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INTRODUCTION

The collection of scientific articles in our edition includes 3 research themes.

The **first block** is related to the results of research by several European urban planners and architects in search of solutions for "green" space, thus suppressing the dominance of construction and traffic intensity in cities.

"Landscape is not just a backdrop in our urban environment. It is a complex system in itself", this is how the Finnish architects working on the Suvikumpu housing estate define the main message of their research.

The design strategies are based on an adaptable future urban housing development, where the design not only responds to the need for housing, but also enhances the environmental value and sense of community by integrating different aspects of the landscape.

The spatial structure and the streetscape are determined by environmental, economic and social considerations. The results of the researchers' work can be seen in the research material collected in Riga (Tērbatas Street and Purvciems neighbourhood), Lviv (Poguljanka Street) and Turkey (Ganit coast). The studies identify combinations of urban planning and functional transformation.

The **second block** of studies is a more n-depth look and a continuation of the first section on urban planning issues. In today's volatile political and economic situation, the number of people who need a specific approach to recovery is increasing. This can be provided by well-designed outdoor spaces. Landscape space as a rehabilitation process in both visual aesthetic and sensual terms. It is an essential aspect of sustainability processes, improving the functional zoning of areas and revitalising partially lost green spaces, which can be given a new public realm character.

In the fight against increasing air pollution, a global problem, green infrastructure and linear or vertical green barriers can act as an effective nature-based solution and fit organically into the urban landscape.

The third section of the studies summarises the identification and conservation of heritage in both urban and rural landscapes:

- The interwar period (1920-1940) in Latvia - industrial heritage and architectural values of the modern movement;
- The post-war period (1950-1970) in Latvia, i.e. the period of occupation and the use of typical buildings in the creation of workers' villages - barrack-like dwellings and, alongside them, farm buildings with a strong subsistence economy;
- The interwar period in Lithuania in the 1930s - construction of realised and unrealised tuberculosis sanatorium buildings and their design features;
- Contribution of Lithuanian architects to the development of the sanatorium in the 20th century. 1950s-1960s in North America - the search for a context of architectural form between national sentiment and modernist tendencies;
- The Ukrainian war situation and the development of border defence lines through the study of the natural substrate;
- Preserving the values of Ukrainian estate parks in the Poltava region.

It is particularly important to pass on the above-mentioned research and its results to students, which is why our publication concludes with a study on the level of emotional intelligence of students and its importance for the growth of their creativity.

PRIEKŠVĀRDS

Zinātnisko rakstu apkopojums mūsu izdevumā ietver 3 pētniecisko tēmu blokus.

Pirmais bloks ir saistīts ar vairāku Eiropas pilsētplānotāju un arhitektu pētījumu rezultātiem, meklējot "zaļās" telpas risinājumus, tā slāpējot apbūves un transporta intensitātes dominanci pilsētās.

Ainava nav tikai fons mūsu pilsētvides apstākļos. Tā pati par sevi veido noteiktu kompleksu sistēmu, tā sava pētījuma pamatatziņu definē Somijas arhitekti, strādājot pie Suvikumpu dzīvojamā kvartāla.

Projektu stratēģijas ir balstītas uz piemērojamu nākotnes pilsētu dzīvojamo kvartālu apbūvi, kur projekts ne tikai reaģē uz mājokļa nepieciešamību, bet arī palielina vides vērtību un kopības sajūtu, konsolidējot dažādus ainavas aspektus.

Telpiskās uzbūves struktūru un ielu ainavtelpu nosaka ekoloģiskie, ekonomiskie un sociālie aspekti. Pētnieku darba rezultāti ir spilgti nolasāmi apkopotajos pētījumu materiālos Rīgā (Tērbatas iela un Purvciema apkaime), Ļvivā (Poguljanka iela) un Turcijā (Ganitas piekraste). Pētījumos tiek identificētas pilsēttelpas plānošanas un funkcionālās transformācijas kombinācijas.

Otrs pētījumu bloks ir detālāks ieskats un turpinājums pirmajai sadaļai par pilsēttelpas plānošanas problemātiku. Mūsdienu svārstīgajā politiskajā un ekonomiskajā situācijā pieaug to cilvēku skaits, kam ir nepieciešama īpaša pieeja atveseļošanās procesā. To var sniegt pareizi veidota ārtelpa. Ainavtelpa kā rehabilitācijas process gan vizuāli estētiskā, gan jutekliskā izteiksmē. Tas ir būtisks aspekts ilgtspējas procesu nodrošināšanā, pilnveidojot teritoriju funkcionālo zonējumu, un iedzīvinot no jauna daļēji zudušās zaļās teritorijas, kurām ir iespējams iedot jaunu publiskās telpas raksturu.

Cīņā ar pieaugošo gaisa piesārņojumu - kā globālu problēmu, zaļā infrastruktūra un lineārās jeb vertikālās zaļās barjeras spēj darboties kā efektīvs - dabā balstīts risinājums un organiski iekļaujas pilsētas ainavā.

Trešā pētījumu sadaļa apkopo kultūrvēsturisko vērtību apzināšanu un saglabāšanu gan pilsētvidē, gan lauku ainavtelpā:

- starpkaru periods (1920.–1940.) Latvijā – industriālais mantojums un modernās kustības arhitektūras vērtības;
- pēckaru gadi (1950.–1970.) Latvijā jeb okupācijas laiks un tipveida apbūves pielietojums strādnieku ciematu izveidē – barakveida dzīvojamās ēkas un tām līdzās saimnieciskā apbūve ar izteiktu naturālo saimniekošanu;
- starpkaru periods 20.gs. 30.–30. g. Lietuvā - realizēto un nerealizēto tuberkulozes sanatorijas ēku būvniecība un to projektēšanas īpatnības;
- lietuviešu arhitektu devums 20.gs. 50.–60.g. Ziemeļamerikā – arhitektoniskās formveides konteksta meklējumi starp nacionālo sentimentu un modernisma tendencēm;
- Ukrainas kara situācija un robežu aizsardzības līniju pilnveidošana, veicot dabas pamatnes izpēti;
- Ukrainas muižu parku vērtību nosargāšana Poltavas apgabalā.

Zinātnieku iepriekš minētos pētījumus un to rezultātus īpaši svarīgi ir tālāk nodot studentiem, tāpēc mūsu izdevuma nobeigumā ir ievietots pētījums par studentu emocionālās inteliģences līmeni un tā nozīmi studentu radošuma kāpinājumā.

Aija Ziemeļniece
Editor of Chief

CONTENT

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STREETSCAPE PLANNING METHODOLOGY AND DEVELOPMENT SCENARIOS. TERBATAS STREET EXAMPLE IN RIGA

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Abstract. The proportion of intensive building and pavement of the urban environment reduces the level of comfort of the population, thus, the streets are nowadays considered to be the essential public outdoor space, where it is necessary to increase the comfort and well-being of the population by reducing the transport load. Historic urban centres are often characterised by relatively narrow streets, without planting and with the intensive traffic, consequently, solutions need to be found to humanise these outdoor spaces. The publication provides the authors' experience in working with the planning of the preliminary research of Riga Terbatas Street and choosing a scenario method that is important for decision-making – because opportunities and options have to be evaluated according to the needs of the city residents and further development of the urban environment. The limited outdoor space of the street is a major challenge where it is necessary to realize both safety, environmental accessibility, ecological, aesthetic and cultural and historical ambitions and tasks. In the times of urban dynamism and variability, there is an important discussion with the public and non-governmental organisations: for this purpose, the scenario method allows some action plans to be evaluated and a decision to be taken for further design. The publication also contains a number of street planning principles to be used in the landscape architecture as validation for concepts and analytical summary of good practice examples. In the planning example, Terbatas Street in Riga has been chosen, which is one of the typical streets of historic centre of Riga, but with its charm and history. The research was carried out within the framework of the project for development of the initial technical documentation of the construction intention "The development of the public outdoor space and promotion of accessibility of Riga Centre and the neighbourhood of Brasa".
Keywords: streetscape planning, development scenarios, street landscape planning methodology

Introduction

In the urban daily rhythm, the street space has become not only a walking corridor, but also a cultural and social phenomenon that reflects the public interest, priorities and ability to adapt to changing conditions of urban environment, both economic and climatic. As a result, therefore, street design is currently a challenging process where both urban growth and the ability to adapt to societal demands, and citizen engagement, awareness of the importance of the street and the need to reduce transport load, and the ability to enter into an agreement on how to divide this narrow but so important part of the city. At such a point of view, the landscape of the city street justifies the holism of the landscape – comprehensive and inclusive – indeed, in the broadest sense. Similarly, the landscape is infinitely variable and diverse, it is mainly formed under the influence of socio-economic, political, technological, natural and cultural conditions. In each landscape, these impacting conditions are in particular interactions with each other, at different levels and at different times, acting with different force. Some of those circumstances could be primary to particular landscape, some – secondary, some could be as consequences, or vice versa, as the reason created as a result of the effects of other circumstances and their combination. Landscape changes not only by the impact of human exposure, it has its own internal variability. There are no two identical landscapes all over the earth, each is different in itself and in time and in perception cut [1; 10; 14;15]. Therefore, authors of the outdoor spaces of the city streets also perceive in this publication as a holistic phenomenon that is a dynamic and variable depending on times, perceptions and many other aspects,

The central part of the city historic centre is densely built and the size of the outdoor space per population is relatively small. It is no secret that the well-being of the population is an essential indicator of the growth and success of the city, where the outdoor space plays an essential role – the street is part of the outdoor space and most often one of the largest in the urban environment. Collaboration of citizens with city administration and planners, landscape architects and road engineers makes it possible to understand the city usage habits and partly predict city development scenarios – versatile and sometimes even controversial - it is a modern paradox where the outdoor space has been subjected to unprecedented high demands and expectations often based on the ideal vision of urban environment [6; 7; 18; 17].

Citizens' cooperation in urban planning is no longer newness or extra, it is a normal phenomenon that activates all interested parties – mainly users by understanding their experiences and daily habits. The formats of cooperation are so diverse – the most important thing is to realize the purpose with which we address the public – whether it is information, whether we want to understand their needs and the issues that need to be solved, whether the population is a part of a planning team that participates in the process not remotely, but is a full planning team. The involvement of modern technologies – such applications as GIS, in order to accurately attract problems to a particular place and to see trends and dynamics already cartographically [20; 28]. No less important are the position and recommendations of the ministry for promotion of population engagement, using the widest possible methods which allow to involve local communities and non-governmental organisations in a more creative way [2; 9; 17; 22].

Nowadays, more and more scientists, doctors and anthropologists talk about the necessity to interest people being outdoors – physical exercise, walking, social communication, mental health and contact with elements of nature in the urban environment are necessary – all these themes highlight the need for the contribution of landscape architects to urban planning – regaining more and more comfortable and green infrastructure – the streets play a key role here, as a large scale park, or even a small square, is not within reach for everyone every day, however the outdoor spaces of the street are our everyday landscape. Improvements made on the local landscape planning scale are essential to improve walkability. This new concept of planning focuses directly on inviting a modern person

outdoors, to go for walks. An important understanding – which invites citizens to take a pleasant and comfortable walk on the streets of the city – trees and shadows, rich planting, developed street infrastructure, quality of cover and developed micromobility [4].

Certainly, when designing the new streets, it is possible in advance to plan their spatial proportions, underground communication corridor and reserve space for planting – such planning practices are not complex and are easily responsive to better ideas for realization. A different, even opposite situation is the status of existing street spaces in the city historic centre – where the width of the street is constant, where are many entrances, existing underground communications and status of the cultural and historical heritage. However, the intensity of usage and interested parties are much more than the physical parameters of the street. These discussions about the reconstruction and arrangement of engineering communications are topical in all European cities, and it is also a painful issue for Riga City, which is related on the one hand to the financial burden, complex administrative and bureaucratic process – therefore the underground space of the city is one of the strongest obstacles in planning the outdoor space of the street. Urban underground is a serious resource which is needed for many urban services, including planting and rainwater infiltration, but a thick network of engineering communications blocks this resource, preventing its full usage – a kind of ecosystem service where underground resource is undervalued. This is also the principle of sustainability: how we use urban resources, how sensibly underground space has been used [3; 25;30].

Taking into account both the holistic phenomenon of the landscape and requirements of the quality of modern outdoor space, the purpose of the publication is to offer a planning method of the streets of historic centre based on a scenario assessment, analysing the most up-to-date information of each place and the needs of the interested parties, as well as the overall experience of best practice in urban environment planning.

Object and Methodology

In the planning example, Terbatas Street in Riga has been chosen. The research was carried out within the framework of the project for development of the initial technical documentation of the construction intention "The development of the public outdoor space and promotion of accessibility of Riga Centre and the neighbourhood of Brasa". This publication is the second part of the authors' urban environment street research and planning methodology. The first publication is dedicated specifically to the research process: it should be noted that the planning method described in this publication should not be carried out without the research part.

Terbatas street is in Riga Centre neighbourhood and it is a part of historic centre of city. Terbatas Street starts at the intersection of Brivibas Boulevard and Merkela Street and ends at Tallinas Street, with a total length of 1,790 metres. For the first time, Terbatas Street was mentioned in 1810 in the list of streets of Riga as an out town extension of the Kalku Street, which went further to Terbatas Highway. With the expansion of the city in 1861, Kalku Street was extended to Leger (Matisa) Street, in 1884 to Riepnieku (Tallinnas) Street. But already in 1885, Kalku Street was renamed to Terbatas Street. Later, in the early 20th century, most of the suburban wooden buildings along the street were demolished and replaced by multi-storey masonry buildings which have been preserved even today. Several national romanticism-style buildings stand out in street building. Nowadays, the street is the street of active centre of Riga with a relatively high intensity of pedestrians and traffic, the intensity of public transport is low, however the multifunctional usage is widespread – the first floors of buildings are occupied by shops, catering and service companies, while upstairs are located residential and office premises. The pavement of a driveway of the street is the historic granite paving stone, which is the cultural and historical heritage of the historic centre of Riga, while in the pedestrian zone is asphalt and concrete paving stone. The structure of the planting is small – only a few trees on the street section closer to Matisa Street. Some of the cross streets had already gone through the reconstruction – there are many public discussions about this and satisfaction levels vary. It should be noted that Terbatas Street also experienced an experiment becoming a pedestrian street for a short time during the summer, where active events took place – in general, this experiment was noted as positive and was supported by residents (Figure 1, 2).

The planning process has been preceded by a study (described in a separate authors' publication) during which

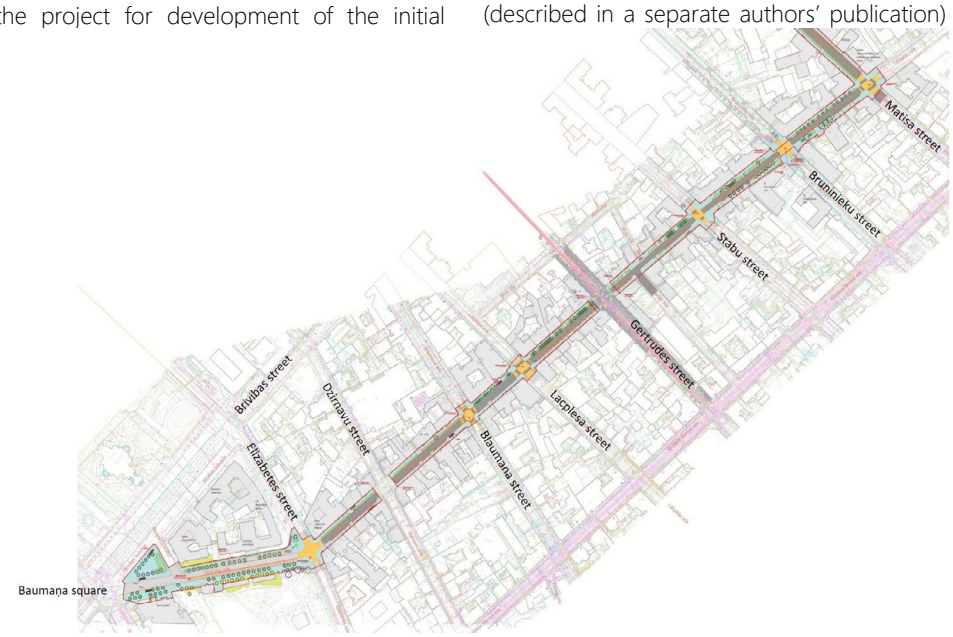

Fig. 1. The map of Terbatas Street [map by authors, 2023]

Fig. 2. Current situation of Terbatas Street [photos by authors, 2023]

the following aspects have been analysed:

- Study and evaluation of the current situation, related documents and projects;
- Study of the related development and planning documents and implementation options of their requirements and solutions;
- Development projects connected to the territory of the route, binding researches, concepts and guidelines;
- Evaluation of the spatial structure of the territory and the links between urban environment objects. Pedestrian and cyclist traffic directions and main attraction objects;
- Evaluation of the historical development and cultural-historical values of the public outdoor space and landscape of the route sections;
- Analysis of socio-economic factors;
- Analysis of technical aspects;
- Analysis of institutional and legal aspects;
- Analysis of environmental aspects.

A scenario method had been chosen to guide the planning process more successfully. During the process of the preliminary research a number of possible scenarios for the development of Terbatas Street have been defined, which have been discussed both in the working groups and with interested parties. The scenario method is the final phase of the project stage, which, after the involvement and discussions of the involved parties, as well as the discussions of the working group, leaves the decision-making to the experts. Therefore, the scenario method was used to avoid a subjective focus. Several scenarios were initially discussed with the involvement of interested parties and citizens, but no consensus was reached. To use the results of the scenario method in the planning process, each of the scenarios was analysed in relation to the requirements of the Riga planning documents, as well as to the quality criteria of modern public outdoor space. The scenario that meets the requirements in most cases also got the most points, but the detailed development and analysis of the scenario, and discussion, which are the next project processes, are also important. A number of aspects affecting the choice of the scenario should be mentioned here:

- Compliance with existing planning documents (planning of Riga historical Centre, development concept of cycle infrastructure, etc.);
- Provision of the current traffic intensity of the street;
- Options for street historical spatial structure preservation;
- Fulfilment of the conditions for preservation of the heritage of the historic centre of Riga (historic stone paving stone);
- The possibilities for micromobility and the provision of intensity of usage are developing more and more actively;
- Safety considerations (unsafe situations arise from the combination of pedestrian and micromobility movements);
- Opportunities for the development of public transport routes;
- Serving the business interests (activity and opportunities, interest in using the outdoor space of Terbatas Street as a potential business development area);
- Connection with the provision of adjoining street infrastructure through street micromobility (existing and planned situation).

It is important to note that reaching the scenarios is also related to the whole preliminary research process involving local government specialists and related local government service structures, representatives of non-governmental organisations, as well as a core working group consisting of landscape architects, road engineers, local government specialists from the development department. Involvement of residents and stakeholders through joint walks, discussing project proposals, and examining situations on site. In addition, meetings were also organized and informative materials were prepared, reviews and opinions were summarized.

A fragment of the plan has been prepared for each scenario according to the current situation and according to specified parameters, a cut that already spatially shows as well parameters for the street structure and each scenario is evaluated according to the mentioned above parameters.

Results and Discussions

During the planning process, the authors of the publication adhered very strictly to a number of concepts of good practice that allow the outdoor space of the street to be made comfortable and in line with modern needs.

Basic elements of urban environment green infrastructure are cores (large green areas) that form units around themselves, and corridors – which are basically streets with small green areas. Since sustainable urban environment green infrastructure is based on the functioning of the whole urban environment as a single organism, thus the role of corridors

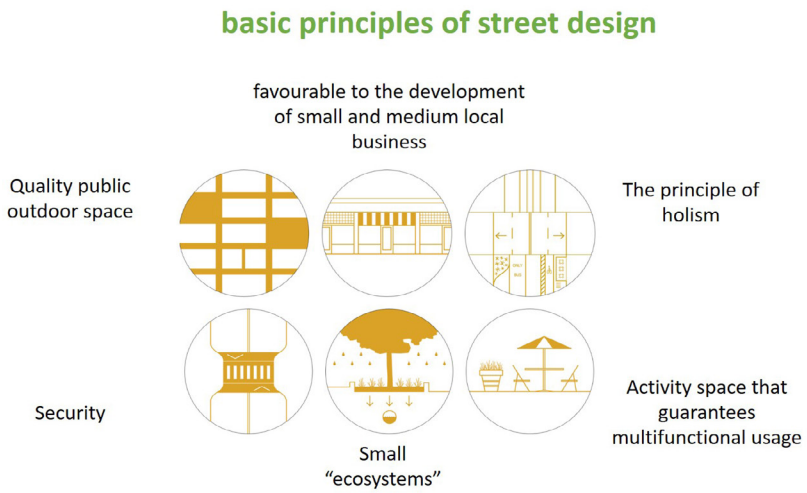

Fig. 3. Diagram image - Basic principles of Street Design [photos by authors, 2023]

is crucial. Therefore, the design of the outdoor spaces of a sustainable street stands out as one of the key issues for urban environment development. In the planning process, it is important to place emphasis on a safe, appropriate to human-scale environment that promotes more active staying outdoors and socialisation of people, the usage of the activities and services offered by a city or settlement. Together, it also contributes to economic prosperity and growth, the creation of a socially qualitative, responsible and based on shared communication and action community, which are relevant and important for Riga City. These findings have become important cornerstones in the planning of a modern urban space, highlighted by leading world urban planners who have worked on planning on such cities that today are valued as examples of good practice in sustainable cities (Copenhagen, Stockholm, Malme, etc.) [16].

City streets are an important part of the public outdoor space, fulfilling the linking function and the function of "green corridors." Therefore, the street as a public outdoor space faces a number of tasks:

- to ensure priority for accessibility of pedestrian and public transport environments;
- to ensure the development of green infrastructure;
- access to buildings and outdoor spaces for house management and first responding transport;
- streets provide daily routes for residents, making tranfer easier;
- the streets must have a wide range of functions: ecological, organisational, recreational, social and health-enhancing function [5].

The are the basis for outdoor space planning on streets (Figure 3):

- security issues play an important role in street design;
- street is a quality public outdoor space in the urban environment, fulfilling both the transfer and representative functions;
- outdoor spaces which are favourable to the development of small and medium local business – multifunctional possibility and infrastructure of outdoor space;
- streets are an activity space that guarantees multifunctional usage of the street outdoor space, linking it to businesses, residents and their common interests;
- streets should be formed as small "ecosystems" which are a part of urban green networking, promoting both urban biodiversity and reducing unfavourable conditions created by climate changes;
- the principle of holism – a set of elements has more value than the sum of individual elements – it is important in a single design approach [19].

The street outdoor space clearly defines its zoning, which at once is related to environmental accessibility and safety issues, therefore keeping with clear zoning is essential for planning the street outdoor space. On analysing the situation on Terbatas and Miera streets, it should be recognised that the existing street spatial structure is unable to meet optimally qualitative requirements for outdoor space, thus, alternatives to reducing transport load, such as sections of one-way and pedestrian streets, as well as reducing parking spaces, should be considered [21; 24].

Different technical parameters are also important for street outdoor space zoning:

- functional area of access to buildings – door opening area, steps, cellar windows, signs, pots with plant composites, etc. – minimum 0,5-0,7 m;
- transfer area – flat surface, comfortable, wide enough – optimum width of 3 m, as far as possible, the widest pedestrian zone shall be provided based on the flow rate;
- the street equipment and greenery area – outdoor furniture, parklets, bicycle racks, information and communication posts, advertisements, etc. – a minimum width of 1.5 m and an optimum of 2.5 m to 3 m;
- it should be noted that parking (parked) areas are part of the street space, but are included in the driveway.

The street outdoor space clearly defines its zoning, which at the same time is related to environmental accessibility and safety issues, therefore, keeping with clear zoning is essential for planning the street outdoor space. On analysing the current situation of Terbatas Street, it should be recognised that the existing spatial structure of streets is unable to meet optimally qualitive requirements for outdoor space, thus, alternatives to reducing transport load, such as sections of one-way and pedestrian streets, as well as reducing parking spaces, should be considered [21;24]. The type and quality of the pavement, as well as the pavement widths, slopes, guideline system – not only on pavements, but also at public transport stops – plays an important role in ensuring accessibility of the environment.

Planting is an integral part of the urban environment. While acknowledging the challenges of planning new planting in existing street outdoor spaces, at the same time, priority should be given to existing planting, assessing the possibilities of improving their growing conditions. The project proposals explore and plan options for expanding and diversifying green

areas around existing plantations, giving advantages for as far as feasible more continuous and larger-area vegetation structures that can survive better in urban environments. Narrow (1-1,5 m) planting areas penetrated between cover strips should be avoided: in fact, such narrow lanes are subject to overheating and due to the concreting of the edges of the pavements, the amount of fertile soil at the base of the pavement is much smaller than the planned vegetation area. According to the study, for the development of the thematic planning of the greenery structure and public outdoor spaces of the city of Riga, it is necessary to plan a multi-level greenery structure, planning not only trees, but also shrubs, perennials, ground cover plants and vertical greenery [23].

An important aspect is the alignment of the proportion of tree crowns with the architectural street value – not to significantly cover the culturally and historically valuable facades, but to plan the timber plants of compact crowns. It is no less important to regularly take care of crowns for existing trees, to design compact crowns for planned trees, according to the spatial structure of the street and the needs and growing conditions of each tree. Plantations plays an important role in street design. When thinking about sustainable development of the urban environment, street plantations are an essential element of the green structure of the outdoor space as they:

- perform the function of "green corridors" in the context of the common concept of urban environment planting;
- suspend flue gases and dust, reduce the noise from transport;
- create a pleasant and safe environment for pedestrians, cyclists and motorists, as well as shade on sunny days and in the heat;
- separate the pedestrian lane from residential houses and transport traffic;
- improve the urban landscape with human-scale planting elements;
- the possibility to plan integrated rainwater systems [7; 26].

Based on the concept of development of cycling traffic of Riga, it is important to respect and develop the common network. **Cycling traffic** can be an essential part of an efficient, sustainable and healthy lifestyle-oriented transport system. The historic stone cobblestone must be preserved in the zone of the historic centre of Riga; thus, it would be possible to go by bicycle along the driveway by creating the recommended cycling lanes (1 m wide), making it from an equivalent stone cobblestone, which is not visually, spatially and qualitatively different from the existing paving, but with the smooth surface. Paving bending machine should be used to reduce roughness. Similar solutions have been used in the old City of Copenhagen, Denmark (the recommended cycling lanes) and in the old City of Tartu, Estonia (cycling and pedestrian crossing).

