LA in addition to the declared environmental goals. In this way, due to its methodological paradigm, which is poorly defined, the law on green areas is not fully implemented. Moreover, the concept of historical greenery as an art object is poorly defined in terms of utilitarianism, which is of great importance to society. Despite the abundance of studies on the science of landscape formation in Europe, deeper analytical approach to the interaction between historical greenery and the present-day societal development, is needed. Problematic issues indicate a lack of focus on the holistic research aspect. Subjectively interpreted discussions are being debated in many post-Soviet countries, including Lithuania, due to the relatively small experience of democratic involvement in the design processes and perceived uncertainties. Often, the thematic insights of the interactions are not determined by the systematic and ongoing monitoring results, but by changes in the conditions of public activism, for example to illegal or immoral activity in public spaces [47].

Related communities often rely on intuitive perception by manipulating concepts and uncertainties [15]. The systemic nature of the

problem, for example, is evidenced by the fact that, often, the design decisions of historical green areas are not based on insufficient landscape archaeological research [29]. From the end of the 19th century, they often remained the subject of only sociological, managerial or media research [43; 19; 59; 61]. Such situation is obviously due to the passivity and low level of leadership of the coordinating institution at the national level [11]. Thus, successful development of the state's public welfare can only be achieved through a comprehensive and complex study of the various interactions between the anthropogenic and the natural environment [30; 44; 12].

Horticulture in early civilizations is the result of the interplay between the anthropogenic and natural environments and is considered as an applied art and utilitarian precursor of landscape architecture. By integrating the forces of nature and the creative endeavours of society, horticulture has evolved from farm fields and practical purpose gardens to contemporary applied gardening [20]. Today utilitarian gardening activity in the Netherlands, England, Italy, Denmark, the Czech Republic, Lithuania and other countries, is favourite leisure time of modern society. In the socio-cultural context, the aesthetic features and applications of horticulture were determined by the level of interaction between anthropogenic and natural processes and the level of civilization development [33].

Many philosophers of ancient times meditated and studied in the gardens. Horticulture was not an exceptional phenomenon, but as an object of applied art, it meant everything that made a person delighted and content [57]. In the middle ages, the garden was associated with paradise [35]. Its anthropogenic and natural interactions had an application to inspire the clerical community for spiritual reflection and to meet other spiritual needs of the ecclesial community. Gardens in the middle ages were closed, focused on sacral utilitarianism. Drawing the inextricable dependence of the aesthetic expression of the Medieval Garden on the monastery residences and castles. It shows that the greenery of that time had its target user [21]. Today, no such greenery has survived in Lithuania, only speculations about the presence of Medieval Garden or nursery relics near the castle's defensive wall. Renaissance horticulture preserved its medieval sacredness and the noble representational function of utilitarianism. It still can be observed as a planning, where in the middle of Vilnius castles there is a large garden between the palace and the defensive wall [48].

Often, what we call gardens in many other languages may refer to the area planted with vegetables or fruit trees near home. However, the Historic Green Plantation in Lithuania is defined by the Law on Green Plantations as "... a large-scale greenery of enduring stylistic value or belonging to important stages of urban development, associated with significant objects or locations and important events or personalities in social, cultural and national history" [39]. This understanding moves away from the natural origins of the garden and approaches the concept of anthropogenized greenery - result of human interaction with the natural environment on functional and cultural level. To achieve the historic goal of greenery management, restoration through conservation, is often understood in modern society as preserving status quo and immutability. As a result, society perceives and interprets THG based on emotions, rumours, or hearsay [15], hence fragmented uncertainty is prevailing in ever-changing environment of postmodern culture [22].

In restoring historical greenery, it is a challenge to choose appropriate strategies for development and to find solutions that strike a balance between contemporary socio-cultural interests and natural heritage. Issues of historical green areas management should be addressed only through scientifically sound reasoning for preserving historicism, supported with the political commitment and interest of society. The aspects of park art, anthropogenic activity and the formation of social and cultural relations are the most important for historical greenery.

Kant's "Critique of Pure Reason" [31] raises the fundamental question of "what must I do?" The way in which the surrounding environment is interpreted depends on the answer to Kant's question. The world is evidently changing, and man, being completely dependent on the nature and time, cannot resist this constant change. This being supposes the temporality of live and conducts the cognition of the world through its interpretation. This is also characterized by the formation tendencies of the contemporary postmodern cultural material environment. When there are no separate artistic directions, art is everything; humanity is left to change its existence through interpretation. Therefore, in the context of contemporary greenery, knowledge is often interpretative and accompanied with intuitive responses. Intuition does not require conscious reasoning but at the same time, it participates in creating effective responses. People may intuitively feel that they know the answer but it may be difficult to rationalize the action causality. In today's diverse environment, where people with different knowledge, experience and various abilities have to interact with increasingly complex or unknown contexts, it is necessary to improve the added value of the environment spatial expression. The aims and objectives of the paper is to explore LA interactions with the human abilities to interpret environment intuitively and to examine the possibility to harmonize THG design on an intuitive level.

Methodology

The research object is intuitive interaction between human and LA, and the objective is to evaluate the possibility to harmonize material environment's shape expression on intuitive level. In a previous article [27] authors explored the potential for the intuitive optimization of the material environment, when mechanical shape expression would provide more universal application for aesthetic and functional design. Relevance of the research into intuitive harmonization is unveiled as universal improvement of the social, cultural and functional interaction quality with the environment and it can be achieved by adapting particular shape forming techniques.

In this article, the concept of intuition is considered on the basis of cognitive sciences theoretical and practical research. Research on the problems of intuition is related to the structure of human thinking mechanisms, combining sensory abilities, psychology, cultural and environmental experiences. Human associative networks are automatically activated in the face of stimulus and parallel processing of information in implicit memory by utilizing processes prior the threshold to conscious experience. Such information processing demands complex decisions that require more effort than a conscious thought [3; 13]. Many researchers agree that intuition can be characterized as intense confidence in an intuitive feeling [25] and as a way to acquire knowledge without resorting to logic and linear analysis [51]. The modern concept of intuition states that a person experiences the world through his senses and classifies the acquired data into an environmental context (including a cultural one). Specific contexts elicit specific somatic and psychological responses and affective associations formed through learning or previous experiences. Activation of somatic states comes before consciously perceived somatic states [38]. According to Hodgkinson [25] the better structure of environment relates the to our senses, the more natural and intuitive our relationship with it is. Somatic mechanisms (sensory somatic markers) are associated with the tendency of unconscious reactions and this creates evidence in neurobiology that environmental assessments are formed not only consciously but also somatically [4; 14]. Therefore, it can be argued that the body and senses are very important factors to acquire and evaluate new information intuitively in the context of environment.

Meanings and spatial properties of objects are not entirely separable from one another but symbolic meanings can be easily detached and learned. Not all kinds of meanings are learned and evidence for that are animals and infants. Gibson points to the evidence that meanings depend on perceptions to modify the world properties and these properties depend on agent's personality and culture [17]. His motor theory of perception tells that the spatial behaviour is intimately connected with spatial perception.

Kirsh and Maglio [34] described motor activity as dual: epistemic or pragmatic. Pragmatic actions are bringing the agent closer to his goals and the purpose of epistemic actions is to obtain new information (explore the environment) by revealing what is hidden, that would eventually lead to the pragmatic actions. According to the study, motor epistemic actions are helping with the cognitive processes by reducing the amount of mental effort to get insights.

According to Gerstenberg and Tenenbaum [16], even if a person has an intuitive understanding of physical causality – what influenced it? A very important factor in shaping people's decisions is the assessment of – how it was influenced to cause different outcome. Counterfactual contrasts allow to intuitively understand the amount of one or another factor's influence, but such estimates vary because different people may regard these contrasts differently.

The ideas of intuitive theory of physics are detailed and structured. Concepts like power and moment are related through abstract laws such as the law of energy conservation. In the case of intuitive theory in psychology, beliefs, desires and actions are linked by the rational action principle – the individual will try to fulfil his desires in the most efficient way possible, taking into account their beliefs about the world [1; 60]. Gibson advocates the idea of embodied cognition [17], which would explain the human body and mind unity in order to interact with the environment – human body proposes the options for interaction.

Agent is looking for the most efficient way to interact with the surroundings and embodied cognition gives the notion of possible action affordance. Such process reduces the amount of mental activity; hence, bodily activity is directly influencing mental processes. On this theoretical basis, the intuitive interaction between human and environment are considered as human ability to perceive and simulate physical causality. This ability provides the opportunity to encode such information into environment's spatial expression, making it more easily and universally understandable on a subconscious level.

Attempts to form an intuitive spatial interaction can be observed in historical examples of the city square design. In ancient Greece and Rome, central urban agoras and forums had a perimeter of stone blocks which marked the boundaries of the public space, preventing the expansion of surrounding

buildings and businesses, limited the access of criminals or other unwanted persons. This symbolic border was a crucial political and social marker because it clearly demarcated the place of democratic processes in society [45]. A problematic example, when medieval Western European city public spaces could have been private or simply hijacked [5]. Seating in such spaces often represented a power or served as a symbol of public order, but was also often a source of conflict between townspeople [2]. Therefore, for safety reasons, the furniture in such spaces was massive or even integrated [54]. Tiananmen Square in Beijing is traditionally shaped to reveal the structure of the city's social hierarchy, with the Gates of Heavenly Peace leading to the Forbidden City, separating ordinary residents from the world of rulers. The size of the square in terms of human scale is also very important. Large, human-scale squares, like the Red Square in Moscow or the Tiananmen Square, can psychologically generate a sense of fear. In doing so, it reveals its purpose as a more political tool or ceremony than a public recreational space [30] hence LA spatial properties can generate means to consolidate particular context.

Urban public areas have no other intended purpose besides to ensure human communication, social, cultural needs and fulfil safety objectives [27]. Therefore, quality of the historical greenery is considered in the context of these criteria. It can be enhanced by exploring the environment and human spatial interaction specifics, revealing the creative and methodical means to relate environmental mechanical causality with the human cognitive abilities.

The principles of universal design and the ensuing goals indicate factors of the environmental harmonization. The goals of universal design principles and their standards have been established and endorsed by the consensus of scientific community. These goals must be combined with the principles of universal design, to improve the quality of human life in a given environment [56; 46; 55]. Based on intuitive principle goals [18] and the cross-walk with principles [55], the following shape intuitive harmonization factors are established:

- The aim of cultural appropriateness – shape improves the aesthetics of an object.
- The aim of health and wellness – shape complements object's function.
- The aim of understanding – shape teaches interaction with an object.

Spatial properties of the intuitive expression variables are very diverse as well as their states (separation, centre, joint, closure, balance, etc.). These variables acquire meaning in the specific context of physical, cultural and social environment [7]. The principles of Gestalt theory are perhaps the most widely recognized in the fields of architecture and design as explaining the perception of the integrity of individual elements in the environment [8].

According to Muller [42], a person is always confronted with shape emanating functionality and even if it does not look familiar, user tries to connect it with something familiar. A semiotic understanding of shape modelling requires to understand Gestalt components from which it is made and the environment where it is placed. “Ability to gain visual information and then to project kinaesthetic sense is giving us a chance to understand the comfort of a particular object or environment” [41].

Intuitive shape perception is subliminal and takes to further and more conscious stages of information cognition and evaluation. The value-based information purposefully embedded in the stage of intuitive cognition creates preconditions for further shape Gestalt evaluation. The variables of intuitive shape expression are physical states that consist of complex elements and are perceived as Gestalt impressions. These states are described as intuitive responses to Gestalt impressions that do not require further explanation. As Gestalt impressions, they are structurally complex and therefore should be investigated in the context of a particular environment.

Abductive reasoning allowed to distinct 10 main shape expression variables, whose properties are not cultural / symbolic or specific functional origin, but are related to the mechanical conditioning, which may acquire positive values in the context of intuitive interaction:

- The proportions of the shape are rational.
- Shape reflects the properties of the materials.
- Shape is minimal.
- Shape is integral.
- The elements of the shape are contrasting.
- Shape elements are massive and rigid.
- Shape reflects the function of the object.
- Shape reveals the construction joints.
- Shape is smooth or adapted to the user.
- Shape reveals the method of use.

This analysis revealed the assumption that there are not many unique elements of shape’s spatial expression, since most of them can be associated with the expression of another. In a particular context, these shape variables may be categorized as aesthetic, functional, and interactive, although they overlap in terms of intuitive design factors. Parks and other urban green zones are directly influenced by these variables. Spaces and contexts are interrelated by shape properties. In this study authors are looking for the most universal spatial expression variable, which can be applied to harmonize intuitive interaction factors.

In late 2018 authors conducted an online survey of the shape variables in which 77 professional architects and industrial designers were participating. Participants were asked to name the most relevant shape expression variable to improve the aesthetics, complement function and to teach interaction. Survey consisted of three parts – one part for each factor. The objective was to distinguish the dominant variable, which prominently participates improving all the factors with the averages as high as possible.

Statistical calculations of survey data were performed with the GNU Affero General Public License program. Main calculations were carried out with the "Stats" module [49], "Psych" module [50] was used to calculate Cronbach's alpha coefficient, and the "Likert" module [9] was used for the descriptive statistics.

In the Methodology of estimation of the most important shape variable for a factor, the estimation of the evaluation means of respondent's answers were used to determine the most significant shape variable of all examined 10 variables for each factor. On the basis of these estimations of means, the investigated shape variables were ranked within each factor. The highest rank is assigned to the shape variable whose estimated mean is the biggest among other shape variable mean values. The most important shape variable can be determined by the following expression:

$$m_i^* = max\{m_{i,j} : j \in \{1, \dots, 10\}\}, i \in \{1,2,3\}.$$

where: $m_{i,j}$ is the estimated mean value of the *i* factor of the *j* shape variable:

$$m_{i,j} = \frac{1}{n_{i,j}} \sum_{k=1}^{n_{i,j}} x_k \qquad (1)$$

Where $i \in \{1,2,3\}$ is the number of the factor; $j \in \{1, \dots, 10\}$ is the number of the shape variable of *i* factors of *j* shape variable, x_k is *k* evaluation of the shape variable. The ordered set (vector) of the mean values of the shape variables $X_i, i \in \{1, \dots, 10\}$ is as follows:

$M = (m_{i,i}, m_{i,k}, m_{i,l}, m_{i,m}, m_{i,n}, \dots, m_{i,s})$,
where
$m_i^* = m_{i,i} \geq m_{i,k} \geq m_{i,l} \geq m_{i,m} \geq m_{i,n} \geq \cdots \geq m_{i,s}$.
Then, the ordered set of the shape variables corresponds to the indexes of the ordered set of the means:

$$J = (j, k, l, m, n, \dots, s_{i,j}) \qquad (2)$$

The difference between the two estimations of the means can be statistically insignificant. In this case, the statistical hypotheses were tested:

$$H_0: \mu_i^* = \mu_j$$
$$H_1: \mu_i^* \neq \mu_j \qquad (3)$$

Where μ_i^* is a mean of the shape variable whose estimated mean is the biggest, i.e. m_i^*. Each pair $(\mu_i^*, \mu_j) \in \{\mu_i^*\} \times \{\mu_j : j \in \{1, \dots, 10\} \backslash \{i\}\}$, where $\times$ is the Cartesian product of two sets, was tested and $p_{i,j}$ values were calculated for each pair (μ_i^*, μ_j). If hypothesis H_0 is rejected then the highest rank 1 is attributed to the shape variable *i* whose $m_i = m_i^*$. If the hypothesis H_0 is rejected and an alternative H_1 is then accepted, the highest rank is attributed to both *i* and *j* shape factors whose $p_{i,j}$ value is the biggest compared to the other $p_{i,k}$ values $k \in \{1, \dots, 10\} \backslash \{i, j\}$, since there can be more than one pair (μ_i^*, μ_j) for which hypothesis H_0 is accepted.

These variables participate with different strength in enhancing one or another factor but the aim of the statistical analysis is to determine the most universal one – strongly influencing not only one e.g., aesthetics but function and interaction as well.

Results and Discussion

The statistical analysis of the survey data identified that the most statistically significant (dominant) shape variable for the object's intuitive factors harmonization is - *shape reveals the method of use* (Table 1).

TABLE 1

Stacking indicators of the intuitive shape expression variables

Rank	Variable	Mean	*p* Value
1	V_10	4.051	1
2	V_1	3.957	0.286
3	V_7	3.739	0.015
4	V_9	3.65	0
5	V_2	3.495	0
6	V_4	3.227	0
7	V_3	3.192	0
8	V_8	3.098	0
9	V_5	2.949	0
10	V_6	2.457	0

It prominently participates in revealing the way space/object should be used and enhances its functional and aesthetical properties. Meanwhile, rational proportions of shape strongly participate in enhancing the aesthetics. Variable shape reflects the function of the object also prominently participates in forming intuitive content but it is less important for the aesthetics. It has been found that the massive shape elements are the least important for all the factors of intuitive harmonization.

The dominant intuitive harmonization variable - shape reveals the method of use has to be implemented into environment shape design. This variable is Gestalt impression and consists of

implicit attributes. This impression is formed by the particular space/object's function and human interaction peculiarities. Its shape constituent parts are anthropometric data, human physical or sensory abilities and interaction place. These elements can be linked through shape altering using mechanical properties like bend – direction of force, gap – anthropometric allowance to interact and etc. These restrictions are explicit and can be measured and applied in the conceptual shape modelling, providing opportunity to document, monitor, modify and test the effectiveness of the intuitive interaction.

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

Established dominant intuitive variable should address not only physical space properties but inevitably local social and cultural contexts. Analysis of the particular space in the context of what is the way of use provides initial design restrictions and conditions for the integration of the intuitive harmonization Gestalt. In order to reveal the spatial usage through physical shape expression it is necessary to understand design conditions of the particular space by performing analysis based on the historical legacy, local community's interests and habits.

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The experimental research should apply the principles of shape mechanical formation to *reveal the method for use* as a THG shape intuitive harmonization variable. One of the experimental methodology's task is to determine the location of the modification in relation to the experimental object's shape. Physical components are the bearers of the function and the exact position of these fixtures may vary in each case. Therefore, research in human interaction with the shape of the environment can be attributed to the border of the functional component. The main restrictions are: the function of element and human interaction peculiarities. The amount of details may vary accordingly to the subject of interest and shape of the element should be defined by the location of functional elements and their joints because depiction of these elements are necessary to understand the placement of the shape gestalt impression.

The objective of the experiment is to test the intuitive perception of the modified LA object's shape in terms of the established intuitive harmonization variable. The practical application of monitoring is object-specific and should involve analysis of the particular object's functional and interaction values to set criterion parameters. Quantitative and qualitative research methods may be applied to monitor – how effectively shape reveals the method of use or how well human interacts with the designated object's function.

Various quantitative intuitive shape harmonization criteria can be investigated, defined by the THG object's functional and interaction values, such as: time spent in a particular place, walking distance, visitor spatial distribution, and so on. These criteria may be established by performing the analysis of the function, spatial context and human interaction peculiarities of the object. Method such as MaxDiff analysis may have advantages for the qualitative assessment when information should be perceived and evaluated on an intuitive level.

In the context of LA, socio-cultural environment, belonging, representation, and the criticality of community are greatly important in order to develop sustainable solutions. Therefore, in defining a territorial (local) community, it should address the interests of communion members [6; 24]. Obviously, the development of historical greenery and its typology is more understandable to the societies with a long tradition of creating and managing them.

Strategic directions for the formation of LA should be determined and based on integral functional-economic, socio-cultural, environmental, and Genius Loci (local spirit) criteria. This will not only benefit the architectural and applied art objects, but according to Laužikaitė [37], the feeling of individual or community spiritual connection and interaction in a specific territory which is difficult to name.

Programmatic discourse with territorial (local) society should be developed at the earliest stages of the design process to formalize and define priorities for the LA objects. The Aarhus Convention [58] concerns three public rights: 1) access to environmental information; 2) participate in environmental decision-making; 3) to apply to the courts for environmental issues [52].

Žilinskas [62] identifies community as the most important local government entity consisting of residents living in a defined space – an administrative territorial unit. The author points out that community is formed by territorial community of municipalities. Thus, the modernization of greenery in a postmodern society (when the object becomes its own to the local community) is a decisive factor for public engagement and

participation. Questions – what is important for the individual, what is important for the territorial (local) community or the wider society are becoming particularly relevant? In answering these questions, the qualities of the discourse participants must pay the utmost respect to the compatibility of law, morality and natural norms [26]. Otherwise, the extent of conflicts in historical greenery management processes will increase. For example, when discussing issues of historical greenery in public discourse, attention is drawn to the fundamental principle set out in the Florentine Charter that extensive, independent research is required before greenery management [36; 40]. In today's mass-consuming society, with its predominantly fast-paced environment, public spaces and park art is becoming an ad hoc challenge. The topic of greenery development is being speculated, and one-day goals and criteria of common goods are being debated in public. The preservation of the composition unity, structural elements, content, and details of historical greenery, whose changes are not detrimental to their essence, must today be formalized by special rules reflecting that era [23].

On the other hand, in a wider territorial (municipal) community and national context, green-field transformations could be captured by contemporary artistic means and adapted to the needs of urban population as a choice of contemporary world views. Today, the concept of participatory society is based on human feelings and the established criteria [53]. The latter aims to connect the spaces in the interest of the community and expanding the concept of communality to the "local spirit". In this way, the "benchmarks" of urban spaces that have formed in the minds of the population and the signs of local identity could be "measured" and compared with pre-existing indicators during the monitoring process. They can be applied by Design Dialogue, Participatory Planning or Participatory Democracy [23], hence communities have the potential for successful spatial solutions based on the "local spirit" of historical greenery. The focus of participatory democracy is on active citizens who join the organizations to represent the interests of the community and influence decisions made by the government officials.

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 [44]. On the other hand, there is a possibility to enhance LA of a specific area by applying principles of the intuitive design even if residents of the area are socially passive or can't establish common ground [27].

Intuitive interaction allows to form urban interaction zones - Genius Loc spaces of territorial (local) communities. Psychologists studying the phenomenon of place attachment equate rapid changes in the immediate environment with factors that lead to strong human experiences, hence feelings. Therefore, it is so important to consider the relationship of local territorial communities with the local spirit, giving preference to the arguments of people living closer together rather than the general view of society as a whole [26].

Definitely, there are regional cultural and social identity specifics but it is possible to harmonize historical greenery coexistence by integrating territorial demographic preferences and employing appropriate design methods to improve its aesthetical and functional qualities. This study argues, that LA spatial shape Gestalt can be analysed and integrated as interrelated physical elements in a particular socio-cultural context and it unlocks new potential in design optimization studies.

Conclusions

In the early civilizations horticulture formed the art of gardening by integrating the forces of nature and the creative endeavours of society. According to the principles of the International Charter of Florence, historical greenery includes architectural compositions of authorship, originality, spirit, authenticity, stylistic features, artistic and floral unity, and ethno-cultural values. They can be compared in the wider context of the evolution of European horticulture in defining the importance of greenery not only on local, national but also at European level.

Problematics of historic greenery preservation reveals itself in various contexts: legislative, historical and social. Intuitive interaction is synergy of the sensory stimulus and the particular context. As a result, it generates sensations and emotional responses. Uncontrolled emotions are disruptive force, even though laws and rationale of the historical preservation are defined and reasoned. More objective approach to intuitive harmonization of perceived stimulus can be found in universal design. Study has revealed that the Intuitive Theories demonstrate human ability to simulate Newtonian physics, and embodied cognition allows to intuitively perceive and anticipate the interaction with the environment shape. Its mechanical expression causality (Gestalt) consists of multiple combined attributes. The intuitive shape harmonization survey data analysis indicated dominant shape variable that can be effectively integrated to harmonize interaction with the environment. Intuitive shape expression gestalt is comprised of function, human interaction

peculiarities and context. To establish socio-cultural and functional criteria and conditions for the historic greenery harmonization, it is necessary to involve community members and professionals on participatory democratic grounds.

The public sees the object of LA primarily as a "part" of the spatial structure of the territorial community, rather than as a place to be redone. Thus, the active participation of the society and consistent involvement in the project implementation processes require the consensus. However, the fact that we are observing conflict situations in a society today, does not mean that all the projects of the territorial communities cannot be properly designed and implemented. Such approach raises a demand for expertise in design management processes and more universal design techniques for controlling sensations in the context of the LA spaces.

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Kopsavilkums. Pētījumiem ainavu arhitektūrā ir svarīga loma, kas nosaka dabisko, antropogēno, sociālo un ekonomisko ilgtspējību. Rakstā galvenais akcents tiek likts uz vēsturisko apstādījumu teritoriju, kas radusies materiālās vides dizaina un sabiedrības mijiedarbības rezultātā. Vides kvalitātes kritēriji ir svarīgi, lai saprastu dabu un cilvēku mijiedarbību, kas iemiesota ainavu arhitektūrā kā lietišķās mākslas izpausme. Balstoties uz heiristisko, kvalitatīvo un kvantitatīvo pētījumu metodēm un literatūras izpēti, rakstā tiek analizētas mūsdienu sabiedrības mijiedarbības, vēsturiskā mantojuma un dabisko procesu problēmas.

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Architecture of Charles Carr in Liepāja

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Abstract. Contribution of civil engineer Charles Carr to the development of Liepāja's Art Nouveau architecture is analysed in the article. Art Nouveau in Liepāja is one of the greatest values of architectural heritage of the city. Buildings of this style determine the cityscape in many places, but data on Liepāja's Art Nouveau architects until recent past were extremely sparse. Ch. Carr was known only as the author of the design of the building at Graudu iela 45. Two more his designs, including the one for the building at Graudu iela 44, were found during research. Analysis of planning principles, methods of artistic composition and architectural detailing of these works allowed identifying several other notable Liepāja Art Nouveau buildings as possible creations of Ch. Carr and to determine the place of this personality in the history of Latvian culture.

Keywords: history of Latvian culture, Liepāja's Art Nouveau architecture, apartment houses

Introduction

Liepāja is the largest city in the western part of Latvia. One of the pearls of the city's architecture is St. Trinity Church (1742–1758, architect Johann Christoph Dorn) – a Baroque edifice, which have no analogues in the whole Kurzeme, the western region of Latvia, but the most outstanding value of Liepāja's architectural heritage is Art Nouveau dating back to the early 20th century. Its importance definitely goes beyond national borders. Liepāja's building stock contains about 70 large-scale Art Nouveau buildings of high artistic quality, but one or the other Art Nouveau feature or individual detail of the style can be seen in at least half a hundred of other buildings. It is in more than in several European cities proud of their Art Nouveau legacy. Art nouveau in Liepāja determines the whole cityscape in many places.

Until recently, most of Liepāja's Art Nouveau buildings were anonymous, as during the Soviet 1970s the archive of historical projects of the City Construction Board was destroyed, and as a result accurate data on the time of building construction and architects were lost. The only known documentary evidence was the personal archive of the architect Paul Max Bertschy and his son Max Theodore Bertschy, which is stored in the Liepāja Museum. This collection of the projects developed by the two architects includes also some works by other authors. Several of them were signed by Charles Carr, a civil engineer. Recent research has made it possible to expand the range of individuals who have actively practiced in the early 20th century in Liepāja, simultaneously specifying contribution of each of them to the Liepāja Art Nouveau heritage. One of the four most prominent personalities along with M. T. Bertschy, Ludwig Melville and Pauls Kampe was Ch. Carr.

Personality

The data on Charles Carr's personal life are relatively scant. It is known that he came to Latvia from England. Between 1894 and 1901 he studied at Riga Polytechnic Institute and received a degree in civil engineering [1]. He worked as a junior engineer at the Steering Committee of the Road Construction Department of Courland Governorate in Jelgava. The districts of Grobiņa and Aizpute were under his supervision, and since 1902, he had the same duties in Liepāja as well. He also combined working for "the crown" with his private architectural practice.

Most of Carr's accomplishments in architecture are known from the documents kept in the archive of Bertschy's construction designs at Liepāja Museum. One more document with his signature was found in the Latvian State Historical Arhives. It is the project of the extension of the hotel at Baznīcas iela 11 in Kuldīga, approved on March 5, 1914 [2]. Most believably, this is not the only Carr's work in architecture outside Liepāja.

Legacy

In the early 1980s, while doing research at the Liepāja Museum, among the drawings of Bertschy, a blueprint of the construction design of the trading and apartment house in Liepāja, at Graudu iela 45 was found [3]. It was signed by Charles Carr, whose name was completely unknown at that time in Latvian cultural history. Design was developed in 1913 and approved by the Liepāja Construction Board on 20 September. Blueprints were reproductions of technical drawings rendered in Indian ink on tracing paper, using a contact print on light-sensitive paper in ultraviolet light (Fig. 1).

The house at Graudu iela 45 was built exactly according to the project. It belonged to a tradesman Abraham Lippert who sold bicycles and sewing machines. A wide shopping halls with no partitions occupied the first two floors of the building constructed in metal skeleton structure. Toilet facilities and an auxiliary room were located at the end of the side wings. Two servant staircases made the supply and delivery of goods more convenient. They also functioned as "the black staircase" that led to the kitchens of the two posh apartments on the second floor. There were six rooms in one flat and seven – in the other. Each flat had a bathroom, a separate toilet, a maid's room and a larder at the kitchen.

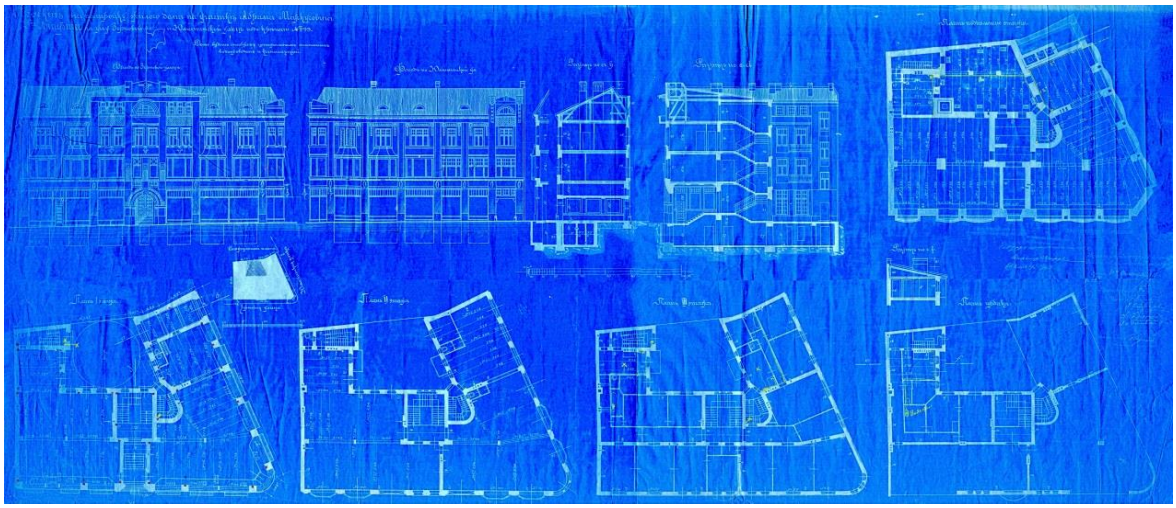

Fig. 1. Blueprint of the construction design of the trading and apartment house at Graudu iela 45. 1913

Fig. 2. Trading and apartment house at Graudu iela 45. A photo of the 1930s [4], a photo taken in 1983 and a photo taken in 2011 [both by the author]

The façades precisely reflect the spatial structure of the building: large shop windows display the goods on the ground and the first floors, while the windows of the second floor are smaller. On the first floor, shop windows are fully glazed forming semi-polygonal bay windows. They are covered with elegant metal roofs of pyramidal shape that makes a harmoniously smooth transition to windows on the second floor. Massive, rhythmically arranged lesenes rise up the full height of the façade accentuating verticality of the composition. Ornamental reliefs fill the spandrels between the floors. Two lion heads guard the entrance overlooking it from the spandrels between the first-floor windows. There used to be another mask – more human in appearance.

During the interwar period the building accommodated a casino. In Soviet times, a district committee of the Communist Party, a city committee of the Komsomol and a dozen of other committees supporting the communist ideology moved in at Graudu iela 45. Shop windows on the ground floor were bricked up, wall plaques of various sizes were tastelessly attached to the entrance portal and lion heads were removed. The mask adorning the middle part disappeared as well. In 2002, the building was restored (architect Agris Padēlis-Līns). The façade has regained its original appearance. Lion heads again stare down at passers-by, though they are not as sculptural as those shown in old pictures. Only the central mask has not found its way back. The entrance to the building has become more open. Interior spaces have been adjusted to meet the current requirements. For this purpose, new functional spaces have also been built in the former inner courtyard.

One of the most magnificent Art Nouveau buildings in Liepāja stands on the opposite side of the street, at **Graudu iela 44.** This building, the trading and apartment house overlooking the corner of Graudu and Krišjāņa Valdemāra streets, belonged to Wilhelm Raeder, a well-known merchant in Liepāja. A long time it was assumed that the architect of the building was Karl Eduard Strandmann [5], a Swedish architect active in Liepāja and responsible for a number of churches in Latvia and the northern part of Lithuania. Nevertheless, the building's construction design which after its approval at the City Construction Board was given to the commissioner (Fig. 3), is signed by Charles Carr. This document has been kept in the personal archive of Wilhelm Raeder's grandson, economist Heinz Raeder, who currently lives in Germany and kindly sent a copy of it.

The construction design of the building was approved in the spring of 1908 by both the Liepāja City Construction Board and the superintendent of the Engineering Works Section at Liepāja Fortress.

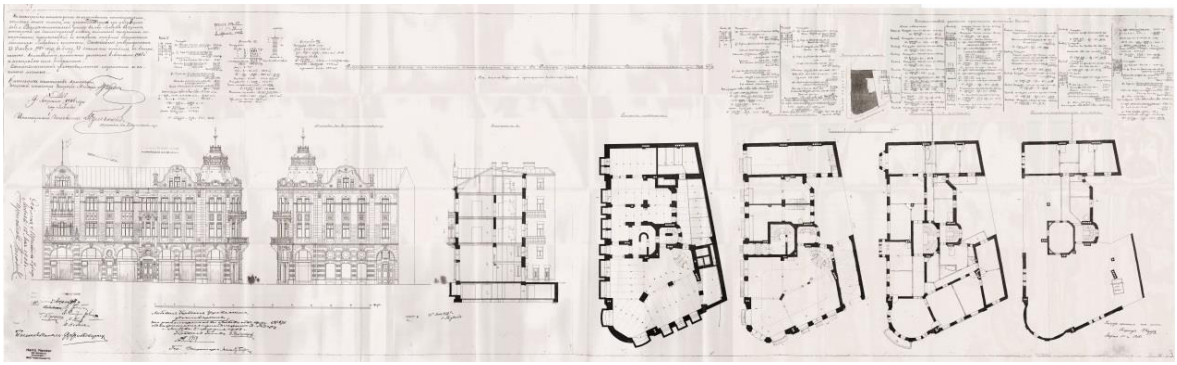

Fig. 3. Construction design of the trading and apartment house at Graudu iela 44. 1908

Fig. 4. Apartment house with shops at Graudu iela 44. A postcard of early 20th century and a photo taken by the author in 2012

Already on July 27, 1907, the status of a fortress was abolished for the Liepāja naval base, but the military authorities were still trying to intervene in the city building issues.

Wilhelm Raeder's trading company sold products made of china, glass and metal, sports goods, haberdashery, various fashion goods, lamps and lots of other things. His shop, located in a rented house in the New Market (now Rožu laukums) offered "household items, leather goods from Offenbach such as: albums, dressing cases, business card holders, wallets, cigar and cigarette cases, letter folders and letters bags, perfumes and soaps, combs, skin, tooth and nail brushes, pipes with wooden and meerschaum bowls, driving whips and riding whips, walking sticks, lacquered tinplate goods, petrol, spirit and paraffin stoves, tea and coffee machines and so on" [6]. Commercial success allowed Raeder to purchase his own real property on the corner of Graudu and Vilhelmīnes (now Krišjāņa Valdemāra) Streets and construct his own trading and apartment house. Construction was completed in 1909.

The façades of the building display an abundance of various ornamental reliefs, mostly geometric shapes and figures – squares, diamonds, triangles, circles, spirals, cones, pyramids, floral motifs, ribbons, wreaths, festoons, ornate decorative bands, stylised palmettes etc. (Fig.4). Large impressive birds – half pelicans, half storks – look at entrants from both sides of the entrance portal. All details form a unique sculptural façade. Surfaces incised by straight or wavy lines running in different directions alternate with completely smooth surfaces or surfaces with a varying degree of roughness. However, all this exuberance unravels only at a close distance, but from afar, the building stands out with its articulated massing. At first, the silhouette captures the eye with impressive gables and dominating corner tower. Two gables overlook Graudu iela and one – Krišjāņa Valdemāra iela. The façade is also embellished by several bay windows and balconies with elegant hand-forged railings. Artistic composition is vertically inclined – it was a trend called Perpendicular Art Nouveau that had become quite widespread in Riga at that time.

Architecture of the building stands out also with the huge shop windows rising up two storeys high. They reflected precisely the modern layout the building used to have back then, since retail spaces were arranged on both lower floors. The left wing of the building contained three shops. Each of them occupied the entire space in the height of two floors along the street, but in the depth was a spacious balcony, to which a separate internal staircase led. In the biggest shop located in the corner part of the building, the balcony encircled the entire shopping hall leaving an atrium-like space in the middle. Only two pillars supporting the upper floors stood there. The imposing staircase, which led to the balcony, divided into two symmetrical flights at the top. The staircase also connected the ground level with the basement. Today older people still remember this marvellously spacious three-storey shop. In Soviet times, the building housed one of the

Fig. 5. Apartment house with shops at Graudu iela 44.
Entrance hall, staircase and stove in the first-floor flat [photos by the author]

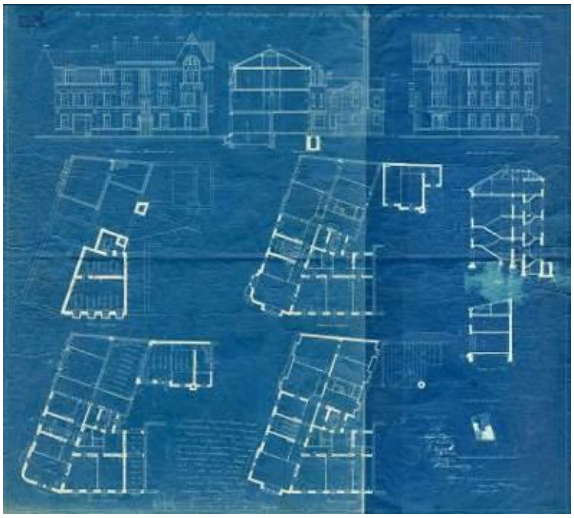

Fig. 6. Apartment house on the corner of Brāļu and Teodora (now Šaurā) Streets. Design. 1913.

Vojentorg shops (a special chain of shops for the Soviet army), but all the unique architecture of the interior was destroyed in the 1990s when the building was fitted for the needs of a bank.

On the second and third floors there are large flats with all amenities. In the façade their windows are framed by decorative mouldings encircling ornamental reliefs on spandrels between the floors as well. It is a typical method of artistic composition characteristic of Perpendicular Art Nouveau.

Interior spaces, especially the entrance, also have quite abundant decorative finish. A spiral staircase is a particularly attractive spatial element. Each floor contains two flats. One has five and the other – seven rooms. Kitchens have another entrance from the so-called "black staircase" that is located just behind the main one. A bathroom in the five-room flat is located at the back of the flat, close to bedrooms. At that time it was quite an innovative solution which became more widespread only in the 1970s. Several stoves with typical Art Nouveau crowns can still be seen in some flats (Fig.5).

Charles Carr's signature can be found on two more projects that have been preserved in the in the archive of Bertschy's construction designs at Liepāja Museum. One of them is the project of the Eckblum's villa at Dzintaru iela 23, designed by the well-known Finnish architect Lars Sonck in 1912. Carr signed it as a construction manager because Sonck could not carry out this duty while working in Helsinki. Another one is the design for an unexecuted three-storey apartment house with a bakery on the corner of Brāļu and Teodora (now Šaurā) streets (Fig. 6). The design was approved by the Liepāja Construction Committee in March of 1913 [3]. The façades of the building containing several comfortable apartments were proposed in a fine manner of Perpendicular Art Nouveau.