Scenarios and their evaluation: three scenarios have been prepared, with corresponding drawings and sections, and their evaluation has been given (Table 1).

Scenario Nr. 1 (Figure 4) – One-way street with a preserved historic cobblestone pavement at full width, using part of the street for short-term equipment. Cycling infrastructure is not to be developed according to the concept of cycling infrastructure. Priority is given to pedestrian infrastructure.

Scenario Nr. 2 (Figure 5) – A one-way street with a preserved historic cobblestone pavement for one-way movement, allocating separately a two-way cycling lane. Pedestrian area is extended.

Scenario Nr. 3 (figure 6) – A two-way street with a preserved historic cobblestone pavement at full width, using the recommended cycling lanes and regulating the traffic speed (20 km/h). Pedestrian area is extended.

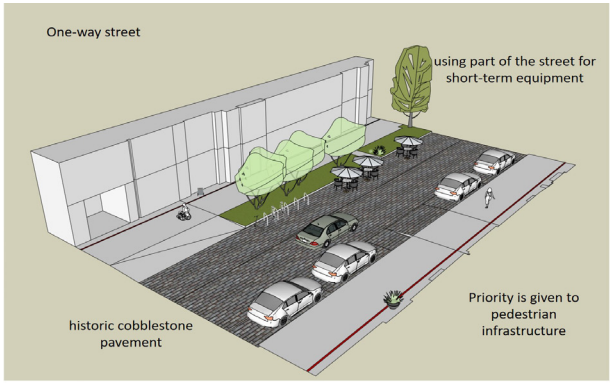

Fig. 4. Scenario Nr. 1 – 3D model [created by authors, 2023]

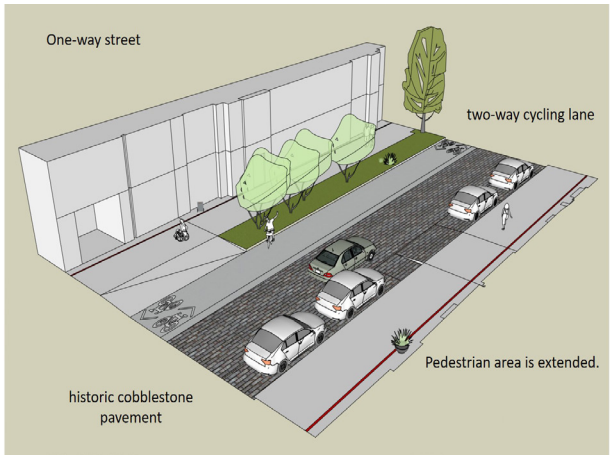

Fig. 5. Scenario Nr. 2 – 3D model [created by authors, 2023]

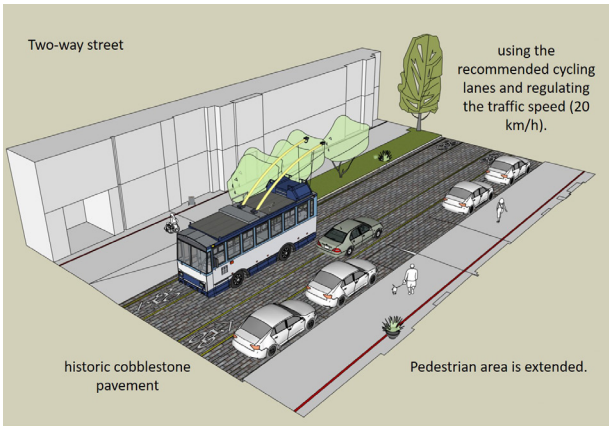

Fig. 6. Scenario Nr. 3 – 3D model [created by authors, 2023]

On assessing development scenarios according to a number of criteria the scenario Nr.3 is the most appropriate scenario. Working towards the goal of a "street with priority for pedestrians" set out in the Development and spatial planning of Terbatas Street, it is essential to resolve the organisation of transport traffic in the wider area (adjoining streets and routes) with the aim of limiting flows of passage traffics and reducing the role of the street for turning, including modelling of transport flows. The issue of the preservation or diversion of public transport, as well as the provision of micro-mobility infrastructure in adjoining streets will also be leading factors in the development of the street. At the same time, in both previous researches and strategic papers Terbatas Street is defined as a high pedestrian priority street, which is essential at future stages/projects of street development. All scenarios provide an opportunity for Terbatas Street to be used briefly, in short-term period, as a pedestrian street, being closed for events, but mostly adapted to it are scenarios Nr. 1 and Nr. 3.

Table 1. Evaluation of development scenarios [table created by authors]

No	Criteria / scenario	Scenario Nr. 1	Scenario Nr. 2	Scenario Nr. 3
1	Compliance with existing planning documents	M	MP	M
2	Provision of existing traffic intensity on the street	DM	M	M
3	Possibilities of preserving the historical spatial structure of the street	MP	MP	M
4	Increasingly developing opportunities for micromobility and the provision of intensity of usage	DM	M	MP
5	Provision of security considerations	MP	M	MP
6	Opportunities for the development of public transport routes	MP	MP	M
7	Securing the interests of business	M	MP	MP
8	Linking to the provision of adjacent street infrastructure	MP	M	M

*Keys – M – Meets, MP – Meets Partly, DM – Does Not Meet

Various methods and their combinations are used in the world today to study the outdoor space of the street - it all depends on the purpose and focus of the research. The analysis of street spaces is different - both to analyze the spatial structure and to analyze the behavior and well-being of pedestrians. We have also focused on research, especially in the city's historical centers. The most commonly used methods - space syntax analysis of metric urban street accessibility, subjective human perception and machine learning, surveys, document studies, and photo-documentation [8; 11; 12; 27; 29] Many researchers rely on map data and street view data [11; 12; 29], which, in turn, are replaced in our research with the exact topographical plan, inventory, as well as several surveys in nature and taking photos in real-time - so we use both the exact topographical data analysis and subjective human perception in our research when surveying the territories. From the method of space syntax analysis of metric urban street accessibility, we use such factors in our research as - safety, spatial structure development opportunities, and high-quality public outdoor space. On the other hand, we choose to replace surveys with face-to-face meetings with donors and representatives of interested parties directly in the street space, taking a walk together and discussing possible solutions, which are also chosen by other researchers [27].

Conclusions and Recommendations

The scenario method allows to assess possible directions for different development for one street, which is the basis for discussion for the development of the street outdoor space. The method allows both spatial (by precise parameters) and functional and aesthetic verification of urban planning proposals. It is essential to carry out preliminary research and identification of interested parties and to include a summary of all wishes in the scenario format. Without question safety issues certainly remain at first place, but a comfortable place to live for residents is key to urban viability - the reason people chose to live in a noisy and active downtown. The example of Terbatas Street is complicated with its cultural and historical heritage (the historic granite cobblestone), which is harder to reconcile with environmental accessibility issues and demands tolerant attitudes, and is one of the makers of the site identity. The scenario method is also applicable during the preliminary research of other existing street reconstruction projects – it also allows the municipality to discuss its vision and to prepare the task more precisely for technical projects already, where one of the scenarios can be unmistakably implemented.

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Kopsavilkums

Pilsētvides intensīvais apbūves un seguma īpatsvars mazina iedzīvotāju komforta līmeni, līdz ar to arī ielas mūsdienās ir uzskatāmas par būtisku publisko ārtelpu, kur nepieciešams palielināt iedzīvotāju komfortu un labsajūtu, mazinot transporta slodzi. Pilsētu vēsturiskie centri bieži ir ar samērā šaurām ielām, bez apstādījumiem un ar intensīvu transporta kustību – līdz ar to ir jāmeklē risinājumi šo ārtelpu humanizācijai. Publikācijā ir sniegta autoru pieredze, strādājot ar Tērbatas ielas Rīgā priekšizpētes plānošanu un izvēlotiesscenārijumetodi,kasirsvarīgalēmumupieņemšanai– jo iespējas un varianti ir izvērtējami atbilstoši pilsētas iedzīvotāju vajadzībām un pilsētvides tālākajiem attīstības plāniem. Ielas ierobežotā ārtelpa ir liels izaicinājums, kur nepieciešams realizēt gan drošības, gan vides pieejamības, gan ekoloģiskās, gan estētiskās, gan kultūrvēsturiskās ambīcijas un uzdevumus. Pilsētvides dinamiskumā un mainīguma laikmetā ir būtiska diskusija ar sabiedrību un nevalstiskajām organizācijām – šim nolūkam scenāriju metode ļauj izvērtēt dažādus rīcības plānus un pieņemt lēmumu tālākai projektēšanai. Publikācijā ir ietverti arī vairāki ielu plānošanas principi, kas izmantojami ainavu arhitektūras jomā, kā konceptu pamatojumi un labas prakses piemēru analītiskais apkopojums. Plānošanas piemērā ir izvēlēta Tērbatas iela Rīgā, kas ir viena to tipiskām ielām Rīgas vēsturiskajā centrā, bet ar savu šarmu un vēsturi. Pētījums veikts - būvniecības ieceres sākotnējās tehniskās dokumentācijas izstrāde projekta „Rīgas Centra un Brasas apkaimes publiskās ārtelpas attīstība un pieejamības veicināšana" ietvaros. Publikācija ir otrā daļa no autoru pilsētvides ielu izpētes un plānošanas metodoloģijas. Pirmā publikācija ir veltītā tieši izpētes procesam – jāatzīmē, ka plānošanas metode, kas aprakstīta šajā publikācijā, nav veicama bez izpētes daļas. Scenāriju metode ļauj izvērtēt dažādās attīstības iespējamos virzienus vienai ielas, kas ir pamats diskusijām ielas ārtelpas attīstībai. Metode ļauj gan telpiski (pēc precīziem parametriem), gan funkcionāli gan estētiski pārliecināties par pilsētplānošanas priekšlikumiem. Būtiski veikt priekšizpēti un iesaistīto pušu apzināšanu un ietvert visu vēlmju apkopojumu scenāriju formātā.

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FUNCTIONALITY OF STREETSCAPE. EXAMPLE OF PURVCIEMS NEIGHBOURHOOD

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Abstract. Streets form the city's living environment and play an important role in social interaction, they are the most accessible public outdoor spaces in the city. Many cities still prioritize vehicular traffic and it is necessary to improve streetscapes to make them more liveable, suitable, and inviting for pedestrians and cyclists. The paper presents research on streetscape analyses and development and highlights the streetscape as an essential part of the human living environment. Purvciems neighborhood in Riga is chosen as a pilot territory. Contemporary street planning approaches and tools are compared. Riga's development planning documents are evaluated by assessing the development opportunities of the Purvciems neighborhood. The existing spatial structure and the ecological, economic, and social aspects of the street landscape of Purvciems are examined in detail. A development vision has been created to improve the functionality of the street landscape spaces in Purvciems at various scales, along with adaptable modular solutions. The developed recommendations and principles, adapted to specific locations, can be used for planning street landscapes in other neighborhoods of Riga and similar-scale territory planning.
Keywords: streetscape, street design, ecological, economic, social planning aspects

Introduction

Historically, villages and cities were located along roads. Streets traditionally served three main functions: providing mobility, commercial activity, and social interaction. However, the multifunctionality of streets is often overlooked, and streets are considered as simple links of the road network, facilitating movement between two or more destinations. Modern street planning derives from ancient practices and road construction technologies. The earliest street law dated ~ 100 BC. [21]. With the advent of automobiles in the 20th century, the streets underwent significant transformations. Many cities prioritized vehicular traffic by diverting pedestrian traffic onto narrow sidewalks. Cities became distinctly car-centric, losing focus on people-oriented urban design [2]. Based on the experience gained from the car-centric cities of the 20th century, urban planners in the 21st century have concluded that multimodal transport networks ensure sustainable growth, equal economic opportunities, and high quality of life. Modern urban residents need transit-oriented neighborhoods with accessible sustainable modes of transportation—walking, cycling, or using convenient public transit. By 2050, 75% of the world's population is expected to live in cities, making it increasingly necessary to balance personal mobility and economic accessibility in urban streets [3].

The character of the street is formed by the overall streetscape scene, which includes the sidewalk, roadway, street furniture, amenities, buildings adjacent to the street, street lighting, greenery, and street trees. Streets provide the main mobility in the city and organize the space. Nowadays, various street planning approaches are being actualized such as complete street, healthy street, and shared space street planning approaches [3, 4]. However, the common denominator of these planning approaches is to emphasize the importance of humans in the urban environment, create an inclusive environment, actualize the use of alternative transportation, and improve well-being and overall quality of life [12].

Streets form the city's living environment and play an important role in social interaction, they are the most accessible public outdoor spaces in the city and the most important city organs [8]. Streets ensure the functioning of the traffic infrastructure and the transmission and performance of overground and underground civil engineering services. Streets play an integral role in people's daily lives, making it possible to move from point A to point B, however, functional and human-oriented streetscapes not only serve as transportation corridors, but they can also serve for leisure. Streets can provide different urban activities such as various social, economic, and political activities [11].

Using street greenery, it is possible to encourage biological diversity, improve environmental quality and microclimate, and reduce noise and environmental pollution, thereby streetscapes can provide important urban ecological functions. By planning street greenery, it is possible to design the streets as green corridors that connect various urban nature territories. Greenery can serve as a tool that improves the city's aesthetics and creates its character. By functionally planning greenery, it is possible to use it as a safety-enhancing element [3].

The street planning approaches and tools discussed in the study are oriented towards ensuring sustainable urban growth with the necessary infrastructure for pedestrians, cyclists, public, and private transport. These approaches and tools aim to create an inclusive environment that ensures safety, comfort, and opportunities for social interaction. Ecological, economic, and social aspects can be achieved in the street by utilizing various street planning approaches and tools.

The street landscape of the Purvciems neighborhood in Riga, the capital of Latvia, was chosen as the research area. There are 58 neighborhoods in the city of Riga. The streets of the Purvciems neighborhood do not fully provide ecological, economic, and social aspects, they primarily serve as transportation corridors. The streets are not adapted for various groups of users, and there is no viable, human-oriented public outdoor space that would encourage residents to stay and socialize in the streetscapes. In the survey conducted in 2013 about life in the Purvciems neighborhood, the condition of roads and sidewalks was evaluated most negatively [6].

The study highlights the streetscape as an essential part of the human living environment and the need to direct actions in the Purvciems neighborhood to improve the functionality of the streetscape and the quality of the living environment. Thereby the study aimed to develop a proposal for improving the functionality of the streetscape in the Purvciems neighborhood, which could also provide ecological, economic, and social aspects. The methods and approach used can serve as an example in the evaluation and development planning of similar areas. To achieve the set goal, the historical development of street landscapes,

Fig. 1. The planned development of Riga's transport infrastructure [conducted by author]

various street planning approaches, and tools in Latvia and the world were studied. The development directions of the Purvciems neighborhood were evaluated in the context of the development planning documents of Riga city, and a study of the current situation of street landscape in the Purvciems neighborhood was carried out. A proposal was developed for improving the functionality of the streetscape in the Purvciems neighborhood at various scales.

Materials and Methods

The study investigated the historical development of street landscapes and an evaluation of street planning approaches and tools used worldwide. The research was carried out from April 2023 to December 2023. Best practice examples were assessed, and an evaluation of the Purvciems neighborhood was conducted within the context of Riga city's development planning documents [1, 14, 15, 16, 18, 19, 20, 22] (Figure 1). As part of the study, an assessment of the current state of street landscapes in the Purvciems neighborhood was conducted in September 2023. The spatial structure of the Purvciems neighborhood was evaluated based on K. Lynch's theory of the five elements that contribute to the legibility and clarity of urban spatial structures, which allowed for the identification of paths, edges, districts, nodes, and landmarks in the Purvciems neighborhood [9].

In evaluating the functionality of street landscapes, assessment criteria were selected, and a matrix was created based on the street planning approaches and tools analyzed in the study. Street landscapes can provide vitally important functions, categorized into three groups: ecological, economic, and social aspects. These are the three main aspects included in the matrix to analyze the functionality of street landscapes in the Purvciems neighborhood.

The ecological aspect is divided into two subcategories: green infrastructure and sustainability. For green infrastructure, the quality of green infrastructure in Purvciems, the aesthetic quality of plantings, and the connectivity of green infrastructure were analyzed. For sustainability, stormwater solutions, the use of sustainable materials and elements, and waste management were assessed.

The economic aspect is divided into subcategories: land use functions and mobility. Land use functions include the functions of ground-floor properties, and the placement of commercial and improvement elements in the street space. Mobility includes the accessibility of the street space for various user groups and the availability of public transport and cycling infrastructure.

The social aspect is divided into subcategories: visual and emotional accessibility. Visual accessibility includes the quality, scale, and harmony of the street condition, and environmental accessibility. Emotional accessibility includes the sense of security, the ability to navigate, and noise intensity in the street space. Each subcategory of the main aspects was evaluated on a 3-point scale, with 3 points being the highest rated indicator, 2 points being a satisfactory indicator, and 1 point being a low-rated indicator.

In evaluating the current and planned situation, streets that ensure the most important neighborhood connectivity were surveyed in the field. In 2023, the main connectivity and access of streets in the Purvciems neighborhood were provided by streets of categories C, D, and E. In Latvia, a B-category street (transit street) is the beginning, continuation, or end of a main or regional state road with a dominant connecting function and a subordinate access function. A C-category street is a major street that provides both connecting and access functions. A D-category street is a city street that provides access to individual land plots and can also perform a connecting function during certain hours of the day. An E-category street is a local street that primarily provides a residential function while also performing an access function [23]. Based on the Riga territorial plan, it was concluded that a B-category street is also planned in the western part of the neighborhood, which would perform a dominant connecting or city arterial function [19]. At the time of the survey, the street was under construction, and the planned B-category street was not surveyed.

In conclusion, recommendations were prepared for street landscape solutions in the Purvciems neighborhood at various scales, and spatial modeling of the planned solutions was carried out.

Results

Evaluating the development planning directions for the Purvciems neighborhood in the context of Riga city revealed that Riga's development vision focuses on integrating alternative modes of transportation into the urban environment, ensuring mobility, and developing diverse public outdoor spaces, including improving the functionality of street landscapes. Although the documents are subordinate to each other, inconsistencies are observed in some places. It should be noted that not all development visions outlined in planning documents are brought from concept to implementation.

In some local-scale projects, the guidelines and vision for sustainable urban development established at the city level are not always taken into account. Current projects in the Purvciems neighborhood show both positive features, such as tendencies towards sustainable urban development, including new and connecting cycling infrastructure and improvements to the public transport network. However, there are also negative aspects where the projects do not comply with the city's guidelines on integrating green mobility and ensuring comprehensive environmental accessibility.

The evaluation of the spatial structure of the Purvciems neighborhood shows that the main structure consists of multi-story buildings with at least four or more floors, with residential areas occupying nearly 50% of the neighborhood's total area. Purvciems is the most densely

populated neighborhood in Riga. It borders six other Riga neighborhoods, but its internal spatial structure is composed of several more fragmented district zones, including areas with multi-story and low-rise buildings, mixed-use areas, and industrial zones, defined by building type and height [17]. Considering the total number of residents in Purvciems and the population density of the adjacent neighborhoods, these areas together account for more than 25% of Riga's total population. Therefore, it is particularly important to ensure an efficient and unified transport infrastructure network that can serve a significant population density in this part of Riga [7]. However, since 2000, the population in Purvciems has decreased by approximately 10,000, while in Riga overall, it has decreased by around 150,000. The overall population statistics of Latvia have shown a significant decline since the 1990s. To increase the desire for people to live in the city, it is important to provide public outdoor spaces that meet people's needs and modern quality standards, with accessible green infrastructure, economic viability, and socialization opportunities [7]. The study emphasized the inclusion of all population groups. One-third of Purvciems residents are children and seniors, highlighting the need to ensure environmental accessibility, comfort, and safety. Meanwhile, two-thirds of the neighborhood's residents are of working age, underscoring the need for accessible workplaces, socializing, and recreational areas near their homes [5]. The most significant nodes in the neighborhood form around its major landmarks. The widest street edges are found along the neighborhood's C and D category streets. The available natural areas within the neighborhood's internal structure are fragmented and unclear, with the most prominent green infrastructure, requiring improved access and connectivity, located on the neighborhood's periphery. Natural and landscaped areas in Purvciems occupy only 3.4 hectares of its total area. These natural areas do not include street and courtyard plantings, which supplement the neighborhood's green infrastructure. However, it should be noted that these planting structures do not form extensive, unified areas. Regarding Purvciems' blue infrastructure, there are no observable water areas in the neighborhood [13].

Regarding the assessment of ecological, economic, and social aspects in the Purvciems neighborhood, economic aspects received the lowest rating, reflecting issues with land use functions and mobility. The accessibility of streets for various user groups and the lack of amenities were evaluated negatively. Social and ecological aspects were rated slightly more positively. By analyzing the obtained data in more detail, it was possible to evaluate the main shortcomings and positive values of each street category.

For C-category streets, environmental and ecological aspects were rated the highest. The connectivity of green infrastructure was positively evaluated. However, there is a need to improve environmental accessibility and safety in street sections where these aspects are at the lowest level or where unauthorized street crossing is frequently observed. Orientation ability was rated the highest, with some of the neighborhood's most significant landmarks located along C-category streets.

In D-category streets, the provision of environmental and ecological aspects is comparable to that of C-category streets. The connectivity of green infrastructure was rated the highest, with a two-level planting structure dominated by regularly mowed grass strips along sidewalks and various tree species, although high biodiversity was not observed. The economic aspects were rated the lowest for D-category streets. The street space is mainly intended for pedestrians and motorized vehicles. There is a lack of amenities, and street-level commerce is not observed. On the other hand, public transport accessibility and the use of ground-floor properties for commercial activities and services were evaluated more positively. Social aspects were also rated more positively. The quality of the street condition in D-category streets is better than in C-category streets.

The provision of economic aspects in E-category streets was rated the lowest. The use of ground-floor spaces is primarily for private use, namely residential, and commercial activities are not observed. The evaluation of environmental and ecological aspects ranks second. There is a mix of publicly accessible and residential green infrastructure, forming a unified network. This street category also features a two-level planting structure with mowed lawns and various tree species. Social aspects were rated the highest for E-category streets. These streets have lower noise levels due to less traffic intensity. The streets are narrower, making them more suitable and pleasant for human scale.

It can be concluded that improvements are needed in ecological, economic, and social aspects across all street categories in the Purvciems neighborhood. The main emphasis is on promoting mobility and service accessibility, introducing amenities, improving the quality of green infrastructure, and developing a sustainable urban environment.

Conclusions and Recommendations

In the potential development vision of Purvciems, it is possible to foresee the improvement of a multimodal street network and street functionality. By establishing a multimodal street network and developing mobility hubs, both the mobility of the Purvciems neighborhood and adjacent area residents could be enhanced, thus promoting sustainable urban development. It is crucial to introduce a holistic development approach to enhancing street functionality, considering the interconnectedness between the neighborhood and city-scale context.

Firstly, it is necessary to develop a sustainable transportation plan that ensures comprehensive and integrated cycling infrastructure and an efficient public transportation system to improve mobility, and accessibility, and reduce traffic congestion.

Secondly, integrating environmentally friendly initiatives such as landscaping and tree planting is important. It is essential to create a functional landscaping structure in the neighborhood to enhance biodiversity and improve the aesthetic and environmental quality. In planning greenery for C and D category streets, sustainable rainwater drainage solutions can be integrated by designing rain gardens and bio-swales to infiltrate stormwater runoff collected from hard surfaces, driveways, and sidewalks.

Thirdly, to promote social interaction and economic growth, the development of a neighborhood center is necessary. By organizing and developing areas adjacent to streets and roads, it is possible to create economically and socially active neighborhood centers. Squares or plazas could be integrated into the central part of the neighborhood to encourage community gatherings and socialization. Planned mobility hubs are intended to be located at significant landmarks, active transportation nodes, and major intersections within the neighborhood. Accessible public transportation with well-equipped public transport stops, electronic boards displaying real-time transportation arrivals, and accessible ticket vending machines should be provided at hub points. Multi-story or underground parking lots, bicycle parking facilities, and spaces for bicycle and electric scooter rentals

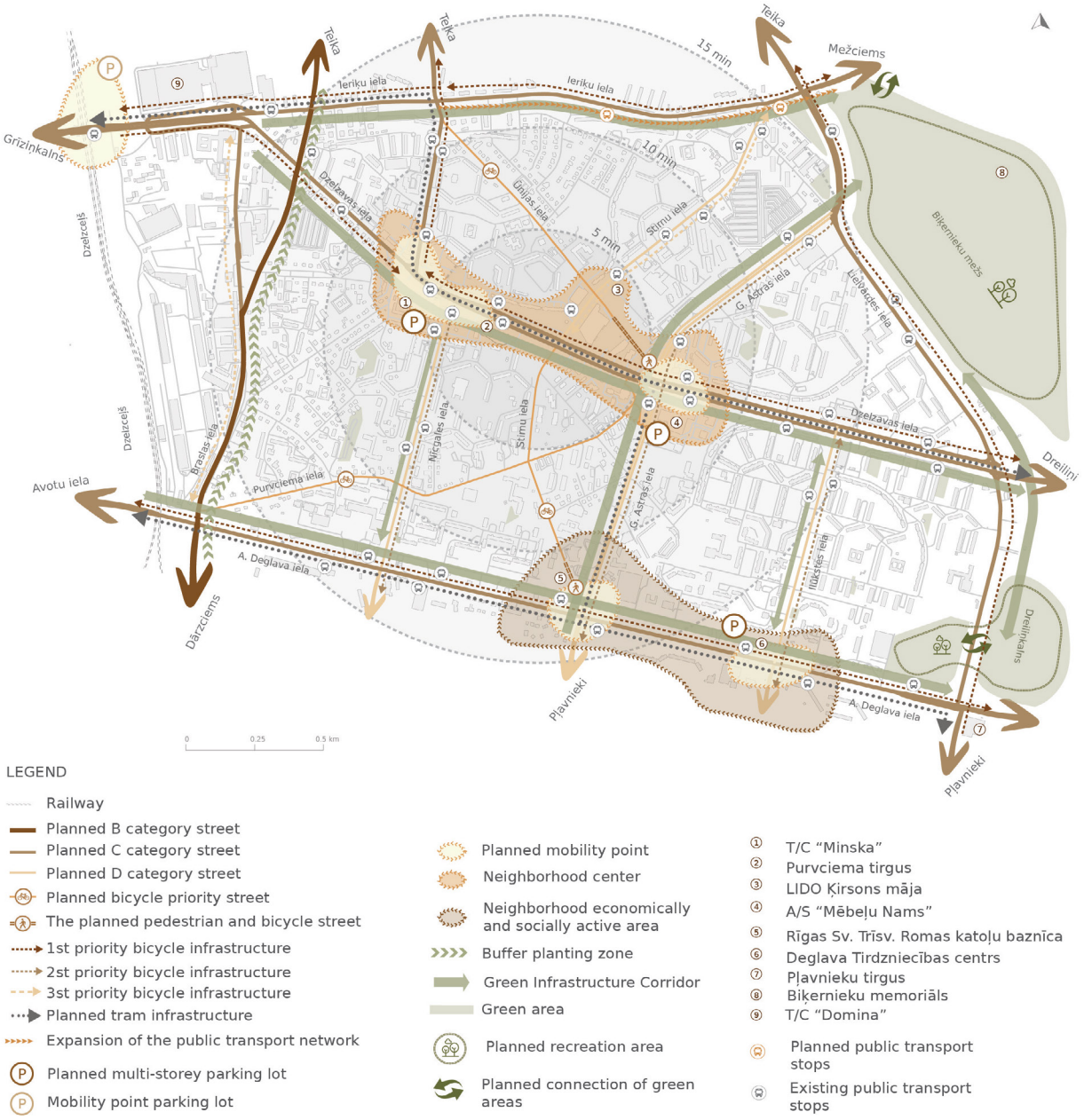

Fig. 2. The planned development of Purvciema neighbourhood [conducted by author]

should be provided at mobility hubs. Street-level commerce can be integrated at mobility hubs by setting up market stalls, kiosks, or mobile vending.