Unidentified works

Both buildings built to the projects by Carr and the unexecuted project pay attention to a number of principles of planning, artistic finish of the facades and principles of creating individual details that are hardly found in the works of other architects in Liepāja. Carr tried to place the bathrooms at the depth of the apartments, as close to the bedrooms as possible, rather than in the entrance area as traditionally at that time. His buildings are distinguished by very dynamic massing, elegantly articulated facades and the sophistication of the artistic finish. The same concerns to interior finish.

Fig. 7. Apartment house at Uliha iela 66. Around 1913. Charles Carr (?).
Plan [reconstruction based on data of State Land Service, Kurzeme region] and exterior view, staircase [photos by the author]

Fig. 8. Apartment house with shops and a cinema at Graudu iela 27/29. 1912–1913. Charles Carr (?). A postcard of early 20th century, a photo of 2012, main staircase in Graudu iela [both by the author] and plan [reconstruction based on data of State Land Service, Kurzeme region]

The ceilings of the staircase and the landings in his buildings are, as a rule, coffered. Such features can be noticed in a number of hitherto unidentified Liepāja Art Nouveau buildings.

One of such examples is the apartment house at **Uliha iela 66** (Fig. 7). The house was built shortly after 1912 as it was not included in Liepāja's directory published that year [7]. In the main staircase, like in the building at Graudu iela 44, partly curved flights of stairs create a visually effective staircase well. The servant staircase is located directly behind the main staircase. There are windows between them. The beautiful railing of the stairs was custom-made. The entrance hall has a coffered ceiling. All these features imply that Charles Carr could have been the author of this building. Also, the same principle as that applied at Graudu iela 44 underlies the layout of flats. On each floor of the house in Uliha iela 66 there are two five-room apartments with a bathroom located at the back of the apartment, next to bedrooms.

One of the largest and most imposing buildings in Liepāja is an apartment house with shops and a cinema *Palace* at **Graudu iela 27/29** (Fig. 8). The address of the building is also at Dīķa iela 10. The façade overlooking Dīķa iela among other elements of decorative finish includes a relief with numbers "1912–1913" designating the construction year of the building. The construction was commissioned by the owner of the building Karl Stefan who was a businessman and film producer [8].

Like at Graudu iela 44 or Graudu iela 45, this building first attracts attention with its articulated massing and expressive silhouette being an example of refined Perpendicular Art Nouveau. The one-storey wing of a cinema hall adjoins the four-storey building at J. Dubelšteina iela. The entrance to the cinema is arranged from Graudu iela. The main entrance to the building is also located in the central part of the façade facing Graudu iela. It is emphasised by the balconies on the second and third floors and by a large gable that interrupts the line of the strongly projecting cornice. The overall architectural image of the building, its details and ornaments are designed in the same artistic vein as at Graudu iela 45. It is quite likely that both buildings were designed by the same architect.

There were four large flats with amenities on each floor. One of the largest flats overlooking Graudu iela and located at the main staircase had six rooms, and the other – seven rooms. Kitchens could also be accessed via the so-called "black staircase" that was situated directly behind the main staircase like at Graudu iela 44. In each flat there was a capacious larder by the kitchen.

Fig. 9. Apartment house with shops at Tirgoņu iela 22. 1911–1912. Charles Carr (?). Exterior view, façade fragment, staircase [photos by the author] and plan [reconstruction based on data of State Land Service, Kurzeme region]

Bathrooms were also large and well-lit as they had windows opening to the courtyard. At the other staircase towards Dīķa iela, there were two four-room flats on each floor.

The building retained its original function until 1940. Then the Executive Committee of the Council of People's Deputies of Liepāja Region was set up in the large, posh flats. The cinema continued to show films but its name was changed to "Sarkanā bāka" (*Red Lighthouse*). Today a shop of household goods has replaced the cinema and one can only image how ornate the original finish used to be in the cinema hall with its painted ceiling.

The building still houses various institutions. Since 2000, restoration works have been under way. A modern lift has been installed in the main staircase, and the Art Nouveau decorative finish there and in many rooms has been carefully restored. Portals and entrance doors to former apartments are one of the most elegant elements of Art Nouveau interior design in Liepāja.

Like the building at Graudu iela 27/29, the apartment house with shops at **Tirgoņu iela 22** stands out with its elegant, refined in appearance and strongly articulated façade. Above the entrance portal, the façade displays numbers "1911–1912" designating the construction year of the building, while the number "14" on the portal stands for its initial address. The present address was assigned during the Soviet period when Lielā iela together with Tirgoņu iela were renamed after Lenin, and the houses were renumbered accordingly. he architectural finish of the façade, its overall composition and expression strongly imply that it could have been designed by Charles Carr. Coffered ceilings in landings and staircase railings made to individual drawings are present at Tirgoņu iela 22 as well.

Several more buildings displaying similar touch in artistic composition of facades supposedly were designed by Charles Carr. The most characteristic examples are apartment house with shops at **Toma iela 49** and apartment house at **Zāļu iela 17**. Architectural decoration of both buildings is much simpler than in the examples analysed above (façade finish at Zāļu iela 17 is still unfinished), but both are a significant part of Liepāja's Art Nouveau heritage.

Conclusions

Buildings designed by the civil engineer Charles Carr present the architecture of highest standards. They stand out with very dynamic massing, elaborated articulation of facades and fine detailing of architectural finish. Staircases in his buildings are peculiar with coffered ceilings and individually designed railings of usually saturated ornamental pattern. Apartments are well planned, convenient and with high level of comfort. He used innovative principle of placing bedrooms in the depth of apartments, close to the bedrooms.

Charles Carr along with architects Max Theodor Bertschy, Ludwig Melville and Pauls Kampe was among major creators of Liepāja Art Nouveau architecture. His contribution to the character of built-up environment of Liepāja and its artistic image quality is invaluable. Art Nouveau of Liepāja forms one of the most important parts of the city's cultural heritage.

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Kopsavilkums. Rakstā analizēts būvinženiera Čārlza Karra ieguldījums Liepājas jūgendstila arhitektūras attīstībā. Jūgendstils Liepājā ir viena no lielākajām arhitektūras mantojuma vērtībām. Šī stila celtnes daudzviet nosaka vides mākslinieciskо raksturu, taču līdz nesenai pagātnei ziņas par Liepājas jūgendstila arhitektiem bija ārkārtīgi skopas. Plašākās dokumentārās liecības bija vienīgi arhitektu Berči būvprojektu arhīvs Liepājas muzejā, kur Berči izstrādātajiem projektiem atrodami arī daži citu autoru darbi, tostarp būvinženiera Čārlza Karra parakstīts ēkas Graudu ielā 45 (1913) būvprojekts un vēl viens viņa neīstenots projekts. Kā būvdarbu vadītājs viņš parakstījies arī uz Ekblūma villas Dzintaru ielā 23 projekta, kuru 1912. gadā izstrādājis pazīstamais Somijas arhitekts Larss Sonks.

Pētījumu gaitā tika atklāts, ka pēc Č. Karrs projekta celta arī ēka Graudu ielā 44 (1908). Ēkas oriģinālā projekta kopija glabājas pie ēkas kādreizējā īpašnieka pēctečiem, kas tagad dzīvo Vācijā. Šo celtņu arhitektūras, kā arī neīstenotā ēkas Brāļu ielas un Šaurās ielas stūrī projekta kvalitātes analīze ļāvusi noteikt Č. Karra radošā rokraksta īpatnības. Viņa celtnes izceļas ar spēcīgi artikulētu un mākslinieciski izsmalcinātu, bet tektoniski skaidru fasāžu arhitektūru. Arī iekštelpu apdare ir izkopti detalizēta. Č. Karrs vannas istabas dzīvokļos centies novietot pēc iespējas tuvāk guļamistabām, dzīvokļu dziļumā. Viņa celtņu kāpņu telpās griesti, kā likums, ir kasetēti. Tieši šādas pazīmes var pamanīt virknē līdz šim neidentificētu Liepājas jūgendstila ēku. Ievērojamākās no tām ir ēkas Graudu ielā 27/29 (1912–1913), Uliha ielā 66 (ap 1913) un Tirgoņu ielā 22 (1911–1912).

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The Study of Valmiermuiža: History and Owners, Manor house and Closed Garden

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Abstract. Valmiermuiža is situated in the north of Vidzeme and borders with the town of Valmiera. The manor is less known than its other outstanding "sisters", for example, manors of Mazsalaca (Valtenberģi), Cesvaine, Dikļi and others. The most famous person among the owners of Valmiermuiža is Elisabeth von Hallart, who was an initiator of the movement of Brothers' congregations in Vidzeme, which turned into the wakening movement of common people. There were other owners but they were less known than the von Loewensterns who left valuables items. There is little information available on the manor's park, and no research has been conducted regarding the closed garden. There is an urgent need to include the manor buildings in the list of the state protected cultural monuments in order to protect them from wrong building activities and other modifications that are not in accordance with the historical cultural environment and spatial structure of the plan.

Keywords: protection and preservation of architectural and cultural heritage, parks and gardens, investigation of the manor house architecture

Introduction

Previously the research on the manor of Valmiermuiža (in German: Wolmarshof) was conducted in 1986, and that material was a valuable source of information for further research but new information appeared in literature and archives [1]. However, it is not available to a wider audience because no one published it. One of the most known sources of information of the town of Valmiera and its neighbourhoods is the book written by researcher H. Enzeliņš who wrote a book, and in 2019 it had the second edition, this time supplemented with commentaries [2]. An unusual centre of the manor, its owners in the course of time, the remains of the castle tower and the closed garden seemed interesting enough to conduct a more detailed study of the area of Valmiermuiža with more detailed research of the archive materials. The ensemble of the manor buildings of Valmiermuiža is extremely large therefore the article focuses only on the history, the family of owners, the manor house and the closed garden. The buildings for business activities, the park and the whole layout of buildings are worth of a separate study, therefore the description of them are not included here.

In fact, the life of Elisabeth von Hallart, the manor's owner and the wife of the general L.N. von Hallart, has been described before in relation to foundations of Latvian Brethren Congregations and the expansion of this movement in Vidzeme. However, her biography has not yet been studied in detail, which was the reason to examine her life in the context of Valmiermuiža's development. The article also presents an accurate comparison of the paintings of the manor house tower with the samples in the Alhambra Palace ensemble in Spain.

History and Owners

In 1622 the Swedish troops occupied Valmiera county. The Swedish king Gustavus Adolphus presented the district of Valmiera castle, which included the manors of Wolmarshof, Zempen, Muremoise and Kokenhof to Axel Gustafsson Oxenstierna (1583–1654), the State Chancellor and a diplomat. During the life of his heirs the process of manor reduction occurred and thus Valmiermuiža manor became the property of the state. Then it was leased to Johann von Reiter, a merchant from Riga. He leased the manor to Peter Bachmann who became a permanent leaser. During the Great Northern War, Valmiermuiža was heavily damaged, buildings were burned, crops and cattle were robbed. Only the sauna building remained unburned, but the mill had already collapsed. Then in 1713 the manor was leased to the lieutenant David Bachmann, a son of the P. Bachmann.

In the next years the history of the Valmiermuižas was closely linked with Magdalene Elizabeth von Hallart. She was born in 1683 in the family of Johan Gustaf von Bűlow in Kortenhof manor. During the Great Northern War in 1705 she got married with Hans Georg Leyon (? – 1708), who was a major of the Swedish army, and he was also an owner of the manors of Qurellen and Kudum. He soon died in the battle at Lesnaya in 1708. Both their sons died during the plague epidemic. In 1710 the widow married for the second time with Ludwig Nikolaus von Hallart (1659–1727), who was the general of the Russian army and they continued to live in Kortenhof manor. The newly married husband was occupied with his service in the army: he served in the army of Saxony for a long time,

Fig. 1. Axel Oxsenstierna. The artist David Beck [internet resources]

Fig. 2. Magdalene Elisabeth von Hallart [the original is kept at the Headquarters of the Moravian Church in Herrnhut, Germany]

in 1700 he was recommended by the Polish king Augustus II to become a commander of the Russian army, where he spent many years. After the failure of the siege of Narva, he was captured by the enemy and was held in captivity for one year in Sweden up to 1705. After the release, he returned to the Russian army and participated in several battles, including the battle at Poltawa. He was awarded the Order of St. Andrew, the highest award of the Russian Empire for successfully defeating one part of the Swedish army. However, the siege of the fortress of Stralsund in 1712 along with the Russian, Polish and Danish armies was not successful, and the general retired. In 1716 Ludwig Nikolauss von Hallart together with his wife moved to Saxony. In Dresden the wife of the general got acquainted with the count Nicolaus Ludwig von Zinzendorf (1700–1760) who in 1722 on his land property established the first Herrnhut Brothers congregation in Germany. Magdalene Elizabeth von Hallart was fascinated by the new movement and became a keen supporter of it. In 1721 M. E. von Hallart stayed in the court of St. Petersburg for some time and then returned to Vidzeme. The manors of Valmiermuiža, Muremoise, Burtneck and Schwarden were leased rent-free to General Hallart for his lifetime. After the death of the general in 1727 the widow inherited the manors [3]. Due to her husband's great merits and devoted service to Russia, the lease was extended. The first mission of Herrnhut Brothers congregation arrived in Riga at her invitation in 1927. Its brothers went to Valmiermuiža to establish a community following the example of Herrnhut congregation.

Fig. 3. Ludwig Nicolaus von Hallart [internet resources]

Fig. 4. Peter August Friedrich Prinz von Holstein - Beck [internet resources]

Fig. 5. Carl von Sievers [internet resources]

Fig. 6. Karl Otto von Loewenstern. Reproduction of the painting of an unknown author [National Culture Heritage Department]

In 1738 a new building for a previously established peasant school was built. M. E. von Hallart built a school for training Brothers congregation's teachers or the deaconate for assistant pastors of the Valmiera county parish [4] on the right bank of the river Gauja at the end of the Diakonāts street as it is called today. A smaller community house was built next to the deaconate for Latvian congregation meetings, but later a bigger house was erected with one hall for Latvian and another hall for German congregation meetings [5].

Unfortunately, no written records about the appearance of the master's house of Valmiermuiža have been found from the time when M. E. von Hallart lived, but the building had to be worthy enough for von Zinzendorf himself to visit it in 1736 and work with the manor's owner on the plan of the development of the Herrnhut movement in Vidzeme [6].

When M. E. von Hallart died in 1750 [7], the state leased Valmiermuiža for 12 years to baron Carl von Sievers (1710–1774), which later received the title of the count and a chief marshal of the court. The archives keep the information that Carl von Sievers, the owner of the manor, disregarded the interests of the townspeople of Valmiera and ordered to build a mill on the river Rute in around 1753. Also, in addition to Valmiermuiža manor, he managed to lay hands on the hill of Jēri and made it his property [8]. The hill of Jēri previously was allocated to the priest of the Valmiera parish. Further, in 1762 Catherine II, the Empress of Russia, presented Valmiermuiža manor as a gift to Peter August Friedrich Schleswig – Holstein – Sonderburg – Beck (1696–1775). He was a field marshal in the Russian Imperial Army, Governor of Estonia, Prince of Holstein – Beck, a participant of the Russian – Turkish war and the war between Russia and Sweden, he received the Order of Saint Alexander Nevsky, the Order of Saint Ann and other awards. In 1723 Peter August married Princess Sophie of Hesse-Philippsthal, but she died in 1728 at the age of 33. Then in 1742 he married for the second time with Countess Natália Golovine (1724–1767). He paid more attention to his property, which he owned for only five years. He was the one who initiated the creation of the famous Irši garden, a special area for the breeding of deer. During the time of Prince Peter August Friedrich, between the years of 1762 and 1762 a new manor house was built which had the features of a palace. Its long facade was thought to have been originally covered with a loft under the roof. A sketch of a Valmiermuiža manor house was found with a tall three-storeyed building with a loft under the roof, but it has not been implemented [9]. A good condition of the manor in the 18th century was evidenced by the fact that Empress Catherine II stayed in the manor house in 1764. Unfortunately, the prince did not own the manor for a long time, because in 1766 he asked the queen to allow the property to be sold and received an approval. The same year the manor was sold to Countess Bazewitz, a widow of Count Wachtmeister, who was a secret advisor, for 130,000

state thalers [10]. In 1773 she sold the property to Karl Dietrich von Loewenstern (1726–1783), who was a county sheriff.

He added a new two-storey building to the existing manor house. Later the manor was inherited by his son Karl Otto von Loewenstern (1755–1833). He had studied in Berlin and Gettingen and travelled around Germany, France, Italy and England. In 1766 he returned to Vidzeme, married Anna Mary Gotlieb von Bayer (1761–1832). After his death Valmiermuiža was inherited by his sons Karl Dietrich Georg, Andreass Magnuss Otto and Dietrich Johann Heinrich. The manor was the property of the family of von Loewensterns for almost 150 years. One of the last family members Karl Dietrich Georg von Loewenstern died in 1835 without leaving any offsprings. In order to earn more money, he established new livestock farms on the peasants' land and expanded the vodka distillery. The amount of obligatory labour (*corvee*) for peasants also increased. The property of Valmiermuiža was inherited by his brother Andreas Magnuss Otto who also owned the manors of Stockmannshof and Kokenhusen. Afterwards Valmiermuža was inherited by his son Otto Eduard in 1855. His wife was Countess Elisabeth von Keyserling. He died a young man in 1863 leaving three minor sons. One of them Carl Otto Edgar inherited the manor. He died on the island of Corsica in 1889 (he was born in 1853). In 1919 Valmiermuiža was taken over by the state. The area of land during that period were distributed as follows: 567 *purvietas* (1 *purvieta* = 0.37 ha) of arable land, 304 *purvietas* of grassland, four *purvietas* was occupied by an orchard, 120 *purvietas* of a park. Besides, semi-manors of Āžakalns, Pilāts, Luce, Buka, Vagulis, Sipe, Pidriķis and Jaunā also belonged to Valmiermuiža manor. As regards the location of Valmiermuiža manor, it was in its present place already at the end of the 17th century, as evidenced by the map of Valmiera town, Valmiermuiža and peasants' land designed by O. Lundgren [11]. The economic development of the manor during the Swedish rule was evidenced by its own glass manufacturing factory, the so-called glass shed located northeast of Šķēpi meadow [12]. The property of the manor suffered greatly during the Northern War. Buildings were burned, cereals and cattle destroyed. The war was followed by plague epidemics that did not spare also Valmiermuiža. For example, 593 people were still alive and 598 were dead in 1712. Later it was mentioned in the audit reports during the time of M. E. von Hallart in 1731 that all buildings were in a good condition, in the cattle farm of Kaposti a double threshing barn and a cattle yard were build, the clearance land was sparse and it had poor and moist soil. Each year six *purvietas* were cultivated. The mill used to be on the river, but for many years it was empty and abandoned. There were three pubs. One was located at Valmiera town, another one was called Sipe pub, and the third one was called *Pleppe Krug.* Each of them were newly built. It was mentioned that the timber as well as firewood were brought from far away which had to be transported one and half miles [13]. The report of the audit in 1744 provided the similar information.

The manor house of Valmiermuiža, later a palace in the second part of 17th century to 1940

The palace of Valmiermuiža vanished except for the tower, which is seen in a few historical photos. However, a historical evidence of the first manor house dates back to the second half of the 17th century. It is mentioned in the inventory records of the manor of 1688 that the residential building was built of wood on masonry foundations. It had an entrance hall, two rooms and four chambers. There was a chimney in the hallway. Underneath one room and the chamber there was a cellar made of boulders. The building was covered with a shingle roof and its technical condition was poor. These documents also detailed each room and a chamber. For example, the room which was on the right side when entering the house from the yard had a door with a pair of hinges, an outside handle and a handle, which led to a chamber, then there was an old green stove on a masonry foundation with three eaves above. There were 6 glass windows in this room with square frames, all windows had hinges, hooks and latches and other devices for opening doors. Below the chimney there was an open hearth made of boulders [14]. It may be concluded from the description that a building was partly similar to peasants' house of that time, with a mantelpiece chimney in the centre and rooms grouped around it. This building burnt down in 1708 during the Northern War. By 1731 a new manor house was built. However, it also became worn out or did not satisfy the owners. As it was mentioned before, Prince Peter August Friedrich Holstein – Beck built the new manor house (palace) in the 1760s. It was a one-storey stone building with dimensions 55.6 x 19.2 x 6 metres. Part of this building was occupied by a large hall decorated with expensive paintings [15]. It was depicted in the postcard dated back to the 20th century [16]. This visual material gives evidence that the building had one floor, it was covered with a tiled gabled roof with lower part hipped. The centre of the symmetrical longitudinal facade was accentuated by the risalite with a segment-type gable, but the ends had triangular gables. The corners of the risalites were adorned with pilasters, but the windows had a semicircular lintels in the central part. As there were small windows in the basement, the building might have a cellar. The rooms for travellers were available in

Fig. 7. Valmiermuiža [photo by the H. Treijs, the beginning of the 20th century]

Fig. 8. Great Duke Vladimir Romanov with the family at Valmiermuiža castle [photo zudusilatvija]

Fig. 9. Luise Auguste Wilhelmine Amalie Herzogin zu Mecklenburg [internet resources]

the palace since the main highway from the Western Europe to St. Petersburg went through Vidzeme. Certainly, these were apartments for nobility, including Empress Catherine II who could use them any time.

Fig. 10. The tower of Valmiermuiža palace [The photo from the beginning of the 20th century. National Culture Heritage Department]

Fig. 11. The tower of Valmiermuiža palace [photo by S. Kviesīte, 1974. National Culture Heritage Department]

One of the noble guests in Valmiermuiža palace was Luise Auguste Wilhelmine Amalie Herzogin zu Mecklenburg (1776–1810), who was also called Queen Louise by people. She, the wife of Friedrich Wilhelm III, wrote in her travel notes on January 1, 1809, on her way from Königsberg to St. Petersburg

that she had arrived at Valmiermuiža, owned by Count von Loewenstern, at around 6 p.m. and was greeted by his son. "*After the heavenly dinner, Prince Dolgoruki and General Duka left us and the men of their military unit handed us over to the other guards. For the first time in my life I had to spend a night under the open sky"* [17]. It was meant as a joke, but it could be misunderstood by researchers in later years. In fact, the lady stayed in luxurious rooms, where the ceiling of the bedroom was painted in the blue colour to imitate the sky, but the sun was made of pieces of the mirror which looked like a mosaic. Louise's grandson, Prince Friedrich Karl, also visited Valmiermuiža at the invitation of the owner of the manor at the end of 1875 to take part in hunting in Irši garden.

In the last quarter of the 18th century following Karl Dietrich von Loewenstern's initiative, an extension to the existing palace was built at one end opposite the granary. It was a two-storey building with a gable roof. In 1918 the palace, which could now be called an ensemble, was burnt down. In 1920 its oldest single-storey section was demolished. Subsequently, in 1922, the interior of the newest part of the building began to be renovated and adapted to the needs of the six-grade elementary school of Valmiera parish. In 1926 the school was given the name of Viesturs, the Latvian legendary tribal chief. As the number of students grew, it became necessary to build a new school closer to the city, the foundation stone of which was laid in the end of 1936. The school was opened on September 1, 1938. As regards the palace, workshops of Valmiera prison were situated there. After World War II, the building housed a camp for prisoners of war, but in the late 1940s the two-storey house burned down and was not renovated anymore. During the Soviet time there was a local farm's warehouse in that part of the building of the palace which had not been damaged. The documents of the Agrarian reform of 1924 contained the following information about the palace: *the palace (burnt down, length 55.6 m, width 19.20 metres, height 6 m, walls partially ruined), the palace (an undamaged part, two-storey 40.50, 10.50, 6 metres, respectively, the roof made of tiles is now being partially improved)* [18]. Nowadays, only a tower, a small part of the basement and the foundations have remained from the palace.

Fig. 12. The wall paintings of Valmiermuiža tower [Rundale palace museum]

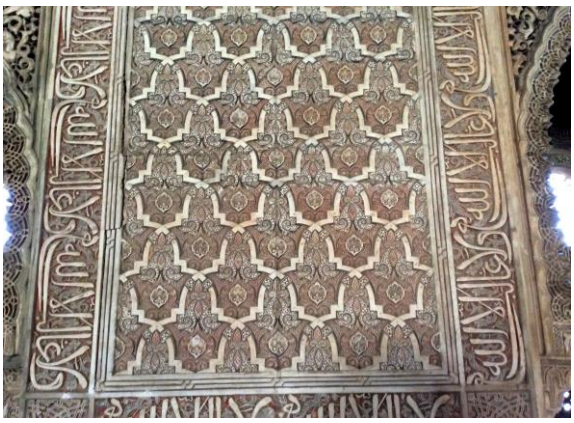

Fig. 13. Decoration of walls can be found in the Komar Castle Tower in the Throne Hall of the Alhambra Ensemble [photo by the author, 2019]

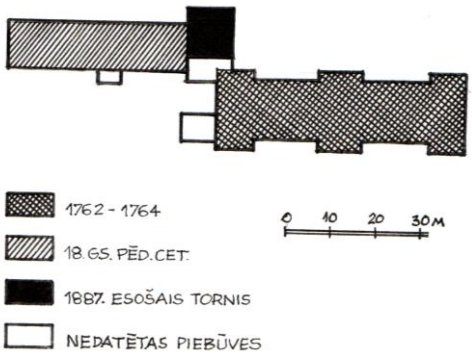

Fig. 14. The plan of Valmiermuiža manors shape before 1918. [created by the author]

The tower of the palace

The neo-baroque tower of the palace was built in 1887 because this year is written on the weather vane. The tower became the vertical dominant of the house. It is covered with a roof characteristic of a baroque style, and on its spire there is a wooden turret with the dome on top of it. A strongly protruded and richly profiled eave of the roof, the rounded corners of the tower were decorated with rough stones, windows of each floor had a different dressing. There is a balcony at the aperture of the second floor. The façade of the tower facing the granary outlines a contour of the lost two-storey building. However, the interior of the tower is particularly significant in the history of Latvian art due to wall paintings on three floors. They are done in the so-called Moorish style. The fashion of using the Moorish style appeared during the Rococo period and flourished in the second half of the 18th century. Alongside medieval and Far Eastern

influence, rooms decorated with arabesque art appeared in European castles, while Moorish-style pavilions were built in parks. Such patterns of ornamentation and park buildings were probably well known in Latvia as well, mainly through engravings. The Moorish style became much more popular in the middle and the second half of the 19th century, when the interest in Islamic culture and art increased considerably. The Alhambra Palace with its fortress complex in Granada, Spain, became a source of imitation and influence. The interior design of this fantastic ensemble inspired the design of individual rooms, for example, in the Winter Palace in St. Petersburg (destroyed by the fire in 1845); Alhambra's architectural motifs were used in the park pavilion at the Linderhof Palace in Bavaria, Germany etc. As regards Valmiermuiža tower, the wall paintings have been preserved best of all on the second floor. Arabesque compositions with palm leaves, shells and Arabic calligraphy elements were situated above the panel space. The composition of paintings was surrounded by the line of Kufic script. The analogy of such decoration of walls can be found in the Komar Castle Tower in the Throne Hall of the Alhambra Ensemble [19]. The tower, according to the design of Caliph Yusuf I of the Nasrid dynasty of Granada, was the most important element which symbolized the power of the emir, where meetings of councils and official receptions took place. To emphasize the importance of the Throne Hall, the Moorish craftsmen embellished a part of the panel with ornamental tiles and the top with lacy stucco cuts, depicting plant motifs, geometric patterns and texts. The ceiling of the throne hall (1334–1354) symbolized the seven heavens of Islamic cosmogony.

Concerning Valmiermuiža, the ceiling on the second floor was decorated with geometrically arranged octagonal stars. The oriental impression was enhanced by the used colours: bright blue, red, white, brown. The stencil was used in the paintings, but some places were finished by hand. The decoration of rooms on the third floor contained a restrained Renaissance ornament. It should be noted that these unique paintings were once endangered. It happened that in 1981 the tower owners expressed their desire to demolish it. In the same year a special commission formed by the Ministry of Culture carried out an inspection of the site and concluded that it was of urgent necessity to preserve the paintings. However, nothing was done, and the building without a proper roof continued to fall into ruins. Then again in 1986 the specialists of Rundale palace museum examined the building understanding the dangerous situation of this significant object. Today the building is in no danger, but the paintings continue to turn into hard-to-see remains ...

Written sources devoted to sightseeing in Valmiermuiža did not provide exact information about the volume of the ensemble. There were also very few historical photographs and most often they documented the time when the tower was standing alone in the middle of the park. The land plans were only outlined, as it was not the task to give the exact dimensions of the buildings when it came to land borders. Therefore, a plan of the shape of the manor's palace, as it might have been before the 1918 fire, is based on the analysis of all available photos and descriptions of the building.

The closed garden

The central part of the manor building consisting of the palace, a garden, a front yard and some buildings on the left side along the edge of the garden, is worth of more detailed study. The garden is surrounded by a 1.5 meter high fence made of cut boulders. In some places it has disappeared in the course of the time. In a small section just opposite a two-storey servants' house, the fence turns perpendicular to the park. It is possible that a small *pocket* had been created here linked to the gates which stands free now and a fragment of masonry fence which was seen next to the two-storey master's house in 1920. The fence of the closed garden has four gates, the fifth gate is freestanding in the middle of the garden. Three of the gate posts have a similar appearance covered with a segment-type roof, but two of them are plastered with stucco finish, and the third is made of boulders, with special treatment for corner stucco finish. The other two gates are different from the previous ones but similar in construction and design. They are built of smoothly finished granite squares, with segment-type and semi-circular loose lintels, both with a highlighted lock. These last gates are made in the tradition of classicism; the gates on the side of the road opposite the two-storey servants' house are especially expressive. The next gate leads to cobblestone pavement, which is parallel to the masonry fence but situated outside it. It is possible that this road, which also passes a small house for servants, to which a fragment of the masonry fence adjoins, previously, was not meant for others to see.

The oldest, available information about the Valmiermuiža centre and its buildings is from 1688. It is the plan of Valmiera town and the surrounding land made by *Eberhard Tolck*, a surveyor and auditor from Riga [20]. The location of Valmiermuiža was indicated as a small simple building inside the fence at the top of a wide area. There were several sections in it that could mean less important buildings. Three roads from different sides led to the gate of the fence. The fence was probably made of wood, but it is impossible to infer from a drawing what kind of building it was.

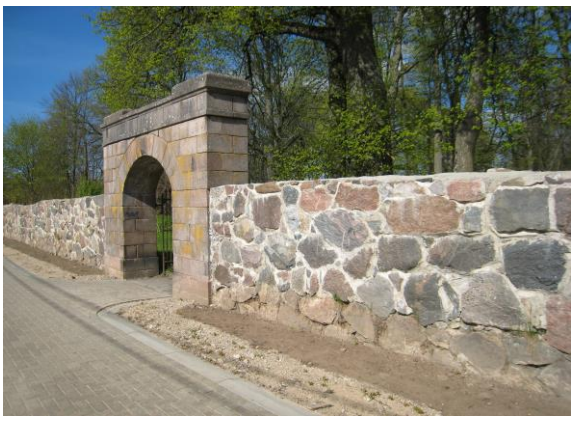

Fig. 15. The fence of the closed garden with the gate [photo by the author, 2018]

Fig. 16. The gate of the closed garden [photo by the author, 2019]

Fig. 17. The road from the gate along the fence of the closed garden [photo by the author, 2019]

Fig. 18. The plan of Valmiera town and its vicinity. 1688., E. Tolks [Latvia State Historical Archive, 7404. f., descr. 1., p. 1381]

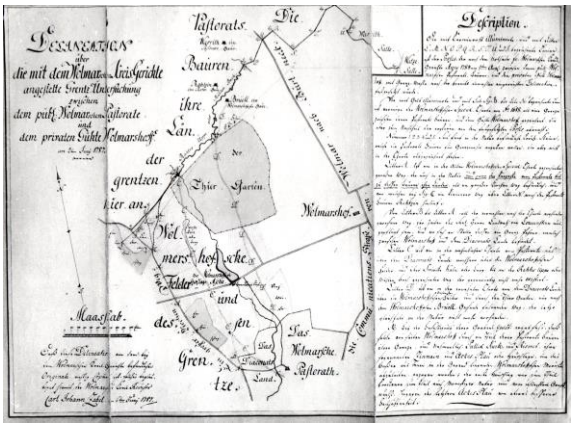

Fig. 19. Land plan of Valmiermuiža and Valmiera pastorate 1787., K. J. Cābels [Latvia State Historical Archive, 6828. f., descr. 2., p. 1259]

Fig. 20. A small paradise garden. A painting of an unknown German painter (around 1415), which depicts a scene of everyday life in the closed garden [Internet resources]

The buildings were built inside a closed yard at that time. In the land plan of Valmiermuiža and Valmiera pastorate in 1787 made by *Karl Johann Cabel,* a crown auditor and land surveyor, only one manor house was drawn, but here a much larger area was depicted and therefore the drawings were more schematic [21].

Certainly, the situation changed over time, new buildings were built, new masonry fence was built, but the principle of including the centre of ensemble in a rectangular piece of land remained. This situation was best seen in the *Land plan of Valmiermuiža* issued in 1817 [22]. Thus the both sides of the castle had adjusted buildings. At one end of the palace, which was the main building, there was the front yard with a circular driveway, but at the other end there was a garden of a typical design, which was crossed by paths dividing the area in almost square shapes, according to the tradition of a closed garden. There was a small building at the end of the garden in the axis of symmetry opposite the main part of the palace, but on the left side three buildings were lined up along the edge of the garden. All this group, as already mentioned, was relatively enclosed in a rectangular area

Fig. 21. The land plan of Valmiermuiža with the location of buildings in 1817 [Latvia State Historical Archive, 6828. f., descr. 2., p. 1272]

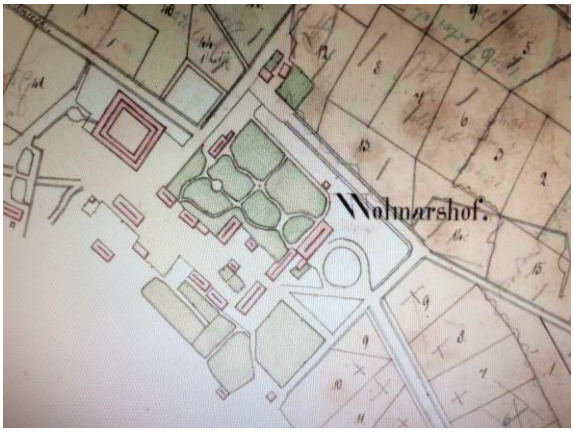

Fig. 22. The land plan of Valmiermuiža land. 1843., auditor F. Wischnakowsky [Latvia State Historical Archive, 7404. f., descr. 1. p. 1381]

Fig. 23. The land plan of Valmiermuiža. 1843 [Latvia State Historical Archive, 1679. f., descr. 156. p. 144]

surrounded by a masonry fence with a gate, which, as already mentioned, has mostly survived to this day. Thus, this central part of buildings formed the so-called closed garden.

As it can be seen in the map of 1843 "Feld Charte Wolmarshof", worked out by F. Wischnakowsky, an auditor, a rectangular enclosed garden design was mostly preserved, only the small adjusted building on the right side of the castle had disappeared. The regular garden paths have got a zigzag configuration, although the cross shaped division was still well seen. Two new buildings have been added, one very small outside the fence on the right side, the other one on the edge of the garden facing another one on the other side of the road along the masonry fence. In the same year, 1843, the land plan of another manor was designed [23]. A small rectangular shape was built at one end of the castle, which has retained its two mentioned shapes. There was a circular road in the front yard, to the left of which there were lanes for walks around small, oval squares. The garden design on the other side of the palace had a regularity, although the corners of the lanes were rounded. On the left side of the garden there was a circular structure (a pavilion?), in front of it there was a small garden with regular features.

Further changes of the closed garden, which was a core of the layout of Valmiermuiža buildings can be traced back to the land plan of the 1920s. Such a plan was designed by the surveyor V. Blumbergs in 1925 [24]. If the garden and the front yard can still be recognized, then the buildings leave a sad impression. Only the place of the old palace built by the Prince of Holstein Beck was identified in the plan, but the building which had been on the axis of the symmetry (its function has not been discovered) at the end of the garden was not included there anymore. Only the tower and the part of the palace which was separated by the road from the granary and which built in the last quarter of the 18th century were in the map. There were also no buildings on the left side of the garden near the road inside the masonry fence. Therefore it was difficult to read spatial structure of the closed garden of the last quarter of the 18th century – the beginning of the 19th century.

The similar evidence is provided by the land plan of 1926 [25] and the land plan of 1928 [26]. The Soviet period introduced its own corrections to the historic design of the core of the manor's centre. No one was interested or knew about the meaning of a historical layout of buildings and planning. The tower survived to become an evidence of the former manor's ensemble, even though there were repeated intentions to demolish it. The design of the

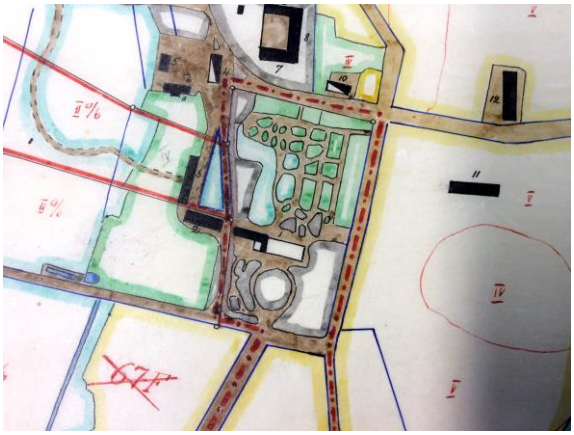

Fig. 24. The land plan of Valmiermuiža. 1925. g.
[Latvia State Historical Archive, 1679. f., descr. 172. p. 1950]

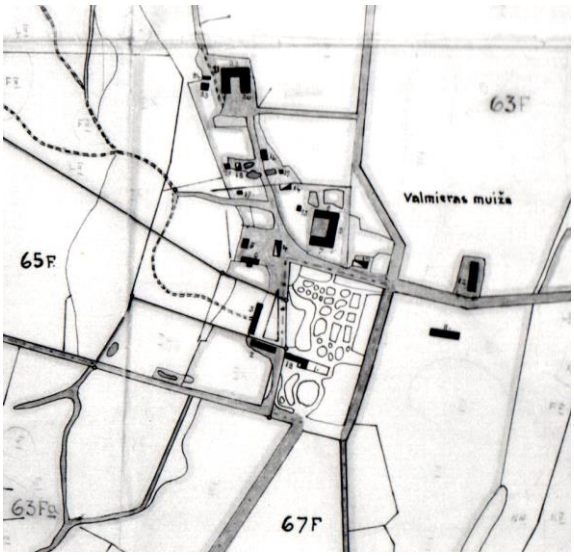

Fig. 25. The design of the changes in Valmiermuiža land plan. 1926., V. Blumbergs
[Latvia State Historical Archive, 1679. f., descr. 172. p. 1950]

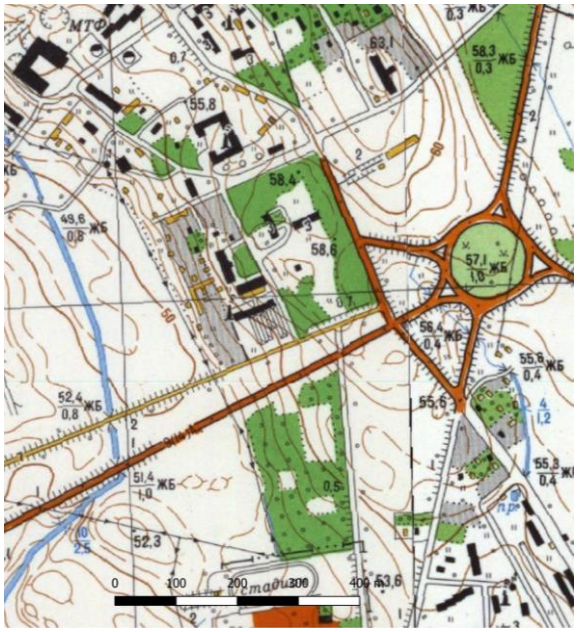

Fig. 26. Topographic map. 1967
[National Culture Heritage Department]

closed garden vanished, trees and shrubs grew where they should not. In the middle of the garden two apartment buildings were built without any concerns regarding the historic value of the place. New roads led to them. But the masonry fence with the gate and an enclosed rectangular area, the ancient enclosed garden, remained. This is shown in the topographic map of 1967 [27].

No significant changes in the essence and character of the core of the manor centre have taken place in the last decades. The palace tower is lonely standing in the middle of a deserted area, people have got used to white apartment buildings, however, the well-kept and tidy masonry fence is pleasing to the eye. There is a small, expressive wooden open-air stage on the edge of the former front yard built in the wrong place.

Conclusions

There are many places in Latvia where the layout of building in the manor centre with a park can be recognized with difficulty. Valmiermuiža is not one of them, because despite the fact that the palace has vanished and new objects have been built instead of the closed garden in the Soviet period, there is a great deal of culture and historical evidence. There is enough evidence left to find out about the manor's owners over time, important and interesting personalities of their time, who not only created material values but also built self-confidence of ordinary people, such as M. E. von Hallart. The similarity of the interior paintings of the manor's tower with the Alhambra Palace complex in Granada, Andalucia, is also important, as it signifies the intentions of owners to follow the latest trends in fashion of that time. In addition, the large business and farming complex that have been preserved to large extent until today is very valuable and requires more detailed research. Also, the park of the manor, the so-called Irši garden, is worth to be investigate. However, the closed garden of the 18th–19th century should be highlighted because the changes can be traced during the centuries and its spatial environment is still present today. It is not just an enclosed area with a masonry fence with a few gates, it is the place full of feelings and emotions where you can still imagine the aristocratic life and culturally aesthetic spirit that prevailed there.

It is possible to partially restore the design of this garden, which has already been tried in the front yard, it is possible to outline the historic buildings, clean the foundations, to present information on famous people of the area using modern techniques and design, to enrich the environment with meaningful activities which are not limited to beer drinking and swings. There are many opportunities and, hopefully, this brief insight into the history of the manor, its owners, buildings and planning of its central part will raise its value in the eyes and decisions of those who are destined to care, preserve and develop it.

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Kopsavilkums. Savdabīgais Valmiermuižas centrs un tā īpašnieki laika gaitā, slēgtais dārzs, palikušais muižas pils tornis ar iekštelpu gleznojumiem likās nozīmīgi pieminekļi, lai sīkāk pievērstos to izpētei, īpaši balstoties uz arhīvu materiālu padziļinātas izzināšanas. Saimnieciskais komplekss, parks un visa apbūve kopumā ir atsevišķa pētījuma vērta, tāpēc šeit netiek aplūkota. Vairāk iepriekšējos gados rakstīts par muižas īpašnieci ģenerāļa L. N. fon Hallarta sievas Elizabetes fon Hallartes darbību, kas saistās ar brāļu draudžu

dibināšanu un šīs kustības sekmēšanu Vidzemē. Taču viņas dzīves gājums detalizēti joprojām nav izpētīts, kas lika pievērsties arī šim jautājumam Valmiermuižas attīstības kontekstā. Nozīmīga likās arī pils torņa telpu gleznojumu precīza salīdzināšana ar paraugiem Alhambras pils ansamblī Spānijā.

No 1622. gada muiža piederēja Akselam Uksenšērnam (*Axel Gustafsson Oxenstierna*). Tālākā Valmiermuižas vēsture ir vairāk vai mazāk saistīta ar jau minēto Magdalēnu Elizabeti fon Hallarti (*M. E. von Hallart*), Krievijas armijas ģenerāļa Ludviga Nikolausa (Nikolaja) fon Hallarta (*L. N. von Hallart*) sievu. 1716. gadā viņi devās uz Saksiju, iepazinās ar grāfu Nikolausu Ludvigu fon Cincendorfu (*N. L. von Zinzendorf*, kurš 1722. gadā savos zemes īpašumos Saksijā izveidoja pirmo Hernhūtes brāļu draudzi Vācijā. Jaunā kustība aizrāva M. E. fon Hallarti un viņa kļuva par tās dedzīgu atbalstītāju. 1729. gadā pēc viņas aicinājuma Rīgā ieradās pirmā hernhūtiešu brāļu draudžu misija. Tās brāļi devās uz Valmiermuižu, lai Jērakalnā veidotu kopienu pēc Hernhūtes draudzes parauga.

1762. gadā Krievijas valdniece Katrīna II Valmiermuižu dāvināja Krievijas armijas ģenerālfeldmaršalam, Holšteinas – Bekas princim Pēterim Augustam Frīdriham (*Peter August Friedrich Schleswig – Holstein – Sonderburg – Beck*). Viņš savam īpašumam, kurš gan tam piederēja tikai piecus gadus, pievērsa lielu uzmanību. Viņa ierosmē izveidots slavenais Valmiermuižas Iršu dārzs – īpaša teritorija staltbriežu audzēšanai. Prinča Pētera Augusta Frīdriha laikā starp 1762. un 1764. gadu uzcelta jauna kungu māja, kuru var saukt jau par pili. Nākošais īpašnieks landrāts Karls Dītrihs fon Lēvenšterns (*K. D. von Loewenstern*) esošajai pilij piebūvēja jaunu divstāvu korpusu. 1919. gadā Valmiermuiža pārņemta valsts īpašumā.

Valmiermuiža tagadējā vietā atradusies jau 17. gs. beigās, par ko liecina 1681. gada zemju plāns. No pils, kura redzama tikai dažos vēsturiskos fotoattēlos saglabājies tikai tornis. Taču vēstures liecības par senāko kungu māju sniedzas 17. gs. otrajā pusē. 1688. gada muižas inventarizācijas aktos minēts, ka dzīvojamā ēka celta no koka uz mūrētiem pamatiem. Šī ēka nodegusi 1708. gadā Ziemeļu kara laikā. Līdz 1731. gadam jau bijusi uzcelta jauna kungu māja. Taču arī tā laika gaitā neapmierināja muižas īpašnieku. Kā jau minēts, jaunu pili cēlis Holšteinas - Bekas princis Pēteris Augusts Frīdrihs 1760. gados. Tā bija pagara vienstāva mūra ēka. 18. gs. pēdējā ceturksnī celtā Karla Dītriha fon Lēvenšterna pils bija divstāvu ēka, segta ar divslīpju jumtu. 1918. gadā pils ansamblis nodega. 1920. gadā tika nojaukta tās senākā vientāva daļa. 1922. gadā jaunākā ēkas daļa piemērota pamatskolas vajadzībām. 1940. gadu beigās šis divstāvu nams nodega un vairs netika atjaunots.

1887. gadā celts pils neobaroka tornis, kas kļuva par Valmiermuižas īpašnieku mājvietas vertikālo dominanti. Tas segts ar barokālas formas jumtu, kura smailē likts koka tornītis ar sīpolveida kupoliņu galā. Īpaši nozīmīgs Latvijas mākslas vēsturē ir torņa interjers – sienu gleznojumi telpās trīs stāvos. Tie izpildīti t. s. mauru stilā. Šim sienu dekoratīvajam noformējumam var atrast konkrētas analoģijas Alhambras ansambļa Komaru pils torņa Troņa zālē.

Padziļinātas izpētes vērta ir muižas apbūves centrālā daļa, kuru veidoja pils komplekss, dārzs, parādes pagalms un dažas ēkas kreisajā pusē gar dārza malu. Vislabāk šī situācija redzama 1817. gada plānā. Šodien dārzu apjož no šķeltiem laukakmeņiem mūrēts, aptuveni 1.5 metrus augsts žogs. Tajā izbūvēti četri vārti, piektie atrodas kā brīvstāvoši dārza vidū. 1843. gada plānā taisnstūrveida t. s. slēgtā dārza tuvumā esošā apbūve kopumā ir saglabājusies, vienīgi celiņi ieguvuši līkloču konfigurāciju, kaut gan krustveida dalījums vēl labi nolasāms. Šī Valmiermuižas apbūves centra kodola jeb slēgtā dārza izmaiņām tālāk varam izsekot pēc 1920. gadu zemju plāniem. Mainoties apbūvei un apstādījumu raksturam 18. gs. pēdējā ceturkšņa – 19. gs sākuma slēgtā dārza apbūves telpiskā struktūra kļuva grūtāk nolasāma.

Savas korekcijas muižas centra vēsturiskā kodola plānojumā ieviesa arī padomju laiks. Kā liecība par pils ansambli saglabājās tornis, kuru nojaukt ne vienu reizi vien bija iecerēts. Pazuda slēgtā dārza plānojuma liecības, nevietā ieauga koki un krūmi. Dārza vidū tika uzbūvētas divas daudzdzīvokļu ēkas. Pie tām radās jauni piebraucamie ceļi. Taču saglabājās mūra žogs ar vārtiem un tā iekļautā taisnstūrveida teritorija – senais slēgtais dārzs. Nekādas būtiskas izmaiņas muižas centra kodola substancē, tēlā nav mainījušās arī pēdējo gadu desmitos.

Ir daudzas vietas Latvijā, kur muižu centru apbūvi ar parku var atpazīt tikai ar grūtībām. Valmiermuiža nav starp tādām, jo neskatoties uz to, ka zudusi ir pils un slēgtajā dārzā nevietā padomju laikā radīti jauni objekti, saglabājušās ir ļoti daudz kultūrvēsturisku liecību. Tā ir iespēja izsekot muižas īpašniekiem laika gaitā, sava laika nozīmīgām un interesantām personībām, kuras ne tikai radījušas materiālas vērtības, bet arī cēlušas vienkāršās tautas pašapziņu, piemēram, E. fon Hallarte. Nozīmīga ir arī muižas torņa iekštelpu gleznojumu tiešā sasaiste ar Alhambras pils kompleksu Granādā Andalūzijā, kas liecina par aktīvu sekošanu jaunākajām stilu atdzimšanas modes prasībām. Taču sevišķi gribētos izcelt 18.–19. gadsimtā veidoto slēgto dārzu, kura izmaiņām var izsekot gadsimtu garumā un kura radītā telpiskā vide jūtama vēl šodien. Tā nav tikai mūra žoga apjozta teritorija ar dažiem vārtiem, tā ir sajūtu un emociju bagāta vieta, kurā joprojām var iztēloties to aristokrātiski sadzīvisko un kulturāli estētisko elpu, kas tajā valdīja. Ir iespējams daļēji atjaunot šī dārza plānojumu, kas parādes pagalmā jau ir mēģināts, var iezīmēt vēsturisko ēku kontūras attīrot to pamatus, var veidot ar mūsdienīga dizaina paņēmieniem informāciju par šeit dzīvojošām un strādājošām personībām.

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Cultural-Historical Development of Landscape Space of Klein- Vielen

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Abstract. The landscape of the maritime lowland Mecklenburg-Vorpommern (Germany) is characterized by a slightly wavy terrain with advanced agricultural activities. There are several lakes around Neubrandeburg and the Neustrelitz area, the shores of which form a picturesque landscape that fostered the development of manor centres already in the 20th century due to the appearance of small rural villages around them. Within a distance of 7-10 km, several manor centres have been preserved in this area, which obviously can enhance successful development of the tourism infrastructure. That is especially true for cycling. The landscape space of the former manor Klein Vielen has been studied in detail, as well as its transformation processes taking place from the 18th century to the present time. The study presents not only the evaluation of relevant issues, but also offers scenarios for the development of the existing cultural -historical landscape space.

Keywords: cultural-historical landscape space, compositional axes, functionality, harmony, visual psycho-emotional highlight in landscape

One of the historical manor centres in the Mecklenburg -Vorpommern region is *Klein Vielen*, which has been studied in detail. The historical manor ensemble vividly reflects the building stylistics and development trends of the landscape space in the 19th century.

Assessing the current situation, this study focuses attention on the aim to recover the cultural-historical landscape space through the process of compositional synthesis based on the changed character of the buildings and the green landscape space [1; 2].

The tasks of this research study were:

- to analyse in detail the landscape space of the manor ensemble;
- to look for an overall compositional image of the cultural landscape space of the manor ensemble *Klein Vielen* for creating a unified whole;
- to study changes in the urban and nature bases (the terrain, trees, meadows and water bodies);
- to study relevant literature and to look into the current situation.

The topicality of this research study is based on the necessity of developing tourism infrastructure in the above historical region by promoting the restoration and functional recovery of its cultural values. Over the past 150 years, the transformation processes of the landscape space have impacted changes in both: the green landscape space and the architectural values in the visual, functional and compositional contexts.

Each landscape architect is acting in nature as a producer/director creating his/her own expression of functionality and composition of the landscape space. It applies to the creativity of architects in both: the 18th and 21st centuries [3; 4; 5].

In accordance with the historical research materials of the manor building centre, the map of 1797 shows the composition axis in the north-east (NE) direction.

At the northern end of the spatial axis of the landscape, the territory of the manor buildings (including the Master's house, stockyard in the backyard, stables, barns, servants' houses, manor pub, etc.) was developed; and in the southern section, a regular shaped park area was formed. When comparing the original map with the situation one hundred years later it can be seen that the park has been transformed to a landscape park, having lost its shapes of regular stylistics.

Approximately 200m south of the park, there were view lines facing the Klingenberg Hill with a distinguished elevation of its peak forming a powerful dominant of the view.

After 1850, at the top of the hill a chapel was built with a tree alley, about100m long, which was leading to the sanctuary (by architect Fr. V. Buttel, 1796-1869). A new compositional axis was introduced into the landscape space, having a dominant inclined towards the existing axis of the ensemble of the manor buildings. Thus, in the middle of the 19th century, the process of transformation of the historical landscape space began.

When assessing and comparing the condition of the old buildings of *Klein Vielen* nowadays and in the pre-war period (the first half of the 20th century), it can be seen that the architectonic expression of the old buildings has changed. These differences can be seen clearly in the photograph fixation.

The red brick architecture has been preserved, however, the proportions of the historical windows and doorways have been lost. The same applies to the changes in the height of the eaves of the buildings. The small windows with tiny panes,

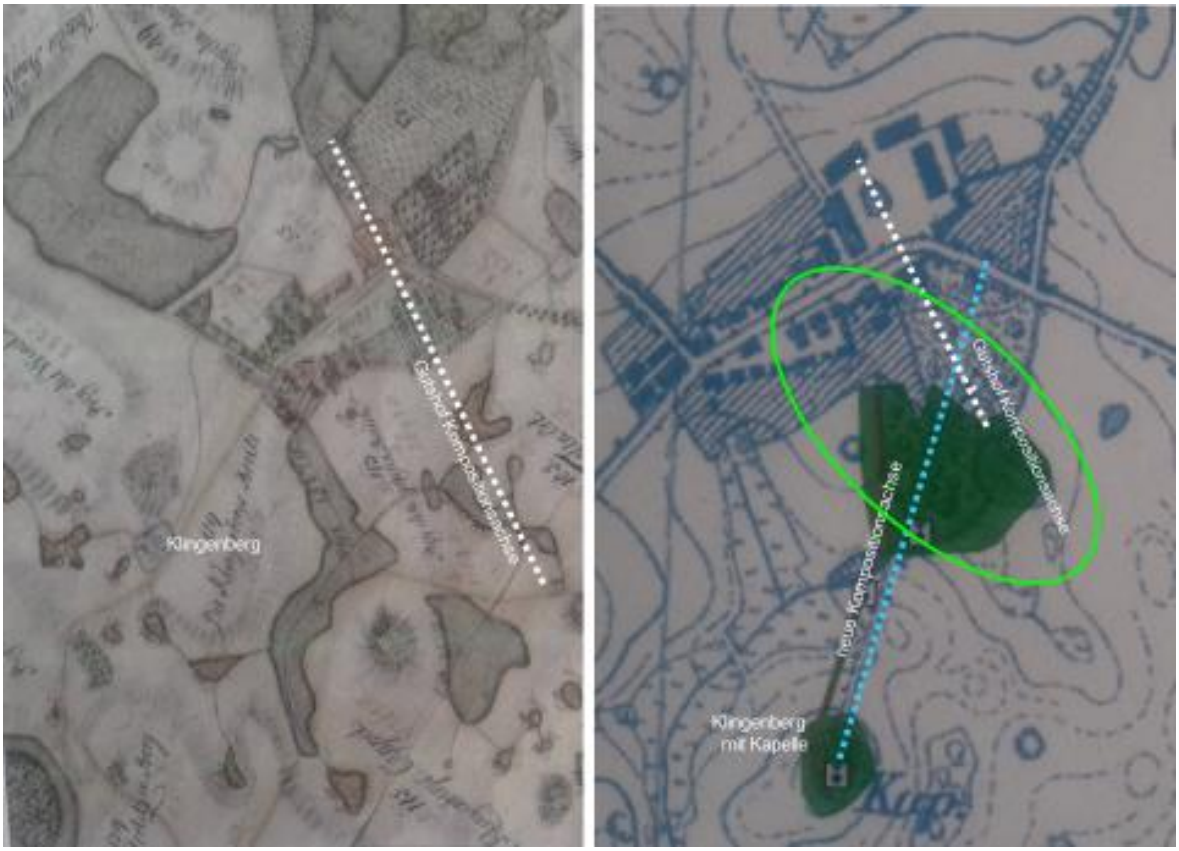

Fig. 1. Left: The Map of the Manor Klein Vielen Made in1797 with a Park, Having a Regular Shape and a Distinctive Composition Axis. Right: The Plan Designed in the Beginning of the 20th Century: with a Landscape Park and a New Axis for Landscape Space Composition [author's drawing]

installed in the auxiliary buildings and servants' houses, have been transformed into large showcases as, in nowadays, they have been adapted to function as mansions.

One of the authentic outbuildings has retained its household character, having a pen for keeping poultry. The historic bed of the driveway and the large backyard has also been preserved. A very positive aspect is that, over the centuries, the area has not been built up, and the historic spatial structure, and its scale can be easily identified.

However, the authentic manor house, which was located in the southern section of the front yard, has disappeared, and it was replaced by a 2-storey residential building built in the 60s/70s of the 20th century. In the post-war period, the area of the historic park was divided into several sections for building mansions. In the far eastern section of the park there is an open- air stage with a large concrete floor for hosting events.

In the ancient park area of the manor two large grounds can be identified. Several old park trees, 70-100cm in diameter, have been preserved. At the intersection of other composition axes of the above mentioned park there is a high *Platanus aceerifolia*. Probably, this tree served as a turning point at the intersection of the central axis and the new alley axis when creating an alley towards the Klingenberg Hill. Symbolically, they represent two distinctive passages of time in the destiny of the family; the first one was related to the prosperity of the kin, and the second- to the tragedy of the family.

Having analysed the above materials, the author of this study offers her own version of the scenario solution for preserving the historical landscape space of the *Klein Vielen* manor, based on the search for a compromise between the historic and contemporary situations.

The proposal consists of 5 landscape spaces combined in a single compositional and philosophical space.

Landscape Space 1 includes the ensemble of the historical manor buildings and the park, the spatial scale of which is readable/ understandable at present.

The area of the manor buildings is the spatial compositional dominant of the landscape in terms of its scale and functionality.

In the post-war years, when new manors were built in the section of the old park, another structure was introduced. Consequently, it is not possible to recover the historical landscape space, and the search for synthesis of the space should be used enabling to perceive the historical scale.

Fig. 2. Photo Fixation of the Historical Buildings in the Beginning of the 20th Century and Their Contemporary Character [author drawing]

As one of the solutions is the use of wedge-shape zones of new green plants, enhancing the expression of the historical compositional axes. The second option is to create protective plantings (buffer plantings) in the main view lines to cover the constructions built in the second half of the 20th century.

The existing old trees of the park provide an opportunity to sense and complement the structural image of the historical park.

In the middle of the 20th century, during the post-war years, a row of poplars was planted in the far south-west side of the manor park. At present, they serve as windbreakers and, at the same time, form a clear border line between the historical landscape space and the adjacent agricultural landscape.

According to the research scenario, **Landscape Space 2** could be formed by the green area between the old park of the manor and the historic alley planted around 1850. So, it is in the area where the giant *Platanus aceerifolia,* mentioned above, is growing. The distance of approximately 150 steps from the south-east side of the park to the beginning of the alley creates compositionally an emotionally powerful space, or prelude, that prepares pedestrians for perception of the next scenario of the landscape space. 20 m before the alley, the pedestrian path can be obstructed by a heavy and approx. 2.8 m high forged double gate, which would enhance the perception of the family tragedy reflected in the landscape space. The gate of destiny of the kin sketches symbolically the first transformation process of the landscape. When creating the alley, the highlight of the hill as an element of the landscape dominant is lost. The hill stops to be the dominant, and the architectural design of the chapel culminates.

Prior to the construction of the large gate, the existing large area/ square on the western side of the path should be preserved for the purpose of a wide meditation space (flower meadow) with a few sculptural works. In turn, the adjacent stage should be dismantled. An activity area can be offered here (the green stage, playground, sports grounds on the lawn, etc.).

Landscape Space 3 is created by the alley of the old trees. Their total number is 64, with 32 trees on each side. The alley is made up of chestnuts and lim-trees.

Being aware of the historical tragedy of the Jahn family, the number of the trees in the alley is understandable. The wife of Baron Eduard Rudolf Jahn (1816-1880), Johanna Theodor Friderika Jahna (nee Kortuma, 1817-1850) died at the age of 32 after giving birth to her 8th child.

In memory of his wife and the newborn baby, a chapel was erected on the top of the Klingenberg Hill, and the alley was leading to it. The road through the alley leads to a very steep hill, thus strengthening the physical and emotional highlight of the perception of the landscape space.

Landscape Space 4 is created by the hill peak with a spiral path as far as the entrance of the chapel.Along the sides of the spiral path, around the chapel oaks and lime-trees have been planted, and, during 150 years, they have grown giant branches, covering the building.The view is also obstructed by a number of tiny trees, which are being cut currently. The red brick architecture of the two level octagonal chapel, with a small spire, form the dominant feature

Fig. 3. Linking the Five Landscape Spaces and Their Compositional Axes [author drawing]

Fig. 4. Hunting Castle Prillwitz.Sculptures in the Castle Park [photo by author, 2019]

of the hill peak. Of course, the building needs a lot of restoration work.

The Gothic and religious-symbolic 8-corner shape of the chapel remind of the family destiny, because the 8-corner layout perimetre forms 7 small roms or premises, which serve as Memory Rooms for each child, and the eighth section of the chapel with the entrance gate is a symbolic place where the mother passed away together with the newborn baby.

The architectural design of the chapel, combined with the steep hill and the crowns of the giant trees, creates very powerful psycho-emotional feelings. The architecture, the foundation of nature, the tragedy of the human destiny, and the awareness of the values of the Christian world through the God, from generation to generation, culminate here.

Scenario of **Landscape Space** 5 is based on the perimeter-placed lines in the southern part of the hill behind the chapel. They overlook the picturesque

Fig. 5. A Forged Metal Gate as a Border Between a Section of the Park and the Alley [photo by author, 2019]

Fig. 6. Park Areas and Flowering Shrubs [photo by author, 2019]

Fig. 7. In the park, the composition of the sunny and shading areas, the main view lines,recreation and activity zones should be considered.'The same applies to the areas for the flowering shrubs and flower beds, their flowering time and coloring [photo by author, 2019]

rural landscape that is particularly attractive in autumn, where the agri-landscape is interdispersed with clusters of trees. The fields and meadows that serve for the herd form an impressive metaphor telling us that the continuation of the kin has not stopped and goes on by the God's blessing. The picturesque scenery of the nature, eternity, the language of architecture and faith in the God all help overcome the heaviest tragedy of the destiny.

A successful scenario choice of the five landscape spaces can make a strong contribution to the tourism infrastructure. Each of the landscape spaces requires an individual detailed solution in terms of composition, functionality, and aesthetical-visual aspect. This applies particularly to the garden sculptures, which should be thematically subordinate to the scale of the manor buildings, the park and alley compositional axes, and the psycho-emotional expression.

The linking of the landscape spaces can be obtained by careful planning of trees, shrubs, and lower beds, taking into account the scale, shades and dendrological characteristics of the existing tree branches. The cultural landsacape of the *Klein Vielen* manor presents a very strong potential for recovering its historical heritage in the Mecklenburgisches Vorpomeraden region.

Fig. 8. Assessment of Dendrological Characteristics of Trees in Different Seasons [photo by author, 2019]

Conclusions

The economic-political wave in the middle of the 20th century, after the World War 2, divided the European countries into two diverse systems of society. The totalitarian power shattered the economy and the cultural and historical landscape in the territory of the Eastern Europe, having destroyed brutally the environmental identities of several nations.

The alien wave of stagnation of collectivisation in rural areas reached not only the Baltic countries, but also East Germany. The described example of the *Pomeranian-Mecklenburg* neighbourhood, located near *Neubrandenburg*, shows that process vividly.

Being aware of the issues of the transformation processes in the cultural landscape of the rural areas of Latvia, it is possible to evaluate the anthropogenic load in the cultural area of East Germany which was detached from the roots of the German culture and history for half a century.

During that period of time, the Soviet totalitarian occupation power degraded the values of the cultural heritage accumulated since the middle of the 18th century in the Baltic countries, Poland and East Germany.

In the post-war years, the functionality and composition of the authentic historical structure of the *Klein-Vielen* manor were destroyed in the 1960s and 1970s due to the introduction of an alien building scale into the historical centre of the manor.

Also, in the post-war years, fast-growing poplars were planted in the park of the manor, and, nowadays, they have reached a huge height, thus destroying the dendrological composition of the historic part of the park.

In the section of the park designed in the 1970s and 1980s, a heavy stage was built having a concrete floor. Such techniques of the totalitarian regime are found also in the sites of the cultural heritage of Latvia. Their purpose was to undermine and destroy the authentic objects and to replace them by a new scale and function symbolizing the victory of the socialist and political demagogy over the cultural values accumulated by the occupied nations.

The historical sites of the rural areas of Latvia and East Germany show a very close similarity based on the Baltic-German stylistic trends prevailing in the architecture and art of manors built in the 18th century.

The 21st century, as the time of spiritual awakening of the Baltic countries and East Germany, came with a new wave of development. The intensive international cooperation for the recovery of the lost historical values at the levels of universities and municipalities shows evidence of that.

The scientific research of the buildings of the *Klein-Vielen* manor built in the 18th–19th centuries serves as a good example for mutual comparison of the trends of the Baltic German architecture and art during the period of development of manors in Latvia until World War 1.

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Kopsavilkums. Meklenburgas piejūras zemienes (*Meklenburgisches Seeplatten*) ainavtelpai ir raksturīgs viegli viļņots reljefs ar attīstītu lauksaimniecisko darbību. Ap Neubrandeburgu un Neustrelicas teritoriju ir vairāki ezeri, kuru krasti veido gleznainu ainavu, kas vēsturiski ir piesaistījis muižu centru attīstību, veidojoties ap tiem jau 20. gs. nelieliem lauku ciematiņiem. Šajā teritorijā aptuveni 7–10 km distancējumā ir saglabājušies vairāki vēsturiskie muižu centri, kas nenoliedzami veicina spilgtu tūrisma infrastruktūras attīstību. Īpaši tas ir attiecināms uz velotūrismu. Detālāk tiek pētīta bijušās muižas *Klein Vielen* ainavtelpa un tās transformācijas procesi no 18. gs. līdz mūsdienām. Pētījums ietver problemātikas novērtējumu kultūrmantojuma saglabāšanā.

Pētījuma uzdevumi ir saistīti ar muižas ansambļa ainavtelpas detālu analīzi; muižas kultūrainavtelpas kopējā kompozicionālā veidola izpēti; vēsturiskās apbūves un dabas pamatnes (reljefs, koki, pļavas, ūdens) transformācijas meklējumi.

Pētījuma aktualitāte ir balstīta uz tūrisma infrastruktūras piesaistes attīstības iespēju vēsturiskajam reģionam, veicinot kultūrvērtību restaurāciju un to funkcionālu atgūšanu. Austrumvācijas politiskā situācija pēckara gados ir nesusi transformācijas procesus, kas ietekmējuši gan zaļo ainavtelpu, gan arhitektoniskās vērtības – vizuālā, funkcionālā un kompozicionālā kontekstā.

Katrs ainavu arhitekts dabā darbojas kā kompetents režisors, scenogrāfs, radīdams laikmetam atbilstošu ainavtelpas izteiksmi funkcionalitātē un kompozīcijā. Tas ir attiecinams gan uz 18. gs., gan uz 21. gs. arhitektu radošās darbības laiku.

Atslēgvārdi: kultūrvēsturiskā ainavtelpa, kompozīcionālās asis, funkcionalitāte, harmonija, vizuāli psihoemocionāls kāpinājums ainavā utt.

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Re-branding Landscapes of Forgotten Resorts. Case of the Healing Resort Kemeri in Latvia

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Abstract. Health resorts have been important landscape identity elements and economy drivers in European cities since the beginning of their development. The sea coastal area in Latvia is rich in sulphur springs that have been used for health procedures since 19th century. Kemeri resort in Jurmala City is known as a unique place that got its name from the forester house Kemeres where the first health procedures were performed by using sulphur spring mud. In 1836 Kemeri was declared as a resort and became known in the whole Russian Empire and later also in the Soviet Union. Significant landscape changes occurred after Latvia regained its independence in 1990, when the ownership of the land changed from the state to the private. Affected by disagreements between the new owners, lack of private and state investments, decrease of visitors from former Soviet Republics, insufficient capacity for competing with European resorts, the resorts in Latvia often became abandoned and forgotten. Historically valuable buildings and parks of the resorts were degraded, the number of inhabitants and visitors decreased. Today the regional government has found opportunities for re-development of Kemeri resort by searching for a new identity and re-branding the place. Re-branding has been used to enhance attractiveness of the place and increase economic benefits. Therefore, the aim of the study is to identify historic heritage values suitable for re-branding of the place and to analyse a potential development of the resort Kemeri. Assessment part of the article is based on historic heritage study by comparing historic and modern photography, field surveys to identify historic heritage values of the place and their influence on possible development scenarios. Historic heritage values were identified according to the Historicity and authenticity; Aesthetic quality and integrity; Social meaning. The other parts of the article are addressed to re-branding of the place that includes involvement of identified historic heritage values into the new identity to enhance functionality, recognisability and attractiveness of the resort Kemeri.

Keywords: forgotten places, health resorts, landscape revitalization

Introduction

Due to the impact of political and natural processes, cities can become abandoned. As a result, population is decreasing, places are becoming forgotten and degraded. In most cases, it is caused by different political events – change of political power and regime, land reforms, wars; or natural factors – natural disasters, forest fires, flooding etc. Revitalization of forgotten and degraded places is a great challenge for local governments [1; 9; 7]. The article reflects revitalization project of the former health resort Kemeri in Jurmala City, Latvia by using re-branding principles.

Re-branding places

A common definition found in different resources states that a brand is something that distinguishes one product from another in the eyes of the customer. This could be name, style, symbol, quality of product, process etc. and involves some degree of expectations and imaginations. Place, city or town branding is a complex of activities – planning, production, governing and promoting specific and unique objects, products, activities in order to compete with other places in tourist attraction, investments, new residents, national and global events etc. [1; 11; 4].

Re-branding is more related to the territories that have lost their identity and attractiveness due to some specific reasons. Therefore the main aim of place / city / town re-branding is to shape a new identity and to promote economic potential of the area. There are different types of re-branding according to the scale of the place (national, city, town, village, and place) or some specific values of the area (agriculture, nature, healing potential etc.) [3; 4].

Forgotten health resorts in Latvia and the need for re-branding

Mud and hydrotherapeutic resorts in Latvia have more than a hundred-year history. Till the 90ies of the 20th century most of them were oriented to the tourists from the Soviet Union. There operated 9 resorts, more than 30 sanatoriums and spa institutions in the coastal city Jurmala. After Latvia regained its independence in 1990 the business of health resorts decreased. Today we can find only 4 actively functioning specialized sanatoriums in Jurmala. Reasons of the decline are mostly connected with political factors. Those are changes of ownership from state in Soviet period to private, political decisions about non-investment of EU

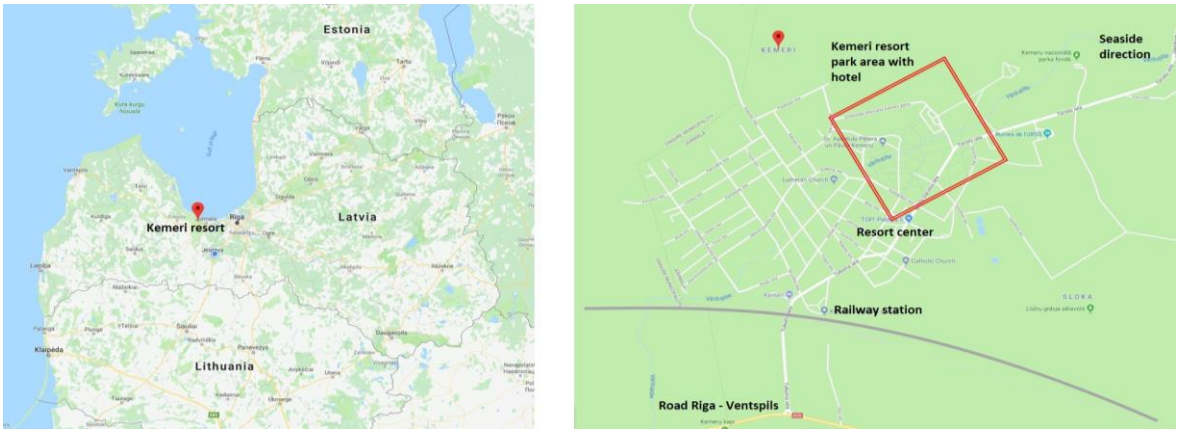

Fig. 1. Location of Kemeri resort in Latvia and Jurmala City on google maps

funds into re-branding and redevelopment of Latvia heath resorts, low competiveness with European resorts due to a poor comfort level that required major repairs of buildings and infrastructure [9; 12].

The aim of the particular study is to identify nature, culture and social values suitable for the place re-branding and to analyse potential development of the resort Kemeri in correlation with the main principles of re-branding.

Material and Methods

Research area

The study observes former health resort Kemeri in Latvia. Kemeri resort is a part of Jurmala city located in the sea coastal area of the Gulf of Riga (Fig. 1). The total area is 13,8 km^2, number of inhabitants – 1962 . Kemeri resort has important mineral water and therapeutic mud resources that were economic drivers for the resort since the end of the 19th century [12]. Since 1836, Kemeri was well known as the healing resort in the whole Russian Empire and later in the Soviet Union. The number of visitors reached 21 000 in 1965, when there were 8 sanatoriums and 29 operating sulphur springs. After Latvia left USSR in 1990, Kemeri resort met the same problems as all the resorts in Latvia, and soon it became forgotten and started to get degraded [9]. Today Kemeri resort is facing new challenges to become one of Latvia brands again.

Kemeri resort has several statuses. It is a monument of the state importance of city building. The park of Kemeri resort and several historic buildings (architect E.Laube) and elements located in the park are monuments of the state importance of architecture.

Methodology

The re-branding of Kemeri resort is based on enhancement of economic potential of the place by promoting its visibility in local and national markets, attracting tourists, investors and potential inhabitants. The methodology of Kemeri resort re-branding included two steps – identification of nature, culture and social values and the use of identified nature, culture and social values in addition to new functions.

Identification of nature, culture and social values of the place existed in the past and today by comparison of historic photography and maps of today`s situation in Kemeri resort [1; 2; 9]. The aim of this activity is to evaluate a potential impact of detected values on the development of the place and the possibility to use them into re-branding of Kemeri resort. Values were evaluated according to the attributes [13; 7]:

- Historicity / authenticity represents connections between the past and today. Those are all elements that represent important nature processes (for example, still existing oak forest, swamp, sulphur springs) or human activities (buildings, network of streets, artificial water elements, terrain, greenery etc.) and still can be found in the area.
- Integrity and aesthetic quality represents harmony of historic elements especially from different historic periods. The activity includes evaluation of composition, scale, proportions etc. of materials, greenery system / design, architectural elements, landscape spatial structure remained from different periods. The activity helps to find best solutions for the development of the place and to detect which elements should be highlighted and used for re-branding of the place.
- Social importance shows to what extent the place symbolizes events, elements, activities and traditions which are important for local / national community. The social importance is evaluated in context of similar places of a local, regional or national importance. What was more different and unique in the development of a particular place and how to make it more visible? The most difficult part of this activity is to choose which of the historic periods

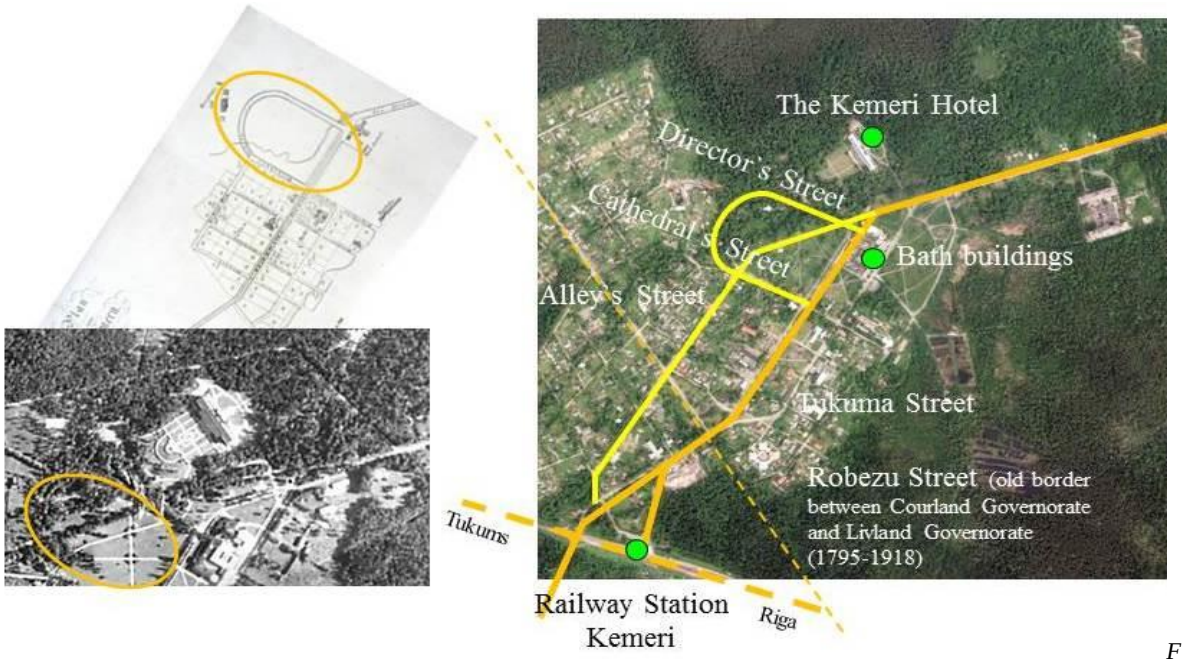

Fig 2. Identified old streets and main directions as connecting element with historical events

will be the base for a new face of the place. Will those be elements most remained for one of historic periods or some specific and unique separate elements?.

Use of identified nature, culture and social values in addition to new functions for the development of a new image, identity of the place, re-branding of Kemeri resort.

Each of identified values are evaluated according to the main principles of re-branding – to promote place as a tourist destination, an attractive place for investors and potential inhabitants. How are detected values important in re-branding process? And how could they be used to make the re-branding more effective [1; 2; 3; 4]?

Results and Discussions

Key elements for re-branding Kemeri resort

Key elements for re-branding Kemeri resort are grounded in the origin of the resort. The research on historic information showed that the key elements of the origin and development of the resort were unique sulphur springs in Latvia, as well as natural environment and elements – forests with oak-trees (Quercusrobur), linden (Tiliacordata), elm trees (Ulmusglabra; Ulmuslaevis), and ash trees (Fraxinus excelsior), small rivers, lakes and swamps. First healing activities with the use of mud and mineral water from sulphur springs dated to the beginning of the 19th century. At that time patients also used local forests for walks and other activities. Based on the long history of nature resource use in Kemeri area, identity and brand elements of the place were also highlighted in the revitalization and re-branding project of Kemeri resort.