In all categories of streets in the Purvciems neighborhood, it is possible to fully address ecological, economic, and social aspects, fostering neighborhood growth towards a sustainable and people-oriented living environment. By improving the aforementioned aspects, the negative impact on the environment would be reduced, economic growth would be promoted, social interaction would be facilitated, and potentially, an increase in the neighborhood's population could be achieved. Quality public spaces would be available to existing social groups in the neighborhood, which would be more favorable for mental and physical health.

Main planning principles for C category streets:

- Introduce multi-level planting structures in green corridors.
- Include vertical plantings along building facades in areas adjacent to the street.
- Design functional planting zones that also serve to slow down and infiltrate rainwater runoff, improve safety, and delineate zones.
- Use mulch in plantings.
- Integrate energy-efficient lighting with smart management systems, provide waste sorting, use sustainable elements and materials.
- Plan a multimodal street network with accessible mobility points, cycling infrastructure, and public transport.
- Activate ground-level commercial activities and street vending.
- Install permanent landscaping elements, environmental and art objects, and seasonally adaptable solutions.
- Ensure environmental accessibility, quality road surfaces, and safety.
- Limit the speed to 40 km/h in the neighborhood center and economically active zones.

Main planning principles for D category streets:

- Promote the improvement and accessibility of green infrastructure quality.
- Provide green infrastructure that separates street functional zones.
- Adapt rain gardens and/or bio-swales.
- Use sustainable elements, materials, provide energy-efficient lighting, waste sorting bins.

- Locally available commercial services at ground level.
- Accessible seasonal dining terraces for establishments adjacent to the street.
- Unified pedestrian and bicycle network accessibility.
- Separately located street vending points.
- Accessible landscaping elements and public transport stops with available shelters.
- Ensure environmental accessibility and a quality road condition.

Main planning principles for E category streets:

- Provide green infrastructure connectivity with point-like tree plantings.
- Establish planting zones enhancing aesthetic quality near significant objects.
- Include seasonal plantings.
- Incorporate bio-swales in wider grass strips.
- Implement shared street use principles, prioritizing pedestrians and cyclists.
- Additional cycling infrastructure elements available, with bike racks near educational institutions.
- Provide accessible amenities in the street space promoting public space usage.
- Adapt seasonal, modular solutions in parking areas.
- Utilize speed-calming elements such as raised intersections, speed bumps, and road narrowing.
- Reduce speed limit to 30 km/h.
- Ensure a quality pavement surface and pedestrian network connectivity.
- Use environmental and art objects as landmarks, creative environmental solutions are also provided near educational institutions, serving as speed dampeners.

The use of modular solutions in streetscape involves movable or adaptable structures for various purposes. Modular solutions can be adapted in all street categories of the Purvciems neighborhood. By developing guidelines and standardized, adaptable prototypes, it is possible to create a unified visual identity for the neighborhood. With modular solutions, it is also possible to offer new recreational opportunities, enhance green infrastructure, and improve safety. The developed recommendations and principles, adapted to specific locations, can be used for planning street landscapes in other neighborhoods of Riga and similar-scale territory planning.

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Kopsavilkums

Pētījumā veikta ielu ainavtelpu vēsturiskās veidošanās izpēte un pasaulē izmantotu ielu plānošanas pieeju un rīku izvērtējums. Apskatītās ielu plānošanas pieejas un rīki, kas orientēti, lai nodrošinātu pilsētas ilgtspējīgu izaugsmi un gājējiem, velobraucējiem, sabiedriskajam un privātajam transportam nepieciešamo infrastruktūru, paredzot iekļaujošu vidi, drošību, komfortu un iespēju socializēties. Izvērtēti Rīgas attīstības plānošanas dokumenti, veicot Purvciema apkaimes attīstības iespēju novērtējumu. Detalizēti izpētīta Purvciema apkaimes esošā telpiskās uzbūves struktūra un ielu ainavtelpu ekoloģiskie, ekonomiskie un sociālie aspekti. Izstrādāta Purvciema apkaimes ielu ainavtelpu funkcionalitāti uzlabojoša attīstības vīzija dažādos mērogos un pielāgojami modulāri risinājumi un sniegti ieteikumi galvenajiem plānošanas principiem C, D un E kategoriju ielās. Pētījums notika no 2023. gada aprīļa līdz 2023. gada decembrim.

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EVALUATING SOCIAL INTERACTION PERFORMANCE AND SENSE OF COMMUNITY IN URBAN GREEN SPACE: THE CASE OF TRABZON GANITA COAST

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Abstract. As population increases in urban centers, urban open spaces are gradually diminishing and the quality of existing spaces is deteriorating. Therefore, when designing open spaces in cities facing issues such as population growth, unplanned urbanization, industrialization, and transportation problems, social dimensions should be considered as much as ecological and economic dimensions. This study focuses on the Ganita Coastal Project, one of the identity spaces of the city of Trabzon. The aim is to determine the social performance of urban open space organizations formed after the implementation of the project and to reveal their effects on the sense of community. The research method consists of surveys that include the evaluation of the social interaction performance provided by the place and the assessment of the sense of community. The research results show that the social interaction performance of the place has a positive and significant relationship with the sense of community. This study defines the sub-dimensions of social features by focusing solely on the social characteristics of the place. The social factors affecting the sense of community are identified as the functional, social, and perceptual sub-dimensions, respectively. The success of the social features such as popularity of place, social accessibility, and variety of activities has allowed for the intense use of this space. This research focuses on the social interaction performance but cannot claim to have examined all the features of the place that constitute social interaction. Considering the importance of urban open spaces as a social stage and their significance in forming relationships between people and places as well as among people themselves, the findings of this study are quite important. The results, especially regarding which social features of a place should be taken into account when designing new urban spaces, can be guiding for both designers and managers.
Keywords: social interaction performance, place experience, performance evaluation, sense of community

Introduction

Today, cities that grow uncontrollably without considering the environment and society are being replaced by sustainable cities. Especially in recent years, the rapidly increasing world population has led to uncontrolled urbanization. Rapid urban growth and population increase in developing countries have resulted in the reduction of open green spaces in city centers. A large portion of the human population resides in urban centers. Consequently, increasing construction due to building density, transportation systems, and other requirements of globalization leads to physical and social changes within and around the city. Therefore, urban open spaces should be evaluated in terms of ecological, economic, and social sustainability dimensions. The city of Trabzon has also been facing issues such as population growth, unplanned urbanization, industrialization, and transportation in recent years. As a result, open green spaces in the city center are gradually diminishing, and the quality of the existing green spaces is also deteriorating. In this context, several landscape projects have been designed and implemented in the coastal city of Trabzon in recent years. One of these projects is the Coastal Project aimed at reorganizing the existing Ganita Coast. This research aims to evaluate the social interaction performance of Ganita Coast, one of the city's important socialization centers. For this purpose, the concepts of place and space, people-place interaction, the social features offered by the place, and the concept of social performance will be focused on.

Urban open spaces should be considered not only for their physical characteristics but also for their social features [1]. In this context, the concept of place has emerged in the architectural literature, with a focus on the differences in meanings between space and place. According to place definitions: Creswell defines place as "locations that people engage with, touch, and connect to; meaningful positions"[2]. Pretty et al. state that place is formed through the interaction of people with each other and their environment [3]. From these definitions, it is clear that contemporary studies in urban design emphasize the need to question spaces not just by their physical attributes but also by their social features that contribute to livability [4,5].

The term green space originates from the urban nature conservation movement and the concept of green space planning in Europe [6]. Urban open green spaces are locations accessible and usable by the public on various scales, from the smallest neighborhood playground to expansive landscapes, with different purposes, functions, and forms. Urban open green spaces contribute ecologically by preventing air pollution and preserving biodiversity. Additionally, from social and economic perspectives, they promote social interaction and integration, thereby enhancing mental and physical health. Considering their environmental, social, economic functions, and contributions to individual and public health, urban open green spaces are indispensable elements of urban planning, urban life, and society. Since this study will focus on the social functions and opportunities of urban open green spaces, it is necessary to evaluate people-place relationships.

Environmental psychology, which questions the foundations of people-place interaction, how it forms, how the features offered by the environment are perceived, and how people evaluate these features, has realized that these questions are also related to the social characteristics of the physical environment. Human behaviors occur in a specific physical and social environment that meets their needs and requirements (Figure 1).

In the formation of the physical environment shaped according to human needs and requirements, it is essential to first examine the fundamental structure of human beings and their behavior. People engage in behaviors to meet their needs. Behavioral science studies the interaction between human behaviors and environmental variables, aiming to measure differences in behaviors influenced by the environment or to

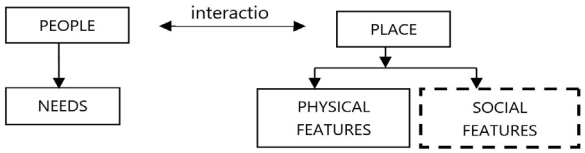

Fig. 1. Physical and social characteristics in people-place interaction [created by author]

modify the characteristics of the environment based on new needs that arise from these behaviors. In other words, there is a mutual interaction between humans and the environment. The interaction system between urban open spaces and their users occurs within the scope of the users' needs and the features offered by the environment. In summary, urban open spaces where users perform their behaviors according to various needs and requirements should be places where people go for individual or group activities, engage in actions to meet their needs, and have amenities that facilitate these actions [7].

Social features of the open place

The physical and social characteristics offered by urban open spaces designed with users' needs in mind are significant factors influencing users' relationships with the environment. Classifications used by environmental designers regarding what urban open spaces should offer to people have expanded to include not just the space but life itself. These studies have focused on the differences in meaning between space and place [7; 8; 9; 10]. An example of these studies is PPS (Project for Public Spaces), which has examined open spaces worldwide and identified criteria for success. In this context, the characteristics of successful open spaces are grouped under four main functions: "comfort and identity," "access and connection," "use and activity," and "sociability" [9]. Among these, the functions of use and activity, as well as sociability, refer to the social characteristics of the place. Whyte stated that urban open spaces should be places that offer a variety of activities and host social events [12].

Carmona evaluated urban spaces in terms of place and the social activities occurring within them. They assessed the social dimension through accessibility, safety and security, proximity, diversity of functions, and street furniture [13]. Similarly, Gehl expressed the success of a place by the number of social and optional activities it hosts. He emphasized that there is a strong relationship between the variety of activities and the success of a place [10].

Salama focused on the functional, social, and perceptual characteristics offered by a place [11]. Özkan and Yılmaz concentrated on the physical and social characteristics that successful open spaces should offer [7]. In summary, the number of studies focusing on the social characteristics offered by places has been increasing in recent years (Table 1). In this research, which focuses on the relationship between urban landscape and social performance in the people-place relationship, the social characteristics of the place will also be evaluated.

Although studies examining the social features of the opportunities offered by open spaces are limited, the indicators vary. When studies investigating the social dimension in the literature were examined, it was seen that the indicators in Table 1 came to the fore. In line with all this literature, the social characteristics of Trabzon Ganita Coast open spaces will be evaluated and their social performance value will be revealed. The effects of Ganita Coast social performance value on the sense of community in users will be investigated.

Place experience and sense of community

Table 1. Social interaction performance factors of urban open places [table created by authors]

Dimension	Factors	Researches
Social features	Social activities	[7], [9], [10], [11], [12], [14]
	Definability	[13, [15]
	Social interaction	[7], [9], [10], [11], [12], [16], [17]
	Inclusiveness	[10], [11], [15], [18]
	Vitality / Attractiveness	[7], [9], [10], [15]
	Activeness	[10], [12], [15], [19], [20], [21]
	Recreational facilities	[9], [12], [15]
	Variety in activities	[7], [9], [10], [11], [12], [14], [22]
	Diversity of AgeGroups	[11]
	Ethnic Diversity	
	Functionality	
	Reachability	
	Social accessibility	
	Harmony	
	Popularity of place	[7], [23]

Studies focusing on people-place interaction focus on the features offered by the place and the emotional bonds between people. In this respect, it is an important dimension whether a sense of community is formed in these open spaces that appeal to the whole society. Sense of community has been defined as the social bonds that develop among people in a particular place [19]. Many studies accept McMillan and Chavis's classification, which explains the sense of community in four dimensions [24]. These are membership, influence, integration or fulfillment of needs, and shared emotional connections dimensions. Public spaces such as parks, coastlines, and squares in city centers improve the sense of community by facilitating chance encounters between people [25]. Urban designers and sociologists have long discussed the features of urban open space that encourage social interaction [12, 14, 26, 27, 28, 29]. However, few studies in the literature have It focuses on the relationship between social characteristics and sense of community. In this research, which aims to investigate the relationship between the social performance value and the sense of community resulting from the social use of public space, Ganita Coast, one of the important public spots for the city of Trabzon, was chosen as the study area.

Materials and Methods

The research was conducted in Ganita Coast, located in the central district of Ortahisar in Trabzon province. According to the 2023 population data, the population of Trabzon is 824,352. With a total area of 4,662 km2, Trabzon province has a population density of 177 people per square kilometer. The population of the central district Ortahisar is 332,504 [30]. Ganita Coast, which holds significant importance in the urban culture of Trabzon, derives its name from the Greek word "kanita," meaning "beautiful place" (Figure 2). The selection of this area as the study area was influenced by its substantial contribution to coastal usage in the city and its reorganization for public use.

In this study, a face-to-face survey was conducted with users of Ganita Coast. The survey was conducted between August and November 2023. The survey, which selected users through simple random sampling, was administered to 145 local individuals aged 15 and above. The number of surveys considered valid and entered into the SPSS 24.0 database is 140.

In the research, data collection consists of two main sections. In the first section, a 5-point Likert scale was

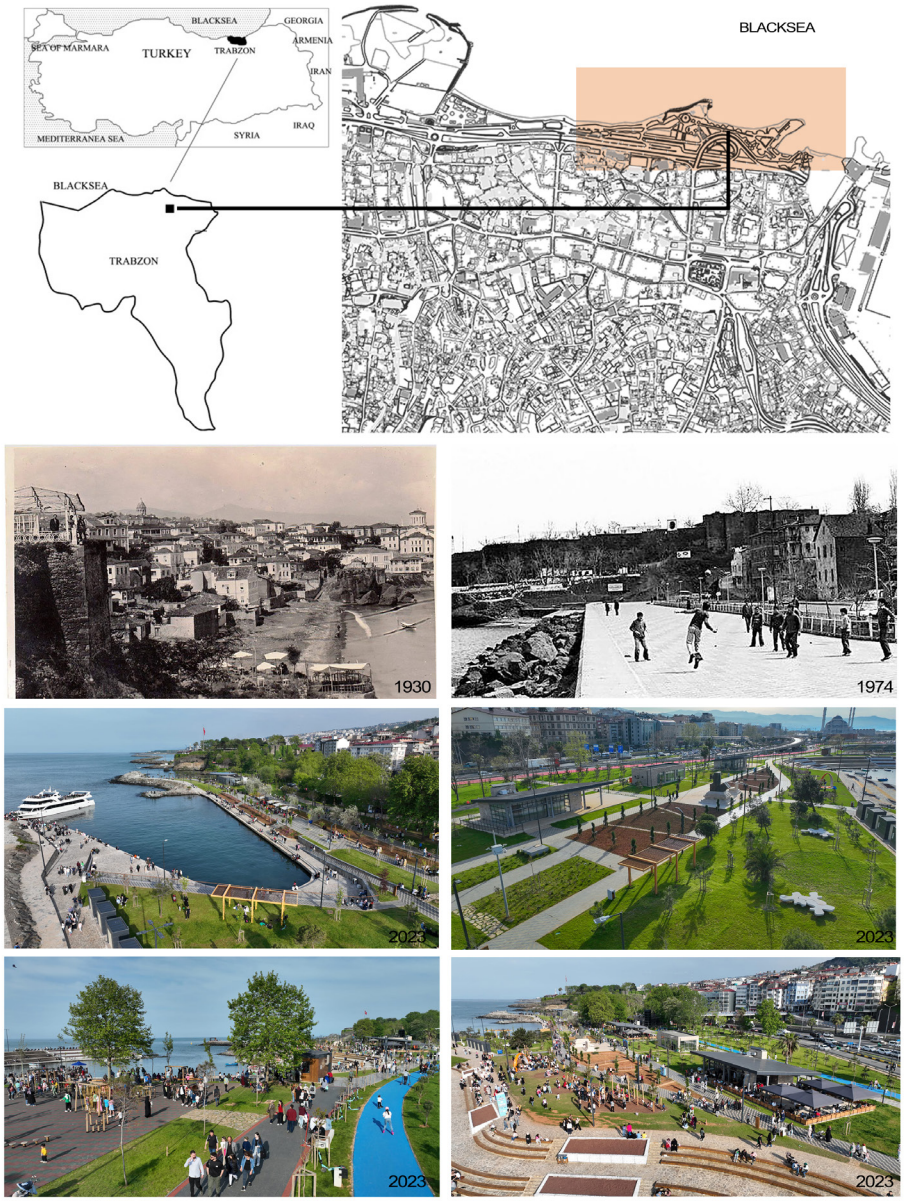

Fig. 2. Location of trabzon ganita coast and changes in coastal use [created by author]

administered to collect data on users' social interaction performance, while in the second section, data related to the sense of community were collected. The scale aimed at determining social interaction performance consists of 15 items, and it was developed based on the works of [9; 11; 13; 15]. The scale aimed at determining the sense of community consists of 11 statements and was developed based on the works of [24; 31; 32; 33]. Subsequently, regression analyses were conducted to determine the relationship and effects between Ganita Coast users' social interaction performance and sense of community.

Results

Findings on evaluation of social interaction performance

The first part of the study aims to determine the Trabzon Ortahisar Ganita Coast in terms of social interaction performance. The values related to users' social interaction performance are shown in Table 2. When examining the values of social interaction performance, it was determined that the items with the highest values are "popularity of place", "variety in activities", and "social accessibility", respectively. The items with the lowest values are determined to be "ethnic diversity", "definability", and "vitality/attractiveness". The average overall social interaction performance of Ganita Coast users is determined to be 3.54. Within the scope of the research, factor analysis was applied to 15 statements prepared to evaluate the social interaction performances of Ganita Coast and after many analyzes, scales were created with various reliability tests that showed suitability for factor analysis.

Factor analysis was conducted using varimax rotated principal component analysis to determine and evaluate the sub-dimensions of social interaction performance at Ganita Coast. Factor loads lower than 0.40 were removed, and the analysis was repeated 4 times. After the factor analysis of the 15-item social interaction performance scale, the statements "Diversity of Age Groups" and "Ethnic Diversity" could not be included in the scale, resulting in a total of 13 items grouped under 3 factors. These factors explain 73.596% of the total variance (Table 3).

Findings on the Evaluation of sense of community

The analysis revealed that the average value of the scale (11 statements) prepared to determine the level of sense of community among Ganita Coast users is 3.32. As a result of the analysis, the first factor was named "influence" and has

Table 2. Descriptive measurements of social interaction performance [table created by authors]

Dimension			Dimension		
Social interaction Performance, n:140	x̄	σ	Social interaction Performance, n:140	x̄	σ
Social activities	3.21	0.985	Diversity of Age-Groups	3.26	1.008
Definability	3.11	1.073	Ethnic Diversity	3.03	0.099
Social interaction	3.37	0.884	Functionality	3.62	0.909
Inclusiveness	3.76	0.889	Reachability	3.50	0.910
Vitality / Attractiveness	3.11	1.008	Social accessibility	3.96	1.065
Activeness	3.73	0.912	Harmony	3.41	1.032
Recreational facilities	3.71	0.954	Popularity of place	4.34	0.819
Variety in activities	3.99	0.818	Total avarage	3.54	0.917
x̄ : arithmetic mean; σ: standard deviation					

Table 3.Principle component analysis for social interaction performance items with varimax rotation [table created by authors]

Dimension	Factor	Variance (%)	Mean	α
(Social) Functional (6 items)		36.186	3.64	.94
Social accessibility	0.937	-	-	-
Reachability	0.917	-	-	-
Variety in activities	0.912	-	-	-
Functionality	0.792	-	-	-
Definability	0.764	-	-	-
Recreational facilities	0.632	-	-	-
(Social) Perceptual (4 items)		26.993	3.50	.92
Vitality / attractiveness	0.987	-	-	-
Inclusiveness	0.971	-	-	-
Harmony	0.964	-	-	-
Activeness	0.958	-	-	-
(Social) Social (3 items)		10.417	3.64	.89
Popularity of place	0.805	-	-	-
Social activities	0.753	-	-	-
Social interaction	0.459	-	-	-
Total variance		73.596		

a variance value of 33.841 %. The second factor was named "fulfillment of needs" with a variance value of 22.555 %. The third factor was named "membership" with a variance value of 14.448%. The fourth factor was named "emotional connection" with a variance value of 11.648% (Table 4).

Findings on the relationship between social interaction performance and sense of community

To determine the relationships between the factors constituting social interaction performance and sense of community, a correlation analysis was conducted (Table 5). According to the results of the correlation analysis, there is a positive and significant relationship between sense of community and the social-functional factor (r=0.619**; p=.000), social-perceptual factor (r=0.297**; p=.000), and social-social factor (r=0.520**; p=.000).

A regression analysis was conducted to identify the factors affecting the sense of community (Table 6). The results of the regression analysis indicate that all factors associated with the sense of community were included in the model. The values show a gradual increase, with the R2 value calculated as 0.601 in the third and final step. The analysis fits the linear model (F (3-136) = 68.381; p=0.000) and there is no autocorrelation. Therefore, it is statistically demonstrated that the factors in Table 6 have a positive significant effect on the sense of community.

Table 4. Sense of community factors for Ganita [table created by authors]

Factors	X	Factor Load	Explained Variance	α
Influence			33.841	0.842
If there is a problem in the place, the users can solve this problem	3.16	0.979	-	-
It is very important for me to use of this place	3.09	0.970	-	-
People greet each other in this place	3.19	0.954	-	-
Fullfillment of Needs			22.555	0.814
I consider this place a good place to live	3.14	0.953	-	-
User relationships are extensive in this place	2.97	0.947	-	-
User relationships are extensive in this	3.12	0.932	-	-
Membership			14.448	0.865
I can recognize most of the people in this place	3.41	0.823	-	-
I share similar characteristics with most users in this neighborhood	3.40	0.784	-	-
I feel at home in this place	3.75	0.632	-	-
Emotional Connection			11.648	0.838
When someone does a good deed for this place that makes me feel	3.68	0.893	-	-
I plan to live in this place for a long time	3.66	0.868	-	-
Total Variance (%)			82.492	-

Table 5. Correlation between social interaction performance and sense of community [table created by authors]

Variables	Sense of commnity
Social - Functional	0.619**
Social - Perceptual	0.297**
Social - Social	0.520**
p*<0.05 , p**<0.01	-

Table 6. Regression analysis between social interaction factors and sense of community [table created by authors]

Variables		B	Std. Err.	β (Beta)	t	p
3	Constant	1.126	0.199	-	5.653	.000
	Functional - Social	0.334	0.036	0.526	9.346	.000
	Social - Social	0.235	0.029	0.446	8.176	.000
	Perceptual -Social	0.110	0.042	0.147	2.640	.008
R=0.775; R20.601; Adj. R2=,0.593; Model F (3-136) = 68.381; p<0.01						

Within the scope of the research, the performance of social interaction and its sub-dimensions were first identified. Then, the levels and sub-dimensions of the sense of community among users of Ganita Coast were determined. Correlation and regression analyses were conducted between these two sets of data, and as a result, the sub-dimensions of social interaction that determine the users' sense of community at Ganita Coast were revealed.

Summarizing the research findings, it is evident that the social features provided by the design, specifically "popularity of place," "variety of activities," and "social activities," received the highest scores. Evaluating these results through the visuals of the Ganita Coast Project, Figure 3 illustrates which features of the place influenced these outcomes. The absence of boundary elements that would negatively affect visual interaction between the sea and the land, and the

Fig. 3. Evaluation of research findings through Ganita visuals [created by author]

design of amenities that allow for sitting and sunbathing, are organizational features that enhance the location's popularity. Ganita Coast offers a high value of variety of activities, enabling activities such as listening to music, dancing, watching the sea, boating, visiting cafes and restaurants, biking, and playing in children's areas. Similarly, the presence of organizational features like the sunset terrace and the over-sea viewing terrace, which bring people together, has had a positive impact on "social accessibility".

Discussion

The aim of this study was to investigate the social interaction performance provided by the social features of the place and its impact on the sense of community. There is a gap in the literature regarding studies that determine the performance value of social features offered by a place. In this context, this research focused solely on the social features provided by the place.

Ganita Coast, a long-standing symbol of the city of Trabzon, has been a significant spot for users. However, it was observed that this area, where the interaction between the city residents and the sea has been most intense for many years, could no longer meet users' needs and had lost its identity. As a result, the project under investigation was implemented and received considerable interest from users.

Considering that cities are recognized for their quality public spaces, the importance of the success of recreational opportunities offered by these areas is clear. [34] and [35] also emphasized that the amenities provided by these open spaces should focus not only on their physical aspects but also on their social dimensions.