Old streets and directions – the base of the main axes of the resort landscape

Till the end of the 20th century Kemeri resort has grown from a few buildings into a town with good infrastructure and connectivity with the largest cities of Latvia. Old streets became important landscape elements as they represented the history of Kemeri development, marked the main directions and determined the compositional structure of the landscape [9; 2]. It is also possible to find the remains of the town structure nowadays (Fig. 2). One of the most important axis in the past and also today is Tukuma Street. It was the main link to the railway that connected Kemeri with Riga (the capital of Latvia) and even Russia. Also today Tukuma Street is one of the central compositional axes in Kemeri resort complex. Robezu (in English – Border) Street represents old border area between Courland Governorate and Livland Governorate (1795–1918). We can find Director`s Street in Kemeri park area. In the 19th century it directed visitors of the resort to the main building and divided the central park of the resort into wild and "cultivated" parts. Alley Street reflects a long history of planting alleys in Kemeri resort.

The main old axes and directions are kept as linkages with the history and roots of the place also in the revitalization project of Kemeri resort.

Historic buildings with new functions

Kemeri town got its status as a resort in 1836, but its development peak was the beginning of 20th century. At that time there were different type and size bath buildings, post office, Catholic, Lutheran and Orthodox churches for visitors of

Fig. 3. Bath buildings and water tower on Tukuma Street, 1936 [6; 5]

Fig. 4. White building of the Kemeri hotel, 1936 [6; 5] and 2017

Fig. 5. Love Island with rotunda pavilion, 193-.[5; 6] and 2017

Fig. 6. Love oak tree (not exists) [5] and the monument for the first developers and directors of Kemeri resort, 2017

different confessions, more than 200 summer cottages, 12 pensions and hotels.

After World War I most of the buildings and the park were destroyed, but very soon the resort was one of the most demanded in Latvia again. At that time Kemeri had its own power and water supply, sewerage system. Today, one of the landmarks of the resort is 45 meter high water tower. In the past, it had two reservoirs for drinking and sulphur water, and sightseeing platform on the top1 (Fig. 3.).

The other landmark of Kemeri resort is Kemeri hotel white building that was built in 1936 and provided different activities throughout the year (Fig. 4.). When the number of visitors from the former Soviet Republics decreased, most of buildings for sulphur spring mud therapies were not used anymore and became degraded.

There are several architectural elements that promote attractiveness of Kemeri resort. Those are pavilions, small bridges, benches, sculptures etc. (Fig. 5.)

One of the most famous architectural elements of Kemeri park is the monument (1896) in the shape of the tree dedicated to the first directors and developers of Kemeri resort (Fig. 6.).

In the revitalization project of Kemeri resort, the main important buildings are planned to be used as visual landmarks of the place. The functions of the building will be supplemented or change to new according to the arrival of new technologies and needs of visitors.

In the revitalization project, the water tower will not be used as water reservoirs anymore, but will provide place for tourists information centre, exhibition and a view platform. Kemeri hotel besides hotel functions will serve new ones – place for conferences and seminars, spa and sports area etc.

Green spaces with high biodiversity symbolizing environmental quality for good health

Positive effects on patients from forests of Kemeri resort are described by several authors. Forests of Kemeri resort were formed as landscape parks by supplementing them with a large number of introduced species of trees, shrubs and perennial plants. The diversity of plant material was initiated and provided by the first gardener of Kemeri resort, owner of Riga nursery – K.H. Vagners (1785.–1846.). The diversity of plant species is also kept in the revitalization project of Kemeri resort for better connection with existing nature of this place.

Other important elements are alleys and hedgerows. In the analyses of historic literature and photos, it was found that almost all streets and pedestrian trails are enclosed with alleys and hedgerows of different species of trees, shrubs and perennial plants (Fig. 7.).

Today old alleys and hedgerows are in low quality because of poor maintenance during the last 25 years.

Historic materials show that since the beginning of 20th century there were two types of green spaces

Fig. 7. Alleys of the Kemeri park in historic pictures [5; 6] and today (Director`s Street)

Fig. 8. Design and plantings of the ornamental parterre part, 1936 [5] and 1960 [6]

Fig. 9. Channels of the Versupite River. Boating (193–.) [5]. Former water sluice gate, 2017 year

Fig. 10. Set of photographs representing activities of Kemeri resort, 193–. [5; 6]

in Kemeri resort – urban forest with pedestrian trails and wild vegetation; and "cultivated park" with a large number of introduced plants. Trends of that period were thuja trees (Thuja) and white robinia trees (Robiniapseudoacacia) that can still be found in the park areas of Kemeri resort. The diversity and colourfulness of the Kemeri park greenery as positive and unforgettable elements are highlighted in many evidences of that time.

New tendencies in the design and composition of Kemeri park arrived together with Kemeri hotel built in 1936. According to the architectural style of the building the composition of the plantings is developed in the style of classicism with symmetrical design of ornamental parterre in front of the hotel and bath buildings. Plantings of the style of classicism could be read only from historic photography. Today, in the park and near buildings, we can find plantings designed in 1960. They have typical of that time attributes – large and irregular areas with perennials, ground covered by concreate plates, decorative retaining walls from stone (Fig. 8.).

Last 25 years, Kemeri resort has been left without any significant interruption to its development. It is affected the green spaces of Kemeri resort both ways. It is positive, that we can find old, beautiful trees and great biodiversity, but there are also many problematic places – broken and unsafe infrastructure elements, overgrown plantings, tree seedlings have grown as big trees and overshadow park area.

The revitalization project of the park of Kemeri resort is based on compromise between the design of the classicism that is more appropriate for the architectural style of Kemeri hotel, and the existing diversity of plants that can be found in the park area nowadays.

Landscape for active participation

Since its foundation, Kemeri resort has had not only healing function, but also provided different activities for patients after their therapies. First of all, those were activities in the nature – walks in the forests, sunbathing, sport activities etc. Since the end of the 19th century, indoor and outdoor spaces were also developed for entertainment activities, music, dancing, reading, gaming, restaurant and library.

After World War I, the café was located on the Love Island with the access to the water channels. At that time, channels of small river Versupite were suitable for boating. The set of water sluice gates was built for this purpose. Today this system does not work anymore (Fig. 9.).

In 30ies of the 19th century, international chess competitions were organized to promote Kemeri resort. In historic materials we can find that social activities were important elements of the identity and recognisability of Kemeri resort (Fig. 10.).

Revitalization and re-branding project of Kemeri resort and its park

Due to specific conditions of Kemeri resort that are connected with different historic landscape layers found in the area, the re-branding and revitalization project of Kemeri resort divides the area into four parts – ornamental parterre part in front of Kemeri hotel building, active part, forest park part and forest wild part (Fig. 11.). Each of the parts has its own specific attributes, as well as requirements for planning, protection and management.

The Ornamental parterre is developed as one unit with Kemeri hotel and is planned as one of the landmarks of the resort. The design of the green space is based on the symmetry and includes plantings with formed hedgerows and flowering plants, as well as architectural elements – benches,

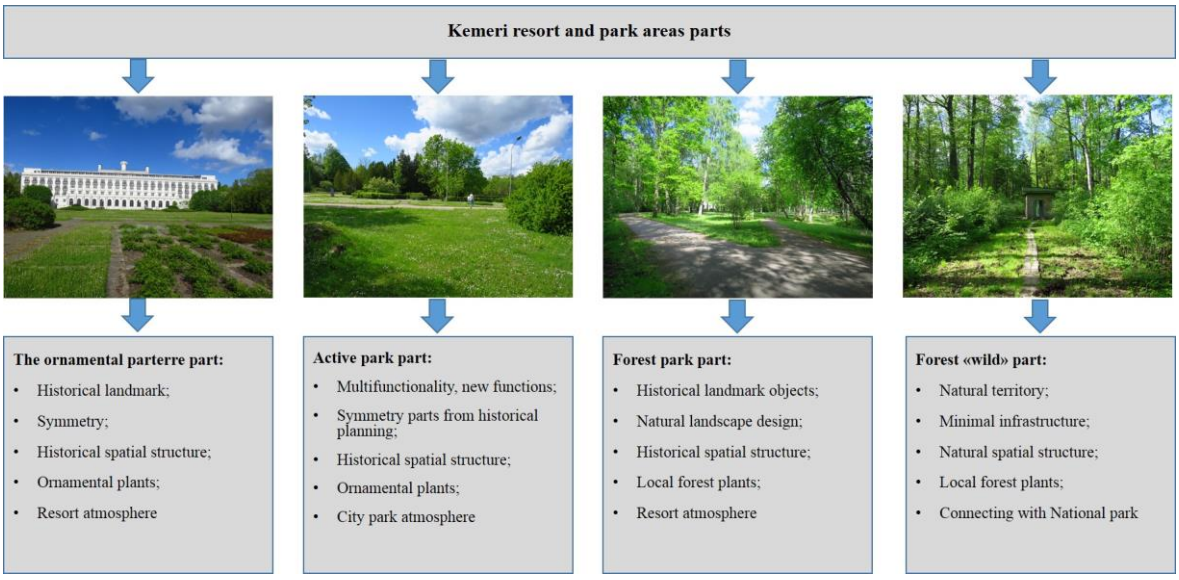

Fig. 11. Kemeri resort and park areas, with [10]. – ornamental parterre, 2. – Active area, 3. – Forest park, – Forest "wild" area, 2017

Fig. 12. Ornamental parterre with the symmetrical structure and a large number of perennial plants [project authors visualization, technical 3D drawing A.Mengots]

Fig. 13. Active part with central composition axis with water tower and alleys [project authors visualization, technical 3D drawing A.Mengots]

Fig. 14. New design of Love Island with rotunda [project authors visualization, technical 3D drawing A.Mengots]

sculptures etc. Flowering plants reflect white colour of the building of Kemeri hotel. As a compromise, there are existing old trees left that were not in the original plan (1936), but now can be found in the area and influence new design of the ornamental parterre [10] (Fig. 12.).

The Active part of Kemeri resort park is more open visually and functionally, but still has a clear composition and the spatial structure that corresponds to the historic period of its development. Alleys, hedgerows, flowering and colourful plantings are used to establish connection with the historic values of the place (Fig. 13.). There are new functions added to this place – exhibition and entertainment squares, recreation places, children playground [10].

The Forest park is a "cultivated" part of forest with open spaces, groups of trees, cultural heritage objects and elements – Love Island with rotunda pavilion, Orthodox church, bridges, monument for the first directors and developers of the resort. The main function of the Forest park part is to connect the Active part and Forest "wild" part of the park. The Forest park keeps the historic structure of the landscape and nature values – diversity of local plant species, river Versupite with natural banks, old trees and groups of trees, specific habitats for bats and insects [10] (Fig. 14.).

The Forest "wild" part is spatially closed forest area with separate open spaces, pedestrian trails and architectural elements. This part will be kept as natural biotope for highlighting nature values of Kemeri resort.

Conclusions

The landscape of Kemeri resort has been changed several times and influenced by political processes, ideology and trends of the historic periods. However, the mental image of the place was always determined by presence of sulphur springs and their use for medical therapies, but the visual and spatial image of Kemeri resort - by nature values (a large number and diversity of plant species, where next to the native species new ones were introduced, a large number of perennial plants, alleys and formed hedgerows were used) and cultural heritage of the place. Therefore, nature and heritage values are defined as one of the key and brand elements for the new identity of the place.

Other key elements for the branding of Kemeri resort are: old streets and historic directions that can be used as a connection between the past and today, and the base for composition and spatial structure of Kemeri resort landscape.

The most problematic issue was how to make the unity between the landscape elements of different historic periods and styles. Each of time periods has left its mental message. Therefore, the new image of the place is developed as a compromise between the elements of different historic periods. The composition and landscape structure is developed in the style of classicism taken from the development time of Kemeri hotel, but the principles of plantings are used from the Soviet era where a large number and diversity of plant species was used.

The social activities also are key elements for the re-branding of the place. We can find them already in the origins of Kemeri resort. Social activities will provide extra interest from possible visitors to experience the place not only for medical therapies, but also for living and working.

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Kopsavikums. Aizmirstu un izpostītu vietu atdzīvināšana ir liels izaicinājums pašvaldībām. Rakstā atspoguļots bijušā kūrorta Ķemeri (Jūrmalā) ainavas atjaunošanas projekts, balstoties uz vietas identitātes izmantošanu, ka jaunu zīmolu, atjaunojot teritorijas funkcijas. Dūņu un hidroterapeitiskajiem kūrortiem Latvijā ir vairāk nekā simts gadu vēsture. Līdz 20. gadsimta 90. gadiem vairums no viņiem bija orientēti uz tūristiem no Padomju Savienības. Piekrastes pilsētā Jūrmalā darbojās 9 kūrorti, vairāk nekā 30 sanatorijas un SPA iestādes. Pēc Latvijas neatkarības atgūšanas 1990. gadā samazinās kūrortu bizness. Mūsdienās Jūrmalā var atrast tikai četras aktīvi funkcionējošas specializētās sanatorijas. Lejupslīdes iemesli galvenokārt saistīti ar politiskiem faktoriem. Tās ir īpašumtiesību maiņa no valsts padomju laikā uz privātiem, politiski lēmumi par neieguldījumiem no ES fondiem Latvijas veselības kūrortu pārzīmēšanai un atjaunošanai, zema konkurētspēja ar Eiropas kūrortiem sliktā komforta līmeņa dēļ, kas prasīja kapitālo remontu, kopēja pilsētvides infrastruktūra. Konkrētā pētījuma mērķis ir identificēt dabas, kultūras un sociālas vērtības, kas piemērotas vietas identitātes atjaunošanai, un analizēt Ķemeru kūrorta potenciālo attīstību saistībā ar galvenajiem identitātes saglabāšanas principiem. Visproblemātiskākais jautājums bija par to, kā panākt vienotību starp dažādu vēsturisko periodu un stilu ainavas elementiem. Katrs no laika periodiem ir atstājis savu garīgo vēstījumu. Tāpēc jauns vietas tēls tiek veidots kā kompromiss starp dažādu vēsturisko periodu elementiem. Kompozīcija un ainavas struktūra ir veidota klasicisma stilā, kas ņemts no Ķemeru viesnīcas sākotnējas attīstības laikiem, bet stādīšanas principi tiek izmantoti no padomju laikiem, kur tika izmantots liels augu sugu skaits un daudzveidība, kas arī mūsdienās ir svarīgs ekoloģiskās daudzveidības pamats. Ne mazāk svarīga loma ir arī sociālām aktivitātēm, tāpēc jauns plānojums balstās uz daudzveidīgo funkciju nodrošināšanu parka teritorijā.

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Role of Multicultural Identity in Landscape Perception and Methodological Possibilities of Its Interdisciplinary Analysis

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Abstract. The paper presents the overview and comparative analysis of landscape cross-cultural and sub-cultural perception research methodologies in order to develop hypothetical methodological framework of interdisciplinary evaluation of cultural differences in landscape perception. The landscape research methods used for the analysis of impact of socio-cultural factors on landscape perception can be classified as mix of psychophysical and cognitive approach and are mostly based on the statistical analysis of the results of sociological research. Drawing the research closer to the relational concept, we propose the hypothetical methodological scheme of interdisciplinary evaluation of cultural differences in landscape perception that integrates landscape research with the knowledge of cultural studies, quantitative sociology (statistical analysis of the results of sociological research: factor analysis, component analysis, correlations, etc.), environmental psychology (cognitive mapping, Landscape Image Sketching Technique, landscape and environmental preferences, way finding, eye-tracking, etc.), and geography (geomatic) (geographic information systems, remote sensing).

Keywords: landscape perception, identity, interdisciplinarity, multiculturalism

Introduction

Landscape as a social construct and process ongoing in time and space is constantly changing and due to that it can be considered as an objectively existing dynamic territorial system that is continually re-evaluated by different individuals (subjects). Regarding to ambiguous cultural, technological, social, etc. aspects of globalization, landscape perceivers/assessors are and will be the members of growing multicultural community. The preferences of each perceiver/assessor in terms of landscape are determined not only by psychological, individual, but also by socio-cultural factors, which are decisive for cultural identity. The relevance of the issue is also supported by European Landscape Convention [10] that defines landscape as an essential component of people's surroundings, an expression of the diversity of their shared cultural and natural heritage, and a foundation of their identity.

Cultural differences evaluating landscape are widely analysed in research articles [6; 8; 15; 19; 28; 32; 38; 40; 43; 49; 50], thesis and graduation works of different levels [17; 27; 33; 39; 42], research projects, reports and guidelines [22; 31; 46]. The analysis of literature allows distinguishing several aspects of relevance of this research. Recent landscape ontology studies attempt to increase understanding and broaden knowledge about landscape as a social construct and objective reality (mapping the territory as integral natural-historical-cultural space) [22]. Regarding international tourism management, the increasing tourist flows, and diversity of visitors cause the challenges of landscape representation and interpretation for the visitors of different cultural contexts [31; 33; 46]. The arising new environments, that can be identified as multicultural spaces or, to say better, intercultural [52] spaces (for ex., office parks and buildings, indoor parks etc. that are used by the personnel of international corporations that employ people from different cultures) raise the questions, what are the environmental designs that are acceptable for the people of different cultures; how the multiculturalism/interculturalism is expressed in landscape design. Cultural literacy [52] in landscape design and management becomes of crucial importance as the landscape architect or the team of architects from one cultural context working in another strongly different cultural context nowadays is everyday reality. Another aspect related with multiculturalism and landscape architecture are the global migration and contemporary multicultural cities [1-4]. Such cities require public spaces acceptable and comfortable for their diverse population [17; 34; 52; 54]. Moreover, the public spaces honouring specific cultures or engaging the previously marginalized groups and both acceptable for general population are now a challenge of landscape design [53]. Sense of belonging to the

place, creating the place attachment are very important in this context. This involves the search for distinguished aesthetics, cultural literacy, participation and reconciliation. The challenge of preserving, actualizing and interpreting valuable regional landscapes in the increasing multicultural society can be distinguished as well [41]. New and constantly developing international aesthetic language of contemporary landscape architecture needs consideration in the context of cultural literacy too. Different and sometimes radical trends, such as vast artificial colourful surfaces, the use of recycled materials and objects, minimalist spaces or overgrown ecological spaces with wild grasses can be accepted quite differently by the representatives of different cultures both in different cultural and multicultural contexts. This challenge can be further expanded to the search for the aesthetic language for the sustainable, biophilic landscape architecture in different cultural and multicultural contexts. It will be successful only if culturally acceptable.

Today's technological capacities of integration and analysis of huge amount of data allow to understand the influence of cultural differences on landscape perception, to evaluate it and to integrate it into landscape design and planning. Remote sensing approaches mapping land surfaces characterising the different landscapes and the footprints of the processes of territorialisation reflect the interaction of human culture, economics, development and planning policies, architecture and natural environment. The perception's cartographies of people in geographic information systems (GIS) merged with landscapes mapped by remote sensing allow to represent different landscape perceptions in regard of the objective reality.

Considering the above mentioned aspects the aim of the work is to formulate the methodological assumptions of landscape evaluation and modelling based on interdisciplinary approach (as the research object – landscape is the object of interest of many disciplines and it is complex and multi-layered), that will allow to identify the influence of different cultural backgrounds and social contexts on subjective perception and assessment of landscape, its preferences and mental image as well as to relate it with objective landscape indicators.

Cultural factors influencing landscape perception

Landscape perception depends on the subjective and objective aspects. The relational concept of landscape evaluation states that the result of landscape evaluation depends on the characteristics both of *landscape* (as an object) and *observer* (as a subject – society) as well as on *relation* of the subject and object [21]. It is necessary to note that in the field of landscape research in the above-mentioned interaction of landscape and its observer the role of the social and cultural aspects and sociocultural context are often overlooked; however,

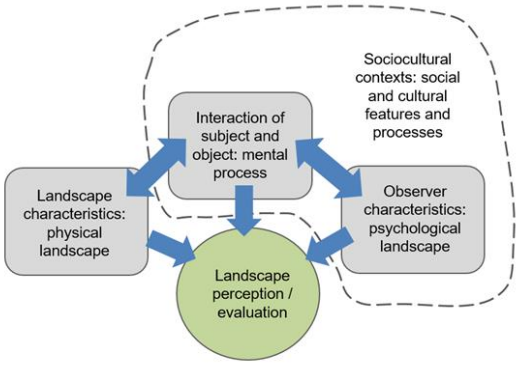

Fig. 1. The theoretical model of landscape perception/evaluation process

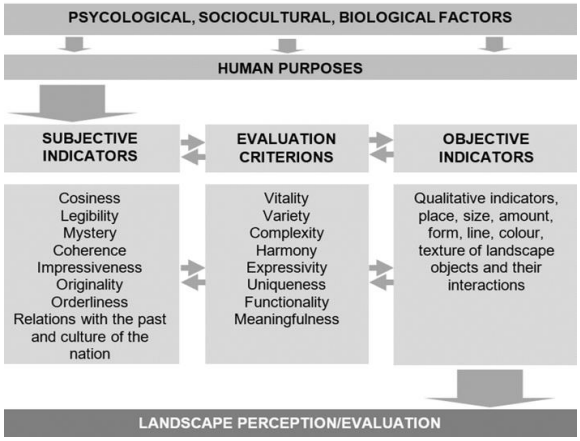

Fig. 2. The place of sociocultural factors in the theoretical framework of landscape perception/evaluation

this is not allowed in the multicultural landscape perception analysis (Fig.1).

The subject – people perceiving/evaluating landscape – are influenced by various factors and sociocultural among them (Fig. 2).

Many scientists state that though the perception and interpretation of landscape is an individual act, nevertheless it is strongly influenced by cultural factors that can explain some important aspects of human choices while evaluating the landscape [20; 29; 30; 48; 57]. For ex.: how people perceive categories of landscape according to the level and intensity of anthropogenization, particular places, landscape components, elements and relations among them, visual features, etc. The landscape observers also are influenced by the global (for ex., being a member of western culture), national (for ex., water meaning in Lithuanian culture) and local (for ex., development of topophilia values) cultural factors. This leads to the conclusion that cultural influence is a multi-layered phenomenon [20] as landscape itself.

Elaborating the concept of sociocultural factors, it can be stated that there is a vast array of them influencing landscape perception/evaluation: nationality, place of residence (urban or rural), politics, preparatory information, professional

experience, daily accessibility to the landscape, familiarity with the area, economics, religion, social values/rules, belonging to a particular class of the society, etc. [18].

Human aesthetic responses occur in the three main levels: biophysiological, psychophysiological and intellectual or cultural [5; 24]; but do culture and socio-demographic factors really affect landscape evaluation process [26]? Though some research state that despite cultural differences people have similar preferences for specific landscapes, some cultural aspects, such as novelty, familiarity, living environment, education level do have impact on landscape evaluation and the issue is nevertheless worth deeper and more methodologically grounded analysis.

Review of existing research methods for evaluating impact of cultural factors on landscape perception

There are a lot of classifications of landscape research methods but the most common one classifies them into objective, subjective and relational (complex or integrated) according to the main dimensions of landscape perception (Fig. 1) [21; 26]. Summing up the findings of Zube *et al* (1982) [56] and Terkenli (2001) [45] there can be identified four landscape research paradigms that can be classified according to objective, subjective or relational aspect: the expert paradigm, the psychophysical paradigm, the cognitive paradigm, and the experiential paradigm.

The ***expert*** **paradigm** is based on expert judgments of visual quality of landscapes while the opinion of non-experts is not considered. Evaluation of landscape quality depends on formal physical and visual characteristics of the landscape. It transforms landscapes into formal design parameters through the classification of landscapes biophysical features (geomorphological forms, vegetation, water, etc.) into characteristics which are considered to be important for landscape aesthetics i.e. forms, lines, textures, colours, and the relationships between these features, for ex., variety, vividness, unity, harmony. These methods include ecological and formal aesthetic models that are used in an objective manner. Visual aspects of landscape are analysed by morphological, aesthetic/visual, iconological, spectral/colour/thermal methods. Though this paradigm stresses the *importance of objectivity* of landscape research it is criticized for being incompatible with users' perceptions as the landscape is evaluated only by experts who perceive visual environment different to laity [26; 45; 55].

Using the ***psychophysical*** **paradigm** landscape visual quality is evaluated by non-experts: the general public or special interest groups. The main assumption of this paradigm is that landscape as an *object* conditions the judgement of the observer without conscious thinking. Ranking and sorting are widely used techniques in visual assessments within this paradigm. It also can be called the perception-based approach where non-expert judgements are made over landscape stimuli and objective properties of landscape [26; 55]. Psychophysical methods integrate landscape evaluation as a whole and split it into objective landscape indicators as well. Therefore, they can be classified as *complex* methods as well.

Another perception-based approach is represented by the ***cognitive*** **paradigm**. It focuses on the analysis of reasons why people prefer particular landscapes, and states that landscape possesses the meaning and cognitive processes influence aesthetic judgements [26; 55]. Cognitive aspects of landscape are analysed by semiotic, ethnographic, hermeneutical, functional-structuralist and other methods [45; 55]. The research main aim is to develop the theoretical basis. Evaluations of landscape visual quality are performed through the use of psychological scaling methods such as paired comparisons undertaken by human viewers (distribution of associative attributes, the theory of Ch. Osgood, 1957) or in accordance with behaviour patterns in the space (the theory of K. Lynch, 1960) [7; 23; 55]. However, this paradigm neglects the physical aspects of landscape (objective side) and emphasizes the *subjective* meanings of landscapes [26].

The ***experiential*** **paradigm** states that human experiences have impact on the landscape perceived value. Experiential aspects of landscape are analysed by behavioural, ethnographic, empirical (bio-ecological, economic, etc.), humanistic (pragmatist, phenomenological, etc.) methods [45; 55]. However, Taylor *et al* (1987) [44] and Kaymaz (2012) [26] recognize that it is more *subjective* than cognitive and psychophysical paradigms.

The landscape research methods used for the analysis of impact of socio-cultural factors on landscape perception can be classified as mix of *psychophysical* and *cognitive* approach. They are mostly based on the statistical analysis of the results of sociological research, though, some of them use different approaches such as Landscape Image Sketching Technique [49], qualitative interpretation of research results [40] or try to integrate linguistic aspect as additional to usual quantitative evaluation (interdisciplinary approach) [43]. Such studies usually require a set of landscape photographs, carefully prepared questionnaire and sample of respondents of different cultures (cross-cultural comparison of landscape preferences) or nationalities (sub-cultural comparison of landscape preferences) participating in the research. Ranking and sorting techniques are widely used in this type of landscape research (Table 1).

TABLE 1

Comparative analysis of the landscape research methods used for the analysis of impact of socio-cultural factors on landscape perception

Reference	Type of research	Research object and result	Research techniques	Quantitative	Qualitative	Mixed
Bruce Hull and Reveli Grant, (1989) [6]	Sociological survey	Cross-cultural comparison of landscape scenic beauty evaluations: locals and tourists gave different evaluations to rural landscapes in some aspects	Photo-questionnaire, rating scales, statistical analyses	+	-	-
Yang and Kapan (1990) [50]	Sociological survey	Analysis of landscape style perception in a cross-cultural context: four landscape categories were established common for all groups of respondents	Photo-questionnaire, rating scales, statistical analyses	+	-	-
Herzog *et al* (2000) [19]	Sociological survey	Cross-cultural and subcultural comparison of landscape perception and preferences: six perceptual categories were established with quite high similarities for all groups of respondents	Photo-questionnaire, rating scales, statistical analyses	+	-	-
Le Lay *et al* (2008) [28]	Sociological survey	Cross-cultural perception of riverscapes: perceptions differed among countries	Photo-questionnaire, rating scales, statistical analyses	+	-	-
Priego *et al* (2008) [40]	Sociological survey	Cross-cultural comparison of perception and value of nature in urban landscapes: it was established that people of different socio-cultural backgrounds use and perceive nature in urban areas in different ways	Interviews of the selected samples of the population using standardised questionnaires, qualitative interpretation and quantitative evaluation of the research results	-	-	+
Schoenberg (2008) [43]	Sociological survey	Cross-cultural comparison of landscape photo perception: the answers were strongly determined by different cultural backgrounds	Photo-questionnaire, combination of visual perception and language	-	-	+
Ueda (2014) [49]	Sociological survey	Cross-cultural landscape perception analysis using Landscape Image Sketching Technique: there was found fundamental differences in the ways of seeing the landscape	Drawing-questionnaire, analysis of the drawings in terms of represented distance and viewing angle, the position of the stand-point, and the main motifs of the sketches	-	-	+
Matijošaitienė *et al* (2014) [32]	Sociological survey	Cross-cultural comparison of road landscape perception: the research results showed the significant differences in landscape perception between the analysed cultures	Photo-questionnaire, rating scales, statistical analyses	+	-	-

Cultural differences evaluating landscape are widely analysed in the international scientific context [6; 15; 19; 28; 38; 40; 43; 49; 50]. Concerning the methodological aspect some of the research cases are worth to be analysed in detail.

In 1989 R. Bruce Hull and Grant R.B. Reveli performed cross-cultural comparison of landscape scenic beauty evaluations in Bali. Both similarities and differences were observed when comparing evaluations of rural landscapes made by locals and tourists. Multiple methods were used, including participant photography, rating scales, and a variety of statistical analyses. The research also suggested three methodological concerns which should be addressed in landscape studies: a concern for the participant's purpose for evaluating a landscape; a concern for the participant's familiarity with a landscape; and a concern for the criterion's appropriateness to all participants [6].

In 1990 Byoung-e Yang and Rachel Kaplan [50] performed analysis of landscape style perception in a cross-cultural context. The sample included three groups: Korean citizens, Korean students and Western tourists comparing influences of Western and non-Western culture on aesthetic judgement. The 40 scenes comprising the photo-questionnaire represented three landscape styles: Korean, Japanese and Western and four landscape qualities: lay-out of space, use of landscape plants, use of stones and rocks and use of water. Participants were asked to rate each scene in terms of their preference and degree of familiarity, using 5-point rating scale. The category identifying methods were used to obtain the results: the Smallest Space Analysis, non-metric factor analysis and Hierarchical Cluster Analysis. After the results analysis four landscape categories emerged: Japanese/Water, Informal, Western/Formal and Korean/Rock for both Korean-based and Western-based analyses [50].

One of the fundamental researches was made in 2000 by Thomas Herzog, Eugene J. Herbet and other scientists [19]. They compared perceptions and preferences for Australian natural landscapes of Australians and Americans. The Australian sample consisted of 384 participants of different age groups and American - of 250 students. The respondents evaluated 60 colour slides of natural environments in Australia how much they liked them using 5-point scale. Two types of statistical analysis were used: factor analysis that permitted comparison of landscape perceptual categories based on preference ratings by different cultures, correlations, and mean comparisons. Each of these analytical approaches provided different insights about cultural and subcultural landscape evaluation preferences. First the correlations among groups and subgroups based on setting scores were analysed. Then factor analysis was used to derive empirical groupings of the settings for the American and Australian samples and then the difference of the categories according to the mean preferences was analysed [19].

In 2008 Y.-F. Le Lay *et al* [28] analysed variations of cross-cultural perception of riverscapes. Human perception of riverscapes has been investigated with a photo-questionnaire submitted to 2250 students in ten countries, capturing reactions to 20 pictures in terms of naturalness, danger, aesthetics and need for improvement. The 10-point Visual Analog Scale (VAS) was used for quantifying the riverscape aesthetics. The Principal component analysis was performed on average scores per country per item. Perceptions differed among countries, reflecting different cultural contexts [28].

In 2008 C. Priego *et al* [40] analysed perception and value of nature in urban landscapes comprehended by people from different countries and cultures: Germany, Chile and Spain. The results of comparative analysis revealed that people of different socio-cultural backgrounds use and perceive nature in urban areas in different ways. The survey was conducted using standardised questionnaires and the stratified random probabilistic sampling technique in six study areas. The main aim was qualitatively examining the interaction between the nature and people through their perception of nature. Though the data were analysed in interpretive manner, it enabled the researchers to quantitatively explore the relationship between citizens and the urban nature [40].

In 2008 T. B. Schoenberg [43] analysed what differences and similarities can be found in landscape photo perception between groups of people from the American, Catalan and Russian cultures and how do people from different cultures, using their native languages, conceptualize and communicate about the landscape. The set of photographs included landscapes that are familiar and unfamiliar to all three cultures. Subjects were asked to write down what features they see in the order in which they see them. The purpose of analysis was to find differences and similarities in the answers both of individuals and of groups [43].

In 2014 H. Ueda [49] performed comparative landscape perception analysis in Japan and Germany using Landscape Image Sketching Technique (LIST). This research was different from the above-mentioned ones according to its methodological approach, as to find out the cultural way of seeing landscapes empirically, a drawing method was used. The represented sketch showed the respondent's viewpoint and distance from the scene as well as the composition of figure and ground in the sketch. In addition to that, the sketch represented *what* the respondents look at and *how* they view the landscape. The obtained drawings were analysed in

terms of represented distance and viewing angle, the position of the standpoint, and the main motifs of the sketches [49].

In 2017 C. Ordonez-Barona made a systematic review of the literature on how different ethno-cultural groups value urban nature (forests). The 31 studies reviewed differed widely in their lines of inquiry, research methods, urban natural setting, and conceptualizations of ethno-cultural identity. The research approach used was mostly quantitative (for ex., survey), in seven cases – qualitative and in five cases – mixed [38].

In Lithuania I. Matijošaitienė *et al* (2014) [32] also performed research in this field. There was compared the road landscape perception of the representatives of different cultures (Lithuanian, Armenian, Russian, Turkish, Arabian and African). The research results were obtained using sociological research methods: sociological survey based on semantic differential scale, and later on performing regression analysis and building a regression model of the hedonomic road landscape for each culture.

Though there are many researches made in this field they still encounter some technological problems that diminish the objectivity of the research results. The problems are the following [26]: using of photographs and other landscape 3D modelling techniques does not represent all the features of the reality fully, in-situ research is time and finance consuming, using of restricted pairs of adjectives for the semantic differential analysis limits people possibilities to use different descriptions for the same preference judgment, this imposes the need for content analysis of non-restricted descriptive verbal material of the research, etc.

Interdisciplinary approach in evaluation of landscape perception cultural differences and proposed hypothetical methodological scheme

Why interdisciplinary approach? As the interdisciplinary research is characterized by the development of a shared problem formulation and a common methodological framework for the investigation of different themes or aspects of the research problem [12; 22], the necessity of the interdisciplinary approach is presupposed by the characteristic features of the research which are the following: interrogation of the dominant structure of knowledge with the aim of transforming them, and development of a shared problem formulation and a common methodological framework. We state that interdisciplinary approach can help to solve the issue of disbalance of landscape evaluation subjectivity and objectivity and draw the research closer to relational concept that embraces physical and psychological landscape evaluation aspects, and mental process of landscape perception. In general, the problems of landscape valuation are solved by philosophy, sociology, environmental psychology, geography, ecology, etc. Every field has its own attitude and methods of landscape research [55]. So, the first question is: *what methods and disciplines* can be integrated as landscape is the object of interest of many disciplines? And, the second question is *how* to *integrate* the methods and knowledge from different research domains for common aim of implementation of relational concept in landscape evaluation, and specifically – revealing of cultural differences in landscape perception and evaluation?

Answering to the first question we state that knowledge of *sociology, cultural studies, environmental psychology*, and *geography* could be integrated together with the field of landscape research here as the research object will be the landscape itself (objective aspect) and how people perceive and understand it (subjective aspect), and why they make particular preference judgements (relational aspect) (Fig. 3).

Landscape research in this model encompasses the traditional landscape analysis and modelling techniques but is not limited to them and may include biological (evolutionary), cultural and mixed landscape aesthetic theories [37], which can help integrating landscape research with environmental and evolutionary psychology and probably trace some cultural differences in landscape perception. Landscape visual characterization [37] and landscape aesthetic categories [36] are attributed to landscape research sphere as well.

The methods and techniques that can be used from the field of *sociology* are already widely described in the second chapter. Many existing research techniques are mostly based on the statistical analysis of the results of sociological research that help to reveal categories of visual stimuli or perceived landscape categories according to the preferences of the observers. The outcomes are evaluated in terms of the most and least preferred scenes, preference predictors (for ex., coherence, diversity, naturalness, etc.), correlations between preferences and predictors, content analysis of preferred environments or comparison of different landscape characteristics [26].

Regarding the importance of cultural literacy [52] in the context of multicultural landscape perception research, *cultural studies* are distinguished as a separate field in our model. Different disciplines and approaches ranging from sociology and psychology to management can be employed for the understanding of sociocultural context. For example, the field of evolutionary psychology dealing with human internal mechanisms as the adaptations that helped our ancestors to get around the world, survive and

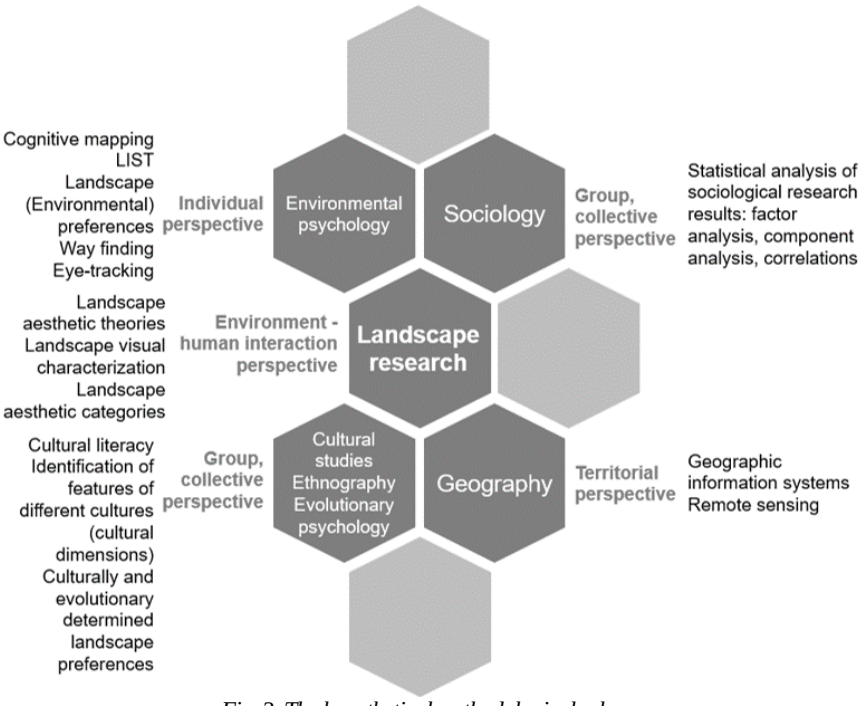

Fig. 3. The hypothetical methodological scheme of interdisciplinary evaluation of cultural differences in landscape perception

reproduce [11], can help understanding, why different landscapes are preferred by different cultures and what are the common landscape preferences shared by different cultures and why. The seven dimensions of cultures distinguished by C. Hampden - Turner and F. Trompenaars [16] can be a helpful tool in the multicultural landscape perception analysis if linked with particular landscape characteristics or environment formation concepts. Distinguished dimensions are presented in a form of dilemmas and include: achievement vs. ascription; individualism vs. communitarianism, internal vs. external; neutral vs. emotional; specific vs. diffuse; sequential vs. synchronous; universalism vs. particularism [16; 25; 47].

Environmental psychology is the branch of psychology which deals with relationships between physical environment and human behaviour (relational aspect). It is a multidisciplinary field where perception of the environment is a fundamental subject. Environmental perception research includes topics such as cognitive mapping, landscape (environmental) preferences, way finding, etc. [26]. Considering the analysed landscape research methods used for the analysis of impact of socio-cultural factors on landscape perception we can distinguish the research of H. Ueda (2014) [49] based on Landscape Image Sketching Technique and the way of mental maps construction developed by K. Lynch (1960) that allow to clear out the differences in landscape representation influenced by socio-cultural factors avoiding limitations of prevailing techniques of sociological research as well as are relevant to strengthen the relational aspect of the research.

Aiming at the more objective research results, the conceptual understanding of landscape can be analysed using geomatic approaches based on the geographic information systems and remote sensing of landscapes in *geography* [22; 51]. Geographic information systems that encompass psychological values derived from the visual landscape could be helpful for *integration* and analysis of the research results [20]. Remote sensing of landscapes would let us to recognise the landscape categories characterising the territories: the environments as the biogeographical distributions of the species, the types of "natural" landscapes, the structures of the geographic space, the types and forms of anthropogenization. The remote sensing is one of the key-approaches for building complex landscape indicators describing spatially the socio-geographic-physical realities of the territories. The spatial indicators contribute to an objective analysis of the landscape determining the characteristics of landscape and classifying landscape units according to natural and cultural factors on different geographic level – local, regional or global – according to the spatial resolution of the sensors and image processing implemented. The impacts of the Earth observation data used define the level and accuracy of recognition of the landscape units [13; 14] and territorial structures. The spatial indicators constitute a key-support for the analysis of the landscapes through the territorial structures showing the influence of the culture and religion on the land organisation [35]. They are also the spatial footprint of the territorialisation processes as the spatial

structures of the geographic space and the territorial organisation. Their construction itself depends on the structure of the landscape studied by remote sensing resulting more or less from the complex interactions between space, nature, culture, economy, politics, conceptions and perceptions of landscapes and territories.

An objective way to measure people's observation of landscapes is also provided by eye-movement tracking. This technique allows the recording of the velocity and direction of eye movements (saccades) and the position and duration of fixations while observing images. Eye-tracking measurements are used in the field of environmental psychology, geography, cartography, and landscape science [9].

Conclusions

1. Socio-cultural factors, that are decisive for cultural identity and socio-cultural background, together with biological and psychological factors influence landscape perception and evaluation. They are subjective aspect of landscape evaluation that determine human aesthetic judgement and its reasons (objective indicators of landscape aesthetic visual quality). This triple nature (subjective, objective and relational) of landscape perception/evaluation process requires interdisciplinary methodological approach in landscape evaluation process for landscape cognition, planning and design purposes.
2. The history of the research of cross-cultural differences in landscape perception reaches the middle of 1980 [19], and since then the landscape research methods used for the analysis of impact of socio-cultural factors on landscape perception can be classified as mix of psychophysical and cognitive theoretical approaches. They are mostly based on the statistical analysis of the results of sociological research, though, some of them use different approaches such as Landscape Image Sketching Technique, qualitative interpretation of the research results or try to integrate linguistic aspect additionally to usual quantitative evaluation. Such studies usually require a set of landscape photographs, carefully prepared questionnaire and sample of respondents of different cultures (cross-cultural comparison of landscape preferences) or nationalities (sub-cultural comparison of landscape preferences) participating in the research. Ranking, rating or sorting techniques are usually used in this type of the research.
3. Considering the existing technological problems of the research that diminish the objectivity of the research results and the need of reducing disbalance of landscape evaluation subjectivity and objectivity, and drawing the research closer to relational concept, we propose the hypothetical methodological scheme of interdisciplinary evaluation of cultural differences in landscape perception that integrates landscape research with cultural studies (cultural literacy, dimensions of cultures), knowledge of sociology (statistical analysis of the results of sociological research: factor analysis, component analysis, correlations, etc.), environmental psychology (cognitive mapping, LIST, landscape (environmental) preferences, way finding, eye-tracking, etc.), and geography (geographic information systems, remote sensing) as the research object is the landscape itself (objective aspect), how people perceive and understand it (subjective aspect), and why they make particular preference judgements (relational aspect).

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Kopsavilkums. Rakstā sniegta informācija par ainavu starpkultūru un subkultūru uztveres pētījumu metodoloģiju. Aprakstītas ainavu izpētes metodes, kuras tiek izmantotas, analizējot sociāli kulturālo faktoru ietekmi uz ainavas uztveri. Analizētas kognitīvās pieejas, kas lielākoties balstītas uz sociioloģisko pētījumu rezultātu statistisko analīzi. Rakstā tiek piedāvāta starpdisciplinārās novērtēšanas metodoloģijas shēma, kas ainavu izpēti integrē ar kvantitatīvās socioloģijas zināšanām (socioloģisko pētījumu rezultātu statistiskā analīze: faktoru analīze, komponentu analīze, korelācijas utt.), sasaisti ar vides psiholoģiju (kognitīvā kartēšana, ainavas attēla skicēšanas tehnika, ainavas un vides izvēles, ceļa atrašana, acu izsekošana utt.) un ģeogrāfiju (ģeogrāfiskās informācijas sistēmas, attālinātās izpētes).

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History of origin and development, compositional and morphological features of park pavilions in Ancient China

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Abstract. The article analyses the origins of such a small architectural form as the Chinese pavilion, investigates its functional, planning and artistic figurative features. The evolution of functional and artistic figurative solution of pavilions from dynasty to dynasty is determined. On the basis of the dimensions of the preserved pavilions, their proportional and metro-rhythmic features were determined; a list of the most characteristic forms of roofs as the main exponents of the national originality of the Chinese pavilions was compiled. The reasons for the revival of the tradition of "chinoiserie" style in modern landscape design are argued.

Keywords: Chinese architecture, pavilions, gazebos, multi-functionality, revival of traditions

Introduction

The relevance of the topic of study of small architectural forms of China, known in Chinese scientific sources as the "pavilion", and in the post-Soviet space as "gazebo", is due to the fact that over the past decades, there has been a revival of the trend of the design of small architectural forms and landscapes "in Chinese style" [13]. There are several reasons for this: the rapid development of the People's Republic of China and its entry into the world market as a powerful economically developed country, the increase in the share of Chinese goods in the market of the world countries, the greater openness of China to tourists, the search of ways of harmony with nature as a counterbalance to the forwardness of industrialization, the need to create one's own space for aesthetic solitude, etc. Today, many companies offer customized and typical "Chinese style" gazebos and landscaping projects; however, such contemporary gazebos are by no means a literal repetition of ancient designs.

In the life of a European or American, a gazebo does not play such an important role as a garden or city pavilion in China, where it performed a much broader range of functions than the modern stylized gazebo now performs (Fig. 1). It should be noted that the construction of pavilions in China was at all times under control of the authorities, even treatises were issued describing the rules for the construction of pavilions, which were different in cities, imperial residences, villages, monasteries or in the natural environment; in addition, they were built on the principles of Feng dhui and display some hidden content, the purpose of the building and the social status of the owner.

The pavilion in China has long been the quintessence of national forms and cultural and artistic preferences, a kind of microcosm of Chinese design, primarily due to the spread of this type of buildings throughout China (Fig. 2).

Traditional Chinese architecture has become the topic of many scientific sources [1; 2; 4; 5; 7; 8; 9; 10; 11; 12]. This topic is directly related to the theme of European "Chinese style" stylizations, in particular, the specific features of "chinoiserie" style [12] and the revival of Chinese motifs in contemporary landscape design [13]. At the same time, most of the sources focus on urban planning, palace complexes, temple structures, rather than a comprehensive study of small architectural forms such as pavilions. Even the thematic monograph dedicated specifically to pavilions of different dynasties, presents mainly historical references, architectural descriptions, chronological table of evolution of the pavilion type and extensive illustrated material – photos and dimensional drawings [4; 7]. These drawings became the basis for deepening the study and analysis of compositional construction, morphology of the basic forms, and planning.

Another possible area of research is the comparison of the compositional and planning techniques of Chinese pavilions and European gazebos, pavilions and buildings of the 18th-19th centuries in "Chinese style" for the purpose of arguing exactly how the modification and transformation of individual chinoiserie forms occurred [12].

Authors used some scientific methods, such as the method of historical analyse, the method of comparative analyse, the graphic and analytical method, the method of the systematic-structural

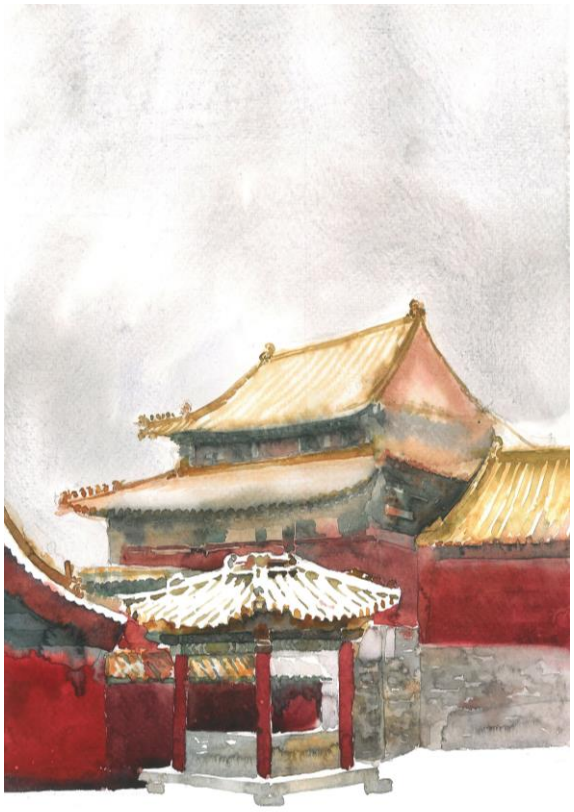

Fig. 1. Pavilion-gazebo near the Thai Hoa building of Gùgōng Palace in Beijing. Watercolour by Chang Peng, 2019.

Fig. 2. Biluo Pavilion, Qianlong Garden of Forbidden City, Beijing. Watercolour by Chang Peng, 2019.

analyse. On the basis of the historical analyse studied origins of Chinese pavilions and gazebos, using the method of comparative analyse made possible to compare the location of objects in the natural environment, the feature of their composition and plans. The graphic and analytical method made possible to compare the drawings of the historical pavilions and gazebos. Method of the system-structural analysis made it possible to establish the principles of location Chinese pavilions and gazebos of in the natural and urban environment, typical planning schemes, the main features of architecture of different historical periods.

Evolution of a Chinese pavilion: from military guard duty to hedonistic function

Although China's pavilions are mostly referred to Shang (1600–1046 BC) and Zhou (1046–256 (221) BC) dynasties, the origins of this type of structures should be sought in earlier times, as well as in the Spring and Summer Dynasties (771–476 BC) and Warring States period (403–256 BC). It is believed that pavilion prototypes appeared before Qin dynasty (221–206 BC), and during the reign of Qin and Han dynasties (206 BC–220 AD), these were rather simple pavilions with flexible function [4, *6, 8*].

During the reigns of the Spring and Summer Dynasties and Warring States period, pavilions were essentially small fortresses on the borders, on outposts, at trenches, that is, they had a purely strategic purpose. Subsequently, in Qin and Han epochs, administrative and controlling functions were added to the military function, since the pavilions began to perform the function of management, as did other administrative buildings [4, *6, 8*]. Emperor Liu Bang from Han dynasty was appointed a Chief Officer of Sishui Pavilion [4, *6, 8*].

The rulers of Han dynasty continued the tradition of the rulers of Qin dynasty and built pavilions every ten “li”, so according to the general census throughout the country, there were 29,635 pavilions. The semantics of the word “pavilion” initially meant literally “standing”, and only later this meaning turned into “place for temporary housing” and “place to stay”; during Han era, pavilions began to be used to communicate an artificially created architectural environment with beautiful natural surroundings. Sbuo Wen called a pavilion a multilevel structure on a high place, and the approximate appearance of the pavilions of that time can be represented by the corresponding hieroglyphs [4, *6, 8*]. The rock fresco images by Mogao of Tang era (618–907 AD) can characterize the state of development of small architectural forms of

this period: pavilions are marked by a variety of outlines of roofs (acute-angled conical, hipped, with double eaves).

During the period of the Northern Qi dynasty (550–577 BC) in Jinci Temple at the headwaters of the Jinshui River, the Spring Pavilion Nanlao was constructed; later this original pavilion on an orthogonal (octagonal) plane with a pointed rectangular conical roof, cantilevered leads and slightly centrally inclined columns was reconstructed in the period of Ming dynasty (1368–1644 BC). Jiu Zhang Suan Shu, who lived in the period of Eastern Han dynasty (25–220 AD), considered all cubic platforms to be pavilions, square pavilions stood on a quadrangular platform, and round ones – on a circular platform. It is during Han era that the architectural modification of the type of pavilion occurs, which becomes a tiered structure of bars and beams on the platform, and each pavilion receives a separate name, due to the function and location. Pavilions above the city gates were called pavilions with the flag, in the market – market pavilions, in the administrative section – city pavilions, at the borders – border pavilions, where the functions of the tiered structure were just reduced to the observation of the surroundings and the implementation of signaling functions.

Beginning with Wei (200–266 AD) and Jin dynasties (265–420 AD), the society rethinks the function of the pavilion, and the function of aesthetic enjoyment of merger with a natural environment comes to the fore. A typical example is the Orchid Pavilion, on the northern slope of Kuaiji Mountain, which initially served as a postal roadside pavilion, and later was twice ported for a better view, first to the shore of the lake, then to the top of the hill for a better view [4, *6, 12*].

However, these were not traditional garden pavilions. The first mention of the garden pavilions is found in the Northern Wei dynasty in the manuscripts of Yang Xuan and Li Daoyuan, in particular, the latter describes the Pavilion on the Stream in the garden Hualin [4, *6, 12*]. Garden pavilions become especially popular in the era of the Southern dynasty. In the Imperial Garden of Emperor Yuan from Liang dynasty (502–557 AD) there were pavilions with the poetic names of Yinshi Ting (Hermit Pavilion), Yingyue Ting (Moon Pavilion), Linfeng Ting (Pavilion by the Wind).

In fact, since the time of Song and Tand dynasties, pavilions have occupied an important place in gardens and parks. Records of Daye Era (605–618 AD), during the reign of Emperor Yang of Sui dynasty, mention twelve pavilions in the mountains, Cuiwei Pavilion in the Imperial Palace and Happiness Pavilion in the Emperor's garden, which was regarded by contemporaries as a styles, plans (square, hexa- and octagonal, round), masterpiece worthy of a place in history [4, *13*]. At that time, there were 24 pavilions in the Imperial Palace, 18 of them in the garden. Subsequently, in Tan era Tan (618–907 AD), the imperial fad gave impulse to the mass erection of such garden pavilions with poetic names in noble estates and monasteries across the country.

During the reign of Song dynasty (960–1279 AD), the development of the architectural and structural system of the pavilions and their functions continued; treatises devoted to their design and a list of standardized forms appeared during this period. There is a focus on building a connection with the natural environment. During Ming (1368–1644 AD) and Qing era (1644–1912 AD), purposes of landscape design expanded to include pavilions, and attention was paid not only to the pavilion's architecture, but also to the choice of location, landscape environment, and conformity of architecture and nature [3; 6].

Traditional building materials for pavilions were bamboo, bars and beams, stone, brick, tile and glazed tile, glaze (ceramic glaze), tree bark.

The researcher Qin Li identified the main stages of evolvement of a pavilion type to become a separate specific architectural structure, but in one chronological list he presented the stages associated with the general changes in the type of pavilion, and the construction of "iconic" pavilions in the epochs of different dynasties, which makes it difficult to draw a complete picture of the evolution of the pavilion. The stages that are more general are more important to our study, so from the whole chronological list we will highlight the following, not related to the construction of specific structures [4, *92–95*]:

1) 1066-221 BC – the first mention of the early military pavilions (Zhou dynasty);

2) 206 BC–220 AD – complication of the design scheme, the appearance of administrative, street, city pavilions and pavilions with the flag over the city gates (Han dynasty);

3) 265 AD–439 AD – appearance of decorated pavilions (Jin dynasty);

4) 420–589 AD – appearance of first landscape pavilions (the period of Southern and Northern dynasties);

5) 618–907 AD – distribution of pavilions in private gardens (Tang dynasty);

6) 963 AD – mention of the oldest pavilion on the bridge (Song dynasty);

7) 1046 and 1097–1100 AD – appearance of first treatises on the construction of pavilions (Song dynasty);

8) 1634 AD – appearance of specialized treatises on the rules for the construction of landscape pavilions.

Functional purpose of the pavilions, urban location and compositional construction

The function of pavilions gradually evolved, diversified and became complicated from a purely strategic military function to an administrative, cult, representational, memorial and recreational one. In Ancient China, pavilions were constructed according to their functions – military pavilions occupied strategic places; roadside pavilions, street pavilions and pavilions on bridges gave short rest and protection from the sun, rain and snow. In religious ceremonies, ritual pavilions, pavilions for the sacrifice for deities, memorial pavilions in honor of rulers or religious figures were formed, in the secular life – pavilions for drinking tea, so-called "tea houses", pavilions for music classes, receiving guests, meditating and more. In parallel with the variety of functions the appearance of the pavilion evolved, which turned into a sophisticated original lavishly decorated building, harmoniously integrated into the natural environment. The increase in the number of functions has led to the construction of more pavilions, of which there are twelve in the Imperial Garden of the Forbidden City in Beijing has; five pavilions of different styles adorn Changyan Garden in Suzhou [4, *5*].

Pavilions were constructed either in strategically important places (for military purposes), or in important city precincts (for administrative or public function), or in monasteries (for ritual purposes), or in a landscape setting (for aesthetic enjoyment).

Based on the existing measurement drawings, 14 pavilions of different regions of China were analyzed in terms of their compositional construction in order to establish possible proportional and metro-rhythmic patterns (Fig. 3).

These pavilions represent three main types: type 1 is horizontally elongated, with a width to height ratio of 1:0.5, type 2 is close to a square with a width to height ratio of 1:1, and type 3 is vertically elongated, with a width to height ratio of approximately 1:2. These objects are quantified as follows: type 1 – 2 objects, type 2 – 10 objects, type 3 – 2 objects. Although these pavilions do not limit the entire list of possible forms and compositional techniques, it can be suggested that with the loss of strategic function by most of pavilions, the need disappeared to construct them tiered, such as pagodas; the presence of a large number of tiers was uncharacteristic of garden pavilions; roofs were mostly one-layered, however, their form was bizarre, with emphasis on decoration.

It was proved that there were no common proportional or metro-rhythmic patterns for the construction of such pavilions, although there were probably typical objects. Each of the examined pavilions has its own construction, which is noticeable even in the following types:

1st type (Fig. 4) – the height of the pavilion from the ground to the end of the roof is divided into three equal parts, which fix the bottom of the bar for binding the upper perimeter of the supports, the middle of the roof, the top of the roof without sculptural cap, the width of the pavilion between the outer sides of the extreme posts is equal to the height of the bottom of the bar for binding the upper perimeter of the supports to the top of the figured cap.

2nd type (Fig. 5) – the height of the pavilion from the level of the floor to the figured cap of the roof is divided in two, and the middle fixes the bottom of the bar for binding the upper perimeter of the supports and the top of the slot, this height is equal to the radius of the circle drawn from the lower inner corner of the pillar-support to the figured part of the eaves and the ball of figured cap on the roof.

3rd type (Fig. 6) – the height from floor level to level of stub of tile is equal to the height from the bottom of the bar for binding the upper perimeter of the supports to the top of the figure on the roof; the circles, section of circles, with radiuses from the lower inner corners of the posts to opposite corners of aperture fix the middle of the roof; if the pavilion were fit to the rectangle, the intersection of diagonals would fix the level of the stub of the bottom row of tile.

4th type (Fig. 7) – the whole height from the floor level to the top of the roof "horns" is divided in two, the middle fixes the top of the slot, the width between the posts is equal to the height from the floor level to the bottom of the roof, the intersection with the roof level of two circles with radiuses from the lower inner corners of the posts to the upper inner corners of the opposite posts defines the beginning of the angular details of the eaves; if the pavilion were fit to the square, the intersection of diagonals would fix the level of the top of the slot.

5th type (Fig. 8) – the height from the floor level to the top of the roof without the figured cap is divided in two, the middle fixes the bottom of the bar for binding the upper perimeter of supports; if the pavilion were fit to the square, the intersection of diagonals would fix the level of the stub of the bottom row of tile.

Historical pavilions of China differ in plan form, they are square in plan, round (Biluo Pavilion in Qianlong Garden of the Forbidden City in Beijing), hexa- and octagonal, paired as two cross circles (Shuanghuan Pavilion in Beijing) or two united hexagons (Taiyu Pavilion in Anhui Province), with the unmatched outlines of the lower and upper tiers (Nostalgia Pavilion in Sichuan Province).

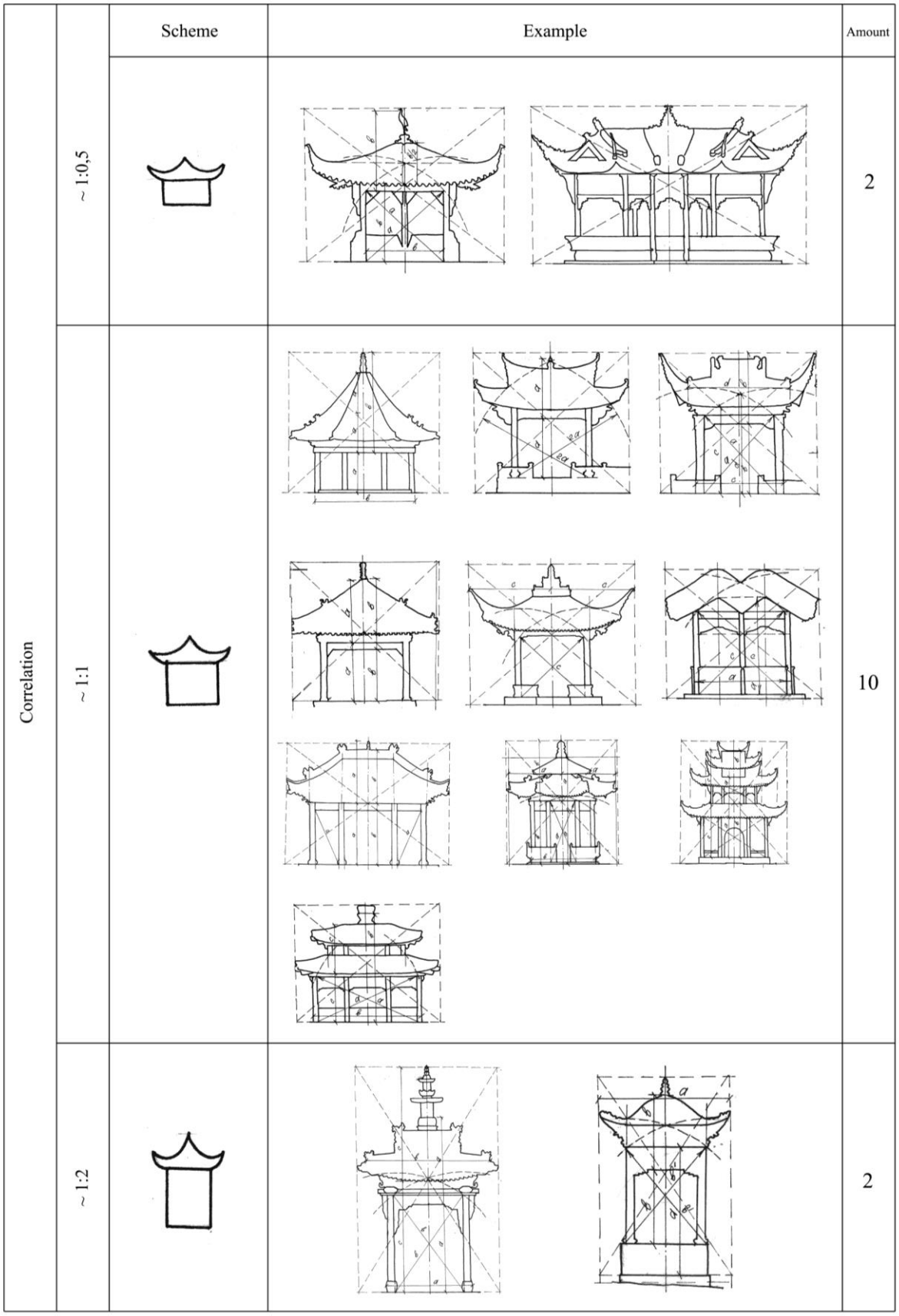

Fig. 3. Analysis of proportional and metro-rhythmic construction of historical pavilions based on dimensional drawings. Drawings by Chang Peng, 2019.

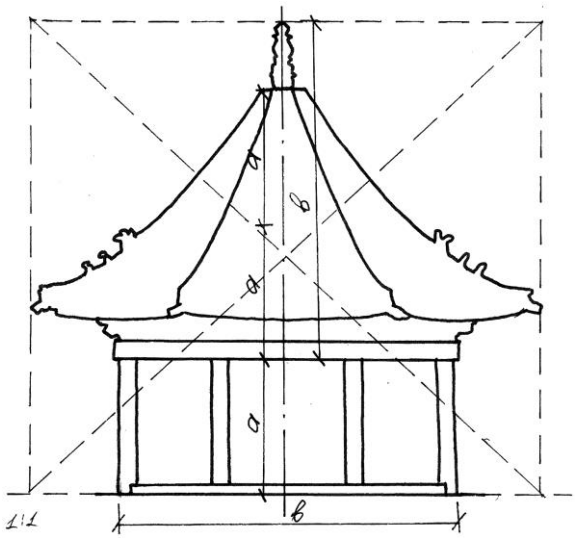

Fig. 4. Nanlao Spring Pavilion of Jinci Temple, Taiyuan, Shanxi Province. Drawings by Chang Peng, 2019.

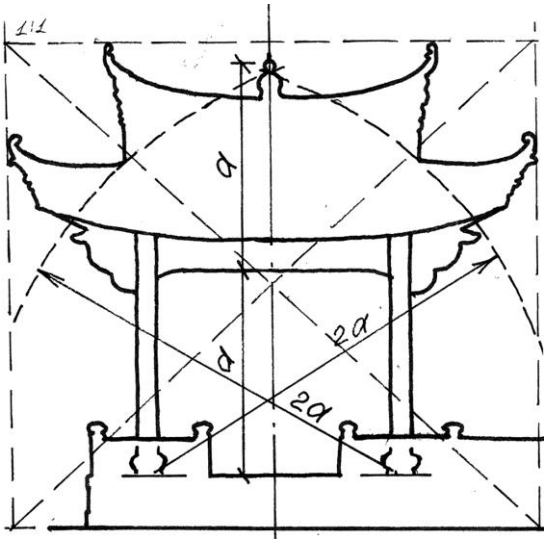

Fig. 5. Square Pavilion, Puzhao Temple in Southern Putuo of Xiamen, Fujian Province. Drawings by Chang Peng, 2019.

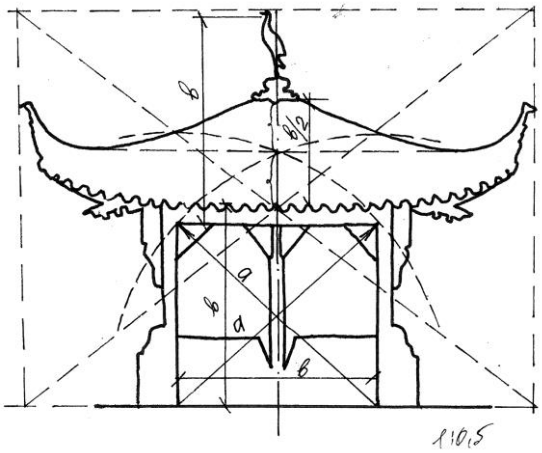

Fig. 6. Kaiwang Pavilion, Lesser Yingzhou, Hangzhou West Lake, Zhejiang Province. Drawings by Chang Peng, 2019.

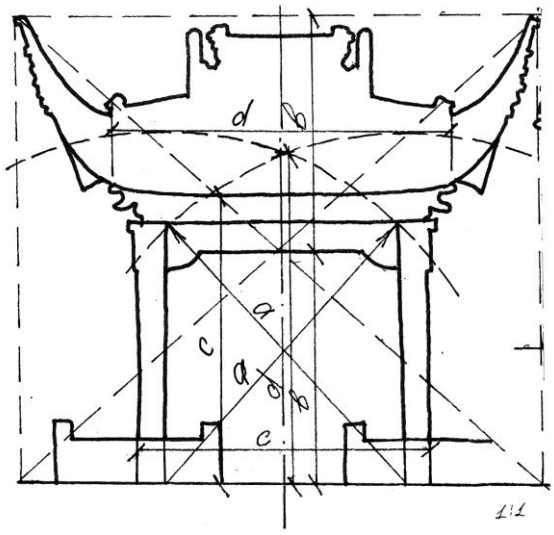

Fig. 7. The Pavilion of Surging Waves, Suzhou, Jiangsu Province. Drawings by Chang Peng, 2019.

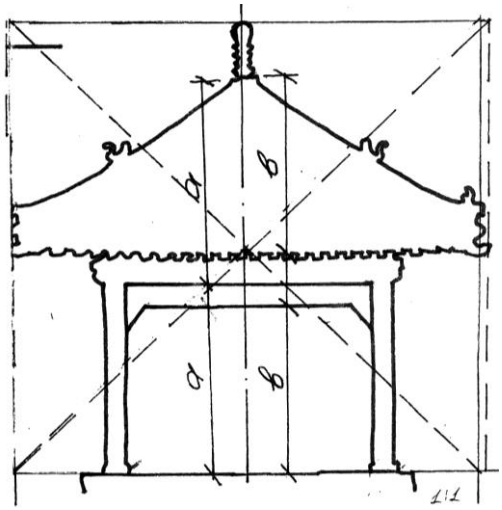

Fig. 8. Guanlan Pavilion of Baotu Spring, Jinan, Shandong Province. Drawings by Chang Peng, 2019.

Types of roofs

The most characteristic feature of Chinese pavilions is the roofs of the original outline (Fig. 9–11). Based on the analysis of samples of historical pavilions of periods of different dynasties and different functional purposes in the north, northeast, east, southwest and central China, six major types have been identified, which in turn form a significant number of modifications.

It has been found that paired roofs are found in pavilions of the northeast, in the east and less frequently in the center and in the southwest, there are types of expressively bent upward "horns" of roofs that are not typical of the north and northeast of China. The type of two-tier pavilion has not become widespread; such pavilions are found in the northeast, rarely – in the southwest and in the center.

Fig. 9. Pavilion at the Gùgōng Palace in Beijing (2nd type). Photo by Dominika Kuśnierz-Krupa, 2017.

Fig. 10. Pavilion in Yu Yuan Gardens in Shanghai (1st type). Photo by Dominika Kusznierz-Krupa, 2017.

Roofs were traditional four-slope (one- and two-tier), four-slope with bent up ends (one-, two- and three-tier), in the form of a tent with curved faces on an orthogonal plane, in the form of a cut tent with bent upward ends on a hexagonal plan, semi-gable, conical, with a combination of several types of roofs, and pavilions themselves were one, two- and three-tier.

Significantly, in the scientific literature, all such structures are called "pavilion", although in fact there are both closed and partially closed pavilions, and open gazebos on pillars (Fig. 9–11). The question of the origin of roof shapes in different parts of China requires additional research; for this purpose it is necessary to compare the natural and climatic conditions and cultural traditions of the regions, their mutual influences and their causes, to trace the dynamics of changes of forms and structures and decor from dynasty to dynasty.

Fig. 11. Pavilion in Yu Yuan Gardens in Shanghai (2nd type). Photo by Dominika Kusznierz-Krupa, 2017.

General conclusions

The analysis of composite construction, planning, and functional organization shows that during its existence a pavilion has evolved from a simple military structure for strategic purposes to a multifunctional building, diverse in design and artistic solution of the structure, which has become one of the most massive types of buildings throughout the territory of China and a major element of landscape design [3; 5; 6]. Treatises gradually appeared describing the rules of construction and design of pavilions, that is, in the course of the evolution of this type of architectural building, theoretical foundations were laid under practical construction.

Contemporary Chinese-style gazebos in countries outside China cannot be considered analogues of ancient Chinese pavilions, since they are much simpler in artistic images, decor, perform a much smaller list of functions, and reduce to new materials and construction technologies [13].

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Kopsavilkums. Rakstā tiek analizētas arhitektūras mazās formas, kas attiecās uz Ķīnas paviljoniem, to proporcijām un mērogu ainavtelpā. Izpētīta informācija par Ķīnas paviljonu pirmsākumiem. Analizēti funkcionālie un mākslinieciski figurālie paņēmieni. Rezultātā, pētījumā tika noteikta paviljonu funkcionālā un mākslinieciski figurālā risinājuma evolūcija no dinastijas uz dinastiju. Balstoties uz saglabāto paviljonu izmēriem, tika noteiktas to proporcionālās un ritmiskās iezīmes. Izveidots un apkopots raksturīgāko jumtu formu saraksts, kas ietver Ķīnas paviljonu nacionālās oriģinalitātes eksponentus. Pētījumā analizēti paviljonu nozīme un tradīciju atjaunošanas iemesli, kas iezīmē noteiktu stilu mūsdienīgā ainavu arhitektūras dizainā.

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Rural-urban Interaction Inclusion in Ongoing Latvia Regional Reform

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Abstract. The ongoing process of regional reform in Latvia involves the vision of both rural and urban territories. The nexus between the city and the countryside and inclusion of it into realistic policy is deemed a good approach for solving failures of the European cohesion policy. To study cohesion between rural and urban areas, there is a need to identify the meaning of two concepts – the city and the countryside. The field rural and urban territories interact is the regional spatial level. And to manage regional development the normative framework is important. Aim of the research is to find does the new regional reform in Latvia is in close cohesion with the New Urban Agenda, especially linkages of rural and urban. Development politics included in research tend to include a question regarding rural-urban interaction, but only in some points. Documents of the United Nations included in research provide a very clear definition of the actions to be taken to ensure cohesion between urban and rural territories. The next step would be to assess and understand how to achieve. The issues of creation and opportunities of cohesion have been discussed in Latvia. It is not clear does the ongoing regional reform in Latvia will achieve declared goals regarding rural-urban interaction after ongoing discussions with the local municipalities.

Keywords: rural territories, spatial planning, urbanization, rural-urban interaction

Introduction

In Latvia, it is an ongoing process of regional reform. In the reform process, it is possible to define the vision of country development. In the regional development process sustainability of both rural and urban territories should be included. Human development processes are complex, and not quite predictable in all aspects. Thus, in a way, some actions are aimed at rectifying faults, such as, for example, climatic changes caused by human activities, which now jeopardize the existence of the entire planet. The inclusion of the nexus between the city and the countryside into realistic policy is deemed a good approach for solving failures of the European cohesion policy – specifically, the isolation of rural development from the cohesion policy [17]. Urbanization is an issue of concern in landscape and spatial planning nowadays, but does that mean that rural territories are unimportant or less important? Evermore people come to live in urban territories. In 2018, city inhabitants accounted for 55 % of the world's population, and forecasts predict this number to rise to about two-thirds of the planet by 2050. A democratic society cannot prohibit a person from choosing a specific place to live, so forecasts in respect of migration processes and numbers are rather tentative. The shortage of detailed forecasts makes it hard to take any preventive actions associated with greater numbers of people living in cities and other large inhabited localities. An essential circumstance is that it is not just the urban population that is growing, but also the size of cities and the number of cities with a population above 1 million. Rural and urban territories meat at the regional level. Regional development has to be sustainable and in theory are widely used three elements of sustainable development – economic, environmental, and social. Scientist Munasigne has defined not only elements of sustainable development, but also practical actions involved (Fig. 1) [6; 9; 12].

Economic aspects are related to income, production, investment, market development, price formation, etc. Social aspects refer to the distribution of equality, such as income distribution, market access, welfare and power positions of certain groups or regions, etc. And environmental dimensions refer to the quality of life, resource scarcity, pollution, and related variables. The key issue of sustainability policy is related to how sustainability is identified in the regulatory framework [11].

Social, environmental and economic bounds are studied in planning documents of different levels within the context of the past, the present, and the future. The process of developing binding documents in the domain of spatial planning requires the involvement of various experts. Habitat III and the New Urban Agenda are a result of consequential actions and processes. New Urban Agenda is a document presented at the United Nations conference Habitat III in 2016. As early as at this conference, this document has already sparked several discussions and outlined the issues to be solved for that policy to be implemented in practice. New Urban Agenda is aimed at fulfilling the progress towards the Sustainable Development Goal

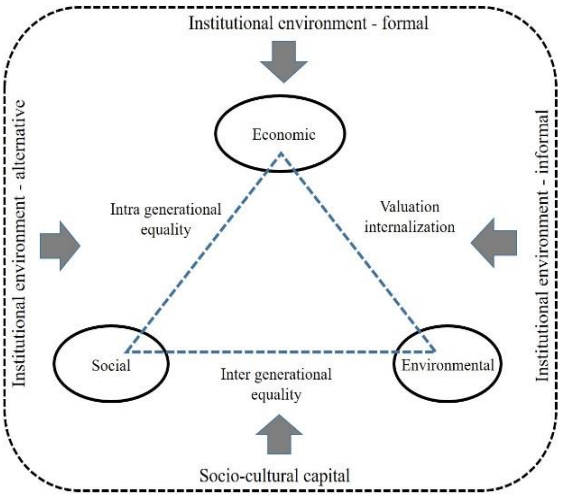

Fig. 1. Munasinghe's Approach to Sustainable Development [6; 9; 12].

Fig. 2. Toronto city borders [16]

number 11. The main aim of the research is to find does the new regional reform in Latvia is in close cohesion with the New Urban Agenda, especially urban-rural linkages. The broad-scale spatial document framework being developed calls for the assessment of the following points in the research:

- are the population dynamics unambiguously oriented towards urbanization;
- what is most essential for ensuring cohesion;
- are there any trends in Latvia that would be indicative of the development of cohesion between cities and rural territories?

Materials and Methods

Research analysis of the subject is based on literature research in three dimensions – applicability or the current subject in the latest comprehensive planning documents, qualitative assessment of documents in scientific publications, cohesion between cities and rural territories in Latvia. In research is used theoretical research papers and political documents, which influence territorial planning in Europe as New Urban Agenda and documents related to the implementation of New Urban Agenda.

Results and Discussion

The reason that makes the issue of urbanization so important nowadays is the increasing urban population. Profound research into various data, however, indicates that the information is not that explicit. An important aspect is that the number of people living in inhabited localities increases rapidly worldwide, yet the decrease in rural population is minimal. At that, the number of people living in rural territories is still expected to decline dramatically over the next few years [16]. In turn, another study reveals that over three billion people in developed countries live in rural territories; their numbers grow and are expected to maintain growth until 2028 [5]. Thus, there is also a great number of people living in rural territories, so the development of these areas may in no way be deemed less important for the public. Given that the three dimensions of planning are usually defined as the environment, the public and the economy, these three dimensions are of equal significance as pertains to the planning of both urban and rural territories. Different documents, studies and process characteristics show a trend toward separating these two concepts – the city and the countryside.

To study cohesion between rural and urban areas, one has to identify the meaning of these two concepts – the city and the countryside. A more precise study makes it clear that different statistical data on urban population cannot be interpreted unambiguously, as this process addresses the varying definitions of what a city is, and where city limits are deemed to be exactly [16; 17]. The definition of a city often stems from the wish to ascertain the population. For instance, 2.6 million people were living within the administrative boundaries of Toronto in 2011. In turn, the inclusion of suburbs into the calculation resulted in the number being almost doubled, to 5.1 million. Along with the metropolitan territory, the number rose to 5.6 million (Fig. 2) [16].

These different definition shows, it would be essential to comprehend the possible definition variations and, respectively, definitions of territories adjacent to cities. It is important to emphasize the value of working on more sustainable development of rural territories, along with solving the issues of a much greater number of people living in cities, even though the countryside is not that populated. The question of where life would be more sustainable does not have an explicit answer – cities are more compact, but rural territories offer each specific person greater opportunities to make individual choices and be more elastic. Even though there is no single specific definition of a city, the

available definition is more like a "recipe", which lists the ingredients of a city [3]. In spite of the complicated definition, the focus remains: it is the urban population that shows rapid growth. Along with the increase in population, it becomes ever more important for urban spatial planning documents to address the issues of city quality and planning, such as, for instance, the Sustainable Development Goal (SDG) number 11 – making cities and human settlements inclusive, safe, resilient and sustainable [16]. In this aspect, the emphasis is placed unevenly, as, even though the number of people living in rural territories does not decrease (not everywhere, however), the relevance of these territories has diminished.