In the study, a scale designed to determine the social interaction performance of the place was subjected to factor analysis, revealing a three-factor structure. These social interaction factors were identified as functional (social), perceptual (social), and social (social) based on the values they received. It was observed that the functional and social factors had the same average, while the perceptual features scored slightly lower. Among the social interaction features of Ganita Coast, the highest values were found for popularity of place, variety of activities, and social accessibility. These findings support the statements by [26] and [36] that designs enabling various activities promote socialization. The intensive use of a place offers significant opportunities for

social interactions. Considering that social interaction includes formal or informal, verbal or non-verbal communication, and all forms of social contact, the importance of a place's intensive use and popularity becomes clear. Overall, the results of this study demonstrate, consistent with previous studies, that the social amenities provided by the physical environment are strongly connected to social interaction [13, 37]. Whyte also stated that urban open spaces should offer a variety of activities and facilitate social events [12]. Similarly, [10] emphasized the importance of the number of social and optional activities in the success of a place. The findings of this study support these statements as well.

Conclusion and Suggestions

The findings of the study regarding the sense of community reveal a four-factor structure consisting of influence, fulfillment of needs, membership, and emotional connection. This structure aligns with the sense of community factor model proposed by [24] and [38].

Studies examining the relationships between the physical and social features of a place and the sense of community have predominantly shown that social features are more strongly related to the sense of community [7; 33; 40; 41; 42]. This research focused specifically on the effects of the social features of a place on the sense of community. The results revealed that social features impacting the sense of community were primarily functional, social, and perceptual characteristics. Among the social interaction features, the functional dimension's "variety of activities" and "social accessibility" and the social dimension's "popularity of place" scored highly. The variety of activities in a place encourages users to spend more time there and facilitates social interaction. This finding supports studies in the literature emphasizing the importance of variety in activities as a social indicator [10; 11; 12; 14]. Social accessibility of a place is also crucial. Salama (2017) highlighted social accessibility as an important social indicator in his classification. Recent studies have emphasized the growing importance of the concept of popularity of place in the design of open spaces and its role as a significant social component [7; 23].

These results indicate that the Ganita Coast Project effectively designed the interaction between sea-land and sea-users. It is evident that the conscious decision not to use boundary elements with the sea has been positively received by users. Similarly, the over-sea viewing terraces are heavily utilized, highlighting their importance in the design for social accessibility. The "sunset window," referred to as an Instagram point, has created significant value in terms of the popularity of place. Additionally, the sunbathing units designed in the project have been well-received by users. Regarding another critical social performance indicator, "variety of activities," the presence of multiple service elements (restaurants, cafes, pop-ups, buffets, etc.), a children's play area, a bike path, a walking track, sea viewing areas, seating steps, and a performance area has transformed the space into a continuously active and interactive social area. The presence of good seating elements and the variety of activities have especially kept users in the area for longer periods. [21] noted that well-designed seating in open spaces encourages users to stay longer.

Places serve as a sort of mirror for both individuals and societies, playing a significant role in shaping social and cultural elements. While places shape individuals, they also adapt according to human needs and behaviors. This relationship between place and people is continuous and dynamic. In the interaction between humans and places, the place serves as a determinant and shaper of human life, thoughts, and actions. In this aspect, places not only have a physical but also a social stage function. According to [43] and [44] a place represents a multi-dimensional sense of meaning, anchoring individuals to a specific location and connecting them to it. Therefore, thorough research into the social features of a place is necessary.

The results presented in line with the objectives of the research only explain the effects of the social features of a place on the sense of community. While this study focused on social interaction performance, it cannot be claimed to have examined all the features of a place that contribute to social interaction. Additionally, the fact that the research was conducted in a single location is a limitation. Therefore, future studies should examine different urban open spaces to verify whether the findings regarding social interaction performance align with those of this study.

Considering the significance of urban open spaces as social stages and their role in shaping relationships between people and places, the findings of this study are indeed crucial. Particularly in the design of new urban spaces, the results regarding which social features of a place should be considered can serve as guiding principles for both designers and policymakers.

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Kopsavilkums

Palielinoties iedzīvotāju skaitam pilsētu centros, pilsētu atvērtās telpas pakāpeniski samazinās un esošo telpu kvalitāte pasliktinās. Tāpēc, projektējot atklātās vietas pilsētās, kuras saskaras ar tādām problēmām kā iedzīvotāju skaita pieaugumu, neplānotu urbanizāciju, industrializāciju un transporta problēmām, sociālās dimensijas ir jāņem vērā tikpat lielā mērā kā ekoloģiskās un ekonomiskās dimensijas. Pētījums koncentrējas uz Ganitas piekrastes projektu, kas ir viena no Trabzonas pilsētas identitātes telpām. Pētījuma mērķis ir noteikt pēc projekta īstenošanas izveidoto pilsētvides atvērto telpu organizāciju sociālo sniegumu un atklāt to ietekmi uz kopības sajūtu. Pētījuma metodi veido aptaujas, kas ietver vietas sniegtās sociālās mijiedarbības veiktspējas un kopības sajūtas izvērtējumu. Pētījuma rezultāti liecina, ka vietas sociālās mijiedarbības sniegumam ir pozitīva un nozīmīga saistība ar kopības sajūtu. Pētījums kopumā definē sociālo iezīmju apakšdimensijas, koncentrējoties tikai uz vietas sociālajām īpašībām. Sociālie faktori, kas ietekmē kopienas sajūtu, tiek identificēti attiecīgi kā funkcionālā, sociālā un uztveres apakšdimensijas.

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COMPREHENSIVE TRANSFORMATION IN UNUSED DEGRADING LANDSCAPED URBAN AREAS' DEVELOPMENT

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Abstract. According to the defined aim of the article, the methodology for the comprehensive transformation of unused degrading landscaped urban areas is proposed, based on the determination of a qualitative indicator of their existing state – the degrees of their historical and architectural value and destruction. The corresponding possible restorative (preserving and restoring) and reconstructive (renewing and transforming) methods of transformation depending on the degrees of value and destruction of a certain area are determined. The most effective combinations of various restorative and reconstructive methods for the realization of comprehensive transformation at different system levels – urban planning, volumetric, and functional, for unused degrading landscaped urban areas, depending on combinations of initial degrees of their historical and architectural value and destruction, are proposed. The principles of the comprehensive transformation of degrading landscaped urban areas, such as "cumulative development"; "contextual complementation"; "attractive spatial disclosure" and "multi-comfort" are formulated. Combinations of planning, volumetric-spatial, and functional transformation of urban space techniques are identified, which reveal the proposed principles, reinforcing each other's action, and make it possible to effectively recover and improve the quality of abandoned urban space, make it active and attractive for people with different preferences and capabilities. Approbation of the put-forward theoretical provisions in the concept of transformation and development of the degrading area along Pogulyanka Street in L'viv was carried out, which confirmed the effectiveness of the proposed methodology.
Keywords: comprehensive transformation; degrading landscaped urban areas

Introduction

The problem of degrading areas in the central parts of cities remains relevant to many cities in different countries. These are mainly former industrial and warehouse areas with abandoned buildings and open spaces that are currently not used, as well as abandoned and unimproved landscaped urban areas that do not attract visitors and remain urban "wastelands." Ukrainian cities are no exception. Over the past two years, in prolonged full-scale military operations and extensive destruction, this issue has become extremely relevant for them and has acquired a new, more complex meaning. After the war is over, Ukrainians will need to find the necessary tools to transform degraded or already destroyed urban areas to recover them to meet the current needs of their residents. In this context, this article proposes methodological principles and practical recommendations for the transformation and future development of unused degrading landscaped urban areas with former industrial destroyed territories and buildings that organized them.

The transformation of abandoned, degrading urban areas is a complex process of improving their quality through new qualitative changes in their functional content, layout, volumetric-spatial, architectural, aesthetic, and environmental characteristics, as well as social and economic attractiveness [18]. The point is to increase their architectural, cultural, social, and economic attractiveness, quality, and interest in the various-term stays of different people in them. The comprehensive transformation of currently degrading urban areas with their new functional, cultural, and emotional content will make it possible to attract people with different preferences, which will contribute to their recovery and sustainable development of the city as a whole [10].

The theoretical basis for this study is the work of some scholars from different countries. They have studied various components of improving the quality of degrading urban areas, which can be conditionally generalized and systematized as functional, urban planning, architectural and imaginative, transport, social, economic, environmental, aesthetic, cognitive, etc. It is worth highlighting the works of J. Corner [3; 4], S. Low [22], and J. Gehl [7; 8] on urban areas as complex formations that combine many important functions. It is also worth noting the study of the urban planning component of the issue, which is the most complex for understanding, as it considers the entire system of different urban areas comprehensively and indivisibly, namely the works of M. Gusev [9], K. Lynch [24], I. Stetsyuk [28]. Of great importance are theoretical works on the transport component in addressing the issues of joint use of urban areas by pedestrians, cyclists, and vehicles, carried out by M. Harbar [6], the socio-economic component – in the works of J. Jacobs [13], W. Whyte [33], L. Wirth [32], M. Storper [29], the aesthetic and emotional-cognitive component in the transformation and development of urban spaces – in the studies of M. Lydon and E. Garcia [23], J. Lerner [15], C. Day [5], P. Nas [25], as well as universal design issues – in the article by U. Ile and L. Bergmane [11]. The work of G. Simmel [27] should be singled out separately, in which he considers urban space as a set of symbolic points that are saturated with a certain social meaning and are a place of localization of relations between people and information exchange. The French sociologist P. Bourdieu [1] argues that the urban space is an overlay of social space on the physical space, which ideally should always intersect. Physical space without social space will not be filled with people, while social space without physical space cannot exist at all. In his opinion, any physical changes in space should be considered and studied together with the social demand for this space, because only this approach gives a complete picture of the need for a particular urban space and transformations in it [1]. It is also worth highlighting the works of L. Ruban [26], B. Bratton [2], I. Ustinova [30], V. Kucheryavyi [14] are devoted to the issues of preserving and maintaining a positive environmental situation in cities, creating places for recreation, restoring degrading water recreational areas in cities, as well as ensuring the figurative integrity of the transformed urban space in the elements of its equipment, navigation, style, color, and texture solutions. It is also worth noting the author's previous research in collaboration with D. Gulei [16] on the transformation of historically formed industrial areas

in historical cities.

The analysis of previous experience points to the existing contemporary problems in the functioning of various urban areas and different approaches to solving them.

The need to improve the existing and search for new, more effective tools for the transformation of degrading urban areas stipulates the relevance of this study. This article aims to propose a methodology for a comprehensive transformation of unused degrading landscaped urban areas, which has to contribute to their activation and further development, as well as allow to eliminate or reduce various destructions at different systemic levels. In addition, the transformation of a complex urban area, which historically was part of a park, as well as industrial and public areas, is considered as a practical example. Now, it is an unused degrading landscaped urban area with former industrial territory and buildings that organised it. The scientific novelty is that the authors propose the use of various combinations of restorative and reconstructive methods for the transformation of such degrading urban areas, depending on the initial qualitative indicator of their existing state – the degrees of their historical and architectural value and destruction.

Materials and Methods

The proposed methodology includes the following methods. The method of logical and comparative analysis was used to define the research problem, determine its study, and issues to be investigated. The method of generalization was used to identify four degrees of historical and architectural value and four degrees of destruction of unused degrading landscaped urban areas. Using systematization, the combinations of restorative and reconstructive methods that are most effective for the transformation of such urban areas were identified. They depend on the determined degrees of these areas' historical and architectural value and destruction. With the help of experimental design, a concept for the comprehensive transformation and development of a degrading area along Pogulyanka Street in L'viv was created, which confirmed the effectiveness of the proposed theoretical assumptions. The concept was created as part of a contest for the development and zoning of this degraded urban area and its transformation into a multifunctional, livable, interesting to visit, and quality leisure time, the results of which became the basis for further detailed design.

The basis for the correct choice of a complex of restorative and reconstructive methods for the transformation of currently abandoned and degrading urban areas are the methodologies proposed in the author's previous studies for determining the degree of historical and architectural value and destruction of the historical urban environment [20; 21]. On their basis, using such methods as historical, graphic-analytical, comparative analysis, field survey, historical and architectural assessment, and generalization, the initial qualitative indicator of the existing state of a particular area is determined. It consists of various combinations of degrees of historical and architectural value and destruction.

It is proposed to distinguish four degrees of historical and architectural value and four degrees of destruction, according to which all areas in a particular city can be systematized. Depending on the defined degrees of historical and architectural value and destruction of a certain area, if it needs to be transformed, appropriate certain restorative (preserving and restoring) or reconstructive (renewing and transforming) methods or combinations of them can be applied to it.

For urban areas of the first degree of historical and architectural value (areas with historically valuable layouts, which include architectural monuments and significant historical buildings) and the first and second degrees of destruction (with fragmentary or point destruction, absence or single disharmonious buildings, respectively), only preserving and restoring methods may be used. For urban areas of the second and third degrees of historical and architectural value (areas with historically valuable layouts, which lack architectural monuments and significant historical buildings, but have ordinary historical buildings or only modern buildings) and the third degree of destruction (with significant planning and volumetric-spatial destruction, with disharmonious buildings), renewing reconstructive methods will be relevant. However, for such areas and the buildings that form them, if necessary and appropriate, renewing methods can also be supplemented by preserving and restoring methods. For urban areas of the third and fourth degrees of historical and architectural value (areas with historically valuable layouts and modern buildings, with no monuments and historic buildings, or areas with only modern layouts and modern buildings) and the fourth degree of destruction (destroyed or degraded because of modern disuse, with the presence of disharmonious buildings), transforming reconstructive methods are recommended. In addition, for improving the quality of such areas and their buildings, both restoring and renewing methods can be used, if necessary and appropriate, in combination with transforming methods.

To ensure the integrity of the process of transformation of abandoned and degrading landscaped urban areas, improving their quality should take place simultaneously at different systemic levels – urban planning, volumetric, and functional, using the methods of restorative-reconstructive transformation appropriate to these levels. At the urban planning level, the issues of increasing the value, integrity, and quality of the planning and spatial structure of the area as a whole should be addressed. At the volumetric level, it is improving the quality of the planning, architectural, structural, and engineering structures of buildings that form this area. At the functional level, it is finding relevant functional solutions for buildings and open spaces to increase their value and activate the urban area [17].

Based on the systematization of existing restorative and reconstructive methods by the activity of interventions for different systemic levels proposed in the author's previous study [19], it is possible to identify the most appropriate combinations of them for the transformation of various degrading landscaped urban areas, depending on the initial qualitative indicator of their existing state – a combination of degrees of their historical and architectural value and destruction.

Thus, for degrading landscaped urban areas of the first degree of historical and architectural value, the following preserving methods can be used in their transformation at the urban planning level: urban conservation or museumification (if these areas have the first degree of destruction), or restoring methods: recovery, revalorization or regeneration (if they have the second and higher degrees of destruction).

Degrading areas of the first degree of historical and architectural value usually include architectural monuments and significant historical buildings. They also have the first degree of historical and architectural value. If they are in the first degree of destruction, the following preserving restorative methods can be used to transform them, already at the volumetric level: repair or museumification. With the second and higher degrees of destruction, restoring methods can be applied to them - fragmentary and holistic restoration, revalorization, or regeneration, respectively. In some cases, it

is also possible to use the method of re-creation. This method is appropriate if an architectural monument or a significant historical building was destroyed "instantly" (because of war, for example). And the buildings remaining nearby form an ensemble created in one period.

If a degrading landscaped urban area of the first degree of historical and architectural value, besides architectural monuments and significant historical buildings, also contains ordinary historical buildings and low-value buildings, then renewing methods can be applied to them (at the volumetric level) - sanation in combination with modernization. In addition, spot new construction is possible in such areas.

At the functional level, for such areas and buildings during their transformation, several functional methods: interpretation, modification of the original function, or adaptation, can supplement the methods used at the urban planning and volumetric levels.

For degrading landscaped urban areas of the second degree of historical and architectural value, restoring methods, such as revalorization or regeneration, can also be used in their transformation at the urban planning level, especially if these areas have the first degree of destruction. For areas that have the second and higher degrees of destruction, renewing reconstructive methods, namely revitalization, will be more relevant. And, as a rule, the sanation of the degraded areas should precede these restoring and renewing methods.

At the volumetric level, for ordinary historic buildings, depending on their degree of degradation, both restoring methods, such as fragmentary and holistic restoration, revalorization or regeneration, and renewing reconstructive methods, such as revitalization, can be applied. For the existing low-value degrading buildings in these areas, it will be advisable to use modernization in combination with sanation. Corrective new construction is also possible in these areas.

At the functional level, when transforming such areas and buildings, these methods can be supplemented by the following functional methods: adaptation, functional filling, and functional renewal.

For degrading landscaped urban areas of the third degree of historical and architectural value, it will be advisable to use a combination of reconstructive methods such as renewal and sanation when transforming them at the urban planning level. If we are talking about a degrading urban area with a high degree of destruction (for example, the fourth degree), then it would be advisable to use such a reconstructive method as transfiguration, either separately or in combination with renewal. And the sanation of the degraded area should also precede these methods.

At the volumetric level, combinations of methods such as sanation and modernization (renewing methods) or sanation and renovation (renewing and transforming methods) can be applied to the existing degrading buildings in these areas, depending on their degree of destruction. In addition, contextual new construction is possible in these areas.

At the functional level, the transformation of such areas and buildings will be based on the use of functional filling and functional renewal.

For degrading landscaped urban areas of the fourth degree of historical and architectural value, the use of such a transforming reconstructive method as renovation will be relevant to their transformation at the urban planning level. If such a degrading area is located outside the historical center, then radical rebuilding may already be used to transform it. It is also possible to combine the two methods - renovation and radical rebuilding. The sanation of the degraded area should precede these methods.

At the volumetric level, for the degrading buildings existing in these areas, also depending on the degree of their destruction, the following combinations of renewing and transforming reconstructive methods can be applied: sanation and modernization, sanation and renovation, or renovation separately. In addition, active new construction is also possible in these areas.

At the functional level, the transformation of such degrading areas and buildings will involve re-functionalization and functional filling, and functional renewal is also possible.

As a rule, in a real practical situation, different degrading buildings are present in the same area. Therefore, one can observe various combinations of their degrees of historical and architectural value and destruction. The area itself may also have parts with varying degrees of destruction. Therefore, to effectively address their transformation, it is important to apply not just one method for each level, but a complex of appropriate restorative and reconstructive methods. This is exactly the approach proposed in the author's concept for the development of the degraded area along Pohulyanka Street in L'viv, presented below.

Results and Discussion

The concept of transformation and development of the degrading area along Pohulyanka Street in L'viv. Disclosure of the ideas and decisions made

The project area is located along Pohulyanka Street, within the boundaries of Pohulyanka Forest Park, and belongs to the Lychakivskyi district of L'viv. It is located in the zone of buildings regulation.

According to the existing zoning regulations, the project site is designated as a mixed development area, with the G-4 zone for cultural and sports facilities, the Zh-2 zone for low-rise and medium-rise residential development, the G-3-1 zone for kindergartens and secondary schools, as well as the P-3 zone for public green spaces and the L-1 zone for green spaces on steep slopes that are not used and inconvenience (Fig.1).

Within the project area, there are currently degrading buildings of a former brewery and then a winery dating back to the mid-19th century.

Historically, Pohulyanka Street, with buildings along it, passed through the entire valley territory of the modern Pohulyanka Forest Park [34]. A brewery, restaurants, a candy store, and an ice cream factory were located here, where anyone who wanted to after a walk along the steep slopes of Pogulyanka could have a good meal, try beer, and buy delicious ice cream [31]. Music concerts and dances were also held on the open grounds of Pogulyanka. There was also an open-air

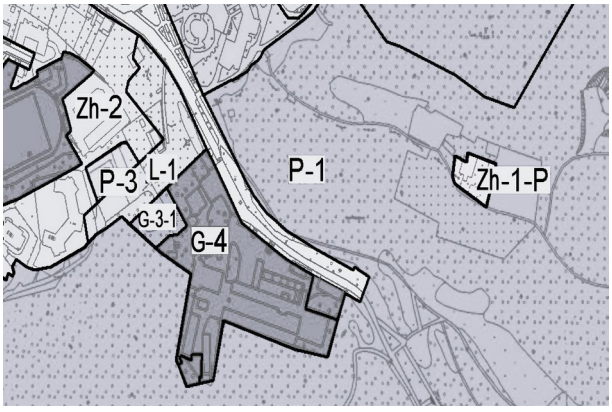

Fig. 1. The existing zoning, 2023 [35]

Fig. 2. The existing state of the main historical building, 2023
[photo by the authors]

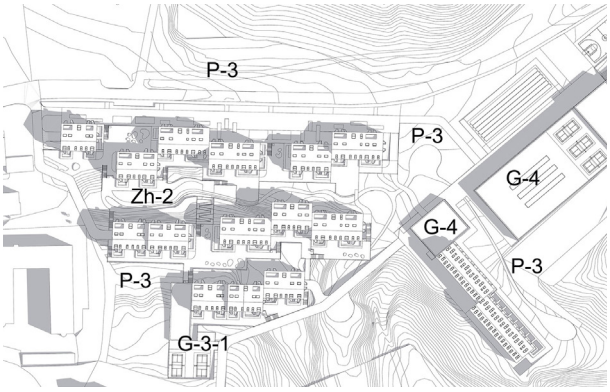

Fig. 3. The proposed new functional use of the area, 2023
[created by the authors]

bath, which was very popular among the townspeople. In the first half of the 20th century, a stadium and a tennis court appeared here, and then a ski jump [12]. The Pohulyanka has strengthened its importance as a popular place for active recreation and sports among the townspeople.

Today, the site of the former brewery and winery and the adjacent territories are not used in any way, they are abandoned. Their buildings, both those that have historical and cultural value and are examples of industrial architecture of the mid-19th century, and low-value buildings from the second half of the 20th century, stand empty, and lose their socio-cultural value, gradually turning into ruins.

The existing historical objects, despite having a significant degree of destruction (Fig.2), are of interest to antiquity lovers as examples of the industrial architectural heritage of the past century. Therefore, the proposed project provides for their maximum preservation with the restoration of destroyed parts, with adaptation to the modern needs of the city and its residents. It is proposed to preserve the main façade of the main production building with three characteristic gables dating from the mid-nineteenth century, as well as the underground vaulted premises of this building, and adapt them to a service function. At present, it is not advisable to recover the historic industrial function in the revitalization of these abandoned buildings and the area. Their original function should be modified and left as a representative in the revitalized and renewed multifunctional public complex with recreational, sports, commercial, and service functions as the main ones.

In terms of historical and architectural value, the area along Pogulyanka Street has parts of the first and second degrees of value. According to their destruction, they were assigned to the third and fourth degrees. Therefore, a complex of the following restorative and reconstructive methods was applied to transform and further develop this degrading area. At the urban planning level (for the planning and spatial transformation of the plots that form this area) is a combination of such methods as sanation, revitalization, and renewal, as well as their addition by transfiguration with contextual new construction. At the volumetric level (for the volume-planning transformation of degrading buildings present in this area) is a combination of such methods as holistic restoration and revitalization (for historically-value buildings), as well as modernization and renovation together with sanation (for low-value buildings). At the functional level, these methods were supplemented by adaptation with modification of the original function, as well as functional renewal and functional filling.

The project envisages a new division of the area by functional use into three main zones: public zone G-4 (zone for cultural and sports facilities), located in the southeast of the site; residential zone Zh-2 (zone of medium-rise residential buildings, 5-7 floors); and extended recreational zone P-3, located in the north. The location of the G-3-1 zone for a kindergarten on the project site remains unchanged (Fig.3). It is planned to place the sports and recreation complex and an apart-hotel on the site of the practically destroyed buildings of the former brewery and winery. It is proposed to preserve and restore the existing historically valuable facades with their harmonious integration into the new building. The upper, northern part of the project area is planned for residential development. The project recreation area should unite the entire new buildings into one whole, starting in the north of the site, behind the residential buildings, passing through them, and going down to the southeast of the site, to the sports and recreation complex and the apart-hotel, harmoniously integrating into the existing recreation area Park Pohulyanka.

The proposed residential buildings, mostly 5-6 stories high, form a cascading complex, following the relief. They are located on three terraces-tiers, connected into a single whole by convenient open passages, ramps, stairs, lifts, and a stramp. They have a common underground car park with three entrances and exits from Olena Teliha and Pohulyanka streets. On the ground floor of the residential buildings of the first tier, from the side of Pohulyanka Street, it is also proposed to place commercial premises (convenience stores, cafes, a pharmacy, a beauty salon, and an art workshop), which will provide functional filling of the space and improve its quality. The kindergarten is located next to the third-tier residential buildings in the G-3-1 zone. This is logical and economically expedient. The kindergarten building is two-story and has a flat "green" roof. On the 1st floor level, there is an open area with an entrance group. On the second floor, there are separate rooms for four groups of children and utility rooms. The kindergarten also has sports, playground, utility, and gardening areas, and a separate entrance from Olena Teliha Street.

The building of the sports and recreation complex is 4-storey, with an underground car park for 320 cars, which is connected to the apart-hotel car park. The main entrance to the complex and the main facade are oriented towards Pogulyanka Street. There is a basketball court and an outdoor swimming pool in the territory. The flat roof is a great place for two tennis courts and three badminton courts. The rest of the exploited green roof (about 2,800m2) is given over to solar panels and collectors that use the sun's energy to heat the outdoor pool and generate electricity independently, which should be enough for the entire complex.

The apart-hotel, like the sports and recreation complex, is also located on the site of the remains of a former winery. The hotel's residential buildings have 5-6 full floors and a mansard

Fig. 4. The concept of a new pedestrian space along Pohulyanka Street, 2023 [created by the authors]

Fig. 5. The concept of a new residential development, 2023 [created by the authors]

Fig. 6. The revitalization concept of the former winery into the sports and recreation complex, 2023 [created by the authors]

floor, and its entrance area with a reception and restaurant has 2 floors. The longitudinal facades of the hotel's residential buildings are equipped with large windows for each room and balconies protected from the north. The hotel has an underground car park and an open area for tourist buses and special medical and fire vehicles.

The idea of building functional and transport links in the design area involves the formation of a multifunctional urban space, where places and functions of mandatory and optional social practices (living, working, convenient movement, as well as recreation, entertainment, and cultural leisure) are interconnected into a single whole. A green recreational area is proposed to expand to 2.17 hectares and arrange for public use, creating places for walking, playgrounds, and places for recreation, sports, communication, and quality leisure time.

To ensure transport links between the city and the projected buildings, it is planned to build new access roads from the west of the project area, from Olena Teliha Street, to access the apart-hotel, the sports and recreation complex, and the upper tier of residential buildings and kindergarten, and from the north, from Pohulyanka Street, to access the two lower tiers of residential buildings. Pedestrian paths and stairs provide high-quality and convenient pedestrian communication between all elements of the design area. Barrier-free accessibility is achieved by ramps, stramps, and lifts.