In turn, territories adjacent to cities – urban regions – are territories where the links between one or several cities and the surrounding rural territory are more intense and functionally (economically, socially, politically and geographically) connected [5]. If rural territories are also defined using the cellular principle, these are territories with over 50% of the population living in the rural sections of the network, but cells are to be identified outside the city clusters [3]. Therefore, unlike cities, rural territories are not an independent value but are rather in close cohesion with the city. The definition of rural territories is essential specifically within the context of cohesion research, but, as it can be seen here, the rural territory cannot be defined before defining urban territory – not with this methodology, at least. Cohesions between urban and rural territories have been discussed for over a decade by now, since the first scientific report of the EPSON (European Spatial Planning Observation Network); studies have provided definitions for different types of rural territories and the development visions becoming possible due thereto. Close cohesion involving cooperation between urban and rural territories is also deemed polycentric cooperation [4]. The EPSON study of 2016 describes Latvian potential in an ambivalent manner – the eastern part is regarded to as a territory with poor urban structure, low accessibility, and territorial cooperation, whereas the western part is deemed a territory with a prominent urban structure, but low accessibility and territorial cooperation [14]. In turn, the latest OECD document examines several cohesion examples between urban and rural territories – travelling to work, migration, provision of public services, etc. It is deemed that the management of these relations may partially be based on functional regions [16].

In my opinion, the issue of cohesion is essential and requires a clear definition at the global level. Habitat III, the United Nations conference that took place in 2016 in Quito, Ecuador, addressed the issues of development of dwellings and sustainable inhabited localities and emphasized the implementation of the New Urban Agenda. The conference was attended by representatives of several countries, practising planning experts and scientists. An insight into the content of the conference with a focus on the cohesion between urban and rural territories reveals that this subject is mentioned in several sections and, which is essential, there was also a separate session on the cohesion between regions and cities. The importance of cohesion is stated in such aspects the following ones:

- **rural territories are important,** as these provide such resources as water, energy, food, and other services, and these are essential, especially in case of disasters;
- to make the development of inhabited locations truly sustainable, **one must think of cohesion** between cities and urban territories, conducting cooperation, and dialogue between the involved stakeholders;
- it is necessary to rethink strategic planning, ensuring the involvement of all concerned stakeholders and creating a **human-centered approach**, local knowledge must be integrated into the decision-making process, including that of farmers;
- **polycentrism** is essential for development planning, and it includes cohesion not just between inhabited localities of different levels, but the involvement of rural territories as well, to mitigate the social and economic inequality in the region in general [18].

Within the boundaries of a separate session of Habitat III on the cohesion between regions and cities, essential findings and inferences were defined in reliance upon discussions between experts and representatives of nations. The main goal to aim towards, even if it is never achieved, is to leave no territory and no individual neglected – this, in my opinion, is a powerful and significant focus, absolutely required to be taken into account in spatial planning. Separate findings are oriented towards identifying the importance and necessity of rural territories, but the major focus remains with the needs of cities:

- to conduce a territorial development approach where the **major role would belong to cities**, especially small and medium ones;
- reinforcing cohesion between urban and rural territories is going to improve the living and subsistence of the rural population and ensure **access to food** for the most vulnerable population groups in the meantime;
- fresh food mostly comes from rural regions, and, as cities grow larger, the rural and urban **food supply chain** becomes longer as well, implying that food travels longer distances;

- we have to improve **synergy** between industries, actors and spaces;
- **partnering relationships** are required between the UN agencies, the academic community, government, and local authorities and the private sector, including residents involved in the discussion, to work together on the solutions for improving the lives of inhabitants of both urban and rural areas [18].

Three emphases can be derived from these key findings – that the central object of interest is cities nonetheless, that rural territories are important particularly within the context of the provision of food, and that cooperation at different levels is important.

The New Urban Agenda is a document that is already being adopted by countries, so each one bears its responsibility for implementation of the principles thereof in practice – that is, in the local planning documents as well. Two key points of the document are more specifically oriented at cohesion between urban and rural territories. One of these declares that countries that endorse the document commit themselves to support territorial systems that integrate the functions of cities and rural territories in the national and regional spatial framework, thus conducting sustainable management and usage of land and natural resources. The second key point draws attention to long-term urban environment and territorial planning processes and the spatial development practice, which includes integrated water resource planning and management, considering the continuity of urban and rural areas on the local and territorial scale [10].

The greatest emphasis is placed on strengthening cohesion rather than consolidating and developing the regions themselves, but the importance of regional development within the context of equality and resource availability is also mentioned. Having secured the involvement of several international organizations and experts, the United Nations have jointly developed a situation assessment to define tools for creating cohesion between urban and rural territories. The defined tools outline the main points to be worked towards by different territories – product flow, services and exchange of information, mobility and migration and partnerships between urban and rural territories, as well as the food provision system and "sustainability chain" for all; urbanization of rural territories – formation of small and medium cities; the aggregate of cities and rural territories within the context of conflicts and disasters; integrated planning; increasing the capacity for cooperation; inclusive investments; environment impact mitigation.

TABLE 1
Document content regarding rural-urban interaction

No.	Document	Connection of rural and urban territories	Main point concerning rural-urban interaction
1.	EPSON, 2010	displayed	▪ Definitions for different types of rural territories and the development visions. ▪ Polycentric cooperation.
2.	EPSON, 2016	displayed	▪ Defines development potential by urban structure, accessibility, and territorial cooperation.
3.	OECD, 2017	displayed	▪ Examines cohesion between urban and rural territories.
4.	New Urban Agenda, 2016	displayed	▪ Integrated territorial systems. ▪ Long-term urban environment and territorial planning.

The United Nations deems large-scale activities to be the most essential at the beginning stage:

- aggregation of data and evidence on the cohesion between urban and rural territories, including a compilation of examples and good practice;
- definition of indicators for cohesion between urban and rural territories;
- establishment of the global partnership for the development of cohesion between urban and rural territories;
- development of tools for supporting the Member States in the process of strengthening cohesion between urban and rural territories on various scales [19].

Table 1 visually displays, that development politics tend to include a question regarding rural-urban interaction. However, not all studies are carried out to implement and use the New Urban Agenda. Deficiencies can often be identified in the course of document examination, and the researchers who analyse the New Urban Agenda have noticed some deficiencies as well. One of these would be the ambiguous effect on such locations as fields, islands, suburbs, small countries, cities of small and medium-size. The currently evolving opinion is that

a coalition was formed by the involved parties that developed the SDG 11 and continues to propagate the importance thereof in the urban dimension [1; 2]. Another substantiated discussion would be the one on the issue of what makes the New Urban Agenda better and more useful than the previous ones, and whether it contains any genuinely new ideas [15]. Objectives set in the course of development of strategies and policies are usually intended to create a better situation, but these are no more than words and smart terms without reference to the actual situation. Planning must be a territorial dimension. Many national development policies adhere to the idea that the development of urban and rural areas is a binary choice.

The territory of Latvia is 64589 km² and here live approximately 2 million inhabitants. As it is said in materials from Ministry of Environmental Protection and Regional Development, the Republic of Latvia, that after reform made in 2009 have been understood, that one of the positive effects of done reform is areas of local governments that were created around regional development centres have benefited from increased urban-rural cooperation. Unfortunately, also is mentioned, that there are local municipalities without regional development centres, and they are limited in urban-rural cooperation [21]. There is no data in which proportion is positive and negative tendencies.

The government of the Republic of Latvia, at its sitting of 21 March year 2019, decided to continue the territorial reform initiated in 1998 and to establish economically viable administrative territories by 2021 with local governments, and after consultation with local governments. The Ministry of Environmental Protection and Regional Development (VARAM) emphasizes that Latvia has also adopted an integrated outlook on the issues of urban and regional development, without addressing these in isolation from each other. The VARAM admits that it is the Territorial Agenda for the European Union that identifies the need to conduce polycentric development using cooperation networks between cities and urban regions, and another priority set therein is the search for new forms of territorial administration and cooperation, mostly between urban and rural territories. The National Development Plan of Latvia for 2007–2013 has identified polycentric development as a prerequisite for the development of a balanced country. This polycentrism approach is intended for implementation in Latvia by reviewing the general regional policy framework [13]. The "Assessment of Interaction between the Urban and Rural Territories of Latvia" study carried out by "Konsorts" LLC summarises the good experience of the EU Member States, analyses interaction between the urban and rural territories of Latvia and identifies the most characteristic forms of interaction that affect the development of the respective region. Findings of the study point to the necessity of cooperation and diversification of rural territories [7]. It is important to note here that the study addressing the necessity and opportunities of cohesion was performed several years before the New Urban Agenda. The study offers some tools that could be specifically applicable in Latvia in the course of the development of interaction between urban and rural territories. It must be noted here that the definition used within this study is rather simple – cities are all administrative territories with the status of a city, whereas all other territories are rural areas.

There are seven objectives set for the ongoing administrative and territorial reform. Conceptual report about administrative reform describes the criteria for creating counties, which include:

- the area is geographically uniform;
- there is a development centre of regional or national importance in the territory of the county;
- the vicinity of Riga is the vicinity of Riga, with at least 15,000 permanent residents;
- the sustainable economic development of the area is possible and the municipality has the ability to attract significant investments to the area;
- it is possible to set up an effective network of educational, health and social services, public transport and road networks, and a utility network;
- the area is optimally created for the municipality to carry out autonomously its statutory autonomous functions, unless otherwise provided by law;
- sufficient pupils for at least one prospective high school [8].

About rural-urban interaction is more thought under the point about the importance of development centre in the territory is included. In this case, development centres are the thirty most important cities in Latvia. Considering mentioned above, as well as the functional connection of these development centres with the rural areas adjoining them, the establishment of such a criterion by law would ensure polycentric state development, also considering the possibilities of the state budget [8]. This objective is cantered at larger inhabited localities, whereas another objective emphasizes the importance of the competitive performance of municipalities [20]. Therefore, the inference is that the administrative reform is not in line with the New Urban Agenda, as competitive performance is contrary to equality and levelled opportunities. The reform is also based on studies, which mostly aim to deliver an assessment of the existing situation from an economic standpoint.

Conclusions

One cannot help the feeling that we are still far from achieving the goal of not leaving any territories or individuals neglected, yet this, of course, does not mean that we should stop trying. Population dynamics tend to deteriorate in rural territories, yet this trend is not as drastic as to make us act as if there would be no one living there, which would only conduce unidirectional dynamic processes. To create cohesion, it is important to realize at the moment that it must be uniform rather than oriented in just one direction – the countryside supplies the city. Regardless of how the documents would be called, these do emphasize inhabited localities, deeming that rural territories provide the city and, if the cooperation is good, the advantageous economic and environmental situation of the city provides support to rural territories. All documents lay great emphasis on rural territories as suppliers of food to the city. This emphasis could rely on the consideration that urbanization is a major influence factor that has a great effect on the environment, economy, and society of urban and rural territories alike. Documents of the United Nations provide a very clear definition of the actions to be taken to ensure cohesion between urban and rural territories; the next step would be to assess and understand how to achieve it and whether any of the defined objectives can be fulfilled in the current situation. Just like elsewhere, the issues of creation and opportunities of cohesion have been discussed in Latvia for over a decade. The new regional reform in Latvia is declared goals also regarding rural-urban interaction, but it is not clear do it will stay like that after ongoing discussions with the local municipalities.

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Kopsavilkums. Latvijā notiekošais Administratīvi reģionālās reformas process ietver gan lauku, gan pilsētu teritoriju redzējumu. Saikne starp pilsētu un laukiem un tās iekļaušana reālajā politikā tiek uzskatīta par labu pieeju Eiropas kohēzijas politikas kļūmju risināšanai. Lai izpētītu sasaisti starp lauku un pilsētu teritorijām, jāidentificē divu jēdzienu nozīme – pilsēta un lauki. Lauku un pilsētu teritoriju mijiedarbība ir reģionālais telpiskais līmenis. Un, lai vadītu reģionālo attīstību, ir svarīgi normatīvie akti. Pētījuma mērķis ir noskaidrot, vai jaunā Latvijas reģionālā reforma ir ciešā sasaistē ar Jauno pilsētu programmu (*New Urban Agenda*), īpaši lauku un pilsētas saikne. Attīstības politikas, kas iekļautas pētījumā, nereti ietvert jautājumu par lauku un pilsētu mijiedarbību, bet tikai dažos punktos. Pētījumos iekļautie Apvienoto Nāciju Organizācijas dokumenti sniedz ļoti skaidru definīciju darbībām, kas jāveic, lai nodrošinātu pilsētu un lauku teritoriju kohēziju.

Habitat III, Apvienoto Nāciju konference 2016. gadā Kioto pilsētā Ekvadorā bija veltīta mājokļu un ilgtspējīgas apdzīvoto vietu attīstības jautājumiem, kur tika akcentēta Jaunās pilsētu programmas ieviešana. Šajā konferencē tikās vairāku valstu pārstāvji, plānošanas praktiķi un zinātnieki. Ja papēta konferences saturu, fokusējoties tieši uz pilsētu un lauku teritoriju sasaisti, var redzēt, ka dažādās sadaļās šis temats ir minēts un, kas būtiski, bija arī atsevišķa sesija, veltīta tieši reģionu un pilsētu sasaistei. Sasaistes nozīmīgums minēts tādos aspektos kā:

- lauku teritorijas ir nozīmīgas, jo sniedz tādus resursus kā ūdeni, enerģiju, pārtiku un citus pakalpojumus, un tie ir būtiski, īpaši katastrofu gadījumos;
- lai apdzīvoto vietu attīstība būtu patiešām ilgtspējīga, ir nepieciešams domāt par sasaisti starp pilsētām un lauku teritorijām un veidot sadarbību un dialogu starp iesaistītajām pusēm (*stakeholders*);
- nepieciešams pārdomāt stratēģisko plānošanu, veicot visu ieinteresēto pušu iesaisti un veidojot cilvēkos centrēto pieeju, lemšanas procesā jāintegrē vietējās zināšanas, arī tās, kuras ir lauksaimniekiem;
- policentriskums attīstības plānošanā ir būtisks, un tas ietver sasaisti ne tikai starp dažāda līmeņa apdzīvotajām vietām, bet arī lauku teritoriju iesaisti, lai mazinātu sociālo un ekonomisko nevienlīdzību reģionā kopumā.

Latvijā ir pārrunāti jautājumi par saliedēšanas radīšanu un iespējām. Latvijā ir pārrunāti jautājumi par saliedēšanas radīšanu un iespējām.Pašlaik, kad notiek diskusijas ar vietējām pašvaldībām, paliek neskaidrs, vai Latvijā notiekošā reģionālā reforma sasniegs deklarētos mērķus attiecībā uz lauku un pilsētu mijiedarbību.

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Use of mixed methods in road landscape perception studies: an example from Latvia

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Abstract. We see, use and interact with different type of landscape every day. One of the important types is the road landscape we encounter during travel, whether a business trip, vacation or just on the way to and from home. Such landscapes can often help to introduce us to new regions or invite us to explore the surrounding areas because we partly experience the world around us from the road. Road landscapes combine important aspects of road and transport infrastructure as well as the quality of life of local people, traffic safety and tourism development. Road landscape development concerns both landowners and road users, each of whom might have different interests and understanding about possible landscape development and its consequences. Therefore, it is important to plan, discuss, present, and evaluate the future developments of any road landscape. The subject of road landscape has been little studied in Latvia. There are no recommendations on road landscape evaluation. Here we present a methodology for assessing perceptions of road landscapes. We aim to introduce several methods in combination that can be used in road landscape assessment, in order to show possible future developments of the road corridor and its surroundings and to test how potential changes might be perceived by road users. A combination of a case study approach, a scenario method, the use of 3D animations and of a web-based questionnaire survey are presented and discussed in the paper.

Keywords: case study method, scenario method, questionnaire survey, road landscape perception, 3D animation

Introduction

The road landscape is a public space, where, when planning changes to it, principles of democracy, bottom-up development and accounting for the opinion of road users should be followed. A better understanding of what elements road users consider important in the road landscape and what is perceived as scenic can help later in road landscape planning in general, and in scenic route planning [37], for example along tourist routes, in particular.

Landscape perception studies are used to understand how people see and evaluate the landscape from psychological, psychophysical, phenomenological and cognitive approaches [38; 13; 14; 20; 34; 2]. Various methods can be used for scenic environment assessment, such as model building [35]. The road landscape character can be assessed with GIS, using map-based indicators and photographs to assess the relationship between landscape and roads [16], or to investigate the relationship of landscape features with scenic preference, using GIS–based visualisations [21]. Movement is one of the key aspects of road landscape perception and it has to be taken into account in road landscape assessment [18; 3; 26). Understanding the road landscape as a moving entity is fundamental and in this respect methods need to be different from more standard perception testing tools which rely on static images.

Landscape architecture is a disciplinary field where multi-method approaches to research are normal, borrowing methods developed and tested in many other fields [9; 6]. The concept of mixing different methods originated in 1959 when Campbell and Fiske used several methods to study the validity of psychological traits. They encouraged others to examine multiple approaches to data collection and analysis [9]. Triangulating data from different sources to seek convergence across qualitative and quantitative methods was proposed by Jick in 1979 [12]. Mixing different types of data emerged from the original concept of triangulation. The integration of different research techniques in one project opens many opportunities for data collection and analysis. As time went on, approaches such as observations and interviews (qualitative data) were combined with surveys (quantitative data) [27]. The introduction and popularity of mixed methods is based on the complementarity of both quantitative and qualitative methods and on obtaining a richer end result than relying on a single method alone. The aim of this paper it to present the various protocols for the research carried out and presented in the doctoral thesis of Kristine Vugule. No results are presented. The research applied case studies, scenarios, 3D modelling, scenario animation development and a questionnaire survey which will be described as a complete multi–method package.

Research strategy

The overall research strategy applied in the project described here is based on three main elements: a set of case studies, the development and visualisation of future scenarios and the testing of

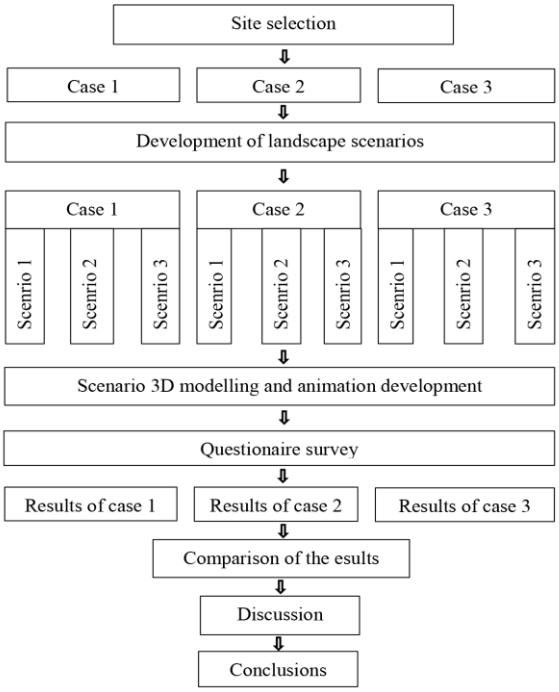

Fig. 1. Research strategy

these for preference using a quantitative survey. Overview of the research strategy is given in Figure 1.

The characteristics and main advantages of each will be presented and then the methodology and how they were applied will be presented.

Case studies

A case study, as defined by Francis, is "a well–documented and systematic examination of the process, decision making and outcomes of a project that is undertaken to inform future practice, policy, theory and/or education" [11]. It may be broadly defined as a study of a specific event, situation or complex phenomenon investigated in its real–world context [27]. Case study research involves designing the methodology, applying the methods to the case study, analysing the results and disseminating the findings. Case studies can be based on geography, documenting projects within a region, or based on the type of project [11].

The case study approach has been used in many fields including law, business, medicine, engineering, community studies, etc. as a method of education and research [36]. It can be easily used in combination with other methods. Case studies have well–established history in landscape architecture and are a popular research strategy within the discipline. Francis concludes that the case study is a highly appropriate and valuable approach in landscape architecture [11] because almost all research is associated with specific locations with particular contexts and framing conditions. This method can help to answer questions at the intersection of policy and design but have limitations in that the results cannot necessarily be generalised. They are particularly useful in participatory planning, for culturally sensitive design, and for testing emerging concepts. In landscape architecture, many master and PhD theses use case studies as a basis for analysis because the setting is limited in time and space. They are also effective for communicating the results of landscape architecture projects to a broader public [11] and frequently can be found in academic landscape architecture publications. For example, over the period 2011–2014, cases studies were cited in 78 percent of published peer–reviewed articles in the journal Landscape Research. The Journal of Landscape Architecture (JoLA) includes a section in each issue called 'Under the Sky' dedicated to case studies, and they featured in 32 percent of all peer-reviewed articles in JoLA from 2006 to 2014. Both landscape architecture professionals and academics [27] also present many case studies at conferences.

Within the project on road landscapes, since each section of road is different (although the engineering requirements and standards may be the same) the perception so and solutions to the road landscape are inevitably site-specific. However, as a result of landscape classification, typical cases can be identified, the results of which may be applied more widely to other landscapes of the same type. This is on way of attempting to link the specificities of case studies to a more generalizable set of recommendations.

Scenarios

The concept of scenarios as a tool for indirectly exploring the future has a long history and can be traced back to the writings of the early philosophers, like Plato. As a strategic planning tool, scenario techniques were originally developed and employed by military strategists, generally in the form of war game simulations [8]. Modern scenario techniques only emerged in the post–war period during the 1960s [6]. Scenarios are now widely used in future studies and include a variety of approaches. Bishop, Hines, and Collins, in their overview of scenario development techniques, identify eight categories of techniques that include a total of 23 variations used to develop scenarios [4]. Since the early 1970s, they have been increasingly used for landscape planning purposes, both at a project level and in research [24; 29]. In Latvia, the scenario method has been applied for landscape ecological plan development [15].

Scenarios provide a useful tool to test the dynamics of a landscape and to evaluate the potential consequences of choices in study areas. Scenario–based studies can be divided into normative studies, which seek to identify preferable futures; and descriptive studies, which aim to identify possible futures without regard for specific preferences. In this research on road landscapes the definition of a scenario by Van den Berg and Veeneklaas (1995) is used, where a scenario is

"description of the current situation, of a possible or desirable future state as well as of the series of events that could lead from the current state of affairs to this future state" [31]. Following this definition, scenarios do not present the most realistic future state, they are not prognoses, predictions, or forecasts. In contrast to forecasts, the scenario concept allows the development of several alternative future landscapes while being aware of the uncertainties associated with each. In extreme cases scenarios can be based not on events which are known to be possible (known knowns) or ones where it is known that variable sexist but there is no knowledge of what they are (known unknowns) but ones which have not been thought of (unknown unknowns or Black Swan Events [28].

Questionnaire surveys

Interviews and surveys have been widely used for research into landscape. Regarding road landscape or road usage, several studies have investigated the prevalence of a wide range of driving distractions using different forms of interviews: telephone interviews [23], face–to–face interviews. Drive along interviews when drivers or passengers can comment landscape they see and point out landscape elements can also be used. Questionnaires may be primarily quantitative, qualitative or a combination. Quantitative surveys, where data are recorded numerically as categories or scales (eg a Likert scale) have the potential for sophisticated statistical analysis including descriptive and predictive statistics. More qualitative surveys allow an in-depth exploration of a phenomenon but no statistical analysis is possible.

The key aspect of a quantitative questionnaire survey is the sampling strategy – whether to obtain a representative, random or quota sample, for example, and the number of respondents directly affects the potential for statistical analysis through the relevant power function (the relationship of the number of variables under test with the characteristics of the sample such as age or gender). Depending on how the survey is administered, it can have the advantage of reaching a reasonably-sized and representative group of people in a short period of time, providing the means to generate data that can be quantified and analysed. The rapid development of survey software and websites on the Internet has led to increased use of web-based surveys, which replace traditional printed survey data collection and on-site studies [19]. Web-based internet surveys have been found to be successful in landscape-related research [4; 33] although there can be biases in the samples obtained. Roth found that internet surveys have proved to be an objective and reliable tool for gathering valid data on landscape perception and visual landscape assessments. The results of online scenic quality surveys have a high potential for broader generalizations [22].

Methodology

Selection of cases

Cases were chosen as purposive samples [27], which enable conclusions drawn based upon their type in this research. Three road sections on the Latvian major roads A3 (Inčukalns – Valmiera – Estonian border) and A7 (Riga – Bauska – Lithuanian border) were selected for the research (Fig. 2.). These roads connect the three Baltic States (along the Via Baltica) and are important for tourism development. The length of each road section was 1 km. This length was chosen for practical reasons, due to the limitations on the creation of animated 3D models, representing real–time movement along the road, which was used to present the scenarios and for the questionnaire survey. The width of the road landscape corridor was defined according to the road landscape definition [17] as 2km within the animations (1km either side of the roadline).

Case study descriptions

The first case area is a section of the A7 major road in Iecava regional community between picket 50.3 and picket 51.3 (pickets indicate the distance from capital Riga in kilometres), representing the open, mostly flat agricultural landscape type characteristic of Latvia. This is a typical agricultural landscape, which belongs to West Zemgale plain, called in the Latvian language, "āraine". This is a type of landscape dominated by arable farmland. The landscape structure is made up of large and wide fields with small stand–alone forest patches and tree groups. It is the most common type of plain cultural landscape that has developed as a result of farming. Because of land amelioration (drainage installation during Soviet collective agricultural times), the natural structure of the landscape has been modified. Very prominent landscape elements with great visual and ecological value typical to rural areas are present here, such as estates and villages, as well as individual trees and tree groups [32].

The second area is a section of the A3 major road in Kocēni regional community from picket 43.5 to picket 44.5, representing the mosaic landscape type. The area is situated in a landscape type known as "mežāre". This is a landscape where agricultural land is interspersed with forest. The relief is undulating or fairly flat and the landscape structure is a mosaic of different patches. Significant landscape elements include farmsteads, natural meadows and groups of trees. Close and medium–close views are to be found, which terminate at a forest edge or farmhouses surrounded by tree groups [32]. The road landscape has cultural qualities. Hay meadows, pastures used for animal grazing and cultivated fields present the traditional way of land management. The diversity of landscape

Fig. 2. The location and character of the three case studies used in the research. Sections of case studies marked with red dots on the map of the Baltic States [K.Vugule using OpenStreetMap]

elements and activities is higher than in the previous area due to the more varied landscape structure formed by the open spaces of meadows and enclosures by the forest.

The third case area is a section of the A3 major road in Strenči regional community from picket 92.3 to picket 93.3, representing a forest landscape. The area is situated in a landscape type called "mežaine". characterized by flat terrain and high proportion of forest coverage. The structure of the landscape is made up of large forests, where small agriculture lands form islands. Landscape contrast is determined by the diversity of forest growth conditions – such as different ages and heights of trees as well as felled areas. Close and enclosed views dominate [32]. The area forms part of the North Gauja Protected Landscape Area [1]. The road landscape has high ecological and natural value. The River Gauja flows 50 metres away from the road and if it would be visible from the road this would contribute to its scenic quality.

The application of scenarios in this research illustrate developments that could happen in the case study areas. The set of assumptions applied within each scenario is built on logic, coherence, and consistency. Landscape development scenarios were defined by considering legal provisions and socio-economic aspects of landscape development. None of the scenarios is designed to be more realistic than others: all are plausible. The road infrastructure has not been changed in any of the scenarios. Roadside management shows standard practice. Road edges are one metre wide. The surface of roads may show some cracks and imperfections normally found on Latvian roads, included to be more realistic. The scenarios therefore focus on the landscape beyond the roadside.

The first scenario in each case presents the existing landscape and acts as a baseline to which alternative scenarios are developed, the second scenario presents a more intensive use of the territory and the third scenario less intensive use of the territory. The proposed scenarios were developed on the current topography but were not planned to represent fully realistic landscape management and design options.

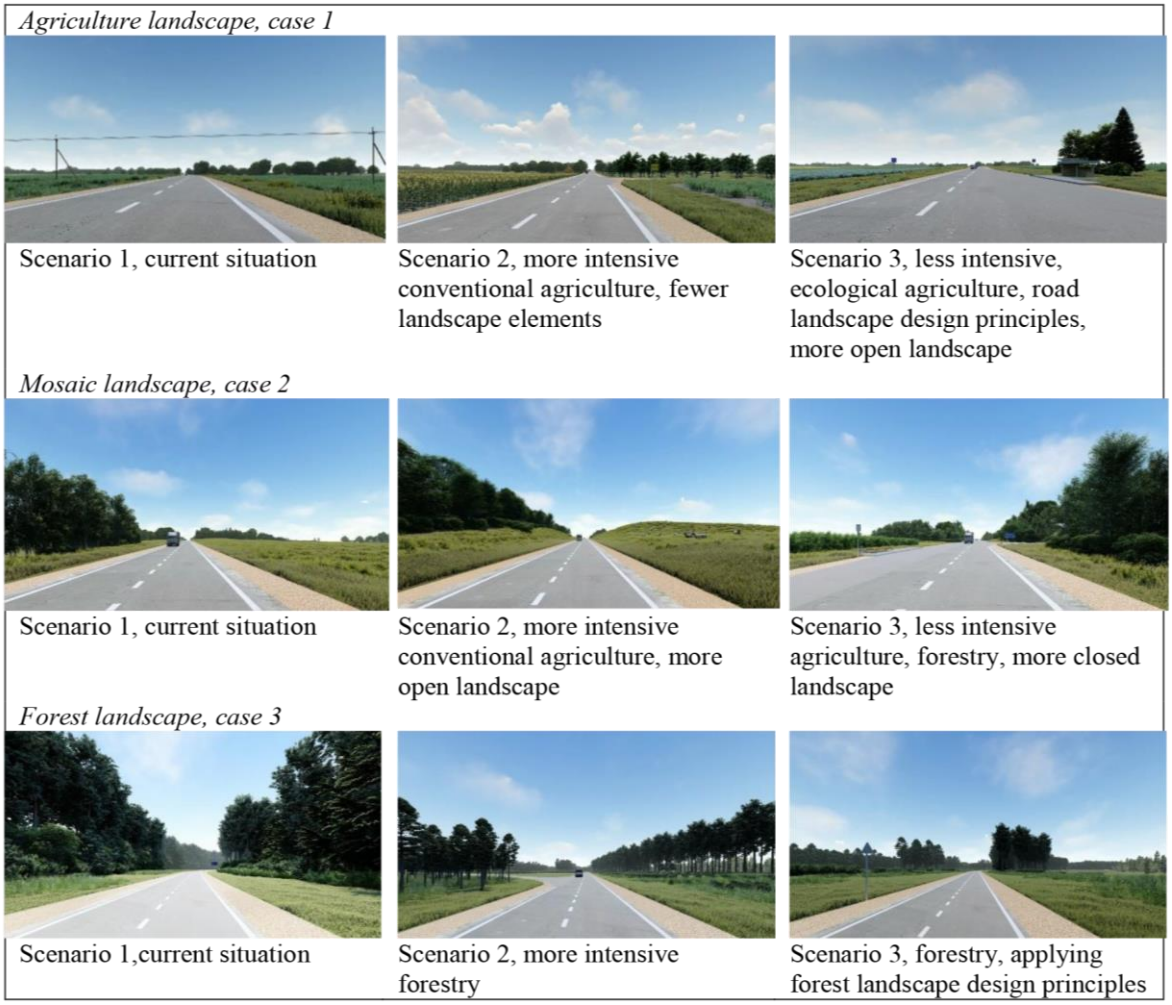

Fig. 3. Snapshots of the landscape of each case study and scenario [K. Vugule material]

To assess the road landscape perception in a more realistic way, through motion, experiencing the landscapes as travellers in a car would, which is an important aspect of road landscape perception, animations of each case area and scenario were created. Three–dimensional computer models were developed for each area using Microsoft Sketchup and Lumion 8 software. Nine animated sequences of driving along the road based on these computer models were developed. The models were based on real data. Point cloud from the LiDAR inventory was used to acquire topography data and geo-referenced orthophotomaps. These data were used in 3D model building and animation development. The road user is assumed to observes the landscape while moving along the road at a permitted maximum driving speed of 90km/h with the eye-level at 1100 mm above the road level (sitting in a typical car). While road landscape should be evaluated in both directions, as the landscape is perceived differently in each driving direction, each animation only depicted movement in one direction along the 1km modelled stretch of road through the study area because this was a limitation of the subsequent questionnaire application. If the task of the research was to evaluate the case study areas and offer solutions for their development, then it would be necessary to develop animations in the opposite direction as well but in this research only one direction was used.

The scenario development applied four visual characteristics of road related to traveller's movement along the road – variety, aesthetic of flow, legibility, and orientation [5]. These characteristics of the road landscape were taken into account in the scenario animation development.

Scenario characteristics and snapshots from the designed scenario animation are presented in Figure 3.

Road user survey

A web–based road user survey was carried out to test the preferences for the scenarios. The intention was to reach a sample of typical road users and to collect data about user preferences on the road landscape and its elements. The internet-based questionnaire instrument was chosen due to the technologies used in the research – the need to present the scenarios as video clips. Firstly, it was necessary to demonstrate road landscape animations and secondly, to reach enough respondents.

The questionnaire was developed and tested first using the first case area. It was pilot tested on two target groups of 14 landscape architects and

14 ordinary persons. The aim was to test the structure of the survey and to see if the questions were understandable to road user and whether they could recognise positive and negative elements in the road landscape. The results showed that it was necessary to change some terminology and to improve the way they were demonstrated. For example, the YouTube platform that was initially used, reduced the quality of resolution of the animations. The questionnaire was improved and five more animations were then added after the pilot testing. The final version of the survey consisted of 74 questions about nine animations. The questionnaire was prepared in a web–based format using a survey tool created by the research company SolidData which was contracted to carry out the survey data collection according to a specific set of criteria or representativeness. The animations were presented from a www.vimeo.com platform which maintained the high-resolution quality of the videos. Respondents were recruited from a Latvian survey respondent database. The survey was carried out in Latvian. The questionnaire was placed online for two weeks in April 2019. The respondents recruited by the company were given access to the survey and a target quota was obtained by the company who guaranteed the data quality. The questionnaire was completed by 217 respondents, genders being divided equally – 109 females and 108 males.

Processing of data

In the research 3D animations were developed for case areas in order to present scenarios for possible development of different types of road landscape. Respondents taking part in the questionnaire watched the different animations and answered questions about their perceptions of road landscapes, pointing out their views on the different scenarios. The main findings emerging from the questionnaire were analysed regarding the respondents' assessment of how important is the landscape they see when traveling along the road, as well as landscape attractiveness, the degree of landscape openness, positive and negative elements or features and the feeling of safety in ach animation.

The data from all the three scenario preferences and the ratings of positive and negative road landscape elements in each case were analysed, followed by the comparison of case results. Answers from open questions were grouped by key words and analysed. Statistical data analysis was carried using the Microsoft Excel program. Multi-factor correlation analysis was carried out which did not show a close correlation among the features, thus showing no interdependence of the results. Descriptive statistics and comparative analysis were used. Descriptive statistics were used to describe the general research use and perceptions of research by survey participants. For comparative analysis the ANOVA was used to test whether the differences were statistically significant between different groups or between findings in this survey. Most data were from multiple-choice questions measured on a four or five point Likert scale, which were treated as continuous variables. In the multiple choice questions, options were coded as categorical variables. Pivot tables were used for cross sectional analysis and to visualize results with tables and graphs. All quantitative data were tabulated and are represented in bar charts by the percentages of responses in each category for each item. Nominal data were reported by frequencies. Ordinal or interval data, measured on a five point Likert scale, were reported by means and standard deviations, as well as frequencies.

Visual characteristics of road related to traveller's movement along were evaluated. Variety, a factor identified as a key concept of the visual quality of the road landscape by Tveit et al. (2006), was noticed and mentioned by respondents as a positive feature. From the characteristics regarding the aesthetics of flow, respondents noticed varied and long enough views. Legibility, which is facilitated by visual guidance, good road alignment and simplicity in design, received negative comments from respondents when the road went into a curve or was in a cutting. Much attention was paid to road signs, which help in orientation. Respondents named positive elements 705 times and negative elements 549 times in all scenarios together. The most mentioned positive elements were trees, tree groups, and bushes. The most named negative elements were the ones which can cause danger on the road, such as poor or limited visibility due to trees and bushes close to the road.

Limitations of the research

The scenario animation method has some limitations. Compared to the traffic simulator, which resembles real–life situations with a possibility to change the focus and angle where one looks, in the animations the landscape was only assessed from the driver's position looking straight ahead. Thus, in the animations, respondents might focus on some things which they do not notice in real life and they were forced to look only at the road ahead.

The use of animations in a web–based survey limits the length of the road section to study or the possibility to assess the landscape from both directions. Animations cannot be too long in order to maintain the attention of respondents. In this research, the average time spent to fill the questionnaire per person was 24.5 minutes. The number of free comments added to the survey forms decreased towards the end of the process, indicating that respondents started to get tired.

There are currently technical limitations of models being too large to demonstrate them online for a web-based survey due to band–width limits, although this is improving year by year.

The web–based survey method also has limitations, which could have influenced the results. It was recommended at the beginning of the questionnaire to look at the animations on a computer in a full-screen mode, but it is possible that respondents completed it in on a mobile phone or a tablet with a small screen, where it is more difficult to notice differences in the animation design. There were some comments that the animations looked the same.

The road section of 1 km length is appropriate for landscape assessment using an animation method. It was possible to assess most of the characteristic features of the road except sequences and road alignment. For these characteristics, the road section should be longer. It is essential in road landscape planning to look at the whole route as the road landscape is perceived as one "story" during the whole drive. Road landscapes can be designed for short sections only after analysis and development plan or general guidelines of the whole route have been carried out.

Conclusions

The case study approach ensured that the research covered the evaluation of road landscapes in the most common landscape types in Latvia.

Development of different future scenarios for each case area provided the opportunity to reach statistically significant conclusions about road landscape qualities, landscape structure, maintenance, and road landscape elements.

The use of the animation method was effective for evaluating how road users see and notice the visual characteristics of the road related to traveller's movement along the road – variety, aesthetic of flow, legibility, and orientation.

The web-based road user survey was effective, and using the panel helped to reach a satisfactory number of respondents in a short time, the results were easy to process and were valid for analyses.

While respondents were not asked to evaluate the road quality, nevertheless, there were many positive and negative comments regarding the quality of road surface, road markings and the width of the road. This shows that it is not necessarily possible to restrict what researchers want respondents to focus on.

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Kopsavilkums. Mēs katru dienu redzam, izmantojam un mijiedarbojamies ar dažāda veida ainavu. Viens no nozīmīgiem ainavu tipiem, ar kuru saskaramies ikdienā pārvietojoties, gan darba vajadzībām, gan lai ceļotu, ir ceļa ainava. Ainava, ko vērojam no ceļa, rada priekšstatu par jauniem reģioniem, tā var aicināt mūs izpētīt sīkāk tuvāko apkārtni. Ceļa ainava ietekmē tādus būtiskus aspektus saistībā ar autoceļiem un transporta infrastruktūru, kā vietējo iedzīvotāju dzīves kvalitāte, satiksmes drošība un tūrisma attīstība. Ceļa ainavas attīstība attiecas gan uz zemes īpašniekiem, gan uz ceļa lietotājiem, un katram var būt atšķirīgas intereses un izpratne par iespējamo ainavas nākotni un attīstības sekām. Tāpēc ir svarīgi novērtēt, plānot, un apspriest jebkuras ceļu ainavas turpmāko attīstību. Ceļu ainavas tēma Latvijā ir maz pētīta, un publikācijā mēs piedāvājam ceļu ainavu uztveres novērtēšanas metodiku. Raksta mērķis ir iepazīstināt ar vairākām metodēm, kuras apvienojot var izmantot ceļa ainavu novērtēšanā, lai parādītu iespējamo ceļa koridora un tā apkārtnes attīstību nākotnē un pārbaudītu, kā iespējamās izmaiņas uztver ceļu lietotāji. Tiek aprakstītas sekojošas metodes - gadījumu izpētes pieeja, scenāriju metode, 3D animāciju veidošana un ceļa lietotāju aptauja.