Pedestrian promenades along artificial streams using natural thalwegs also add to the comfort of the site. They start from the upper artificial reservoirs, which are periodically filled with atmospheric runoff, and descend through artificial channels lined with stones with drainage. Thanks to the height differences and large stones, cascades are created, and a pleasant murmur of water is heard on the site. The streams flow into another lower artificial reservoir, which is skilfully integrated into the landscape and formed from smaller stones.

Along Pohulyanka Street, there is a 2m wide bicycle path with local extensions for charging electric scooters and mono wheels. Further on, there is a green zone (4 m), a promenade zone (4.5 m), and a zone for recreation, communication, and leisure with a variety of comfortable seating areas, with tables and benches on open terraces in front of coffee shops and bakeries. The building area is connected to the alley by pedestrian paths. They are illuminated with energy-saving LED luminaires with solar modules and twilight sensors (Fig. 4).

The idea of forming a three-dimensional spatial composition of the development involves the rational use of the relief with maximum preservation of the natural slope and green spaces. A cascading composition of residential development with the creation of three terraces-tiers, united into a single whole by pedestrian crossings, is proposed (Fig. 5). The residential complex consists of 14 buildings, 5-6 floors with an attic. They are sectional. There are two or three apartments on one floor, connected by a common hall on the horizontal plane. Stairs and lifts provide vertical connections. The connection between the three tiers-terraces of the residential development is made by footpaths, stairs, ramps, lifts, and a stramp. There is a one- or two-level parking lot under all tiers.

The sports and recreation complex and apart-hotel are located on the site of the remains of a former winery. The plan follows the contours of the winery's buildings. The preserved historic façade of the main building of the former winery is being restored and integrated into the new building of the sports and recreation complex. The homogeneity of the new glass superstructure emphasizes its dominant significance, against which it stands out (Fig. 6). The layout of the sports and recreation complex and the apart-hotel is mixed. Stairs and lifts provide vertical connections, while a gallery, corridors, halls, and terraces provide horizontal connections.

The main landscaping elements of the project area include the paving of footpaths, platforms, and ramps, organization of patios and terraces protected by vegetation, lighting of the area with LED lamps of different heights, creation of seating using recycled materials, arrangement of artificial streams and ponds with natural stones, arrangement of footpaths and resting places along them.

The elements of green spaces include trees, shrubs, and lawns made of plants resistant to the local climate. Plants of different heights will be used to protect against noise. The project also provides for the maximum preservation of existing trees.

The proposed project for the comprehensive transformation and development of the area along Pogulyanka Street with the revitalization of abandoned former industrial buildings and territory is based on the following author's principles: "cumulative development"; "contextual complementation"; "attractive spatial disclosure" and "multi-comfort".

The principle of "cumulative development" - the accumulation of positive properties that together contribute to a qualitative change, a combination of "traditions" and "innovations" - formed the basis for the revitalization of the former winery, the restoration, and integration of its historic facades into the new building of the sports and recreation complex.

The principle of "contextual complementation" - the introduction of new buildings and spaces following the existing context - determined the idea of forming a three-dimensional cascading composition of the new residential development with the creation of three terraces-tiers, with maximum preservation of the natural slope and its green spaces.

The principle of "attractive spatial disclosure" - increasing the attractiveness of a certain urban space, and the principle of "multi-comfort" - ensuring a high-quality long-term stay of people in this urban space, determined its functional and physical content to form a multifunctional urban space, where places and functions of mandatory and optional social practices are interconnected into a single whole, convenient and interesting for different people with different preferences and opportunities.

To reveal the above principles, we also used a combination of several techniques for the planning, spatial, and functional transformation of urban space. This is a combination of such techniques as: "facade offset" (when the new part of the facade shifted inwards compared to the historical part of the facade of the revitalized building, emphasising its dominant importance); "single pedestrian space" (combining all elements of a particular urban space into a single pedestrian zone); "green ring" (for the spatial integration, combining the existing park and a new green recreational area along the terraces of residential buildings, around the apart-hotel and sports and recreation complex into a single whole); "horizontal and vertical zoning" (equal functional filling of the degrading landscaped urban area, with the distribution and combination of various functions and its structural elements in the horizontal and vertical planes, which will contribute to its revitalization, quality improvement and transformation into a multi-comfortable one); "creation of artificial ground levels and geoplastic" (for spatial allocation of certain places with certain functions in a given space, attracting people's attention to them, i.e. creating places for diverse and long-lasting attractions); "activation of boundary zones" (through the connection and change of various

functions on the boundaries between the building and the open urban space, which lead to the activity of actions when people are interested in them and thus activate and improve the quality of this place). Together, these techniques will reinforce each other's effect. This will make it possible to recover and improve the quality of abandoned urban space, making it active and attractive for people of different preferences and capabilities.

Conclusions

Summarising, it can be noted that the proposed methodology for the comprehensive transformation of degrading landscaped urban areas using various combinations of restorative and reconstructive methods, depending on the defined initial qualitative indicator of the existing state of these areas - the degree of their historical and architectural value and destruction, is effective. For urban areas of the first degree of historical and architectural value and the first and second degrees of destruction, it is possible to use only preserving and restoring methods. For urban areas of the second and third degrees of historical and architectural value and the third degree of destruction, renewing reconstructive methods are relevant, but they can be supplemented by preserving and restoring methods. For urban areas of the third and fourth degrees of historical and architectural value and the fourth degree of destruction, transforming reconstructive methods are recommended, which can also be supplemented by restoring and renewing methods. The most appropriate combinations of various restorative and reconstructive methods for the transformation of various degrading urban areas were also identified, depending on the initial qualitative indicator of their existing state and the integrity of solving the issue simultaneously at different systemic levels - urban planning, volumetric, and functional.

The proposed methodology has been successfully tested in the author's concept of transformation and development of the degrading area along Pohulyanka Street in L'viv, which has first and second degrees of historical and architectural value and third and fourth degrees of destruction. Accordingly, a combination of restorative and reconstructive methods was used for its transformation, such as: sanation, revitalization, and renewal (to address issues at the urban planning level); holistic restoration and revitalization, as well as modernization and renovation together with sanation (to address issues at the volumetric level); and adaptation with modification of the original function, functional renewal, and functional filling (to address issues at the functional level). This made it possible to improve the quality of the degrading landscaped urban area integritically.

The proposed principles and techniques of urban space transformation are universal and relevant for the recovery and revival of degrading landscaped urban areas, which differ in historical and architectural value and destruction. Their application has enhanced the effectiveness of the comprehensive transformation and development of the area along Pohulyanka Street in L'viv.

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Kopsavilkums

Atbilstoši definētajam raksta mērķim, pētījumā tiek piedāvāta neizmantoto, degradēto pilsētvides teritoriju visaptveroša pārveidošanas metodika, kuras pamatā ir to esošā stāvokļa kvalitatīvā rādītāja, vēsturisko un arhitektonisko vērtību iznīcināšanas pakāpes noteikšana. Rakstā tiek pētītas atbilstošas pieejas un transformācijas metodes atkarībā no teritorijas vērtības un iznīcināšanas pakāpēm. Piedāvātie pilsēttelpas pārveidošanas principi un paņēmieni ir universāli un aktuāli degradēto pilsētvides teritoriju atveseļošanai un atdzimšanai, kas atšķiras pēc vēsturiskās un arhitektoniskās vērtības, to iznīcināšanas pakāpes. Pētījumā tiek identificētas pilsēttelpas plānošanas, funkcionālās transformācijas kombinācijas, kas atklāj dažādus principus un ļauj efektīvi atgūt, uzlabot pamestās pilsēttelpas kvalitāti, padarīt to aktīvu un pievilcīgu cilvēkiem ar dažādām vēlmēm un iespējām. Pētījumā kopumā tiek veikta degradēto teritoriju gar Poguljanka ielu Ļvivā pārveidošanas un attīstības koncepcijā izvirzīto teorētisko noteikumu aprobācija, kas rezultātā apstiprina piedāvātās metodoloģijas efektivitāti.

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LANDSCAPE AS A SUPPORT FOR COLLECTIVITY IN THE DIFFERENT SCALES OF INHABITATION

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Abstract. The landscape is not merely a backdrop to our urban environments, but plays an intrinsic role in fostering collective identity and cohesion. This hypothesis serves as the basis for the research, which aims to investigate how architectural design can not only reflect but also enhance the formation of collective identity. In order to substantiate this hypothesis, an examination will be made of built architectural experiences that have previously addressed this approach. An illustrative example is the Suvikumpu housing complex designed by Raili and Reima Pietilä in the late 1960s in Espoo, Finland. The analysis of the project examines the three scales at which the community shaped the architectural design: the landscape, the neighbourhood and the dwelling. This study has shown how the project, as documented in the original graphic design held by the Museum of Finnish Architecture (MFA), begins with the appropriation and reinterpretation of the landscape and its constituent elements, resulting in a design that supports collective living.
Keywords: historic landscape design, spatial composition, collective housing, 20th century, Finland

Introduction

The urban reality of our cities and the plausible future scenarios that are beginning to emerge in terms of the need for even more housing and its proper planning are becoming a major challenge, raising a crucial question that has repercussions on the urban space: how to approach this process in order to open up spaces for collectivity without sacrificing the quality of the built environment and the living conditions of its inhabitants? In this complex balance between individual and collective needs, between the built and the shared, architecture becomes a fundamental tool for shaping the landscape —both urban and natural— and, in turn, for building community.

However, it would be wrong to assume that architecture is the only discipline involved in this endeavour. This research is based on the assertion that landscape is not merely a backdrop to our urban environments, but an intrinsic element that fosters collective identity. This initial hypothesis motivates the research to explore how architecture can not only reflect but also enhance this construction of collectivity. To support this hypothesis, we examine built architectural experiences that have addressed this approach in the past. One such example is the Suvikumpu housing complex designed by Raili and Reima Pietilä in the late 1960s in Espoo, Finland (Fig. 1).

This case study examines how the Suvikumpu experience exemplifies the role of shared landscapes as a catalyst for collective identity formation. The residential proposal is not limited to the creation of simple habitable structures; rather, it is an endeavour that seeks to cultivate connections between individuals and their shared environment. In studying this residential complex, we observe the ways in which architecture can serve as a unifying force that transcends the boundaries of lines and volumes, fostering a sense of community across diverse scales. These include the ***landscape scale***, the ***neighbourhood scale***, and finally, the ***scale of the dwellings***.

The aim of the research is to study the landscape conditions of the project, to examine how the surrounding nature has conditioned not only the formal aspects, but also the different scales of inhabitation - already mentioned - proposed by the architects. To this end, it was necessary to develop a specific methodology that would guide the two years of research and allow us to analyse the keys to this architectural experience. The first step was to collect and categorise the sketches and drawings from the different phases of the project, grouped according to the three scales of research, in order to determine how the state of the landscape influenced the choices made by the architects in the development of the project. The analysis is not limited to superficial readings, but delves into the germ of the project idea through access to the original documents of the work - most of them unpublished - which are stored in the archives of the Museum of Finnish Architecture (MFA), thanks to the research stay at Aalto University in 2024. This, together with personal visits to the site and exploration of the interiors of the apartments, as well as conversations with the tenants, has allowed for a holistic understanding of how interaction with the landscape is integrated into the experience of collective inhabitation.

Fig. 1. Photograph of partial area of the Suvikumpu residential complex, 1969 [Suomen rakennustaiteen museo - Museum of Finnish Architecture - MFA]

The idea of belonging to the landscape becomes the leitmotif of this reflection, from which the other scales are derived. To achieve this sense of permanence, a constant interaction with the natural environment is necessary, which becomes the guiding principle. In this way, the project and its formalisation in relation to the landscape becomes the architectural score that gives life to the collective symphony of the community.

As we examine Suvikumpu's experience and elucidate its design strategy, we identify fundamental lessons that inform our methodology for building collective housing in our cities in a way that is sensitive to the landscape. This article encourages a deeper examination of the potential for architecture to serve as a catalytic force that fosters collective identity without compromising the quality of the built environment or the living conditions of its inhabitants.

Sense of collectivity from belonging to the same environment: recognition of the landscape

The notion of landscape as a social and cultural construct establishes a direct relationship with social structures. It is on this basis that we can consider the potential of landscape as a means of shaping space from the commons [1].

The epistemological review of the concept of landscape - from its consolidation in the 16th century to the present day - carried out by researchers from a range of disciplines has enabled a consensus to be reached on its meaning. Although there are some nuances depending on the field of knowledge, there is a general agreement that landscape is a social and cultural construct. The consensus is that landscape is a social and cultural construct that exists because of the manipulations that society makes of it. This is evidenced by the work of Brinckerhoff (1984) [3] and Maderuelo (2005) [14]. As Professor of Human Geography Joan Nogué i Font [17] points out, landscape is a construct that exists only in relation to human perception and appropriation.

These considerations have been validated at the normative level by international institutions. The European Landscape Convention, signed in Florence in 2020, provides a legal framework for such considerations, transforming the theoretical into a regulated field and establishing common standards for action [7].

In order to understand the postulate proposed by Nogué on the relationship between landscape and man, it is necessary to develop some prior considerations that make this affirmation possible. Nogué starts from the distinction between nature, an element that exists in itself, and landscape, which requires a relationship with man in the sense that he "perceives and appropriates" it. Both are based on the same physical support, but a natural extension does not become a landscape until we separate it, detach a fragment of it [17]. Underlying this idea is the specificity of the fragment. Therein lies the key, in the specificity and what it entails. The fragment becomes an inhabited landscape, perceived as something unique, something independent of the rest. Brinckerhoff Jackson ascribes to it the attribute of insularity. Size, richness, beauty have nothing to do with it, it is a law unto itself [3]. Therefore, to speak of landscape is to delimit a surface that has been modelled, perceived and internalised over a long period of time by the people who have inhabited that environment.

Consequently, the involvement of society in the definition of landscape makes it possible to relate to it from different social levels, including that of the community. It is not individual experiences that construct this landscape, but the collective experience of the group of individuals. This interdependence between people and their environment is characterised by the role of landscape as a catalyst [17].

"A landscape not only shows us the world as it is, but it is also a construction, a composition of our world, a way of perceiving the world. Landscapes evoke a clear sense of belonging to a particular group, to which they confer a sense of identity. Landscapes do not create territorial identity out of nothing, but from the special meaning conferred on them by our culture" [18].

The specificity we are talking about may seem to be something that has already been assimilated and incorporated into current ways of doing things, especially in the era of globalisation in which we live, but this is not quite the case. This reflection is more relevant than ever. The specific response to place implies the rejection of universal solutions that produce places that lack a cultural component and are therefore completely alien to the sense of community. These

Fig. 2. Photograph of the Suvikumpu residential complex, 1969 [Suomen rakennustaiteen museo - Museum of Finnish Architecture - MFA]

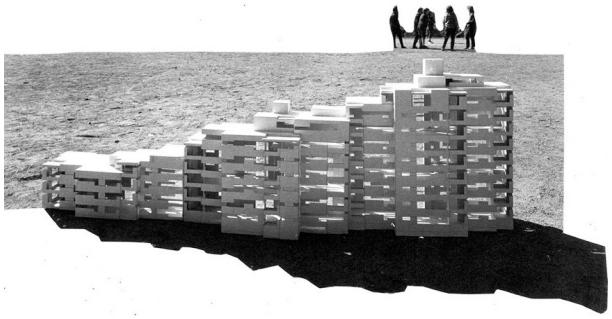

Fig. 3. Collage of a photograph of a model of one of the buildings in the complex with children playing, ca. 1962 [Suomen rakennustaiteen museo - Museum of Finnish Architecture – MFA]

are replicas that allow us to recognise the space, but there is nothing with which we can identify.

The collective perception of the landscape gives rise to a sense of identity that shapes the cultural character of a particular place. As early as 1998, in his book The Information Age, Manuel Castells [4] pointed out that social movements questioning globalisation were primarily based on a commitment to identity in the context of the logic of placeless spaces, or, as the anthropologist Marc Augé introduced in 1993, the concept of non-places [2]. The concept of 'non-place' remains a prominent one in the present day. The defining characteristics of these spaces are largely based on their transient nature, serving as mere transit points rather than destinations in themselves. The lack of a clearly defined identity and the universality that characterises them makes it difficult to distinguish these entities on the basis of their specific location. This lack of differentiation leads to a lack of meaningful relationships, which in turn hinders the formation of a collective identity.

The process of consolidating a cultural identity depends on the inhabitants themselves understanding the landscape as a social and cultural construct. This understanding serves to link them to the shared sense of belonging that derives from their status as members of the same culture. It is therefore pertinent to ask how architecture can evolve without undermining these necessary and highly enriching relationships for society. The great territorial transformations have been promoted by economic criteria and often entail a loss of heritage. Is it possible, through architecture, to strengthen these relationships with the landscape from a collective point of view?

Despite the changes that these new constructions bring to the existing landscape, it is interesting to note how the situation can be transformed and how these new operations

can be understood as opportunities to revalue the landscape and strengthen these relationships. Aragón Rebollo calls this action "landscaping" [1]. In this way, the landscape is linked to the community as an action within. It is through landscaping that these important actions within a community are brought into play. It seems reasonable to suggest that landscaping can be used as a key tool in the process of inhabiting the commons and promoting the formation of meaningful relationships.

The aim of this study is to evaluate the Suvikumpu residential complex to see if it can be seen as an example of how architectural design can facilitate the formation of a sense of community among users who are connected to the surrounding landscape (Fig. 2).

Nature has a privileged place in Finnish culture. The sense of connection with nature influences many aspects of Finnish life, including cities and their architecture. Despite occasional periods when other needs, such as the rebuilding of wartime cities, promoted industrialised techniques for fast and efficient construction, a balance has generally been sought between architecture and landscape. The strong presence of nature has played a key role in forging the identity of the neighbourhood [12]. Consequently, the proposal for Suvikumpu is based on an explicit relationship with the landscape, with the aim of creating a space for collective interaction, not only among the immediate neighbours, but also among the wider population. By enjoying and participating in this space, neighbours can experience a sense of common belonging (Fig. 3). This is not a sense of exclusive belonging, but rather a sense of sharing.

"Landscape can be interpreted as a dynamic code of symbols that speak of the culture of the past, the present and perhaps also the future. The semiotic legibility of a landscape, or the ease with which its symbols can be decoded, may be complex to a greater or lesser degree, but it is always linked to the culture that produces the symbols" [18].

This understanding is shared by Raili and Reima Pietilä, who have developed a design methodology based heavily on landscape metaphors and cultural interpretations of nature. This method is consistently applied throughout their work. In the case of the Mäntyniemi Presidential Residence (1983-1993), they express the following intentions: "This building is always "distanced" -kept among natural things- and related to landforms and trees as simultaneous environmental parameters. [...] It is a metaphoric place and the morphic simile of it; it's a reminiscence of man's togetherness with nature, in general, and with the Finnish aboriginal environment, in specific. *This was the image sketch for the competition. We have returned to our initial vision of a melting glacier above the end moraine, where wet stone and ice are glittering. The poetic archetype communicates this existential image. [...] It becomes our theme if we find that it is suitable for us and this contemporary culture of ours" [20].*

This theoretical discourse is reflected in the design strategies and graphic methods employed by the architects. The cultural-landscape spectrum plays a central role in the development of the project. Based on their relationship with the landscape and the support of the community, Raili and Reima develop an architectural design that aims to reinforce this relationship. The result is a built environment that fosters a symbiotic relationship between the built object and the natural environment, creating a living space at all scales.

Collectivity Across Scales of Inhabitation:

The Suvikumpu Residential Complex

The architectural strategies developed by the Modern Movement were mainly chosen as the model to be implemented in urban development plans. These were designed to respond to the exponential population growth that cities experienced in the mid-20th century, resulting in significant demographic shifts. Among the numerous examples that emerged across the European continent, the city of Helsinki was also affected by such transformations, mainly due to the process of migration from rural to urban areas [16].

Fig. 4. Photograph of the exterior of the Suvikumpu residential complex, 2023 [the authors]

The expansion of the city limits between 1946 and 1966 resulted in the incorporation of natural open spaces into the urban fabric, necessitating interaction between the city and these external environments [5]. The lack of housing to accommodate the influx of new residents in Helsinki led to the need to plan new urban residential areas. Among the proposals for the city's metropolitan area, architect Otto-Ivari Meurman's design for the suburban area of Tapiola responded to a revised garden city model in which the interaction between collective housing and nature formed the basis of the design. The quality of the outdoor spaces was of paramount importance, as a healthy living environment was sought for the families who would live in and enjoy these spaces. This aspect was directly linked to the reflection on the typologies of the dwellings and the future dwellings themselves [13].

As part of one of the last urban developments in the Tapiola area, Pietiläs was awarded the contract to build the Suvikumpu housing complex, which will comprise 140 apartments. The site is located in the south-western part of the area and is characterised by a large area of birch forest and rocky hills. In the project it is possible to see how the conceptual and perceptual relationship with the landscape is produced at different scales: a general one, that of the building as a whole with the morphology of the natural elements that shape the surroundings; an intermediate one, related to the neighbourhood spaces understood as natural "places"; and a domestic one, that of each of the dwellings understood as a fluid micro-landscape in itself, directly related to the context (Fig. 4).

Landscape Scale: Landscape as a Supportive Space for Collectivity

The Pietiläs based their proposal on a reinterpretation of the elements that make up the landscape. The geological component, in terms of topography, and the botanical component, through the tree species that populate the site, have been transformed into an architectural proposal that uses subtle mechanisms of mimesis to establish a link with the surrounding environment.

The wooded and minimally modified state of the site, compared to the rest of the Tapiola area, which was completely urbanised at the time, is its greatest value. The formal

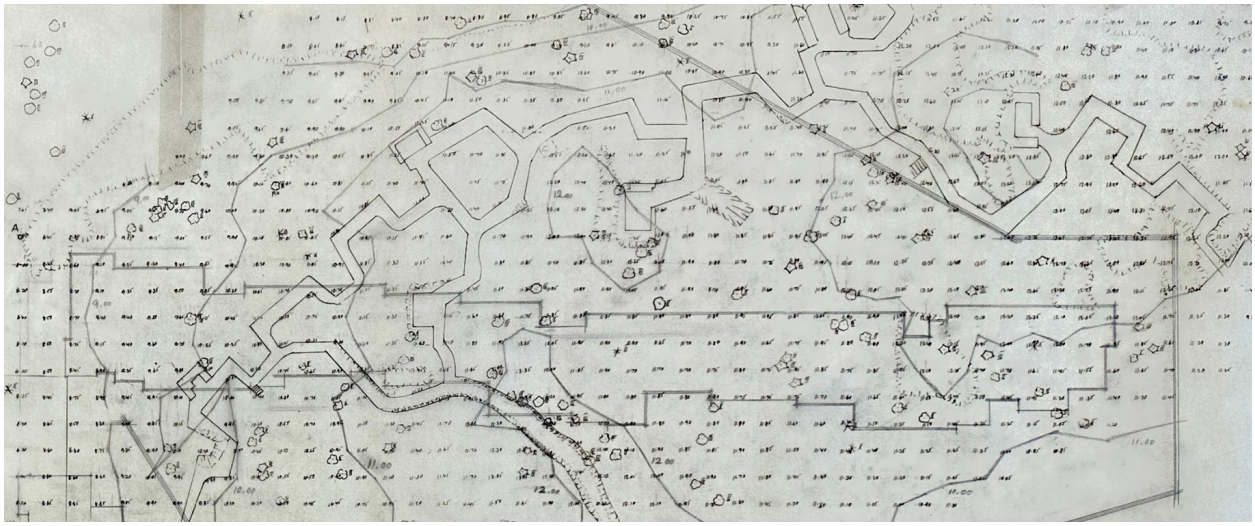

Fig. 5. Topographical plan of the site. Raili and Reima Pietilä, ca. 1965
[Suomen rakennustaiteen museo - Museum of Finnish Architecture – MFA]

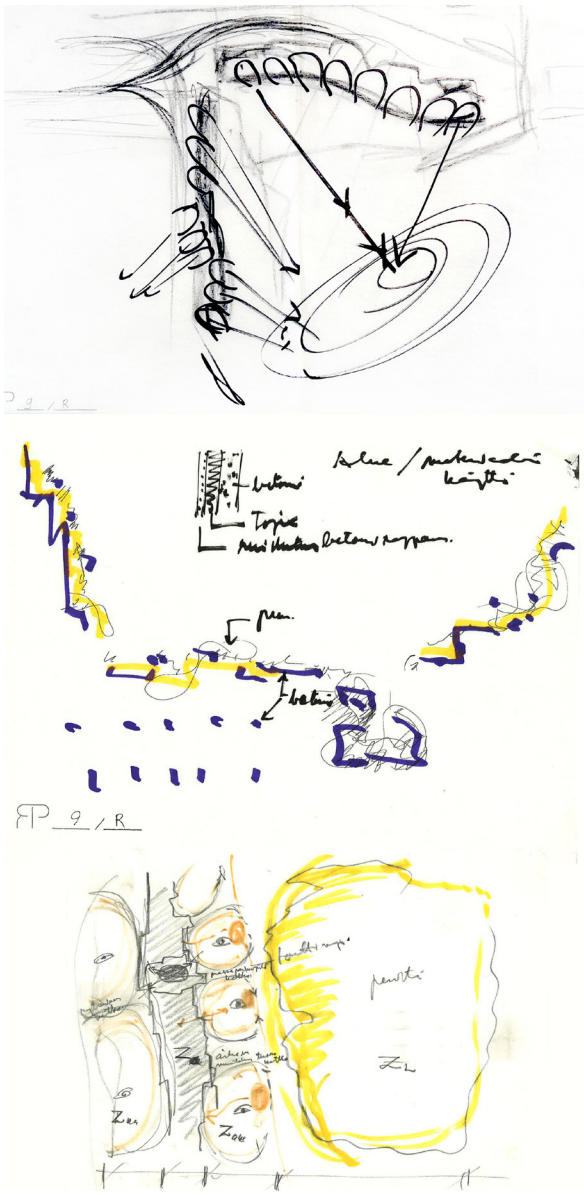

Fig. 6a-6c. Initial project ideation sketches, Reima Pietilä, ca. 1964
[Suomen rakennustaiteen museo - Museum of Finnish Architecture – MFA]

elements derived from the natural environment condition the formalisation of the sculptural mass of the ensemble, which seems to be interpreted as a metamorphosis of the natural phenomenon.