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The influence of the natural environment on the transformation of architectural style

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Abstract. The article explores the phenomenon of the architecture style transformation with a radical change in the natural environment. By the example of two pairs of objects of the same style – objects of Northern National Romanticism in Finland and China and objects of the "Moscow pattern work" in Russia and France, the non-identity of the their architecture perception is argued with the general preservation of the defining signs of style – severe stone forms of northern national romanticism in dense Helsinki's urban development is perceived differently than similar forms of northern national romanticism among the exotic greenery of the coastal city of Qingdao, just as finely detailed forms of the Moscow Orthodox churches are perceived differently than similar forms among the palms of Nice. Another aspect is associated with a change in the ideological perception of the style of architecture when it is transferred to the territory of another country. Thus, Northern National Romanticism was perceived by Finland and the Baltic countries as the style of their national identity, therefore, it clearly expressed those elements and plots that just expressed the national identity of the countries under the rule of the Russian Empire. The same style, embodied in the representative buildings of Qingdao, primarily the governor's residence, expressed a different ideology: Qingdao was the military base of the navy, therefore Northern National Romanticism in this case expressed the nationality and dominance of Germany. At the same time, as you move away from the center of origin, each style invariably transforms as a result of multiple local layers, therefore, with all the grandeur of the appearance of the residence, it does not look as monumental as similar buildings in Finland or the Baltic countries due to the influence of Chinese traditions in polychrome and decor and placement in a different natural environment.

Keywords: natural environment, influence, Northern National Romanticism, perception of style

Introduction

Hypothesis, proven by this research, is that the natural environment in some case is not only a successful addition to the object of architecture; it can fundamentally change the perception of style. Therefore, such objects will be perceived differently in a diverse modern landscape. The mentioned is typical for objects of various functional purposes – religious buildings, public or residential buildings, small architectural forms. As examples, we selected pairs of objects of different functional purpose, located in diverse parts of the world, but similar in style. The Saint Nicholas Cathedral in Nice is compared to the Church of the Holy Trinity in Nikitniki in Moscow; the former residence of the Governor of Qingdao in China, a representative government house, is compared with the Helsinki's Pohjola Insurance building. If we analyse why these or other churches among the rest leave a particularly strong emotional impression and are remembered for many years, it becomes clear that, along with the purely canonical component – the main one in Orthodoxy, there are two others – successful urban planning, natural surroundings and a memorable unusual architectural appearance. The same goes for public and government buildings.

The successful urban planning of an object in an urban environment is the creation of beautiful views from various streets, a picture from a hill, visibility from a long distance, as well as picturesque nature, which in this case plays the role of a kind of theatre backstage to represent an architectural object.

In article was determined the group of outside factors and conditions, which predominated the transformation of styles. At the base of methodology of the systematic-structural analyse there were investigated the semantic properties of the architectural forms of buildings. On the basis of the methodology of the system-structural analysis, the principles of location of objects in the urban environment, planning schemes are determined, the basic elements of styles are analysed and systematized, the structural layouts and decoration are studied. Objects are analysed from the enlarged urban-planning level (location in the urban environment) to the object level.

The role of the natural environment in the transformation of the perception of the Nordic National Romantic Style

As the first example, we will consider how the perception of National Romanticism – the national style of Finland, Northern Germany, Scandinavia and the Baltic countries – changed when it was transferred to the territory of China's settlements, a country with rich local architectural, construction and landscape traditions, into fundamentally different natural climatic conditions.

Fig.1. Pohjola Insurance Company Building in Helsinki. Watercolour by Chang Peng, 2019

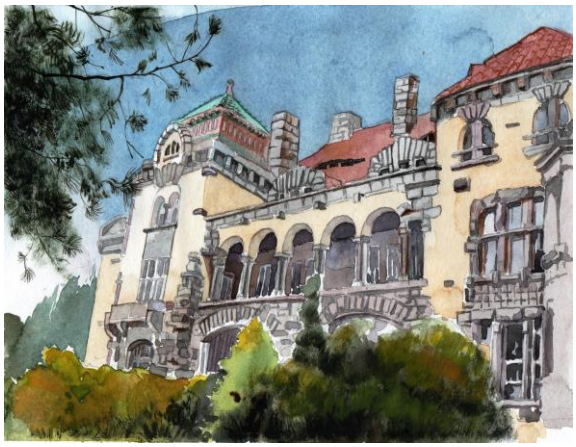

Fig. 2. The residence of the governor of Qingdao. Watercolour by Chang Peng, 2019

The Nordic National Romantic Style is one of the varieties of National Romanticism as a whole, as a separate direction [1; 4; 10; 11; 13]. National Romanticism spread in European architecture in the second half of the 19th century and was associated with the search for national identity, and it was especially active in those countries that thus realized their desire to free themselves from foreign domination and at the same time strengthen national culture. The emergence of National Romanticism is associated with an increase in interest in the heritage of Romanesque architecture (it is noteworthy that this interest was also cultivated by historical novels about this era, primarily Walter Scott's books). Steeped in the severe note of knightly valour, the era of the early Middle Ages became a source of inspiration for the American architect G. Richardson, who, based on it, created his version of "Neo-Roman" architecture, opposing it to Neo-Gothic with its desire for extreme decoration, dominating in the second half of the 19th century.

The Romanesque architecture of Germany with its massive rude forms became the source for National Romanticism (the so-called "Nordic style") in Germany. The buildings of G. Richardson, the Romanesque architecture of Germany (and France), German National Romanticism of the second half of the 19th century, the English rationalist Art Nouveau and the Arts and Crafts movement, combined with the themes of Finnish folklore, became the basis for the development of Finnish National Romanticism in the early 1890s (Fig. 1).

Similar phenomena arose in other Scandinavian countries – Sweden and Norway; however, it was Finland that gave the world the most vivid image of Scandinavian National Romanticism. The chief creators of the new style were Onni Tarjanne, Lars Eliel Sonck, Akseli Gallen-Kallela, Gottlieb Eliel Saarinen, Herman Ernst Henrik Gesellius, Armas Eliel Lindgren.

As a result, the main signs of Northern National Romanticism were formed, which subsequently passed into the modernist style of St. Petersburg, which was called "Nordic" [4; 10; 11]:

1) composition: dynamic asymmetry with a dominant; large scale; emphasized tectonics through the use of national stone – granite, often in the form of raw blocks; active silhouette with towers, gables, bay windows with towers;

2) elements: towers with motifs of Romanesque medieval castles, multi-store bay windows of various shapes with original crowning, finishing stone working of walls and unusual decor, trapezoidal or egg-shaped windows and entrances;

3) decorative methods – special deliberately rough-textured processing and decor with motifs of pine branches and cones, bears, lynxes, heroes of Finnish and Swedish folk tales.

Northern Art Nouveau of Saint Petersburg distinguished by severity, monumentality, restrained monochromaticity, the use of natural stone (granite, Swedish slate) on facades with various finishing (rock-faced rustication, smooth rustication), overhanging the massif of the entrance part, as if "cut out" in the rock. The low-relief decor in the technique of stone carving came from Scandinavian culture and legends – with images of predatory animals, fish, snakes, spiders, mushrooms, fantastic humanoid creatures.

The Art Nouveau architecture of St. Petersburg had a strong influence on the Art Nouveau architecture of Central and Eastern Ukraine, especially because most of the Kyiv and Kharkiv architects were graduates of the St. Petersburg Institute of Civil Engineers or the St. Petersburg Academy of Arts, and there was a practice of inviting famous architects to fulfil high-prestige private orders.

In Art Nouveau of China, the international trends of European Art Nouveau are intricately intertwined with traditional Chinese architecture, giving rise to the original phenomenon of Art Nouveau in China [5; 6; 7; 8; 9; 14; 15; 16]. In the modernity of Qingdao, an original phenomenon arose in representative buildings – a peculiar Chinese interpretation of northern (namely, Germanic) national romanticism. This phenomenon is unusual also because in the Russian territories, where St. Petersburg architects and graduates of St. Petersburg educational institutions worked, it did not receive such a distribution. It can be assumed that the presence of local grey granite deposits, a cheap building material, also contributed to this.

The unique character of the phenomenon of Northern National Romanticism in China lies in the fact that this movement originated and spread at a large distance from the northern countries, in completely various climatic and cultural conditions, which entailed the transformation of one of the most distinctive branches of Art Nouveau as it applies to the Chinese conditions. It is a unique fact that eclecticism is present to a much lesser extent in Northern National Romanticism of Qingdao than in the objects of other varieties of Art Nouveau in China. Were studied the historical reasons of appearance of the Art Nouveau objects at the European settlements territory in China and was observed the influence of the outside factors (the economical, political, religional and national) on the style's transformation and specific of Art Nouveau forming in Chinese architecture. Was analysed and argued the influence of the natural landscape to Art Nouveau transformation in China. Was argued the correlation of national and regional in the North National Romanticism in China.

There is much to say, that even in the best objects of Northern National Romanticism in Qingdao there are features unusual for the original Northern National Romanticism; however, the architects managed to achieve the chief thing: their objects seem successful quotes, stand out for their scale and monumentality, and demonstrate the possibility of combining Northern National Romanticism and Chinese architectural and artistic traditions. It should be noted that such an astonishing mix of "northern" Germanic style and "eastern" Chinese is not perceived as tasteless and ordinarily fits into the natural environment.

Among the objects of Northern National Romanticism in China, the residence of the governor of Qingdao keeps an exceptional place due to the unique synthesis of German rules of park art and local landscape traditions that have been formed in China for millennia [16, *68–69*; 17] (Fig. 2). The governor's residence seems to be standing above the dragon's lair, since the mountain itself is called "Dragon", and the roads along the southern slope, leading to the governor's residence and connecting it with the foot of the mountain, are "dragon's". It is the synthesis of the ancient Chinese name of the mountain – "Dragon" and the Scandinavian and German early medieval epics, that explaines the presence of a roof hanging from the cornice over the main entrance of the stone dragon's residence.

The image of the dragon is present in the medieval Germanic epic poem of the 12th–13 centuries, "The Song of the Nibelungs". Fafnir (ancient Fáfnir) is at the same time a hero of Scandinavian myths, where he is considered the son of the sorcerer Hreidmar, who later assumed the form of a dragon.

Dragon Fafnir was considered the keeper of magic gold. His name is mentioned in the sagas "Poetic Edda", "Younger Edda", "The Saga of the Völsungs", "The Song of the Nibelungs". Richard Wagner makes him the character of his opera "The Ring of the Nibelungs".

The residence building was built on the southern slope of the Dragon Mountain and is fully visible from the top. Thus, the thoughtful top view of the building with tower volumes, stone chimneys and plastic of different heights with crowned and pitched roofs with greenish and red tiles and red wooden details characteristic of China is of particular importance.

The monumentality of the building is largely due to its three-dimensional composition. The main facade with an open gallery of the second floor is oriented to the south, the central entrance is on the west side.

The yellow plastered surfaces of the external walls have a textured finish in the form of regularly repeated wavy lines; the facade elements are

reinforced by contrasting different textures (stone – plaster), ornaments and gables; and the plastics technique is used for uneven different-height protruding and recessed volumes combined into a single whole.

Although this "castle-like" building is much younger than European castles, it seems to be related to them in style.

After the liberation in 1957, the building was again returned to China and was a government residence; during the residency of President Mao in it in July-August 1957, the meetings of the Politburo were held in the house. Since 1999, it turned into a museum with open visits, recognized as a monument of national significance and taken under state protection.

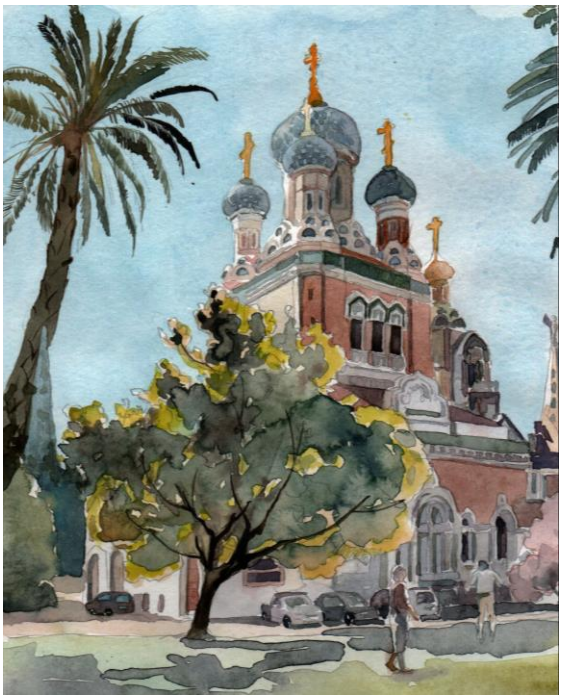

Fig. 3. St. Nicholas Cathedral in Nice. Watercolour by Chang Peng, 2019

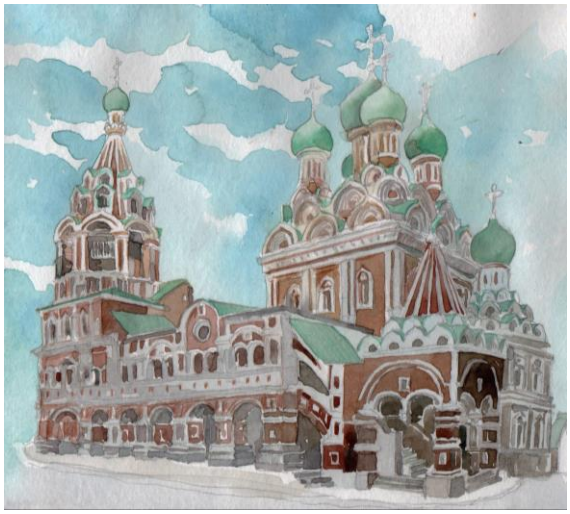

Fig. 4. St. Trinity Church in Nikitniki in Moscow. Watercolour by Chang Peng, 2019

In objects using the motives of Northern National Romanticism in China, the decorative function in the interpretation of towers and crowning mostly goes to building materials, since in many cases they become the principal expression of decorative qualities (roof tiles, towers' finishing with rock-faced stone).

The role of the natural environment in the transformation of the perception of the style of the "Moscow pattern-work" ("Moscow uzorochie")

When we spoke about the fact that for many cathedrals the urban planning and nature around the temple is an important factor, all of the above fully applies to St. Nicholas Cathedral in Nice, which is the principal figure of the city, and at the same time a symbol of the total foreign Russian Orthodoxy. By the example of St. Nicholas Cathedral, one can trace how placing an object in the Moscow pattern-work style among exotic greenery and palm trees completely change its visual perception, it can be seen when comparing St. Nicholas Cathedral in Nice (Fig. 3) and St. Trinity Church in Nikitniki in Moscow [12] (Fig. 4).

Just approaching the cathedral, you can see from afar against the backdrop of picturesque mountains with greenery and villas scattered along the slopes, its expressive patterned and detailed silhouette of a complex outline, aimed at the bright blue sky with ceramic blue-green domes with gilt openwork crosses [12]. The cathedral can be seen from above, from the hill, from different points; it is slightly covered by exotic Mediterranean greenery, and this unusual combination of the temple-tower in the style of the Moscow pattern-work of the 17th century and tall palm trees is especially impressive.

A distinctive perception of the temple even from afar is also facilitated by the fact that it is located on a vast, undeveloped richly landscaped area with the possibility of roundabout and rest areas with alleys and benches. This idea also has a deep meaning: the temple is so complicated in compositional form and so detailed that it needs to be read like a book, slowly and thoughtfully considering the composition of volumes, majolica friezes of modified entablature, fine detailing of majolica panels and stucco decoration of facades with geometric and phytomorphic ornaments, anthropomorphic (images of the Lord and the Mother of God) and teratological (six-winged seraphim and angels) plots, each of which contains profound sacred meaning.

It is noteworthy that the specific architectural solution of the front western facade of the cathedral is explained by a purely urban planning factor, since initially St. Nicholas Cathedral was to be built on another site, at the intersection of two streets,

the directions of which were emphasized by two porches with entrances [12]. After the construction of the temple on another site, such a non-standard solution of the entrance part gave the volumetric composition a particular expressiveness and dynamism. Besides, the classic architectural technique, providing a circular walk around the object and its full façade, is setting the volume at the corner. Thus, the angular placement of the two porches provided a circular view of the temple and enriched its composition.

The architectural appearance of St. Nicholas Cathedral is unique and unusual for Russian Orthodox architecture, although during the reign of historicism-eclecticism and Art Nouveau, a free combination of compositional techniques and elements of several styles was allowed. The construction of churches in the early twentieth century simultaneously felt the influence of the traditions of previous historicism -eclecticism and innovation of Art Nouveau that arose at the end of the 19th century. It was at the turn of the century and in the first decades of the twentieth century that special attention was paid to the expression in the architectural appearance of the Orthodox church of national identity, "Russian national identity", often by explicitly moving away from the established stylistic canons by simultaneously embodying the national signs of ancient monuments of various architectural schools: in the temples of the early twentieth century there are modified forms of domes and tents, simplified and modernized entablature and cornices, different from classic samples; hypertrophied orders, often with simplified capitals and bases or without bases at all; decor in the style of paintings by V. Vasnetsov and I. Bilibin. All these features of Orthodox church architecture of the early twentieth century are fully present in the solution of the facades and interiors of St. Nicholas Cathedral in Nice.

The main idea of the temple's architecture is to embody in one object those features that express "Russian originality", "Russian identity", create the image of a temple-visiting card of Russia abroad and make it recognizable just like a Russian church abroad [12].

The cathedral is distinguished by a complicated multiaxial volumetric-spatial composition. The central axis, passing through the triple window of the western facade, the bell tower and the projection of the principal dominant chapter, and many minor axes are distinguished – two pass through the porch with tents attached to the plane of the western front facade, four through the smaller cupolas surrounding the central chapter, several through attached elements of the eastern facade, two through the portals of the northern and southern facades, three more through an open doorway with a bell, a kokoshnik above it and the cupola of the bell tower on all facades except the western one. Such multiaxial and complicated volumetric-spatial composition is not only a particular feature of the temple construction of the modern period but also a consistent reference to the structures of temples of the "Moscow pattern-work" of the 17th century.

Two entrances are situated not on the central axis, but to the right and left sides of it, from the southwest and northwest corners. Initially, the site allocated for the construction of the temple was located on the intersection of two streets, and this arrangement of entrances was convenient. However, the cathedral was built in another part of the city, on the territory of the former Bermond Villa, the initial building plan was preserved.

The central axis is emphasised by a triple window with a gilded canopy, characteristic for the Russian pattern-work, above it, and the mosaic depicting the worship of two angels to the Holy Savior's image; an open belltower with an elegant majolica "kokoshnik" above the opening with bells and a gilded scaly roof; even higher, the principal axis is supported by the largest and highest dome on a high drum with light windows (another non-standard feature of the temple that differentiates it from Russian pattern-work churches is light windows in drums, whereas the original sanctuaries of the 17th century had only decorative cupola).

Although the temple is consistently stylistically connected with the Russian pattern-work, nevertheless, it is also associated with the pseudo-Russian style of the 19th century, with the artists of Abramtsevo and Talashkino, which is especially noticeable in the majolica ornaments of a composite pattern on the walls and friezes of the cathedral.

The specific aesthetic expressiveness of the cathedral is achieved due to the harmonious correlation of the heights of the various constituent volumes; each has its crowning, and the ratio of the heights and scales of the parts of the temple also denotes a particular hierarchy – they are all subordinate to the central volume with cupolas, one of which dominates.

The architect paid particular attention to the ratio of masses and scales of elements and details. Despite the recognizability of the Russian architecture of the 17th century, the volumetric-spatial composition and the solution of the facades of the cathedral differ both from the churches of Moscow pattern-work and the other of the architect M.T. Preobrazhensky. It is the peculiarity of the author's style of M.T. Preobrazhensky, who created a unique synthesis of Russian medieval temple construction, the traditions of the pseudo-Russian style of the 19th century and Art Nouveau in the temple architecture of the early 20th century.

The five-domed cathedral was built on the model of the Moscow five-domed churches of the XVII century (in Nikitniki and Ostankino) from light brown German brick but decorated with local materials: pink granite and blue ceramic tiles.

As mentioned earlier, the angular arrangement of the porches with marble steps and tents provides a composite connection of the facades. Although the porches are a part of the cathedral and play an essential role in the dynamism of the three-dimensional composition, at the same time they create the impression of independent volumes since only one of their facades is connected to the cathedral, and the other three protrude significantly from the western facade.

From one side each porch is supported by hypertrophied massive columns, pronouncedly round in plan, with stylized foundations and pedestals. From the side of the facade, analogous low massive pilasters of similar proportions correspond to them. Among the columns and pilasters, there are arches with tympana decorated with polychrome majolica panels with a combination of teratological ornament (round medallions with the image of six-winged seraphim) and phytomorphic ornament (curved stems of plants with flowers and fruit – a definite echo of the Art Nouveau phytomorphic ornaments).

In the drawings of the ornamental decor of the cathedral facades, at the same time, the direct influence of the pseudo-Russian style of the 19th century and especially the works of V. Vasnetsov and I. Bilibin are noticeable.

The elements of the period of the "Russian pattern-work" ("Moscow pattern-work") are as follows: the tent roofs with a characteristic decorative detail – drop ornament in the form of an overturned pyramid, which supports decorative arches under the large one joining them; blind decorative cupolas; outside architraves in the form of kokoshniks; multi-tiered kokoshniks on vaults; wreathed columns; half-columns; tiled, stucco and picturesque decor.

The architect applied on the facades of St. Nicholas Cathedral a kind of "alphabet" of elements expressing Russian national identity. He used the onion-shaped domes, derived from stone churches of the 17th-century Russian pattern-work and wooden churches of the Russian North, and the tent-shaped domes; kokoshniki – semicircular false gables for decorative purposes, located in decreasing tiers at the base of the drums of cupolas; arches of various shapes – circular arches (over the porch of the western facade, portals and windows of the northern and southern facades); ogge arches (framing the triple window of the western facade, three arches of the lower tier of the eastern facade, decorative insert of the eastern facade); mitred arches (framing three windows of the upper tier of the eastern facade wall); multifoil compound arches above the open space of the bell tower, above the bells which were typical of the period of blossoming "Moscow pattern-work" ("Moscow Uzorochie").

In the appearance of St. Nicholas Cathedral, the author embodied small decoration and a smaller scale of planes, characteristic of temples of the 17th century, and picturesque composition, which in the 17th century was the opposite of the 16th-century church architecture with simple, slightly decorated symmetrical facades.

It also used the decorative technique of architectural forms that do not reflect the structure.

The echo of the traditions of the 17th century is also present in the polychrome of St. Nicholas Cathedral: it was in the 17th century that the strict monochrome of the earlier churches (the colour scheme was determined by the combination of building materials brick-stone) was replaced by saturated polychrome with an open colour scheme and the wide use of bright ceramic tiles (thereby, it cannot be argued that the ceramic decor on the facades of St. Nicholas Cathedral is associated with the use of majolica during the Art Nouveau period, such traditions in Russia were earlier).

The St. Nicholas Cathedral is associated with the traditions of the "Moscow pattern-work" by the compositional technique of several tents in the crowning of the volumes of one church when the tent from the ceiling turns into a low decorative crowning of a secondary volume.

In its figurativeness, the St. Nicholas Cathedral is closest to a 17th-century Moscow school, where the idea of a five-domed church with several tiers of kokoshniks came from; however, the architect applied the technique of light drums of all cupolas, while the churches of the Moscow school often had a light central drum and purely decorative smaller cupolas.

In the St. Nicholas Cathedral, another method of the Moscow school was applied and creatively rethought – an additional division of tiers by developed decorated architraves with wide majolica friezes and modified entablements and cornices.

M.T. Preobrazhensky also studied the manifestations of national Russian features in the temples of Yaroslavl and Suzdal of the second half of the 17th century, in particular, he borrowed and rethought the construction of the church's volume with closed galleries and embodied this idea on the eastern facade in the lower tier. Perhaps he borrowed the idea of the cube-shaped volume of the church with five domes there, but he saturated it with decor and contrasted the cube-shaped volume of the church with two tented outbuildings. Despite the strict canonicity of the composition of the St. Nicholas Cathedral, it is successively connected both with the churches of the period of "Russian pattern-work" and with residential chambers of the same time where a similar set of elements was applied;

it has continuity with the wooden churches of the Russian North, which is expressed in the outline of domes and the use of majolica tiles in the shape of an old-fashioned wooden ploughshare, which was used as a cover for wooden churches in the Russian North.

As already mentioned above, despite the fact that the appearance of the cathedral is a concentration of all the signs characterizing national identity, because of another – the Mediterranean – natural environment – it is perceived quite differently than the temples of Moscow, Yaroslavl or Suzdal. In this case, we can say that it was the natural environment that completely changed the perception of the style of architecture.

Conclusion

To a large extent, the impressive image of the residence of the Governor of Qingdao (otherwise - Qingdao Guest House) created by the aid of the urban development, which helped to transform the building, original in architecture, into an accent element that forms the perception of historical buildings. The installation of the building on the hill with the possibility of its comprehensive review significantly enhances its artistic perception, which is visible by the location of the government residence on the hillslope of Xinhao Mountain (Xinhao Shan, Signal Hill, Dragon Mountain, Dragon's Mountain), facing the sea, thus the formation of the "architectural landscape" actively includes the natural landscape [16]. The building of the governor's residence seems to be standing above the dragon's lair as the mountain itself is called "Dragon", and the roads along the southern slope leading to the residence and connecting it with the foot of the mountain are "dragon's" [16]. The general visual composition involved the water surface with a bridge and a natural relief, and a well-tended landscape park of 26,000 square meters with green terraces.

The dragon in Chinese mythology, philosophy and culture (Chinese trad. 龍, ex. 龙, pinyin: lóng, pall.: moon), unlike the predatory European dragon snake, symbolized the good beginning of the Yang, the Chinese nation, the water element. As the king of animals, the dragon was a symbol of the imperial authority.

On the one hand, foreigners who settled in the city-colonies, first of all, sought to create the image of their homeland, including the landscape gardening art; on the other hand, they had to take into account the specific natural environment, landscape, local flora. Besides, Chinese gardeners were also involved in the landscaping process, and thus the German general methods of organizing the natural environment were superimposed on local park building techniques [16, 17].

Understanding the origins of Chinese garden art is impossible without a deep understanding of Chinese philosophy and worldview. The traditional Chinese landscape gardening art in its philosophical content is much more complex and profound than the European landscape gardening art. The first aims at harmonizing area which is an integral part of the Universe; the second serves primarily as a means of aestheticization and harmonization of the architectural environment and, in most cases, it does not contain a philosophical component at the root [16, 17]. Chinese garden art characterized by the polysemy and symbolism of the created compositions, the smoothness of lines and the freedom of growing plants, their infinity through human interference, the identification of the "hidden meaning" of each plot through small architectural forms, stones, inscriptions of philosophical content located in strictly defined places, the relationship of the natural landscape with different types of art – literature, music and painting (landscape as a principal character of the creation, a person as an additional secondary optional part). During the reign of European Baroque, Romanticism and Art Nouveau in the landscape garden art of Western Europe, some features of eastern parks were inherited: "columns of sadness", obelisks, park pavilions and "ruins" with philosophical names, "Chinese pavilions" and "tea houses" appeared, however, it was only a "Europeanized" external inheritance of a phenomenon alien to the European consciousness without filling it with philosophical meaning.

The example of the Saint Nicholas Cathedral in Nice shows how, thanking a radical variation of the natural environment, such a conservative building as an Orthodox church is changing. The Saint Nicholas Cathedral is an example of the ideal placement of the object in the natural environment when the environment enhances the perception of architecture; the temple is striking by its every non-standard element: the complexity of the dynamic multi-axis volume and spatial composition and the emphasized detailing of the facades and the interiors' decoration. The cathedral, as it were, simultaneously exists in several dimensions – it contains echoes of the ancient Russian traditions in the interior, the "Moscow pattern" on the facades, at the same time it is a temple of the period of historicism-eclecticism and modernity and a temple that exists in our time.

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Kopsavilkums. Rakstā analizēti vienāda stila objektu pāru piemēri, kas atrodas atšķirīgās valstīs. Izvērtēti apsekti, kas saistīti ar arhitektūras stila ideoloģisko uztveri, kad objektu stils un izpildījums tiek pārcelts uz citas valsts teritoriju. Analizēti objekti Somijā un Ķīnā, kā arī Krievijā un Francijā. Raksts ietver informāciju par vispārējo stila noteikšanas pazīmju saglabāšanu, objektu novietojumu pilsētvidē un formu valodu, kas katrā valstīt tiek uztverta atšķirīgi un veidota konkrēta identitāte.

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Main stages of development of architectural science. Organization, methodology and updating of theoretical knowledge in the field of architecture and design

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Abstract. The paper focuses on research of the background and basic elements of complexity issue in architectural theory, and in the context of design practice. It also brings forth the question of introduction of complexity in didactics and education programs implemented in universities in architecture as a field of study. Paper contains critical analysis of limitations of traditional approach to architectural practice based mainly on intuition and confronts it with integrated design ideas. These ideas contribute to the development of wider application of the theory of complexity.

Keywords: architectural science, methodology, field of architecture and design, architectural theory

Introduction

Architectural theory is today at an impasse. Not only are many print journals now gone, architectural theory courses have been eliminated in many schools' curricula in favour of technology cantered courses, research studios, history without theory, and autonomous theory. It's as if architectural theory, a field of inquiry developed and articulated over a few thousand years, filling archives and rare book rooms with beguiling works of architectural knowledge, was suddenly transformed in unrecognizable ways. This symposium asks, "What has happened to architectural theory and where is it headed?" What constitutes the practice of architectural thinking – or theory – today? Surely, even if earlier preoccupations now seem irrelevant, architects and students still seek to reflect on the greater purpose of their activities. Age-old architectural concerns about aesthetics, function, materials, and construction have not disappeared. Yet more comprehensive intellectual tools are needed to interpret, assess, and evaluate the long-term social and cultural implications of architectural work, the highly technological expansion of design and building. If little in architectural theory, as developed in recent decades, has prepared architects to thoughtfully engage in our contemporary challenges, it is perhaps time to make a new start in defining architectural theory now [7].

Architecture can and has been conceived as an intrinsically philosophical enterprise – grounded in aesthetics and ethics (including theories of human nature) – and in elements of social and political philosophy. Architects, landscape architects, and designers are responsible for creating spaces and fashioning the world (materially and ideationally) in which people live and interact. In so doing they promote as well as undermine certain values, understandings, and ways of living [6].

Research goal and task is to find out the development trends and we can do to update knowledge of theoretical architecture and analyse state of architecture field in Latvia, its organizations and long – term priorities in the use of architecture:

1. Strengthening the national identity of a country using architectural values, assets and competencies.
2. Broad public engagement and education, as well as representation of the interests of all groups.
3. Promotion of the competitiveness of the architectural industry, improvement of its legal framework, creating favourable conditions for creative entrepreneurship and architectural services for export [1].

Used methods in research is primary data and secondary data. Primary data is data that is collected by a researcher from first-hand sources, using methods like surveys, interviews, or experiments. It is collected with the research project in mind, directly from primary sources. The term is used in contrast with the term secondary data. Secondary data is data gathered from studies, surveys, or experiments that have been run by other people or for other research.

These methods are chosen because it saves both time and money and avoids unnecessary duplication of research effort [8].

Latvian architecture is an integral part of national identity. Latvia is a country where the landscape, architectural heritage and new buildings create favourable conditions for life. Architecture contributes to the well-being of society, national growth and international recognition. The concept of architecture encompasses both the profession of architect and construction. Latvian architecture is an essential part of the culture of the nation and of Northern Europe as a whole. It forms the spatial identity of the region and presents qualities in the context of historical and contemporary architecture as well as successful examples of the interpretation of the archetypal values of the region. Latvian architecture is characterized by high interior design culture and traditions [1].

Overview

The term theory of architecture was originally simply the accepted translation of the Latin term ratiocinatio as used by Vitruvius, a Roman architect-engineer of the 1st century CE, to differentiate intellectual from practical knowledge in architectural education, but it has come to signify the total basis for judging the merits of buildings or building projects. Such reasoned judgments are an essential part of the architectural creative process. A building can be designed only by a continuous creative, intellectual dialectic between imagination and reason in the mind of each creator [4].

The historical evolution of architectural theory is assessable mainly from manuscripts and published treatises, from critical essays and commentaries, and from the surviving buildings of every epoch (each of epoch styles are featured in picture nr.1). It is thus in no way a type of historical study that can reflect accurately the spirit of each age and in this respect is like the history of philosophy itself. Some architectural treatises were intended to publicize novel concepts rather than to state widely accepted ideals. The most idiosyncratic theories could (and often did) exert wide and sometimes beneficial influence, but the value of these influences is not necessarily related to the extent of this acceptance.

If we look at the way architects approach design today, we will find several different responses. Some of them are neo-modern (as we have entered the phase that is very distant from the modern period, so this revival is possible), some still remind us of post-modernism, and some we are not sure how to call – deconstructivism, perhaps, or parametricism as a possibly new type of universal language, or something else, that hasn't been named yet [2].

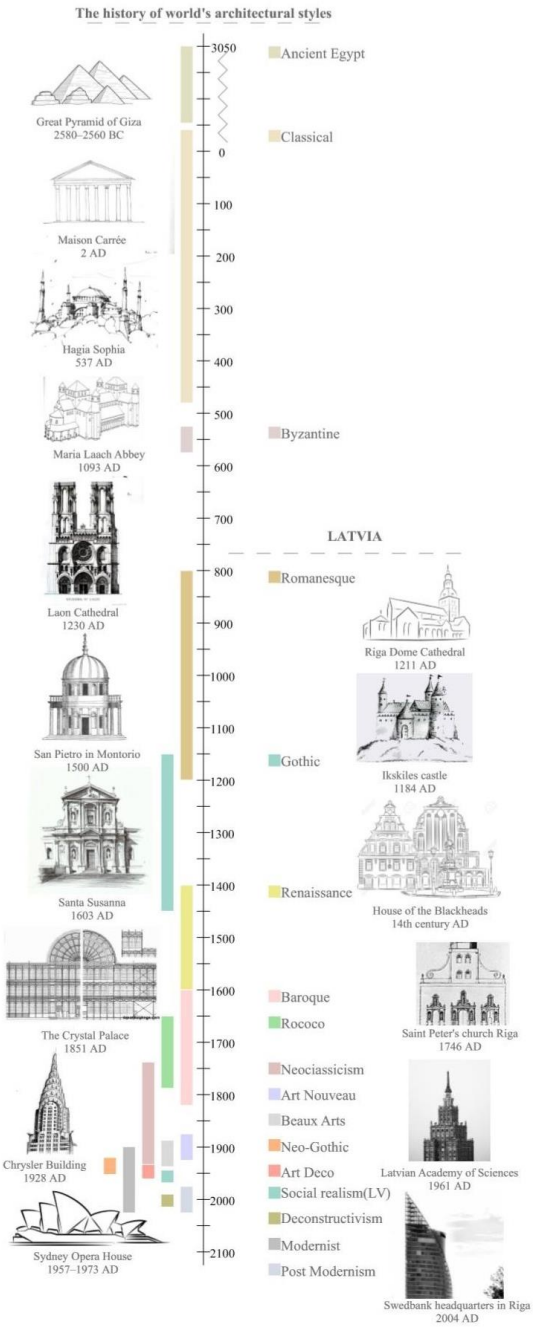

Fig. 1. Worlds architecture style timeline

Technological improvements, especially the computer programs but also the one that are directly related to construction, make almost everything seem possible. The only relevant parameter is the cost, and of course, ethics. But as mentioned earlier, architecture rarely escapes the imprints of the era it is being built in, and whatever becomes out of it in the next few decades, it will be the echo of our own generation. Another possible way of looking at it is adopting the idea that history reoccurs, which would mean that postmodernism was the contemporary version of the Baroque, and we are much likely to return to the new revivals.

Organization in the field of architecture and design

Networking with one's fellow artists and engineers is extremely important for personal and professional development. Professional organizations sponsor conferences, publish journals, and serve as reviewers or editors. They set professional and educational standards and provide job and career services for their members.

The SWOT analysis puts a critical view on the strengths and weaknesses of the processes in the archiecture in Latvia. It outlines the problems, potential and possible directions for development tarting from 2015. Processes of architecture are in a constant development, which is why the SWOT analysis is not aiming to be an absolute and fixed representation of the situation. The mapping of the architecture field was created by acknowledging everyone involved in the architecture ecosystem (picture nr.2). SWOT Analysis of Architectural Sector in Latvia:

Strengths:

1. Qualitative architectural and spatial environment;
2. High creative potential, well-organized, consolidated professional environment, strong public organizations of architects;
3. Experience in international competitions and participation in international professional; competitions architects' organizations;
4. Internationally recognized professional architect;
5. Architecture as one of the most economically active industries in the creative industries is tight related to other sectors [1].

Weaknesses:

1. Improving industry governance;
2. Shortcomings in the regulations affecting the quality of the architecture;
3. Poor cooperation with local governments, state institutions and other territorial organizations development planning and architectural issues;
4. Weak self-initiative and insufficient communication with the public, lack of information the skills of the architect and the nature of the services rendered;
5. Lack of co-operation between professional and public organizations of architects and different generations of architects;
6. Weak regional architectural units; focus on topicalities and opportunities mainly in Riga and Riga region;
7. Insufficient quality of architecture education compared to the leading Europeans architectural universities;
8. Insufficient further training of architects;
9. Poorly developed science and research in architecture and urban development;
10. Narrowly historically profiled architectural theory and criticism;
11. Inadequate quality of architectural competitions related to the client (including country and municipalities) lack of understanding of the role of architecture in environmental design the priority of economic criteria embedded in context and legislation;
12. The construction process inherited from the USSR and different from European practice, including architectural services organization [1].

Options:

1. The country's advantageous geopolitical location between different cultural spaces;
2. Participation in the integration of society, involving high-quality and attractive societies shaping every citizen;
3. Improvement of the competence in the field of architecture for a quality living space shaping;
4. Identification of export potential of Latvian architecture and favourable conditions for its creation;
5. Cooperation with cultural and creative industries, education and economic sectors;
6. Specialization and competencies specific to the Baltic Sea region and the Nordic countries strengthening;
7. International mobility of architects;
8. International accreditation of study programs and reorganization of study environment;
9. Strengthening the role of architecture in the international image of the country;
10. Harnessing the opportunities offered by today's globalization processes [1].

Threats:

1. The outflow of qualified architects and construction professionals to other countries; - Declining economic activity in the country and narrowing domestic market opportunities; - Lack of national development priorities;
2. Loss of professional qualifications and competitiveness of architects;
3. Disorganized legislation on architectural services and the construction process organization, including tendering (lowest price as values factor in state and municipal procurement tenders);
4. Depopulation of certain territories, degradation of landscapes and buildings, globalization the threat of losing the identity of the spatial environment [1].

The oldest Latvian architect organization is the “Latvian Association of Architects”, founded in 1924. This organization unites 464 members

(data from 2015). Important investment from organization is that they approve architects and makes a unified environment in architecture field. LAA is actively involved in architecture, construction and spatial development drafting of regulatory enactments regulating the profession (Construction Law; Territories development planning law, Cabinet regulations and building codes) and encouraged development of new regulatory enactments regulating the field of architecture. LAS has actively participated in different countries institutional and municipal working groups and expressed professional views on society current issues.

Since 1995, the LAA has been organizing annual exhibitions of the best works of Latvian architecture and organising annual Architecture Awards by inviting an international jury to evaluate the projects. The works nominated for the Latvian Architecture Awards are exhibited at a traveling exhibition can be viewed also in other cities of Latvia, thus introducing inhabitants to the sectors achievements and understanding of trends in contemporary architecture and cultural history heritage conservation. LAA organizes the annual Architecture Days in the first week of October, involving not only Riga but also other cities of Latvia (for example, Cesvaine in 2015) municipalities, informing the public about developments in the sector, holding exhibitions and debates on professionals and the general public.