The area is characterised by a pronounced topography formed by a primary hill. The authors' interest in this topography was evident in the architects' drawings, which explored different ways of representing it in order to control and incorporate it into the proposal. Figure 5 illustrates the precision of the topographical information they used, which was complemented by the characterisation of the existing tree species and their position, as well as the location of pre-existing features within the forest.

The footprint of the building is superimposed on these layers of information, revealing how the architectural device uses the landscape as a support on which to place itself, interacting with the existing (Fig. 5). The resulting global volumetry also originates in the field of forces activated by the topography. This premise is particularly evident in the first sketches, where the hill becomes the primary conditioning element and attractor of forces. The first volumetric sketches are thus marked by the objective of establishing a link between the architectural and topographical realities.

In the initial illustration (Fig. 6a), Reina Pietilä demonstrates an interest in establishing connections between the various cells of the proposed dwelling, which are initially sketched in a U-shape. The existing mound is also depicted, though with a certain degree of informality, yet it serves to illustrate the conceptual approach that the proposal will adopt in order to achieve its intended outcomes.

The architecture began to be considered on the basis of its possible relationships with the environment, as a second nature. As a result, the more or less modular construction uses the morphological keys of the forest and takes as its starting point the reinterpretation of the patterns identified in the vegetation and in the existing topographical conditions, indirectly attempting to imitate the existing landscape. In this way, the dimensions, heights, materials, textures and colours of the residential complex are derived from those suggested by the existing nature. The design schemes are often accompanied by development and construction details. In the second of these (Fig. 6b) we see how the detail of the exposed concrete façade envelope is shown, specifying in which areas we have "betoni = concrete" or "puu = wood" as a response to the relationships sought.

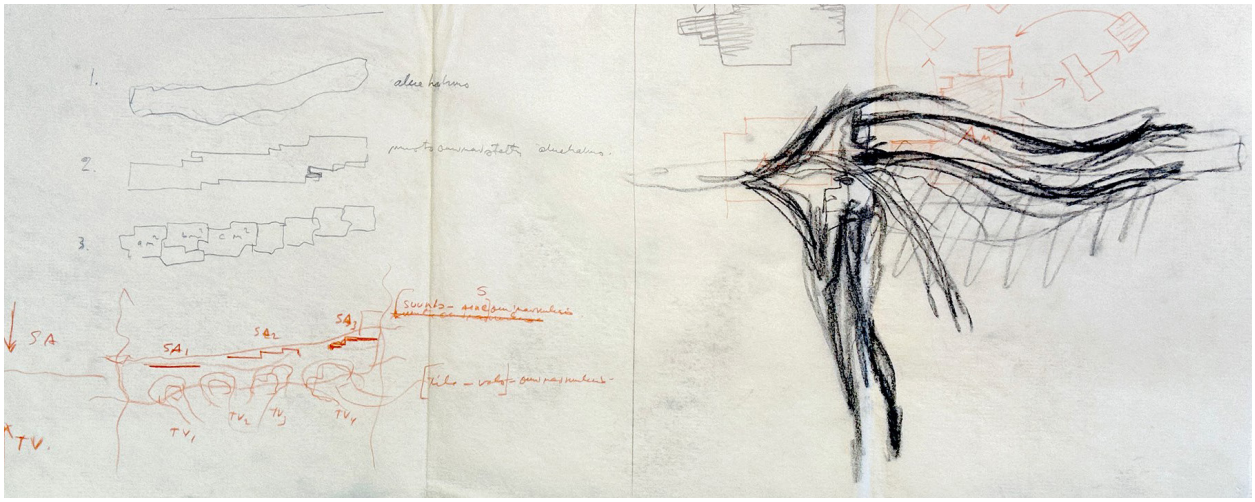

Fig. 7. Initial concept sketch together with methodological scheme, Reima Pietilä, ca. 1964 [Suomen rakennustaiteen museo - Museum of Finnish Architecture - MFA]

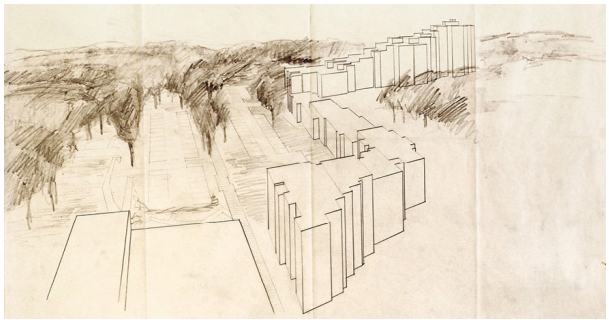

Fig. 8. Partial aerial perspective of the residential complex, Raili and Reima Pietilä, ca. 1963 [Suomen rakennustaiteen museo - Museum of Finnish Architecture - MFA]

Fig. 9. Photograph of the Suvikumpu residential complex, 2023 [the authors]

In these sketches Pietilä establishes the relationship between the architectural proportions and the surrounding landscape. In the third sketch (Fig. 6c), the lower part of the drawing illustrates the proportions and boundaries of the landscape layers, consisting of forest, architecture, forest and hill. It shows how the architectural element will have the least pronounced thickness compared to the other components. This demonstrates the intention to propose an architecture that is not overly extensive in terms of occupation. The position of the trees influences the rhythm of the façade. The drawing of the circle of the tree crown conditions the occupation of the volume, marking the recess of the vertical planes of the façade in order to respect the planting space (Fig. 6c).From this initial graphic documentation, it can be confirmed that the volumetric development of the proposal will tend towards recessed planes and blurred boundaries, as opposed to continuous urban façades. This is a response to the rhythms that define nature.

Reima himself drew the outline of the volumetric definition process that followed, which summarises the aspects described above under the title "Muoto ja Hahho: Ominaistaalreen (Form and Character: A Landscape Feature)" (Fig. 7). The first step is the volume with hardly any changes, and then successively the transformation and complexity based on the existing reality. This process is driven by the contrast between two realities: on the one hand, the more urbanised world and, on the other hand, the forest to which it is intended to open up.

The definition of the volume that will house the dwellings follows the process of deconstructing the cube, as shown in the top right of Figure 7. It represents a back and forth between the global volume and the dwellings. The alteration of the global volume seeks to enrich the interior living spaces based on this connection with the exterior.

The initial general layout of the Suvikumpu settlement is derived from this methodology (Fig. 8). The housing project will combine different ways of understanding collective and individual living, proposing new ways of living based on different typologies.

The Pietiläs chose a formalisation of the collective dwelling that was disciplined and adapted to the visual patterns that could be distilled from the perceptual features of the existing park. These included the rocks that form the mounds, the striped verticality of the trunks that make up the forest, and the visuality of the birch bark (Fig. 9). As a result of this choice, the ensemble has a degree of uniformity comparable to that of the park. The motifs and forms are repeated, albeit with minor variations (Fig. 10). This formal approach contrasts with that of Ralph Eskrine, as can be seen in his Scandinavian and British housing estates. In these, the various forms of fragmentation serve to indicate the diversity of the community of residents, as opposed to the continuity of the park. Bykwer Wall's project (1968-1981) exemplifies this consideration through the composition of the façade, which features coloured balconies and a casual use of colour [10].

Intermediate Scale: Building Collectivity

Through the Program

The volume proposed by Pietilä and arranged in relation to the landscape is activated by the programme, the majority of which is multi-family housing. However, as mentioned above, the landscape is not just a backdrop for architectural design, but rather a series of deliberately created support spaces that are highly capable of hosting communal activities between housing and nature.

Having transcended the landscape scale, the proposal continues to address the question of collectivity at an intermediate scale, that of the neighbourhood. The interstitial spaces that emerge from the proposed volumetric aggregation are of considerable importance and generate the potential for encounter. Raili and Reima Pietilä refer to these spaces as ***"vicinity spaces"*** [6].

This concept may be related to the theory of ***"soft edges"*** developed by the Danish architect and urban planner Jan Gehl in the mid-1980s. His approach is based on the idea that the boundaries between public and private domains within residential areas have the potential to act as catalysts for collective engagement. To test this hypothesis, Gehl selected a number of residential streets as case studies and subjected them to analysis. The results suggest that streets with a 'soft space' between the private and public spheres have a higher incidence of social activity. This semi-private space is of primary importance. In this study, Gehl presents the results of a study conducted in the city of Melbourne to test this hypothesis. He concludes the first phase of his research by asserting the significant role of the semi-private courtyard as a space between the home and the outdoors that is conducive to social interaction and activity [9]. The challenge lies in creating a space that is not designed to accommodate a specific set of activities, but rather to encourage a variety of indeterminate and spontaneous activities.

These observations, confirmed by Gehl's research, were already evident in Suvikumpu two decades earlier. The dissolution of the boundaries of the façade led to the creation of these soft edges, which were transformed into courtyards, green spaces, transition areas for access to private dwellings or communication spaces. The aim was to focus not only on the building itself, but also on its impact on its surroundings. This concept was also advocated by the Smithsons, who stressed the importance of considering the "space around it" and its capacity to establish multiple relationships despite being an unprogrammed space [19].

Fig. 11a – 11b. Planimetry, Raili and Reima Pietilä, ca. 1964 [Suomen rakennustaiteen museo - Museum of Finnish Architecture – MFA].
Exterior photographs current state, 2023 [the authors]

The graphic production of the project shows a renewed interest in defining these spaces. Figure 11a illustrates how the architects have focused on defining the space between the dwellings and the exterior. The courtyards of the ground floor dwellings have been combined with small gardens that demarcate the plot while maintaining spatial continuity between the interior and exterior (Fig. 11b).

Inhabitation Scale: Typologies that Construct the Collective Whole

The preliminary research that formed the basis of the project involved a rethinking of living arrangements based

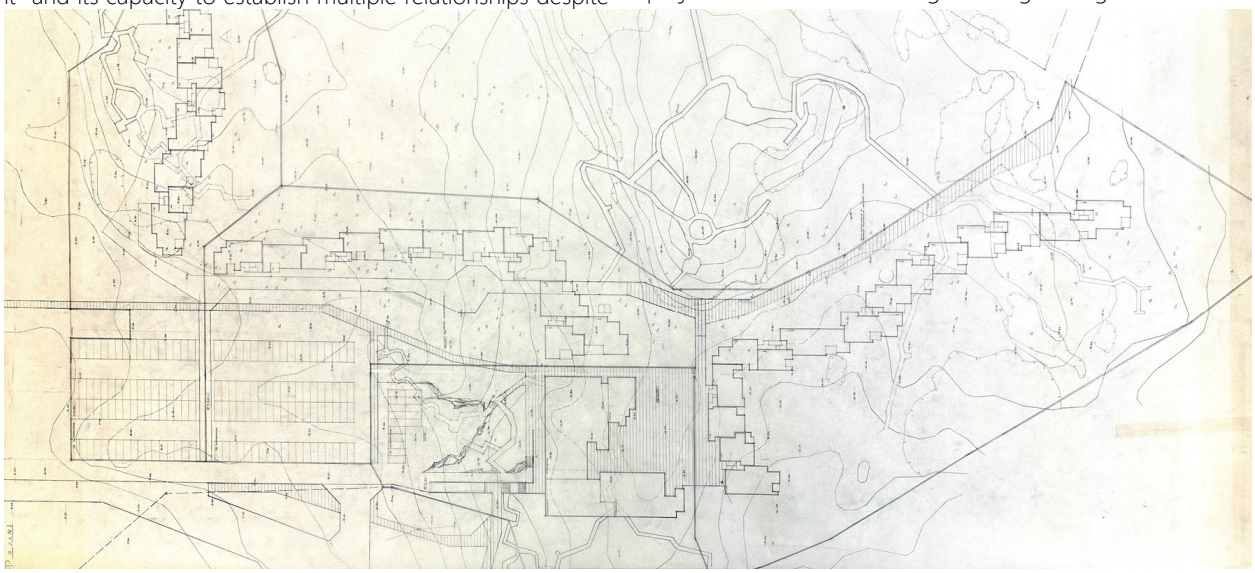

Fig. 10. First post-competition development of the residential complex,
Raili and Reima Pietilä, ca. 1964 [Suomen rakennustaiteen museo - Museum of Finnish Architecture – MFA]

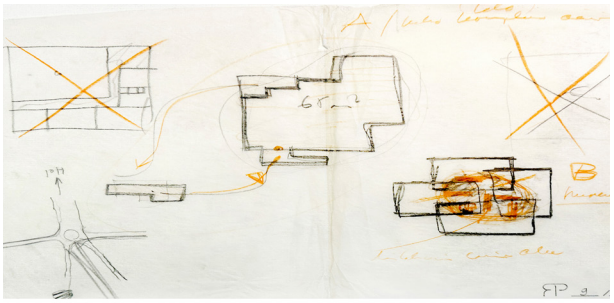

Fig. 12. Ideation sketch. Organisation of the programme, Reima Pietilä, ca. 1962 [Suomen rakennustaiteen museo - Museum of Finnish Architecture - MFA]

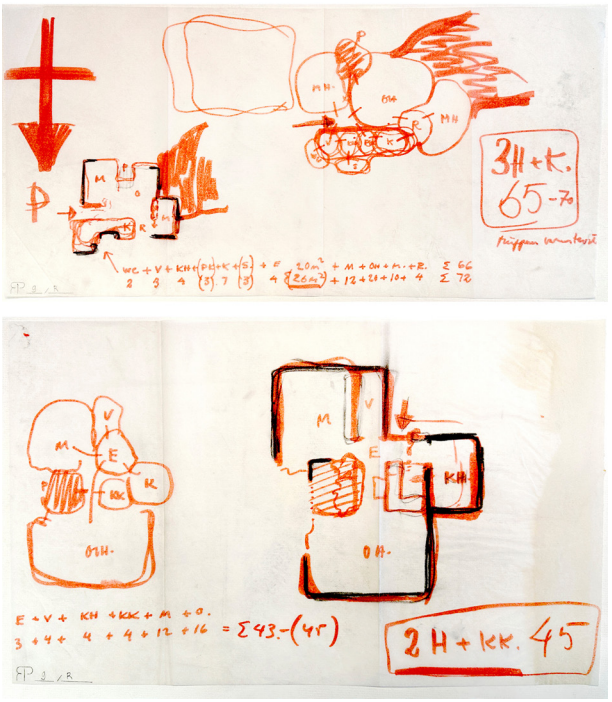

Fig. 13a – 13b. Ideation sketch. Organisation of the housing programme, Reima Pietilä, ca. 1962 [Suomen rakennustaiteen museo - Museum of Finnish Architecture - MFA]

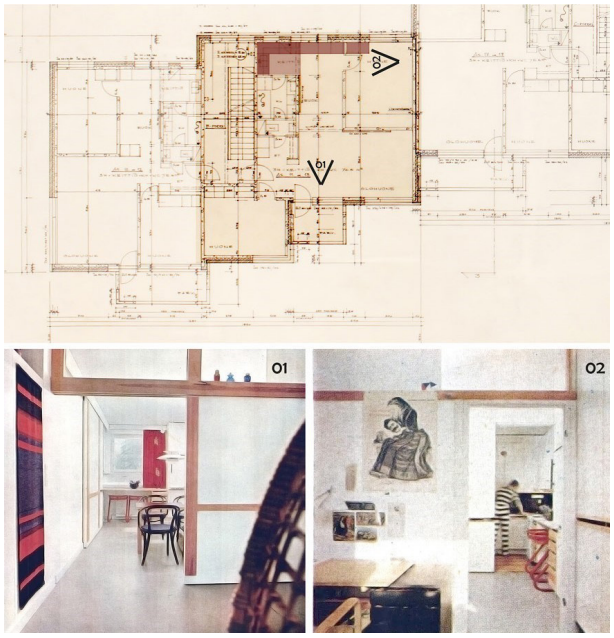

Fig. 14. Plan of the execution project with photographs of the interior, Raili and Reima Pietilä, 1966. Museum of Finnish Architecture - MFA] [Museum of Finnish Architecture - MFA

on typologies designed to respond to global landscape considerations. The Suvikumpu houses were designed not on the basis of the strategy of 'aggregating rooms', but rather with the mechanism of a 'map of fluid spaces', of rooms connected by openings in the shell (many of them in the corners or at the top of the wall) that seek to bring the forest into the interior landscape and minimise the sense of disconnected interior spaces, even between the rooms themselves. The architectural schemes developed by the architects during the process of developing the typologies show a clear rejection of the conventional solution of rooms arranged around a corridor (Fig. 12). On the contrary, the proposed space is configured on the basis of the decomposition of the basic modular cube, as previously discussed, following a process of extraction, modification and incorporation of its parts.

In addition to the aforementioned sequence of rooms, we must consider the impact of a preexisting room that directly affects the interior of the dwellings, namely the landscape. The orange stain, in direct contact with the dwelling, is represented in the initial maps of spaces, which illustrate its influence on the layout of the programme and the relationship between the interior spaces (Fig. 13a). Finally, it becomes a room in its own right, designated as the outdoor room (Fig. 13b).

In Suvikumpu, forty different types of dwelling have been defined, representing a variety of adaptations to a basic architectural concept. This concept revolves around the server core, or server rooms, which have been replicated and adapted to meet the evolving needs of the community. The aim is to foster a heterogeneous community where different approaches to living coexist. The typologies serve to realise this vision, allowing users to adapt the basic scheme to suit their specific requirements.

As Agatángelo Soler points out in his analysis of the concept of flexibility [23], this is achieved primarily through the versatility of the spaces, rather than through a mere change in their configuration. The dimensions assigned to the spaces by Raili and Reima are similar in order to facilitate potential changes in activities. This approach avoids the hierarchical organisation of spaces based on predetermined activities and the loss of surface area for circulation spaces. There is a preference for an undefined central space that connects the living room and kitchen and provides access to the other rooms. The similar size of this space allows for the alternation of uses according to the changing needs of the inhabitants (Fig. 14).

The Pietiläs tend to arrange the programme according to the concept of the open diagonal, as can be seen from the floor plan of the house. This results in the kitchen and living room being located at opposite ends of the house, creating a greater sense of spaciousness and influencing the views to the outside (with the windows or terrace located in the corners adjacent to the living room). In contrast, the other rooms are located on the opposite diagonal. Accordingly, within this conceptual framework, the kitchen is designed to facilitate a fluid interior space, thereby dissolving the conventional boundaries of the kitchen (Fig. 14). The kitchen thus becomes a space that is no longer the domain of women, as has been the case since the beginning of the century [15], but is integrated into the living space.

The kitchen is designed to have an impact on the rest of the home, with the furniture extending beyond the established boundaries to connect them. Its dimensions increase and are comparable to those of other rooms. In some cases, the kitchen goes beyond the established boundaries, blurring them. The act of cooking is no longer a private matter; it

Fig. 15a – 15b. Interior perspective of the house with the outside room, Raili and Reima Pietilä, 1966 [Suomen rakennustaiteen museo - Museum of Finnish Architecture - MFA] Actual photograph, 2023 [the authors]

Fig. 16. Exterior photograph of the outer rooms of the Suvikumpu residential complex, 1969 [Suomen rakennustaiteen museo - Museum of Finnish Architecture - MFA]

has become a social activity within the domestic sphere. This represents a shift away from the traditional disproportion between the size of the kitchen and the amount of space allocated to the living room [11]. This new configuration challenges the gender bias that has traditionally characterised the domestic space. Pietilä's design reimagines the role of the kitchen in the home in line with the proposed new way of living.

As has been demonstrated, each room was in turn subordinated to the interaction and presence of the birch forest. The integration of the landscape into the interior was not merely achieved through the strategic openings in the façade; rather, the living programme was enhanced by this "outdoor room". Each dwelling features a terrace, or outdoor room, which varies in size and allows the inhabitant to engage with the shared landscape from their private space. The configuration of the interior spaces has consistently been informed by this consideration. The interior design drawings (Fig. 15a) illustrate the pursuit of intermediary elements between the interior living space and the exterior landscape, which ultimately manifests in the built work (Fig. 15b).

Conclusions

The theoretical discourse presented at the outset of the article has been called into question by the case study of the Suvikumpu residential complex. The analysis has revealed the capacity to construct collectivity from the landscape and, simultaneously, how architecture can serve as the conduit that catalyses the relations between the landscape and its inhabitants. This has been achieved through a journey that has approached these interactions at varying scales: that of the landscape, the intermediate scale and that of the dwelling. This allows us to confirm that architecture contributes to reinforcing the feeling of collectivity that initially stems from the feeling of belonging to the same environment.

The analysis of the Suvikumpu experience has enabled the identification of interests and design strategies that may be applicable to future urban residential developments. In addition to responding to the need for housing, the project enhances the environment and the sense of community, thereby consolidating the attributes of the landscape.

The approach taken by the architects permits the formulation of a coherent and specific architectural proposal, defined in terms of its formal and theoretical parameters. The transformation of topography and vegetation into a constructed mass has resulted in the formation of significant relationships with the forest, as well as intermediate relationships with the interstitial spaces between the volumes – the soft edges – and finally, on a smaller scale, with the redefinition of ways of living that involve typologies where diversity is embraced, as this is the most effective way of building community. This is exemplified by the case of a community of 140 dwellings (Fig. 16).

The success of this architectural approach, which has withstood the test of time and remains relevant today, underscores the value of fostering analogous modes of interaction between humans and nature. It is therefore essential to determine the pivotal function of architecture in fostering constructive and harmonious interactions where society at large can identify a model for urban planning and construction, whether for residential or other purposes, without compromising the quality of the built environment, the well-being of the population, or the landscape that underpins our community life.

In light of these challenges, which are becoming increasingly pertinent in the context of climate change, it is imperative to consider the interaction between human and natural ecosystems. This argument, which has gained renewed significance in recent times, underscores the need for action that is grounded in this understanding [8][21][22]. At a larger scale, where the threats are centred on the current ecological crisis, it is necessary to adopt a position that acknowledges the necessity of the interaction between humans and the natural environment. Only then can the challenge be addressed comprehensively. It is therefore evident that the work of architecture, as a device that articulates these interactions, is a crucial element in the future urban developments of our society.

Acknowledgments

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Kopsavilkums

Ainava nav tikai fons mūsu pilsētvides apstākļiem, bet tā pati par sevi veido noteiktu kompleksu sistēmu. Pētījumā tiek analizēts un pētīts Suvikumpu dzīvojamais kvartāls Somijā. Veikti izpētes darbi par kopienu, kāda ir ainava, noteikts tās raksturs un analizēti esošā dzīvojamā kvartāla būvapjomi. Rezultātā Suvikumpu pieredzes analīze ir ļāvusi identificēt intereses un projektu stratēģijas, kas piemērojamas nākotnes pilsētu dzīvojamo kvartālu apbūvei, kur projekts ne tikai reaģē uz mājokļa nepieciešamību, bet arī palielina vides vērtību un kopības sajūtu, konsolidējot dažādus aspektus no ainavas.

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BRYOPHYTES FOR THE LINEAR BARRIER AS A PM2.5 MITIGATION TECHNOLOGY IN THE URBAN LANDSCAPE

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Abstract. Air pollution has been recognized by the World Health Organization as a global problem, resulting in 9-12 million deaths annually, and particulate matter is the most severe threat to human health. Particulate matter can be distinguished by its size, as PM2.5 has a diameter of 2.5 µm or less, meaning that these tiny dust particles are invisible to the naked eye. Various solutions are being sought for the problem of air pollution, which resonate with landscape architecture solutions, such as Green Infrastructure and linear (vertical) barriers. They are being researched as an effective nature-based solution to the growing air pollution problem that organically blends into the urban landscape. Evaluations of various plants for their pollution abatement potential highlight bryophytes as particularly effective due to their high absorption capacity, and to ensure the sustainability of the linear barrier, cultivation under controlled conditions is recommended. This paper investigates the cultivation of bryophytes under controlled conditions and identifies the most effective moss species during a practical experiment. This experiment and paper are part of a larger, more extensive study on air pollution reduction using bryophytes, and the research described in this paper is instrumental in future research. The assessed bryophyte species will be further investigated for their ability to absorb air pollution PM2.5. This paper uses research methods such as literature analysis and a laboratory experiment conducted between January and April 2024.
Keywords: green infrastructure, urban landscape, air pollution, pollution mitigation, linear barriers

Introduction

Air pollution as a threat to human health [9] has been recognized since the time of Hippocrates around 400 BCE [11] and is currently a global issue [4,31], resulting in 9-12 million deaths per year [20,7]. Particulate matter (PM) is the primary source of air pollution [25,16] with PM 2.5, fine dust particles typically 2.5 µm in diameter or smaller, being especially hazardous as they are not visible to the naked eye [29] but are being absorbed deep into the human body, including the lungs and blood. PM has been recognized by the World Health Organization (WHO) as the most severe air pollutant for human health [14].

Air pollution has been studied for decades, and solutions are sought. One solution being used in landscape architecture worldwide is based on nature—using different plants for air purification with phytoremediation [24], green infrastructure (GI), and urban greening methods [17].

GI uses vegetation like grass, trees, shrubs, and other species for urban planning; GI is usually accessible for public use and mitigates the effects of vehicle-related environmental impacts like air pollution and urban heat islands [17]. As GI promotes public health and economic growth while emphasising the importance of environmental quality, social-environmental importance increases [28]. Natural conditions and elements of the environment are usually considered when forming the city's structure. Large greenery areas, street greenery, and other green structures must be connected to form the green network territory. Therefore, key GI elements are nodes or larger structures such as parks, squares, urban forests, and connecting linkages such as street greenery; these elements form a single green network. For these elements, the main targets are to ensure the sustainability and resilience of the overall ecosystem, as well as to ensure ecological and functional quality [17] and various ecosystem services like flood management, heat stress, water scarcity, carbon storage, energy use, groundwater recharge, erosion, wellbeing, ecological connectivity, environmental education, aesthetics, food production or green job opportunities [18]; additionally, GI can mitigate air pollution caused by traffic by absorbing gaseous pollutants and PM [28]. The walls of the buildings represent a large amount of the overall building surface, which is larger than the roof area. For high-rise buildings, this amount can be up to 20 times more than the surface of the roofs. Therefore, green walls can offer great potential. The effects of the green walls on air pollution depend on the climate, location, lightning, chosen vegetation species, and other factors [28]. To determine the most effective GI for air pollution mitigation, it is essential to understand how vegetation affects the movement of air pollutants on a global (entire city) and local scale. At the regional scale, a higher potential for air pollution mitigation indicates vegetation barriers to physically separate pollution sources from the receptors [2]. The introduction of linear barriers - such as hedges or fences - between source and receptor zones redirects the flow of air pollutants upwards, effectively extending the length of the air pathway from source to receptor and may also promote concentration reduction by increasing turbulence (Figure 1).

Thus, hedges and fences can decrease concentrations in sidewalks and other pedestrian areas adjacent to traffic by both pollutant flow movement upwards [27], and dry deposition, which is the process when the vegetation absorbs pollution; PM pollutants are at least temporarily removed from the atmosphere by interception, sedimentation, capture, and other sub-processes [2]. Nevertheless, currently, there is limited guidance on implementing GI, and as these systems are alive, it is challenging to provide standards [30].

In densely built-up urban areas, the widespread use of GI linear barriers can create an opportunity to improve environmental conditions, and one of the most promising plants that can grow anywhere in the world are bryophytes (more commonly called mosses) [5,26,21]. Recent studies have revealed the possibilities associated with using mosses with the impact of effective rainwater management, the ability to reduce surface temperature, and the ability to trap atmospheric pollutants. Properties of mosses, such as easy maintenance, lightweight, and durability compared to vascular plants, are advantages in reducing the heat island effect and contributing to the increase of urban biodiversity [26] as mosses are evergreen plants with whole-year photosynthesis [22].

There are studies on mosses' ability to reduce PM2.5 levels

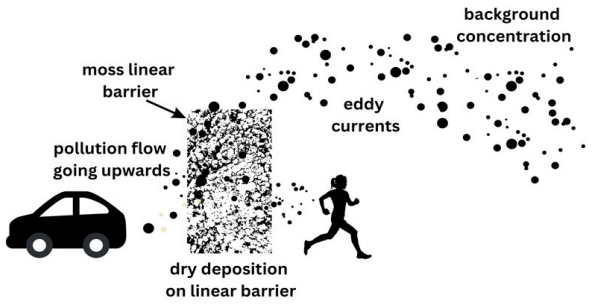

Fig. 1. Illustration of transport air pollution
[adapted by the authors from Sheikh et al., 2023]

in polluted environments, and these plants are already being used as a biomonitoring mechanism in many cases due to their ability to capture chemicals such as heavy metals and other types of particles [5,32]. This feature is facilitated by the fact that mosses, unlike vascular plants, do not have a cuticle layer to protect metals from entering cells through the single-cell layer of thick leaves, and it makes it possible to acquire nutrients from the air or surrounding water by absorbing particles onto their whole surface [13].

To ensure the sustainability of mosses as linear barriers, it is essential to transition from harvesting mosses from natural habitats to cultivating them in controlled environments.

Mosses need sunlight, carbon dioxide, minerals, and moisture to photosynthesize [23]. When growing mosses under controlled conditions, it must be considered that they can absorb water much faster than vascular plants [24]. Mosses are grown in natural environments such as Japanese gardens and used in bonsai to cover the soil and improve the impression of age. Cultivation protocols are not widely implemented. There are different methods. Cultivation of mosses under free conditions is often initiated using specimens transplanted from the wild. However, certain bryophyte species can be challenging to maintain away from their natural habitats due to their unique requirements for combinations of light, moisture, substrate chemistry, and wind shelter [22].

Under controlled conditions, mosses can be cultivated through various methods:

1. The cultivation of mosses from spores

This cultivation method involves a natural dispersal process wherein moss spores are released from sporangia and are carried by wind or rain to open surfaces. These spores adhere to surfaces conducive to the growth of specific bryophyte species, typically taking several years to establish and spread. Porous materials with moisture-retaining properties, such as brick, wood, and specific coarse concrete mixes, serve as ideal substrates for moss colonisation. Moreover, surfaces can be treated with particular substances, including acids, buttermilk, and yoghurt, to create an environment conducive to moss growth [22].

2. Vegetative propagation of mosses

When conditions are optimal, protonema and mature mosses regenerate well from cut fragments, making this method easy and fast. Trays with moss samples should be covered with foil or lid and watered with water to maintain optimal humidity. The first protonema appears after about 30 days, and the first adult moss gametophytes are obtained 60 days after propagation. If the weather allows (no minus degrees Celsius during the night), the trays can be moved outside in a shaded area. Finally, the moss colonies are exhibited 12 to 14 months after propagation. Various moss species (Hylocomium splendens, Rhytidiopsis robusta, Dicranum scoparium and Mnium lycopodioides) are successfully propagated by this method, but the first two show the most efficient growth [33].

3. In vitro propagation under controlled conditions

It is a technique in which moss tissue fragments are grown artificially under aseptic conditions. It involves culturing explants isolated from the mother plant in a sterile medium, resulting in cell proliferation and plant regeneration. In vitro plant propagation has contributed significantly to basic research knowledge and offers potential applications as it guarantees a sustainable industry based on the commercial production of plant compounds. Plant tissue culture effectively isolates and processes active compounds, including secondary substances and engineered molecules, from economically significant plants [19]. The advancement of modern technology has facilitated the development of numerous protocols for the large-scale production of various plant secondary metabolites.

The critical aspect of moss cultivation lies in achieving the right balance of soil composition and nutrient levels. Excessive nitrogen content, for instance, has been observed to decrease moss growth. Given that mosses thrive on dust accumulation, soil conditioners, while intended to enhance growth, can paradoxically hinder it. This phenomenon holds evidence for organic soil conditioners, which, if overly potent, can deter moss proliferation [23].

Results and Discussion

A research endeavour was conducted from January to April 2024 at RTU Liepaja Academy under the auspices of the Ecotechnology Master's program to assess various species of bryophytes as potential linear barriers.

Seven different bryophyte species (Table 1) were carefully selected, and small samples were taken from the forest in January 2024. These moss samples underwent further preparation, being carefully cut into smaller fragments using scissors. Subsequently, 65 g of moss biomass from each species was segregated into individual laboratory vessels. Each vessel was then repleted with 200 mL of a 2% agar solution prepared with spring water with a pH of 6.1.

The obtained moss-agar mixtures were blended to ensure homogeneity, creating a uniform application medium. These mixtures were applied to 10 x 10 cm tiles prepared in three layers: a veneer plate foundation overlaid with a hemp-growing mat and reinforced with a hardened metal mesh (Figure 2).

Following application, the samples were abundantly

Table 1. Visual evaluation of the results of the moss propagation experiment
[construction by the first author]

Species	Summary
Atrichum undulatum	Withered and didn't survive, probably due to the fragile habitus
Brachythecium albicans	Most promising species. Reached 0.8 mm height (height of the mature plant is 2 to 5 cm), bright green and thick surface structure
Brachythecium rutabulum	It started to grow after 2 months, 1 month, became 1 cm in height (2 cm medium height for mature plant), dark green and thick structure
Bryum argenteum	Good result, 0.3 mm in height (medium height for this species is around 1 cm), very thick and solid structure
Dicranum scoparium	Reached 1.2 mm in height (mature plant sized up to 5 cm), light green, not very thick surface, but solid and strong
The mix of different species	Shows excellent results with Brachythecium rutabulum, Brachythecium albicans, and Bryum argenteum as leaders in growth
Plagiomnium affine	Withered and didn't survive, probably due to the fragile habitus
Tortula muralis	It stopped growing after 2 months, at first, it was very promising

Fig. 2. Experimental tiles with cultivated moss sample after 2,5 months in an incubator [photo by the second author]

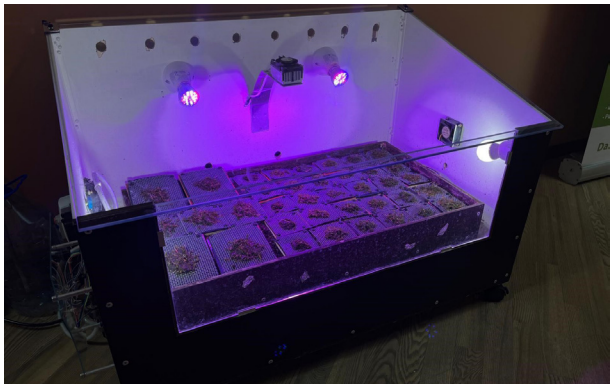

Fig. 3. Incubator for propagating vegetative mosses in the RTU Liepaja Academy building incubator [photo by the second author]

moistened with spring water and moved into an incubation chamber. Of seven moss species, 33 sample tiles were prepared in 10 x 10 cm tile size, and four extra 15 x 15 cm tile-sized samples were created. Each species was prepared on tiles in four replications (28 tiles in total), and additionally, five 10 x 10 cm and four 15 x 15 cm tile samples were created for a mix of all the species in one bowl.

A mix of different species has been showing promising results in various studies [23,32,33]. The incubator (Figure 3), measuring 100 x 60 cm with a height of 50 cm and featuring a glass cover, was equipped with red and white light sources (six lamps in total), emitting a luminance of 900 units, each rated at 60 W. A lighting regimen consisting of 16 hours of illumination followed by 8 hours of darkness was instituted throughout the cultivation period. Daily irrigation of the moss samples was meticulously carried out in the mornings over three months. Approximately 50 mL of spring water was applied daily to ensure the samples were fully humid, facilitating optimal growth conditions.

Weekly evaluations of the growing patterns were conducted, with results meticulously recorded and summarised at the end of the research.

The above research identified Brachythecium albicans, Brachythecium rutabulum, and Bryum argenteum as the most promising species, mainly when cultivated in combination (mix). The subsequent phase of experimentation necessitates the establishment of PM2.5

Fig. 4. Visualization of the placement of free-standing moss panels in a park in Riga [visualization by the authors]

Fig. 5. Visualization of the composition of moss panels with benches [visualization by the authors]

chambers within laboratory settings to assess the species' response to air pollution. Subsequent outdoor environment testing will be conducted in later stages.

This study aimed to define the results of the initial phase, which focused on the growing of mosses under controlled conditions. These findings are essential for the next step, the practical use of moss in urban landscape architecture, reducing air pollution, and creating an aesthetically pleasing environment.

Urban landscape architecture

Dynamic social, economic and ecological changes influence the modern urban landscape. The Most efficient hybrid solutions to these challenges are without fragmenting the space and urban fabric. With the awakening of global environmental consciousness and discussions of sustainability issues, the urban landscape is a challenging research field for various disciplines, even outside landscape architecture. These disciplines include planning, ecology, environment, and engineering, with the main focus on the synergy of these fields. **This article focuses on urban landscape architecture using nature-based solutions to reduce pollution.** The specific solutions form a representative design approach to the urban landscape.

Urban landscape architecture is a unique mix of theory and practice that has played a role in regenerating the urban environment. Landscape architecture, by definition, is a science, art, and technique that focuses on the study, design, and planning of natural or artificial landscapes or environments as perceived by humans [1]. Urban landscape architecture has a distinct role in restoring the urban landscape's spatial, ecological, and cultural continuity.

The authors' design for moss panels will harmoniously fit into the existing pilot research facility, a park in Riga, the capital of Latvia. It will be an inviting place for recreation and events, fully integrated into the surrounding urban landscape. Figure 4 shows free-standing moss panels, which also purify the air in autumn and winter and, with their green colour, make the environment more attractive. The planned dimensions of these panels are 2.3x2.5 m, 3.4x2.5m, and 4.9x2.5 m, with a height from the ground of 50 cm. According to the life cycle assessment, the materials of the panel's circular economy approach are planned using the most sustainable materials.

In the central part of the park, 2.5 to 6 m high moss panels, supplemented with benches, are planned to be installed. These panels will form the central composition and complement the park's landscape.

Conclusions

1. Air pollution poses a significant threat to human health, with staggering global implications. Statistics indicate that air pollution contributes to approximately 9 to 12 million deaths annually worldwide. Of particular concern is the presence of delicate particulate matter, PM2.5, which represents a primary contributor to air pollution and is a focal point of concern for the WHO.
2. Green infrastructure (GI), an incredibly linear barrier, has garnered attention as an effective technology for mitigating air pollution. Its mechanism involves creating a physical barrier between source and receptor zones. This barrier redirects the flow of air pollutants upwards, thereby elongating the air pathway from the emission source to the receptor area. Additionally, GI structures can reduce pollutant concentrations by enhancing turbulence within the airflow. These combined effects contribute to the overall efficacy of GI in combating air pollution.
3. More guidance on implementing GI is needed, and providing standards is challenging as these systems are alive.
4. Evergreen and primarily perennial plants, mosses distinguish themselves from vascular plants through their year-round photosynthetic activity. This perennial process enables mosses to exhibit a higher pollutant absorption capacity than their vascular counterparts. Furthermore, mosses have demonstrated resilience in inhabiting environments characterised by high toxicity levels, showcasing their adaptability to highly hazardous conditions.
5. A study conducted at RTU Liepaja Academy in Latvia from January to April 2024 has identified Brachythecium albicans, Brachythecium rutabulum, and Bryum argenteum as the most suitable species for cultivation in controlled environments. Following three months of controlled cultivation, these species have reached maturity levels conducive for deployment in urban environments.
6. Further research is required to assess the efficacy of identified species in mitigating air pollution, particularly PM2.5, both in laboratory settings and real-world environments. This research aims to elucidate the full potential of these moss species as an effective tool for air pollution mitigation.
7. For the designed moss panels, which are free-standing and combined with benches, use the most durable moss species or a mixture of moss species.

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Kopsavilkums

Pasaules Veselības organizācija ir atzinusi gaisa piesārņojumu par globālu problēmu, kā rezultātā ik gadu mirst 9–12 miljoni cilvēku, un cietās daļiņas ir vissmagākais drauds cilvēku veselībai. Cietās daļiņas var atšķirt pēc to lieluma, jo PM2,5 diametrs ir 2,5 μm vai mazāks, kas nozīmē, ka šīs sīkās putekļu daļiņas ir neredzamas ar neapbruņotu aci. Gaisa piesārņojuma problēmai tiek meklēti dažādi risinājumi, kas sasaucas ar ainavu arhitektūras risinājumiem, piemēram, Zaļā infrastruktūra un lineārās (vertikālās) barjeras. Tie tiek pētīti kā efektīvs uz dabu balstīts risinājums pieaugošajai gaisa piesārņojuma problēmai, kas organiski iekļaujas pilsētas ainavā. Dažādu augu novērtējumi attiecībā uz to piesārņojuma mazināšanas potenciālu izceļ bryofītus kā īpaši efektīvus to augstās absorbcijas spējas dēļ, un, lai nodrošinātu lineārās barjeras noturību, ir ieteicama audzēšana kontrolētos apstākļos. Šajā rakstā ir pētīta briofītu audzēšana kontrolētos apstākļos un praktiskā eksperimenta laikā noteiktas visefektīvākās sūnu sugas. Šis eksperiments un dokuments ir daļa no lielāka, plašāka pētījuma par gaisa piesārņojuma samazināšanu, izmantojot bryofītus, un šajā dokumentā aprakstītie pētījumi ir noderīgi turpmākajos pētījumos. Novērtētās bryofītu sugas turpmāk tiks pētītas attiecībā uz to spēju absorbēt gaisa piesārņojumu PM2,5. Šajā rakstā tiek izmantotas tādas pētniecības metodes kā literatūras analīze un laboratorijas eksperiments, kas veikts no 2024. gada janvāra līdz aprīlim.

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SIGNIFICANCE AND DIVERSITY OF LANDSCAPE DESIGN IN REHABILITATION

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Abstract. The World Health Organisation defines human health as a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity. Nature is one of the mechanisms that can help to achieve the aspects highlighted in this definition. Recovery environments, such as therapeutic gardens in the outdoor areas of treatment centers, play a crucial role in challenging life circumstances and can supplement traditional forms of treatment. They are not a substitute for medical care and different therapies, but rather function as a support system and enhancement for achieving quicker and higher quality outcomes. The aim of this paper is to look at the possibilities of creating different revitalisation landscapes, including abandoned ones, and to adapt them to different target groups, which are increasing in number and diversity in today's changing political and economic situation, as well as to the growing number of people who need a specific approach to the recovery process, which can also be provided by a well-designed outdoor space. The revitalisation of the landscape of abandoned rehabilitation facilities is also essential for sustainability processes, when the functional zoning of such areas is improved and outdoor spaces that can fulfil their function in the long term are brought back to life, transformed into spaces adapted to modern needs. Based on the analysis and theoretical studies of different outdoor spaces of abandoned rehabilitation institutions, proposals and thematic models for the revitalisation of rehabilitation landscapes near abandoned water, near settlements and surrounded by forests have been prepared, highlighting the potential of such areas within individual landscapes and emphasising the importance of rehabilitation landscapes in each of them.
Keywords: therapeutic landscapes, rehabilitation landscapes, stress minimizing landscapes, landscape design

Introduction

A significant proportion of the world's population now lives in cities, and urban life inevitably affects people's health, and health is critical to our ability to function in society. Increasing urbanisation, as well as financial, political and environmental challenges, are driving the search for innovative solutions to develop healthy environments and adapt to this era of chronic lifestyle diseases [16]. This process has long been relevant in many respects, making cities and urban environments more sustainable from a number of perspectives in which landscape plays an important role [18]. Landscape and urban design that promotes health and well-being is of paramount importance, not only because health systems around the world are under pressure, but also because of a wide range of social, economic, political and environmental factors [16]. Considering its impact on the psyche and health, rehabilitative landscape design is mainly intended for various medical institutions, sanatoriums and nursing homes, but its application is not limited to these spaces; therapeutic design principles can also be applied in schools, libraries and any public outdoor space [1].

While a well-designed living environment is beneficial to the health and well-being of all citizens, it is particularly important for certain target groups for whom it can have a therapeutic effect. Firstly, healthy environments need to address demographics - we live in an ageing society. In the next few years, the majority of the population will be of working age, which means that the proportion of age-related diseases will increase, so it is necessary to plan now how to develop and create a quality living environment for seniors [4; 11]. Similarly, according to the European Agency for Safety and Health at Work, stress is one of the biggest health and safety problems in Europe and the second most commonly reported work-related health problem, affecting more than 20% of workers in the EU-27. It is estimated that 25% of Europeans experience mental health problems at some point in their lives, and around 10% of long-term health problems and disability can be attributed to mental and emotional health disorders. Analysis of Latvian statistics on neurotic, stress-related disorders shows that the situation in this area has deteriorated significantly, with the number of new cases of neurotic disorders rising sharply by 2021 [5; 6; 15]. Of course, the current unstable political situation and wars will inevitably have an impact on the psychological, mental and physical health of society. The coming years will be a long and difficult process of recovery, which will require peaceful and safe spaces.

Referring to the European Landscape Convention, which states that any landscape, anywhere - urban, rural, degraded, areas of outstanding beauty, areas of high quality and everyday areas - is an important part of the quality of human life, and that landscape plays an important role in human recreation and well-being, is a key element of individual and societal well-being, and in understanding the global challenges mentioned above, it is reasonable to consider that the creation of high quality living spaces is an important aspect of the common good of society [10]. Environmental design specifically designed to improve health and well-being can be used to stimulate positive social change in cities and their neighbourhoods [16].

Various terms are used in the literature to refer to the therapeutic segment of landscape architecture. Terms such as sanctuary, therapeutic or restorative gardens, rehabilitative, therapeutic or healing landscapes, etc. are used, usually

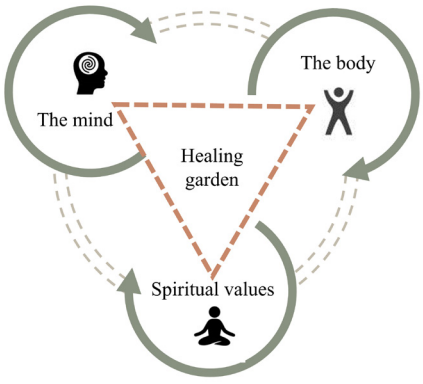


Fig. 1. The essence of healing gardens [Authors' scheme, 2023]

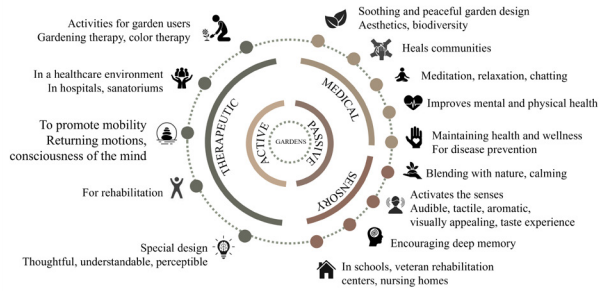


Fig. 2. Gardens with healing properties, their types [authors' scheme, 2023, using 1; 3; 16]

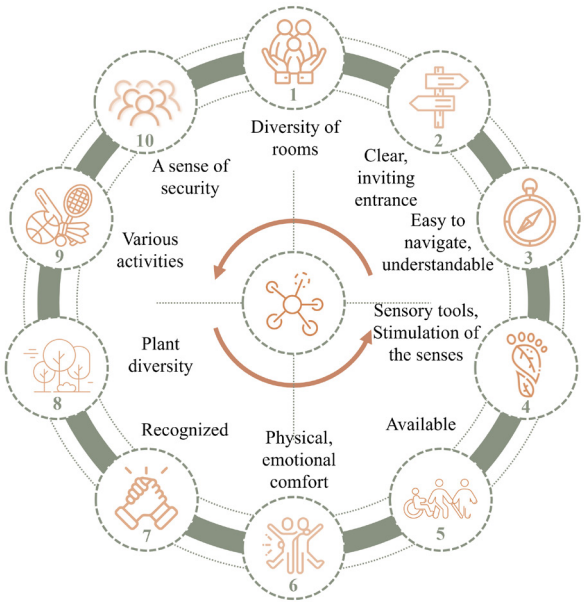


Fig. 3. Basic principles of rehabilitation landscape design [authors' scheme, 2023]

referring to the creation of gardens with healing and therapeutic effects, with a positive impact on human health, they should help and accelerate recovery (see Figure 1). Often these words and terms are used interchangeably [1; 12].

There are thought to be two main types of gardens with medicinal properties (see Figure 2). Gardens that provide passive health benefits - Healing gardens [12; 21] and Sensory gardens [8; 13], and gardens that provide and promote active healing - Therapeutic gardens [1; 16; 19; 20].

Healing gardens are a long-term investment in improving public health and healing communities. By spending time in a healing garden, visitors are healed in a passive way, by feeling the presence of nature. These gardens are not just for when there is an acute need, but are important for preventing illness, promoting active lifestyles, and maintaining and improving feelings of health and well-being [16].

A sensory garden cannot be designed without considering the human factor. Unlike other display gardens, which are designed to be observed from a distance, sensory gardens attract visitors to touch, smell and actively experience with all their senses [8].

The activities that take place in therapeutic gardens contribute significantly to treatment and stress reduction for patients and staff. Therapeutic gardens mainly cater to patients suffering from mental illness and those undergoing rehabilitation after various traumas or illnesses [20].

Focusing on understanding the inner world, adapting to situations and creating the right environment is a sequence of actions that requires attention to nuance and detail. As discussed above, the philosophy of therapeutic landscape design is to create gardens that promote health. This design combines horticulture and landscape architecture with psychology and medicine. It is based on the theory of the positive effects of nature, vegetation and gardens on the psyche, senses and health [1]. For the design of a healing garden to be functional and achieve the goal of healing, specific design and planning principles need to be considered (see Figure 3).

For the purpose of this study, rehabilitation landscapes are landscapes in rehabilitation centre areas, the development concept of which is based on research-based design principles for therapeutic gardens.

Methods

Three different landscapes of abandoned rehabilitation centres have been selected for the study, where the selected areas have different spatial structures, but what they have in common is the rich natural substrate and the diversity of existing elements. The areas were divided into different categories and selected on the basis of the following principles: seaside, forest, suburban - the most typical locations of the treatment centres, which were mainly determined by the natural environment - by the sea, near the forest, in a suburban area. The location of these specific sites has also historically been a key location for the development of sanatoriums and rehabilitation centres. The different structures, sizes and locations of the sites allow each of them to be selected and developed according to the most appropriate development scenario and adapted to the specific group of people. Once the sites have been selected, their functional boundaries are defined. They are not based on cadastral divisions, but the spatial structure of the sites was assessed during the site survey and the functional boundaries were defined in terms of spatial and visual divisions.

The selection of sites was based not only on their location, but also on their natural base, size and the preservation of existing buildings (whether and to what extent structures have been preserved). The sites vary in size, location and configuration, but all of the selected sites have retained their historic buildings; the state of deterioration of the buildings varies, but is one of the prerequisites for the development of the site.

Two former sanatoriums - Liepaja Sanatorium and Baldone Sanatorium - were chosen for the study. Sanatoriums were usually built outside populated areas for hygienic reasons. They were most often built by the sea, in mountains and coniferous (dry) forests, and less often in suburban green areas [7]. The Liepaja sanatorium falls under the category of 'seaside'. The proximity to the sea is a compelling advantage for the development of the rehabilitation centre, it would provide both an influx of visitors and positive health benefits. The Baldone sanatorium falls under the 'forest' category. This site is the largest of the selected sites in terms of area. This gives it the advantage of being able to develop a variety of treatment facilities and offer a variety of activities. The third site selected is the former Straupe Narcological Hospital. This site has not historically been a sanatorium, but the therapeutic framework has been a key element of the site throughout its existence. The site was chosen because of its location - it falls under the category of 'suburban' - and because of its specific natural substrate and the overall configuration of the site.

The Abandoned Rehabilitation Landscape Character Assessment (ARLCA) approach was developed to best assess the existing situation of the sites and their suitability for the development of a rehabilitation function. The matrix is based on the principles of rehabilitation landscape planning and the

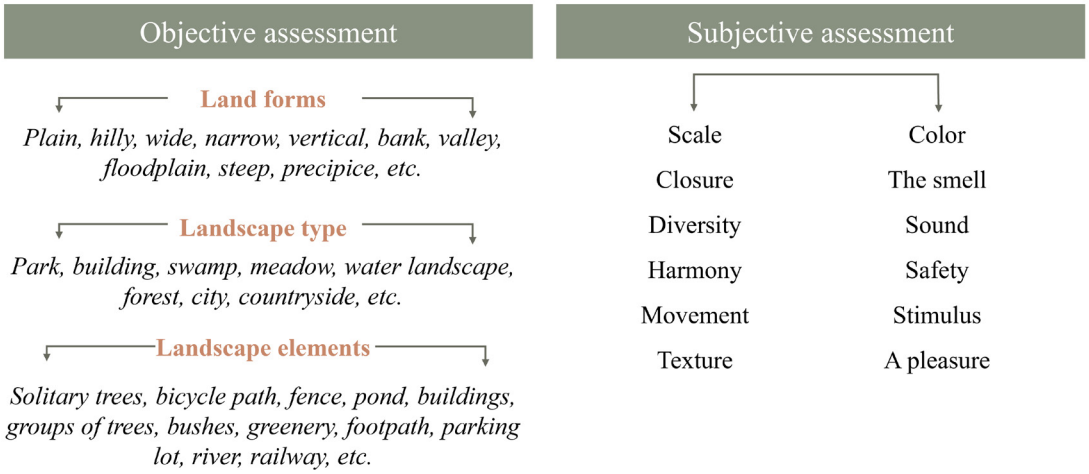


Fig. 4. Landscape assessment method [authors' scheme, 2023, using 9]

Landscape Character Assessment method (see Figure 4).