With the aim to offer high quality education in Figure 2 Architectures ecosystem Latvia [3].

architecture for youngsters in middle school, LAS have made informal education program called "School student. Researcher. Citizen", creative workshops have already received a positive response from educators and students.

LAA organizes discussion cycles on topics relevant to the organization, for example, formulating LAS guidelines of the Riga City Council, City Development, Department announced by the public in the discussion on the planning of the Riga Historical Centre and in a separate lecture cycle – on the promotion of the exportability of architecture.

Other non-governmental organizations are active in the sector, such as the "Latvia Nostra", whose mission is to identify and preserve the wooden architectural heritage, Latvian Association of Landscape Architecture (LALA, www.laab.lv), Architectural Promotion Foundation (www.a4d.lv), Foundation of Latvian Museum of Architecture, Contemporary Architecture Information Centre, Passive House Latvia (www.passivehouse.lv), initiative "Free Riga" (www.freeriga.lv) and others.

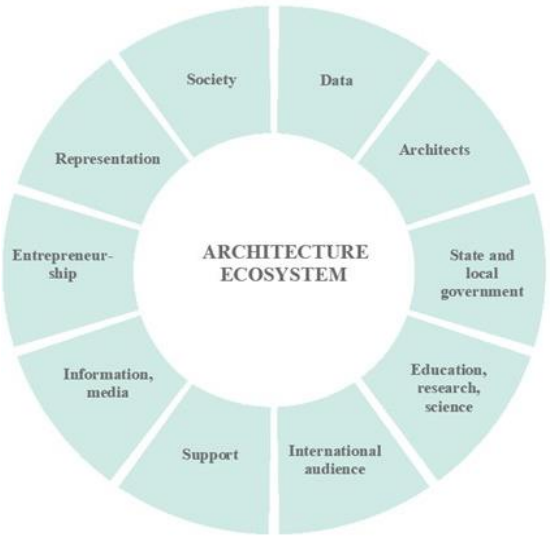

Fig. 2. Architectures ecosystem Latvia [3]

If a professional organization exists mainly to create value for its members, then it is a member-benefit professional association. If in addition, it offers one or more designations as a service to its members it is an association that offers a designation. If a professional organization offers a designation but does not have non-designated members and is mostly focused on its designation, it is likely a certifying body. If an organization has regulatory powers delegated to it by statute and has a mandate to promote and protect the public interest, it is a professional regulatory body [1].

Architecture is a complex system influenced by various factors. An architectural project involves a variety of stakeholders and people - users. Everyone has their own role and responsibility in project development. Successful communication and collaboration between these parties is needed to realize a successful architectural project that: within the limits of the funds allocated, it must satisfy the customer and the people who will use the building, the building must fulfil its intended function, etc. There for "Architectural Ecosystem" is essential.

Methodology and updating of theoretical knowledge

Throughout its years of development, the understanding of design problems and design process has been revised considerably but still our current understanding of design is incomplete. Yet architectural theory is the act of thinking, discussing, or most importantly writing about architecture. It is taught in most architecture schools and is practiced by the world's leading architects. It is often didactic, and theorists tend to stay close to or work from within schools.

It has existed in some form since antiquity, and as publishing became more common, then architectural theory gained an increased richness. Books, magazines, and journals published an amount of works by architects and critics in the 20th century. As a result, styles and movements formed and dissolved much more quickly than other modes in earlier history [6].

Something which architectural knowledge appears to lack is a theory of the relations between spatial orders and social orders. This may appear to be surprising regarding Bill Hillier's (Bill Hillier is Professor of Architectural and Urban Morphology in the University of London) statement that what distinguishes architectural knowledge is precisely its theoretical approach. Yet theory can imply many things. There is reason to look more closely at what is meant by theory in this context [2].

Hillier distinguishes between two types of theory within architecture, which are closely linked to two elements of what architects do and are expected to be good at. We can in general terms say that architects in design processes primarily do two things; on the one hand they devise architectural solutions – the generative phase – and on the other they make predictions about the outcomes of these solutions – the predictive phase. In practical work a continuous interaction naturally takes place between these elements. What is important is to see that architects need theoretical support in both these elements, but above all that the theory in both cases must be of different types. In the first case, it is theory that helps architects to see how the architectural solutions they are working with can be developed, renewed, put together in another way or be replaced by new ones. Such theories can be characterised as speculative theories in a positive sense, that is theories that attempt to see assumptions in a new way- or theories of possibility as Hillier puts it. Such theories we know amongst other things from art, where the various manifestos of modernism are good examples.

Yet architects also need theories to help them with the other element, namely the predictable outcome of the architectural forms and solutions that they propose. To make such predictions, there are only two ways to take, either to refer to previous examples, or to refer to some principle. Here we can see the advantages of vernacular knowledge: it can always follow the first path and refer to earlier examples within the building tradition to which it belongs. In principle, the outcomes of the solutions that are used are always known. Within architecture this is impossible as one generally wants to create what has not been seen before. An architectural building is, by definition, unique. This means that it is impossible to refer to earlier examples since they simply do not exist. What remains is to refer to a principle to some form of architectural theory [5].

The different architectural theories that had been analysed in this paper, several techniques of measuring and evaluating could be applied to them, in order to be more understood and perceived, then more used by designers, or at least could analyse the meanings they carry, so that discovering how people interpret them. Conclusion could be summarized as follows:

1. Monitoring, measuring and evaluating architectural theories should be done, to be applied in the design processes.
2. Architectural theories had been elaborated to help in design, not as theoretical studies only.
3. Theory can change practice by legitimizing usages condemned by previous theories.

Conclusion

In this article the role of enterprise architecture in general has been explored. As a result, the role of architectural theory that has been established for knowledge conversion is limited. The knowledge that is subject to the various modes of knowledge conversion is restricted to knowledge about the structural elements of an organization and their interrelationships. The knowledge in an organization that should be managed and is subject to knowledge conversion is much broader than the knowledge covered by architecture theory. But then, the architectural frameworks, that determine what knowledge is covered by their viewpoints, aren't designed for the discovery of all knowledge assets in an organization. From this it must be concluded that architecture theory can play a role in knowledge conversion but only partial. There are architectural frameworks that contain knowledge viewpoints. It would be interesting to find out if their role in knowledge conversion is different from the other architectural frameworks and how it is different. Further research in the field of knowledge conversion and architectural frameworks is required to establish whether the role of architectural frameworks that include knowledge viewpoints differs from the role of architecture theory in general.

Architecture for the society is wisdom of thought and action - meaningful activities and solutions for people, community and nation. Architecture and world building for social welfare develops and accumulates social capital. It increases the level of happiness and satisfaction of life in both micro and macro levels. A person is not only influencing the economy, but also the *society* and ecology in the long-term by changing the environment, lifestyle, habits, values and action.

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Kopsavilkums. Rakstā iekļauta arhitektūras teorija un arhitektūras zinātnes progresa apskats. Pārskats par vēsturisko attīstību un situāciju mūsdienās, plašāks organizāciju pārskats Latvijā, metodoloģija un teorētisko zināšanu papildināšana arhitektūras un dizaina jomā. Arhitektūras jomas analīze plašākā mērogā, ieskats faktoros, kuri ietekmē nozeres attīstību Latvijā. Autors ir apkopojis informāciju par Latvijas arhitektūras organizācijām un analizējis arhitektūras ekosistēmu, tradicionālās arhitektūras teoriju, teorijas nepieciešamību arhitektūras prakstizēšanā.

Atslēgas vārdi: arhitektūras zinātne, metodoloģija, arhitektūras un dizaina joma, hronoloģija, arhitektūras teorija.

Zinātniskā raksta mērķis: koncentrēties, atpazīt problēmas un izpētīt pamatelementus arhitektūras teorijā un projektēšanas praksē. Kas izvirza jautājumu par sarežģītības ieviešanu izglītības programmās, kuras tiek īstenotas arhitektūras programmās. Rakstā ir kritiski analizēta tradicionālās pieejas, ierobežojumi arhitektūras praksē, balstoties galvenokārt uz integrētām dizaina idejām. Mērķis ir tās atpazīt un analīzēt.

Metodika: pētījumos izmantotās metodes ir sekundāru datu analīze no astoņiem literatūras avotiem. Šī metode ir izvēlēta, jo tā ietaupa gan laiku, gan naudu un ļauj izvairīties no nevajadzīgas informācijas dublēšanās.

Galvenie secinājumi: Arhitektura priekš sabiedrības ir domas un rīcības gudrība – jēgpilnas telpas radīšana, kura būtu funkcionāla un reprezentējoša. Arhitektūra un pasaules veidošana sociālās labklājības jomā attīsta un uzkrāj sociālo kapitālu. Tas paaugstina dzīves laimes un gandarījuma līmeni gan mikro, gan makro līmenī. Cilvēks ilgtermiņā ietekmē ne tikai ekonomiku, bet arī sabiedrību un ekoloģiju, mainot vidi, dzīvesveidu, paradumus, vērtības un rīcību.

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The Research of Environmental Accessibility in Riga Churches

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Abstract. The topic of the research is the environmental accessibility of churches in Riga. It is equally important both in Latvia and worldwide. Environmental accessibility is generally perceived as removing obstacles for people with special needs. According to the universal design and its principles public spaces should provide equal accessibility for every member of society. The Laws and Constitution of Latvia provides equal rights for all citizens. Environmental accessibility problems most commonly occur in cultural monuments, which include some of the churches. In modern world Christianity is a tradition, words and rituals of God, as well as social assistance. This is the reason why it is crucial for it to be comprehensive, so that everyone could use provided services independently and be equally involved in the church's activities. This research analyses problems that occur in existent urban environment and examines 86 churches located in Riga. Observation and digital analysis methods are used in order to acquire measurements. Results are provided using graphical method. The subjects of the study are Christian denomination churches, that have been mentioned in Article 51 of the Latvian Civil Law, it includes Evangelical Lutherans, Roman Catholics, Orthodox Believers, Old Believers, Methodists, Seventh-day Adventists and Moses Believers (Judaism). Taking into consideration statistics and modern situation the study also includes some of the most widespread and active Christian denominations: Baptists, Pentecostals, Mormons, New Generations, Anglicans, New Apostles and Christians of the Evangelical Faith. The purpose of the research is to provide an overview of the current situation, as well as determine problems in environmental accessibility and guideline integration into sacred buildings. Research also aims to provide possible solutions for improving the quality of life of people with functional limitations. The study reflects on the significant shortcoming of churches located in Riga in meeting the guidelines and standards of public buildings. New buildings are more often to meet accessibility requirements and regulations, however, chosen solutions often lack practicality or do not provide easy usage.

Keywords: environmental accessibility, churches, functional limitations, equal opportunities in architecture

Introduction

The issue of environmental accessibility is important both in Latvia and worldwide. Elderly, people with disabilities, parents with young children and struggling individuals are the most likely to seek support and spiritual strength in churches. By its very nature church is a place of refuge, comfort and answers. Therefore, it must be able to provide services for every member of society on an equal basis. There is no comprehensive or regular analysis of the current situation in the field of environmental accessibility in Latvia. Convincing reports and studies from the Ombudsman as well as other sources show that environmental accessibility has not been fully addressed. Current situation restricts and suppresses the rights and freedom of people with disabilities, elderly and parents with young children [17]. There have been no studies conducted in Latvia regarding the state of environmental accessibility either in churches as a whole or their regions.

This research studies 86 Riga Churches of different denomination. It also uses expert opinion on various issues, including accessibility of environment, protection of cultural monuments and universal design. The aim of this paper is to present current situation, as well as problems regarding integration of the environmental accessibility principles and guidelines into sacred buildings. The goal is also to draw conclusions on possible solutions to the problem in order to improve the quality of life for people with functional limitations. To achieve this goal following tasks were performed: exploring and analysing theoretical material and legislative criteria; developing a survey criteria; conducting photo fixation and comparative analysis of 86 churches in Riga in order to evaluate current situation and identify problems in the area of environmental accessibility; composing a survey and questions for the interviews; selecting experts and conduct surveys and in-depth interviews to ascertain the experience and views of the various national authorities involved; based on the obtained information and legislation developing a methodology for the evaluation of Riga churches; inspecting 86 churches located in Riga (measurement and photo fixation, filling in the assessment questionnaire), making a percentage calculations of the environmental accessibility of Riga churches based on qualitatively developed criteria; summarizing the data obtained and presenting the results in graph form; drawing conclusions.

Methods used in the study: literature and legislative analysis, first survey (digital analysis and measurement), comparative analysis, expert surveys, expert interviews, benchmarking, second survey (digital analysis and measurement), percentage calculations and graphical analytical methods for

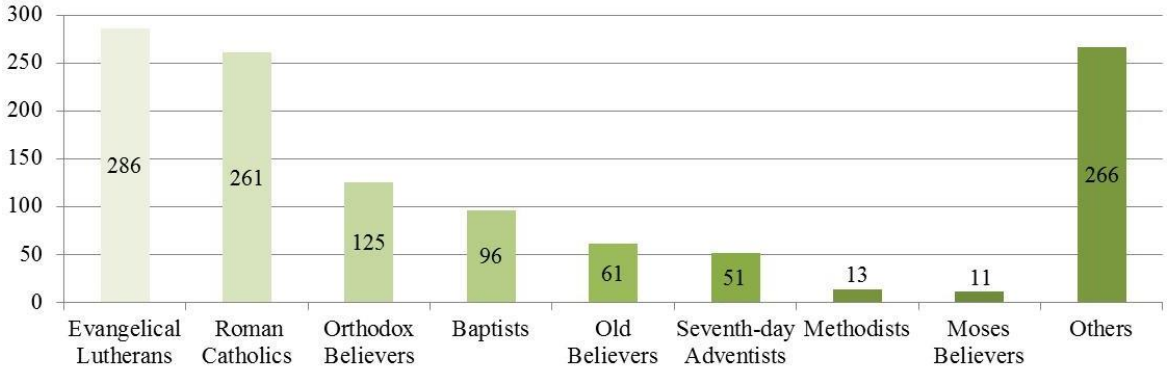

Fig. 1. Congregations registered in Latvia in 2017 [3]

demonstrating results. The scientific article is a new study in the field of engineering and architecture on the accessibility of the environment in Riga churches. It can be useful as a basis for identifying obstacles in churches of Riga city, or as a learning resource for industry, students, and any interested member of society, as well as to raise awareness to the issue.

Analysis of the current situation

Religion is an all-inclusive cultural system that roots deeply into existential views of the society. Since ancient times, Latvian citizens have been closely connected to religion, with certain denominations dominating in specific historical period. Nowadays churches are an essential part of the cultural heritage, as well as play an important role in lives of many people. This fact is confirmed by the news from the Ministry of Justice (TM) regarding submitted reports of religious organizations. The number of churches has increased significantly since the restoration of Latvia's independence. In 1990 there were 693 religious congregations registered, while at the end of 2017 the number was 1170 (see Figure 1) [3]. At its core the Church is both public space and the centre of spiritual life. In the 21st century the design of public buildings is an important social responsibility, as well as an interdisciplinary strategic of the development process and a way to identify problems and find solutions. Every human consciousness is primarily concerned about one's well-being, satisfying specific needs, desires and rights, being independent and free, without creating any social or physical obstacles. The implementing of environmental accessibility guidelines in churches provides an opportunity for all members of the community to fully use the space, its elements and services.

The data of the National Commission of Medical Examination of Health and Capacity for Work (VDEĀVK) shows that based on the three year dynamics the number of individuals with disabilities tends to increase (see Figure 2) [9]. In 2016, the number of disabled people was higher by 6003 than in 2015, but in 2017 the number increased by 5014 compared to 2016. Although the rose is less significant in the recent years, which is a positive factor, the proportion of people with disabilities is very high in relation to the total population of Latvia. According to the State Social Insurance Agency (VSAA), there are currently over 190 thousand people with disabilities in Latvia [20]. Individuals with disabilities do not form a universal community of people that has easily identifiable needs, obstacles and possible solutions for the accessible environment. Disabilities have many causes and types based on which it is possible to define several groups of disabilities that require different approaches in order to overcome obstacles: sight, hearing, physical disability, intellectual disability, psychosocial or mental disability and invisible disabilities (e.g. asthma, cardiovascular diseases, allergies, damage to various organs and impaired functionality) [8]. According to the Central Statistical Bureau (CSP), Latvia is also one of the European Union countries where the predominance of mortality over birth and predominance of emigration over immigrants has caused significant changes in the age composition of the population (see Figure 3). [4]. The proportion of children before working capability age (0-14 years) compared to the number of population has slightly increased since 2009 - from 14.1% to 15.9%. The number of individuals in the age group of 65 + has increased significantly - from 17.8% to 20.3%, which is about one fifth of the total Latvian population. In addition to people with disabilities and elderly, it should be taken into account that the following groups of people have limited mobility: children under 4 years accompanied by an adult (103.6 thousand or 5.3 % of the total population); people with temporary disabilities (after injury or illness); overweight individuals; very small or tall people; individuals with suitcases, bags, etc. [9].

It is essential to find successful solutions while designing temples so that people with functional

Fig. 2. The increase of the individuals with disabilities in the time period from 2015 to 2017 [9]

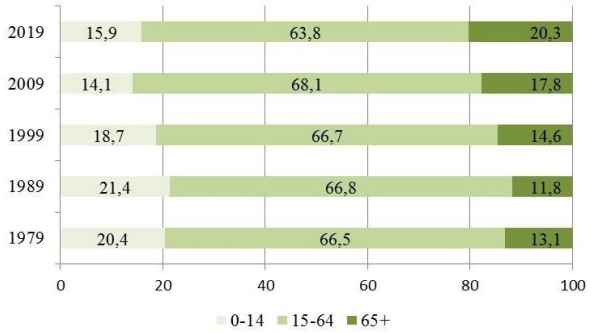

Fig. 3. Population by the age group at the beginning of the year (thousands) [4]

limitation could carry activities on their own or with the minimal necessary help from others. Types of function limitations vary and require different needs to be met when defining a sacred building accessible to everyone. Evaluation of the current situation shows that it may not always be possible to adapt the environment to the needs of all individuals, however, good and qualitative results, as close to the maximum as possible, can be achieved by following basic accessibility principles [7]. The equal access to the environment has always been a major issue of the citizens' rights. In Latvia, the realization of accessibility in public buildings is governed by both national laws and adopted UN and EU documents. Sections 4, 5 and 9 of the Building Act define the requirements for the design of a public building, which should provide accessible environment, so that every public member can move around and use the building and its services accordingly. However, Article 9.1 mentions derogations where accessibility requirements may not be met, for example in protected areas, buildings of historical value (if it may result in losing their value) [15].

Creation of accessible environment is provided by Cabinet of Ministers (MC) regulations No. 331. "Regulations on Latvian Building Standard LBN 208-15 "Public Buildings", Article 4. It requires providing a comfortable access and movements in public buildings, the necessary equipment (lifts, slopes) and access to information (audio and visual information, tactile surfaces, Braille) to people with functional limitations [12]. Compliance with the environmental accessibility requirements at all stages of the construction process, except in specific cases, is stipulated by Cabinet of Ministers Regulation No. 500 "General Building Regulations", Cabinet of Ministers Regulations No. 529 "Building Regulations" and Cabinet of Ministers Regulations No. 240 "General Regulations for Spatial Planning, Use and Building" [11; 13; 14]. European Union (EU) and United Nations (UN) documents in force regarding freedom, human rights, anti-discrimination and promotion of access: "Universal Declaration of Human Rights", "Convention for the Protection of Human Rights and Fundamental Freedoms", "Charter of Fundamental Rights of the European Union" and others [1; 5; 6]. With the support of European foundations, various organizations working in the field of integration for people with disabilities have developed accessibility guidelines for public buildings, their elements and public outdoor space. For example, "Guidelines for the Application of Building Standards for the Accessibility of Individuals with Disabilities", "Guidelines for the Accessibility of Individuals with Disabilities", "Guidelines for Environmental Accessibility in Public Buildings and in the External Environment by Universal Design Principles streets and public spaces".

Latvia has a well-structured and satisfaction legislation on environmental accessibility; however significant deviations from the requirements occur in the real life. It is possible that the problem is caused by the exceptions allowed by laws and regulations creating loopholes that are being used. No matter how organized and well through the legislation is some will choose to disregard it, if such option exists. In Latvia there have not been done any comprehensive analysis of the current situation regarding environmental accessibility in public. However, convincing reports from the Ombudsman and some studies, as well as other sources prove the existence of environmental and informational imperfections [10; 17; 18; 19].

Some of the churches in Riga are significant cultural monuments with both local and national importance, which leads to their adaptation to the needs of visitors being a great challenge as well as a testament of the professionalism. The key to preservation of cultural heritages is to provide their usage to the public, while also preserving and not diminishing historical value. The protection of cultural heritage in Latvia is regulated by the Law of the Republic of Latvia – "the Protection of Cultural Monuments" [2], which define the types, prohibitions, rights of use, accounting, preservation, supervision and control of cultural monuments. In 1997, the Historical Centre of Riga was included in the UNESCO World Heritage List. In 2003 the Law on Preservation and Protection of Riga Historical Centre was taken [16]. In accordance with the law, the Riga Historical Centre Conservation and Development Council was established in the same year.

Methodology of research

To ensure successful and reliable results, a thoroughly developed methodology has been strictly followed throughout the research. Required materials for an in-depth investigation of the situation has been chosen and classified according to their content: Latvian state laws, EU and UN regulations that are currently in force in Latvia, guidelines, literature on religious denominations and universal design. Source research and analysis has been made. A historically genetic method has been used in order to achieve the most objective and reasonable conclusions regarding necessity of the Church in human's life, historical development of denominations, the preconditions for the development of universal design worldwide and in Europe and Latvia. Benchmarking criteria was developed based on legislations and guidelines so that the problem would be easily detected while conducting the initial survey. In 2018, in the time period from 7th of September to 5th of November 86 churches in Riga have been surveyed (photo fixation, measurements). The obtained data is presented in the form of a table and diagram that reflect the existence of shortcomings of accessibility in Riga churches (see Fig. 4). During the research the author has also encountered other obstacles. Wrong addresses are provided for the Grace International Riga Baptist Church and 2nd Adventist Church. Armenian parish church denied access. The "Prieka Vests" Christian Church and the 3rd Adventist Church in Riga at the time of the survey were undergoing reconstruction, so were not eligible to be evaluated competently. Further research took place in the 79 churches of Riga.

From the time period from the 3rd of January 2019 to 8th of March 2019, expert surveys were conducted in 17 different churches in Riga (11 clergy and 6 church members). In the spring of 2019 two in-depth expert interviews were conducted. On the 10th of May, Agnes Rupenheit, Deputy Head of the Cultural Heritage Policy Department, discussed the feasibility and limitations of environmental accessibility requirements in cultural monuments. On May 24th, Ann Posahov, the Civil Engineer of the Planning and Design Organization Division of the Traffic Infrastructure Authority, discussed the prerequisites for the construction of ramps in a public outdoor space.

Based on the legislation of Latvia and the information obtained, an evaluation questionnaire for in-depth inspection of churches in Riga (surveys and photo fixations) was carefully elaborated. Seven major evaluation categories were selected: ramps, stairs, thresholds, doors, information, public halls and corridors, other criteria (elevator, toilets, parking, playrooms and religious instruction). Required criteria were applied to each category.

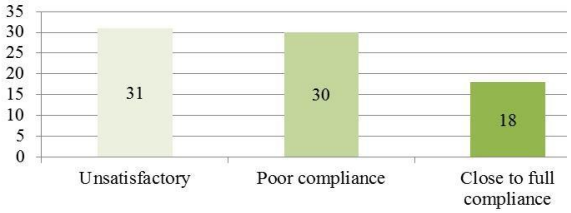

Fig. 4. The results of the First Survey of Churches in Riga [from the author's personal archive]*

From the 7th of June to 28th of July 2019, 79 churches in Riga were surveyed, which included photo fixation and measurements accordingly to the developed guideline. For comparison and analysis of the results percentage calculations of environmental availability were made. The results are presented both in the form of tables and diagrams.

Results

Accessible environment is essential for any member of society in order to feel accepted and equal, as well as to provide a successful social integration process. Churches are not only the spiritual centre of life, but also a public space that should meet the necessary accessibility requirements, as among its purposes is the ability to accommodate anyone in the need of services.

During the first survey (07.09.2018–05.11.2018) presented in the research, significant deficiencies were discovered in the fulfilment of the requirements and guidelines for accessibility of public buildings. The results are shown in the form of a bar graph (see Figure 4). 31 of the total surveyed churches encountered a major problem in providing access to all members of the society (need and lack of ramps, high thresholds that are difficult to overcome, lack of information, broken equipment, etc.). A tendency to improve the accessibility situation was recognized in 30 sacred buildings, however some functionality problems have occurred most likely due to lack of knowledge. 18 sacred buildings provide an easy access to anyone with minor disadvantages that do not endanger the health of the person. However, they can cause compilations and confusion, so it is advisable to make improvements based on good examples worldwide. During the surveys of some churches other obstacles were encountered: incorrect address information, private properties, construction work and denial of access – further research involves 79 churches located in Riga.

In order to acquire information on the current situation in churches of Riga, as well as acquaint expert opinion regarding accessibility of the environment, both closed and open questionnaires were used. A total of 17 experts from 17 different churches in Riga attended, including 11 clergy and 6 church members. Experts were asked to name the

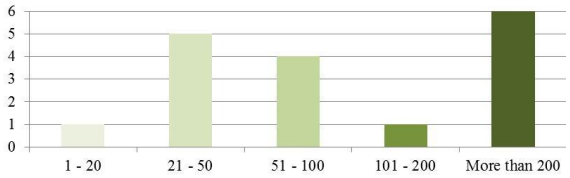

Fig. 5. Expert evaluation on attendance of the churches they represent [*]

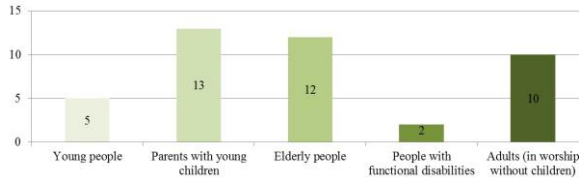

Fig. 6. Expert evaluations on dominant groups in their church events [*]

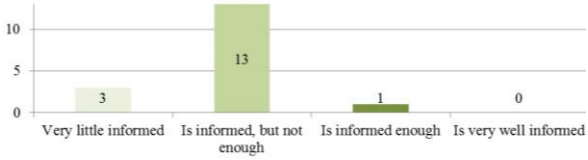

Fig. 7. Expert evaluations on public awareness about environmental accessibility [*]

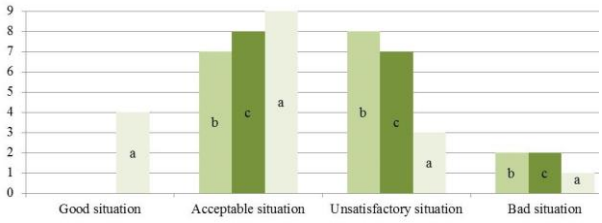

Fig. 8. Expert opinion on the state of environmental accessibility in Latvia, in churches and in the church they represent [from author's personal archive]
a – expert's church, b – Latvia, c – churches in general

estimated number of people who regularly attend services in their church (see Figure 5). Of course, when evaluating the results, it should be noted that the number of visitors directly dependents on the number of people in the particular congregation. However, the overall number of visitors during church events indicates that churches occupy an important place in society and are attended. Most experts have mentioned that they would wish for a higher attendance. Summarizing the results of the expert survey (see Figure 6), it can be concluded that the dominant groups are parents with children (marked 13) and the elderly (marked 12). Two of the experts have listed people with disabilities as one of the dominant groups in Church life. The results reflect that most of the temple visitors are people with limitations and it is essential to provide an accessible and obstacle free environment to them. Many members of the society do not see difficulties in going to the church, climbing the stairs, choosing a comfortable seat and attending church services or other church activities. Perhaps it is due to the fact that most are not forced to deal with major obstacles in their life or have not acquainted people with functional limitations. This leads to some not noticing in their fast-paced daily routine that not everyone is able to do it as easily. In society the topic of creating an accessible public environment is mostly associated with individuals with disabilities, disregarding the fact that the majority of the Latvian population is a potential user of accessible environment – people with functional disabilities, elderly people, parents with young children and other members of society in specific life situations. It is essential to invite all members of the society to the churches, giving everyone the opportunity to be there, providing the help to everyone who has any difficulties or requirements. There is a high possibility that adapting churches to the requirements of environmental accessibility would result in a higher attendance of services and events.

Problems can also occur due to the intolerance of others, neglect and lack of knowledge, that is further expressed through negative body language or verbal condemnation. For instance, even if the church meets all accessibility requirements, but brings discomfort to the person with special needs, it most likely will not be attended. Insufficient knowledge is also reflected in the opinion of experts on people's awareness and understanding in the field of accessibility (see Figure 7). Most experts (13) note that public awareness exist, however is not sufficient and it is necessary to promote awareness among local authorities, parties involved in the construction process and the general public in order to develop positive interactions and tolerant environment. The execution of the regulation requirement only formally should be prevented as much as possible. Public access to all users should be maximized.

Experts were asked to express their opinion on the state of environmental accessibility in the churches they represent, in Latvia and in churches in general (see Figure 8). Most experts (9) consider the accessibility situation in their church to be acceptable, and eight out of questioned find it acceptable in the churches as a whole. Some based their opinion not on the direct accessibility situation of the building elements, but on the support and assistance of the clergy. Possibly due to lack of information it is noticeable that such elements like markings, the presence and correct design of handrails, the presence of edges at the required height (0.10 m), manoeuvring areas, pendant slopes and widths, information signs and other factors have not been taken into account. Some of these do not endanger people's life, but can lead to confusion and result in difficulties in moving and orientating through the church. Seven experts consider the situation of accessibility in Latvian churches to be generally unsatisfactory. In terms of environmental accessibility in Latvia as a whole, most (8) see the situation as unsatisfactory.

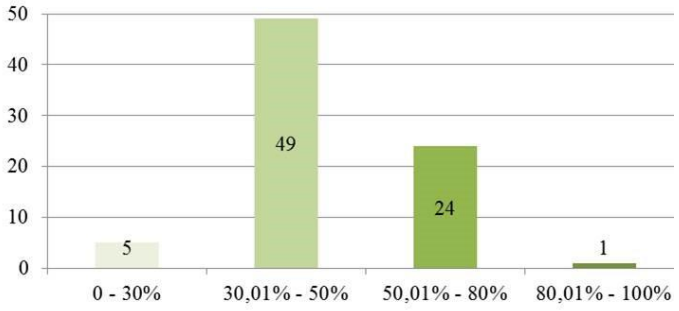

Fig. 9. Compliance of Riga churches with accessibility requirements [*]

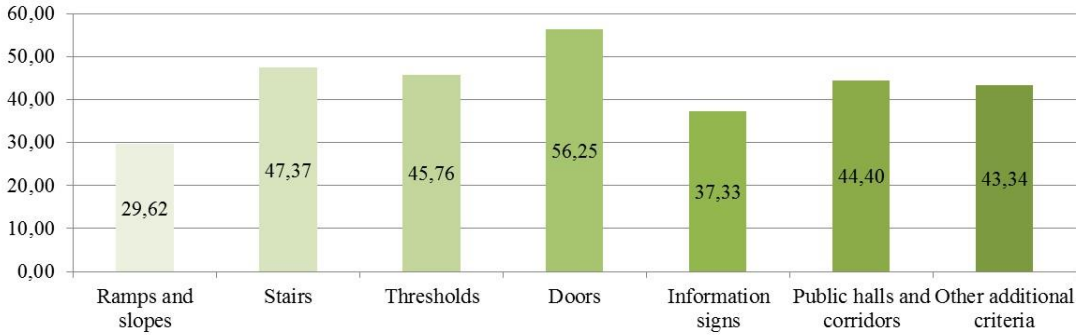

Fig. 10. Eligibility of elements of Riga Churches to the environmental accessibility requirements [*]

The majority of experts believe that accessibility requirements cannot be fully met in all buildings; however, it is essential to ensure the necessary accessibility of public buildings to everyone, taking into account the maximum amount of target audience. Several suggestions to improve current situation in Latvia were made: managing authority representatives would be more willing to listen and implement ideas to improve the situation of environmental accessibility in cultural monuments; declare whether building is meant for people or people are meant for the building; set stricter requirements for the environmental accessibility; apply penalties if the building does not meet accessibility requirements, specify and shorten conciliation procedures, as well as help churches find financial resources, as not all are large enough to raise donations for the construction. 50 % mark based on the average accessibility. Out of them five churches fall within the range of 0 % to 30 % and forty-nine within the range of 30.01 % to 50 %. Twenty-five sacred buildings are above the 50 % mark, of which only one exceeds 80 % of the accessible environmental compliance value.

In order to define elements that have the greatest non-compliance with environmental accessibility requirements, the average percentage for each element among surveyed churches were calculated (see Figure 10). The results identify that "door" is the infrastructure that meets most of the environmental accessibility requirements in the surveyed churches (56.25 %). This is due to the fact that since ancient times most of the churches were designed to have large, wide and grand doors, which makes it accessible to people with functional limitations nowadays. The other elements are below the average of 50 %, which is not satisfactory. The most inadequate infrastructures are information signs (37.33 %), ramps and slopes (29.62 %). Most of the informational signs use fonts and word size that does not meet the requirements, as well as can be too shiny and are not visible during all times of the day. The majority of the surveyed churches lack signs for people with functional limitations with information and instruction on the access of the building. Most of the churches that were surveyed require a ramp, as they do not have a built one, as well as part of the current projects does not meet environmental accessibility requirements.

The accessible environment consists of many details, which can often serve as obstacles for people with functional limitations. For instance, the ramp is appropriately installed; however, door was not being taken into consideration: it either opens in a way that makes wheelchair access impossible, or there is no access beyond the door. The opposite can be also true – door and public space were meant to be open to everyone, but are not accessible to everyone. The solution for accessibility is needed by the whole community, as a large part will become parents, as well as eventually everyone ages.

Overall during the evaluation of the acquired results, as well as research of previous studies and observations in the field of the environmental accessibility in Latvia [10; 17; 18; 19], a significant and addressable accessibility issues were pointed

out, resolving which will result in providing a maximally equal life to everyone. It is impossible to fully solve all problems in order to reach the ideal, due to the complexity of adapting one environment to such a diverse audience, given the physical and social differences between the individuals and society as a whole. However, responsibility, tolerance and cooperation are the key to achieve the most appropriate and effective accessibility solutions for public buildings that will be able to satisfy the vast majority of society members.

Conclusions

Worldwide, as well as in Latvia, the amount of people who have various movement limitations is rising significantly, and it is not always people with special needs. By evaluating the situation in Latvia as a whole and by highlighting a particular group – churches – significant problems in the area of environmental accessibility can be identified. However, a positive trend can be notable, as attention to the accessibility question has been increasing in the recent years, as well as co-operation with foreign experts and learning from their experience is taking place.

The research of the scientific article convincingly reflects the effectiveness of the survey of Riga churches, identifying existing obstacles and main problem groups, which facilitate the analysis of the situation and development of possible solutions. It is advisable to perform this type of research in other sectors of the public environment and services as well.

The accessibility problem groups in the churches are ramps and signboards – their absence or inadequacy of existing ones. Some of the churches in Riga due their cultural and historical status have various construction restrictions and encumbrances in order to preserve as much historical value of the object and its elements as possible. While considering possible solutions for creating accessible environment in cultural monuments, it is essential for the benefits to overweight the loss of parts of the heritage that will be irrevocably gone. All solutions need to consider consequences and comparability with the particular historical building. It is recommended to use light weighted structures, which can be easily transformed in case of need, for example into various mobile ramps and lifts. Nowadays, with the advance technologies there is a wide range of labelling options (adhesive, screwed on, embedded as surface coating) that can be easily used in public areas without damaging the surface, as well as replaced and disposed of when needed. The design of the existing information signs indicates a lack of knowledge, so it is advisable to carefully study the accessibility requirements before signs are created and used in the public domain. In Latvia the legislation on environmental accessibility for people with functional limitations is mostly well organized, however in reality it has not been fully executed in many places. It should also include solutions that are acceptable for cultural monuments, as well as specific penalties for violating certain accessibility requirements in order to reduce the chances of problems occurring when projects are being realized. One of the major obstacles for the churches is the lack of funding to develop, coordinate and perform projects for the improvement of current situation.

A creation of accessible environment includes not only the elimination of physical barriers, but also providing opportunities for people with functional limitations to engage in everyday social activities. It is essential to educate others on the topic of people with disabilities, parents with young children and the elderly, creating tolerance and understanding. It is advisable to provide information about good practices through various events and media. As a result of a successful communication and cooperation between the community, responsible individuals and institutions, it is possible to create the friendliest and accessible environment for everyone in Latvia, as well as to ensure equal access to the services. In other case visitors will be denied one of or even the only opportunity to socialize. The aim of the research has been achieved, tasks have been fulfilled and the authors will continue to work on informing the public about the accessibility of the environment. It is planned to carry out various researches and summarize their results in scientific articles.

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Kopsavilkums. Zinātniskā raksta pētījuma joma ir vides pieejamība Rīgas dievnamos. Tā ir aktuāla gan Latvijā, gan pasaules mērogā. Vides pieejamība pārsvarā tiek uztverta kā šķēršļu likvidēšana cilvēkiem ar īpašām vajadzībām. Balstoties uz universālo dizainu un tā principiem publiskajām telpām, jābūt pieejamām ikvienam sabiedrības loceklim. Latvijas Satversme un tiesību akti paredz vienlīdzīgu tiesību nodrošināšanu visiem iedzīvotājiem. Vides pieejamības problēmas sastopamas kultūras pieminekļos, no kuriem daļa ir dievnami. Mūsdienās kristīgā ticība ir gan tradīcija, Dieva vārdi un rituāli, gan sociālā palīdzība. Tāpēc dievnamam ir jābūt visaptverošam, tādam, lai ikviens sabiedrības loceklis spētu lietot tā pakalpojumus, būt neatkarīgiem un līdzvērtīgi iekļauties baznīcas aktivitātēs. Pētījumā tiek apskatītas problēmas reālā pilsētvidē un apsekoti 86 Rīgas dievnami. Ar novērojumu un digitālās analīzes palīdzību veikti mērījumi un ar grafoanalītiskajām metodēm attēloti rezultāti. Par pētījuma objektu izvēlēti kristīgo konfesiju dievnami, kuri minēti Latvijas Civillikuma 51. pantā – Evaņģēliskie luterāņi, Romas katoļi, pareizticīgie, vecticībnieki, metodisti, septītās dienas adventisti un Mozus ticīgie (judaisti). Ņemot vērā statistiku un esošo situāciju, pētījumā ietvertas arī dažu mūsdienās izplatītu un aktīvu kristīgo konfesiju draudzes: baptisti, vasarsvētki, mormoņi, jaunā paaudze, anglikāņi, jaunapustuļi un evaņģēliskās ticības kristieši. Raksta mērķis ir sniegt priekšstatu par esošo situāciju un problēmām vides pieejamības principu un vadlīniju integrēšanai sakrālajās celtnēs, kā arī veikt secinājumus par problēmas iespējamajiem risinājumiem dzīves kvalitātes uzlabošanai cilvēkiem ar funkcionālajiem ierobežojumiem. Pētījumā atspoguļotas Rīgas dievnamu būtiskas nepilnības publisko ēku vides pieejamības vadlīniju un standartu izpildē. Jaunbūvēs biežāk ievērotas pieejamības prasības un normatīvi, tomēr, ne vienmēr izvēlētie risinājumi ir ērti lietojami un praktiski. Latvijā nav veikti pētījumi par vides pieejamības situāciju ne dievnamos kopumā, ne atsevišķos reģionos. Zinātniskais raksts ir jauns pētījums inženierzinātņu nozarē un arhitektūrā par vides pieejamību Rīgas dievnamos. Raksts var būt lietderīgs kā bāze Rīgas pilsētas dievnamu šķēršļu identificēšanai vai kā izzinošs materiāls nozares pārstāvjiem, studentiem un ikvienam interesentam no sabiedrības, kā arī uzmanības vēršanai uz šīs problēmas aktualitāti.