The ARLCA matrix is divided into three assessment blocks: Landscape - Perception, Accessibility and Approachability, and the Physical Condition of the Site, where each of these blocks has their own evaluation aspects and more detailed evaluation criteria.

The Landscape - Perception block is designed to assess the structure, emotional perception and aesthetic quality of the landscape. The landscape structure assesses the composition of the site, the natural substrate, the existing vegetation, the presence of water, which is an important factor in rehabilitation, and the topography. The emotional perception of the landscape is the subjective assessment of the author, taking into account the basic principles of rehabilitation landscapes, such as the safety of the area. Criteria such as smell, colourfullness and sound are assessed too. In terms of aesthetic quality, attention is paid to the scale of the site, views and existing elements, as well as the architecture of the buildings.

Healing gardens are most often in combination with different buildings. Where there are existing buildings on the site, the relationship between the architecture and the landscape should be examined as part of the site analysis. Architecture and gardens should complement each other and speak the same language. The garden and architecture should be in harmony. The treatment process must be supported by the site, e.g. the shape of the garden, the façade of the buildings, etc. Depending on the diagnosis of the garden users, even the building materials or the size of the building can affect the feeling of safety and comfort [14].

The second evaluation block, Accessibility and Approachability, assesses physical and visual accessibility. This includes criteria such as orientation and landmarks, functional accessibility (public and private transport), distances to public centres, the external appearance of the site and views to it, and environmental accessibility or universal design.

As the sites are derelict and not subject to public activity, the matrix includes an assessment block on the Physical Condition of the Site. This block assesses the extent to which the site is degraded, polluted and vandalised. It also assesses the existing infrastructure in the area - lighting, landscaping features, footpath network, their existence and functionality.

Results

The highest score in the territory of Liepaja sanatorium was obtained in the aspect of emotional perception (see fig. 5). This is explained by the location of the territory, the presence of the sea gives the territory a higher scenic value and makes it more pleasant to be in. The structure and aesthetic quality of the landscape are rated similarly. The site is classified as green, with up to 30% of the total area covered by green vegetation, dominated by individual large trees and groups of shrubs. The value of the site lies in its proximity to water. The architecture of the existing buildings blends harmoniously into the overall landscape, forming a unified structure.

The highest score in the Baldone Sanatorium area was given to the aspect of landscape structure. All the evaluation criteria were above average. The site is interesting, it is not monotonous, the site also benefits from the proximity of water (the river), which also determines the changes in the relief. The site is very green, dominated by groups of trees and shrubs, due to its proximity to the forest. The proximity of the forest also influences the evaluation of the criterion of emotional perception. The assessment of the harmony of the architecture with the surroundings shows that there is discomfort. The high-rise building on the site is very large, creates a feeling of insecurity and is out of scale with the surrounding area.

The lowest score in this block was obtained by the area of the Straupe Narcological Hospital. The score is largely due to the location of the site and the adjacent infrastructure elements. Positive features include the presence of water and the existing green structure, the space is filled with various groups of trees and shrubs, and there are also groups of greenery. Despite the large scale of the existing building (the Palace) in relation to the adjacent part of the park, it fits harmoniously into the overall landscape and reads as a coherent structure.

The location of the Liepaja sanatorium site - the city centre - is positively reflected in the assessment of physical accessibility (see Figure 6), but the functional accessibility of this site received the lowest score because, in comparison with other sites, this site is not as close to public transport as other ones. The site is visible, with views on all sides, partially screened from the sea by trees.

The lowest score in this block is given to the area of the Baldone sanatorium. As part of the site is surrounded by woodland, it is not easily visible from a distance and has no clear landmarks.

The criterion of orientation reflects the situation in the evaluation of the size of the sites. The Liepaja and Straupe sites are relatively small and therefore easy to navigate, while the Baldone site is large and lacks clear landmarks, making it difficult to navigate. All sites score low on the criterion of environmental accessibility - the current situation is not conducive to environmental accessibility. Liepaja Sanatorium scores slightly higher than the other sites due to the fact that there are virtually no changes in the terrain.

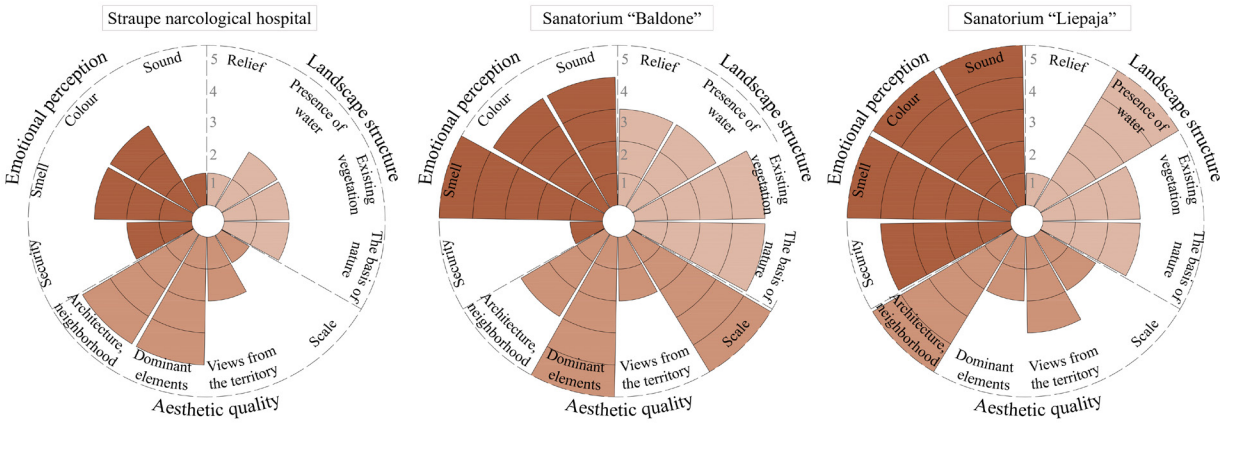


Fig. 5. ARLCA landscape assessment approach, Landscape Perception assessment [authors' scheme, 2023]

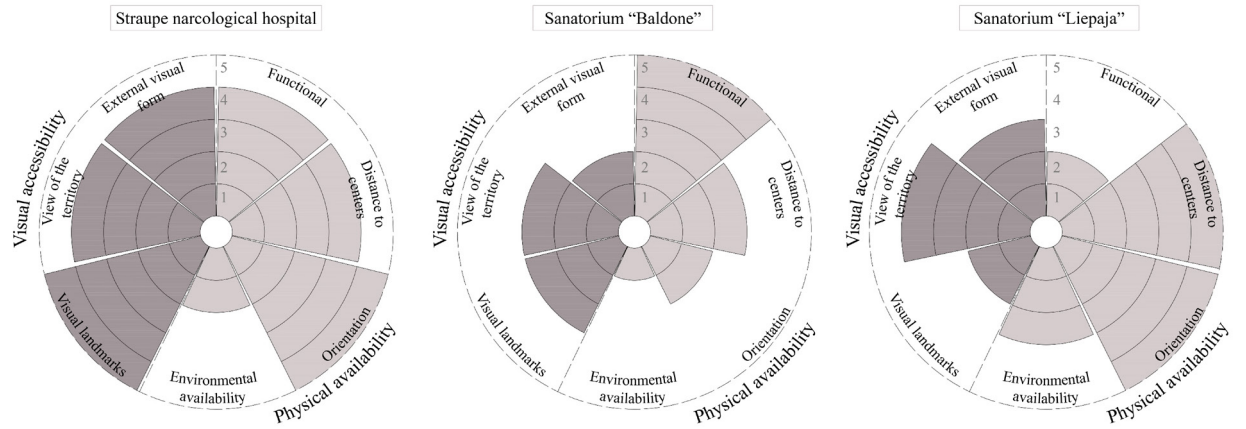


Fig. 6. ARLCA landscape assessment approach, Accessibility and Approachability assessment [authors' scheme, 2023]

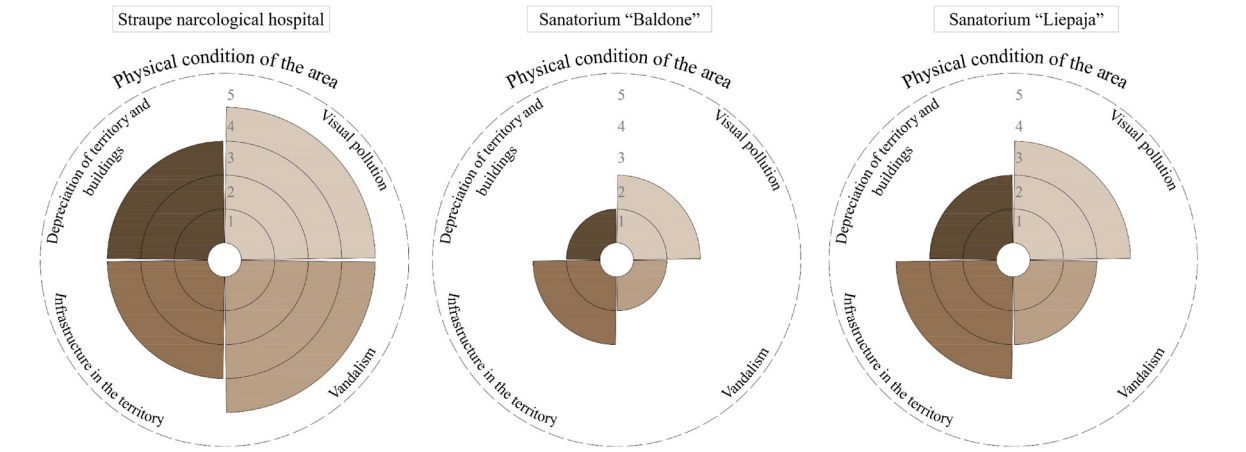


Fig. 7. ARLCA landscape assessment approach, Physical Condition of the Site assessment [authors' scheme, 2023]

Summarising the results of the third evaluation block, there are strong differences between the areas surveyed (see Figure 7). The highest score was obtained by the Straupe Narcological Hospital, where the physical condition of the site was judged to be of the highest quality. This is due to the fact that the institution has been closed for the shortest period of time and both the park and the buildings are still in active use, mainly for tourism.

The Baldone and Liepaja sanatoriums were closed during the same period, but the physical condition of the site is different. This is due to the location of the site and the surrounding infrastructure. The Liepaja sanatorium has suffered from vandalism, and there is a marked deterioration of the buildings. Visual pollution is visible in some places, but the site is arbitrarily overgrown with various shrubs. The Baldone sanatorium, on the other hand, suffers from severe vandalism, pollution and dilapidation. The former infrastructure is no longer functional.

Discussion

A review of the literature and existing research on the needs of different patient groups, the adaptation of outdoor spaces and the aspects relevant to planning, reveals an overall concept of rehabilitation landscaping (see Figure 8). The concept reflects three key elements: nature, people and architecture. These elements interact to influence and complement each other, with the common goal of creating a high quality and adapted rehabilitation outdoor space for

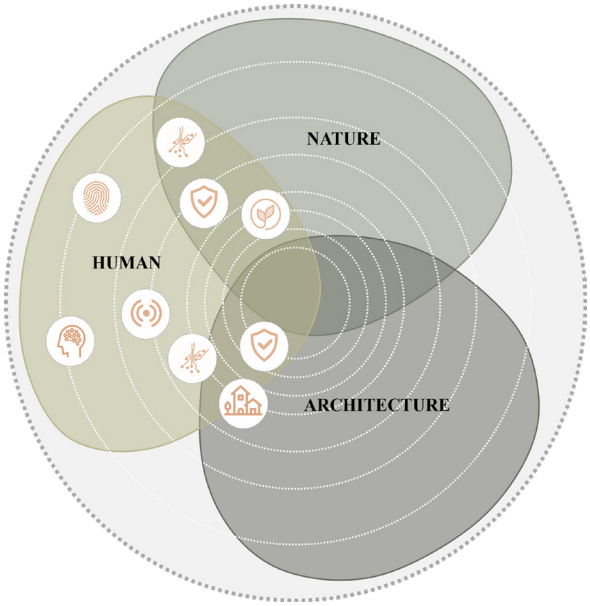


Fig. 8. Basic concept of rehabilitation landscaping [authors' scheme, 2023]

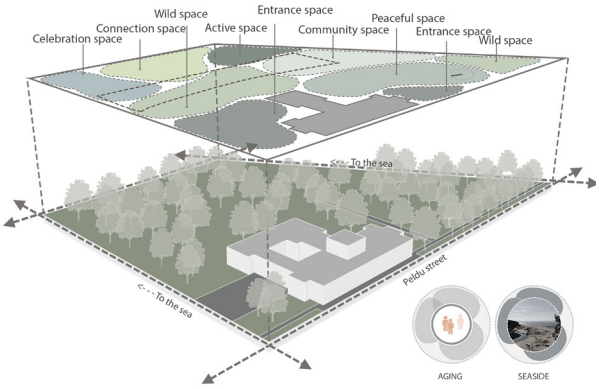


Fig. 9. Planned zoning for the territory of the Liepaja sanatorium [authors' scheme, 2023]

each visitor.

The concept of outdoor development in such abandoned rehabilitation centres comprises seven categories of comfort, which include different psychological and emotional facets, different functions and outdoor structures. By combining some or all of these categories, an overall outdoor message is created that provides the functions needed by visitors and the full functioning of the rehabilitation landscape. Each concept can be tailored to the specific problem of the study, where the direction of development would be tailored to the needs of the user group.

For each of the former off-site rehabilitation facilities to be developed, the paper proposes not only an overall concept for the development of the site, but also three spatial design models that highlight the key features and opportunities of both the site and the specific functional space.

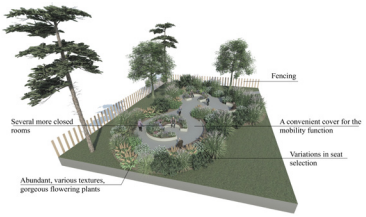
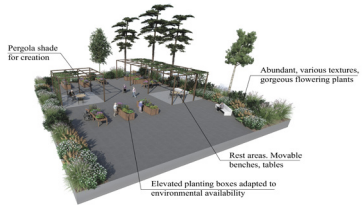
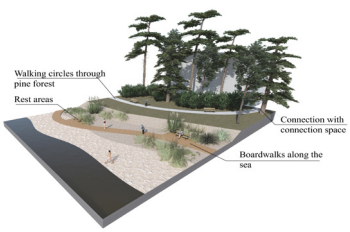
There are several advantages to creating rehabilitation landscapes close to water, in this case the seaside. Rehabilitation by the sea can offer a versatile and effective approach to promoting recovery, providing physical, emotional and social benefits.

Having assessed the current situation, positive features and shortcomings of the Liepaja Sanatorium territory, as well as possible development scenarios, the development direction of this territory is focused on care and rehabilitation of the elderly. Having identified the needs and abilities of the elderly, the territory of the sanatorium is the most suitable for the successful implementation of this type of rehabilitation.

The zoning of the area is divided into seven rooms (spaces) (see Figure 9 and Table 1), which include both more active activities and quiet areas to be with oneself. The zoning is based on the existing situation, but also takes into account the planned new buildings, which will occupy a large part of the total area. The natural base will shrink considerably with the planned development, but the zones have been arranged in such a way that they can be adapted to the future situation with a slight transformation.

The area of the sanatorium is small, easily covered and transparent, and this aspect will ensure that the seniors can easily move around the area, feel safe as they are easily visible

Table 1. Spatial design models for the development of the territory of Liepaja sanatorium [construction by the author]

Spatial design models	Description
	The main purpose of a Peacefull space is to provide a quiet, undisturbed place to be alone or with a small group of friends. The space can accommodate different types and models of seating. The seating areas can be more enclosed or more open, and the backdrops can be varied and made up of different types of greenery. Use flowering, aromatic plants to make the space more inviting.
	Community space - a space to develop communication, interpersonal skills and practical activities. The plan is to create horticultural therapy areas with various raised planter boxes and seating areas. It is important to design the space so that everyone has the opportunity to work - the planters are sized to be easy to reach, the boxes are adapted for wheelchair users and distances are respected. The space is in a sunny location, so it is important to provide shelter from the sun. This solution uses pergolas to shade the space from the sun whilst allowing sufficient light to pass through.
	Connection space - an open, slightly transparent space that merges with the adjacent beach. The space provides a link to the activities on the beach, acting as an introduction to the sea area. Walkways should be created here, linking to footbridges or paths in the dune zone, on the beach. Benches (or seating areas) should be systematically placed along the paths. Views of the sea are important too.

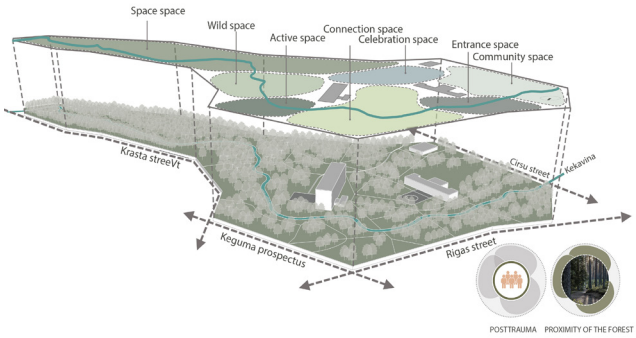


Fig. 10. Planned zoning of the territory of the Baldone sanatorium [authors' scheme, 2023]

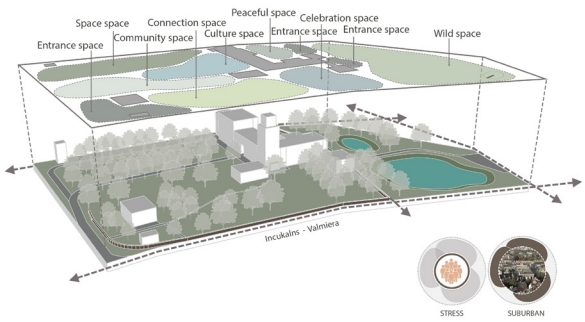


Fig. 11. Planned zoning for the territory of Straupe Narcological Hospital [authors' scheme, 2023]

in any situation, and can quickly return to the building. There is no change in the terrain of the area, which also ensures ease of movement. The proximity of the sea will encourage exercise - quiet walks, swimming and sea air will have health benefits. The infrastructure surrounding the sanatorium, the concert hall, the park, the beach, will give the patients the feeling that they are still part of the community, so that they are not isolated from the activities around them.

Rehabilitation landscapes near forests can offer several benefits for both physical and mental health. The therapeutic effects of forests on stress have been proven by several studies, and various forest therapies are now gaining recognition.

By evaluating the territory of the "Baldone" sanatorium and identifying the positive effects of the forest on stress-related problems, the development of the sanatorium territory is focused on the rehabilitation of post-traumatic stress patients - war veterans. The location and surroundings of the site will create a peaceful rehabilitation space that will provide the necessary peace and quiet for this group of patients.

The seven rooms (spaces) in the sanatorium area are arranged in such a way that they do not conflict with each other and successfully integrate with the existing Lilac Park (see Figure 10 and Table 2).

The creation of outdoor rehabilitation areas in the suburbs enables local people to use them and makes them easily accessible due to their location. The location of the Straupe Narcological Hospital in relation to the nearest towns and settlements makes it economically advantageous to develop the rehabilitation function.

The existing situation of the area suggests that the development of the area could be directed towards the rehabilitation of patients with various stress-related illnesses. The constant movement around the site will remind patients that everything is changeable and transient, so they will not

Table 2. Spatial design models for the development of the territory of Baldone sanatorium [construction by the author]

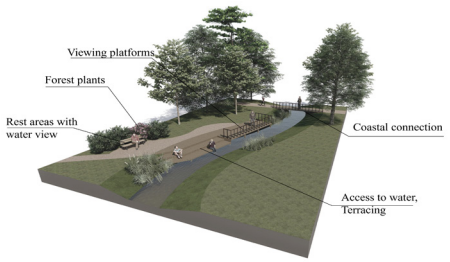
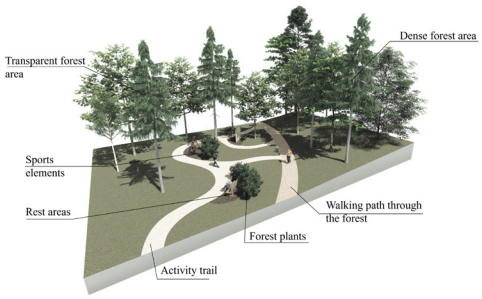
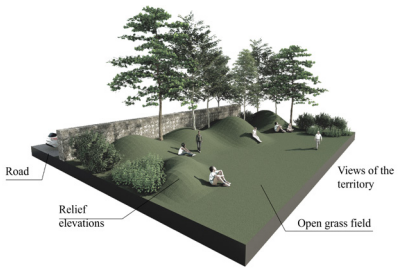
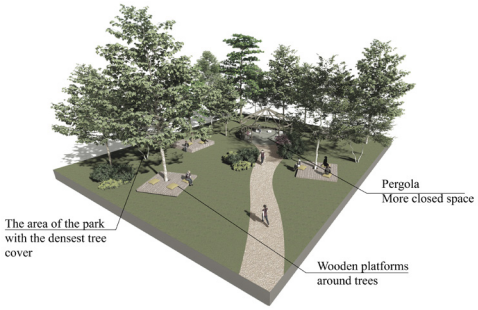
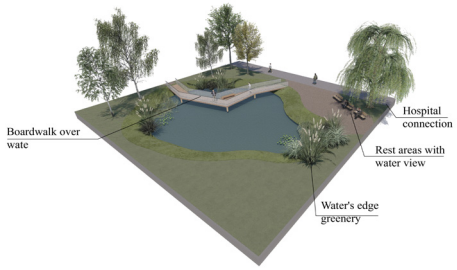
Spatial design models	Description
	The great value of the area is the river Ķekaviņa that flows through it, and its presence can be integrated into any space, but in the Wild space the value of water is emphasised the most. The space will include activities related to observing and exploring nature, focusing on the positive effects of water on visitors. Different approaches to the water will be developed, creating terraces and platforms to be placed near the river. Several bridges will be built throughout the sanatorium area, connecting the two banks of the riverand creating a walking path. There will be areas where it will be possible to touch the water and areas where it will be possible to observe the water from a distance.
	The largest part of the territory is covered by a Space space that shows and emphasises the main asset of the territory - the forest. The space includes the entire adjacent forest area and part of the sanatorium park. The space is to be designed as naturally as possible, taking into account the existing forest values. Emphasis should be placed on the development of walking routes of various lengths and types, with sports equipment in certain areas. It is important to provide regular recreational areas. In order to emphasise the positive effects of the forest on health, forest therapy and forest bathing (Shinrin-yoku) should be developed in the area. Forest bathing is a deliberate act of being in nature, a long, slow walk that allows you to feel your surroundings [22].
	Next to the forest area, next to the sanatorium buildings, there is a Celebration space. The space is intended for various community events for visitors. The development model includes a terraced amphitheatre that blends into the overall forest landscape and provides an opportunity for gathering and developing communication skills. When creating this type of gathering space, environmental accessibility should be ensured. As part of the space is terraced, ramps should be provided to allow wheelchair access to the space.

Table 3. Spatial design models for the development of the territory of Straupe Narcological Hospital[construction by the author]

Spatial design models	Description
	A Connection space is provided along the road to partially separate the inner part of the park from the road. This area provides the most open and secluded areas, allowing for the development of open space for a variety of activities, while allowing unobstructed views of other visitors. The development solution proposes a variety of elevations which will create an interesting structure and opportunities for different uses of the space. The raised areas would also act as a noise barrier, integrated into the overall function of the redeveloped outdoor space.
	In the part of the park where the trees are denser, there is a Space space. The aim of the space is to create an area, separated from the surrounding traffic, where it is possible to be alone or in small groups and feel the presence of nature. By taking into account the position of the trees in the space, it is possible to place integrated wooden platforms around the trees. They can be built at different heights to make them easy to use for all visitors. The space should be complemented by a laconic canopy that allows people to stay outdoors even in adverse conditions.
	The ponds on the site are located outside the walled enclosure of the hospital, so the pond area and adjacent green spaces form a shared Wild space. The emphasis of the space is on the presence of water and its health benefits. The development proposes walking platforms over the water, with the possibility of separate areas with direct access to the water. Safety measures should be taken when creating platforms over the water, with fencing along the edges of the platforms. Recreational areas should also be provided adjacent to the ponds with views over the water. Benches, tables, planting near the water's edge to emphasise the purpose of the space - to connect with the water.

feel isolated from the world around them.

When designing the outdoor rehabilitation area near the motorway, the layout of the spaces should be considered in such a way as to create a reminder of the constant movement mentioned above, but without creating a conflict between disturbing noise and quiet rest areas. The site consists of eight rooms (spaces) (see Figure 11 and Table 3), located in relation to the designated areas, the road and the existing building complex.

Conclusions and Recommendations

Based on the research and development proposals for different types of rehabilitation landscapes, guidelines have been combined to help in the design of such outdoor landscapes:

- Firstly, a therapeutic outdoor space should provide a variety of spaces - spaces with different characters for groups of visitors and for being alone. Providing a variety of spaces gives patients a choice and a sense of control, which in turn reduces stress. A space designed for solitude allows patients to 'break away' from the sterile environment of the hospital; spaces where small groups, visitors or medical staff can gather provide social support for the patient [12].
- Closer to windows, rooms and building entrances, the garden will be used more as these spaces are easily accessible, but another approach should also be offered, the provision of more remote, spacious, freer spaces. Designs should be made to allow easy access to garden spaces, providing an environment that encourages social interaction between small groups, as well as places where larger numbers of people can gather, while still allowing a sense of privacy [21].
- Provide a variety of activities - both active and passive activities should be provided. In developing different activities, a balance should be struck between passive and active spaces. The balance between these two aspects needs to be found depending on the type of users and how much they are able and willing to be active or vice versa. This aspect points to the importance of understanding user groups and their needs at the outset [14].
- People should be able to work and stay in the garden during different seasons and weather conditions. Shelters in the garden will provide protection from the sun and allow activities to take place in less favourable weather conditions. There may also be covered areas closer to the entrances to the buildings to allow access to the garden when it is raining. Lighting should be provided to allow the garden to be open during the dark seasons [1; 12].
- All garden elements should not only be safe, but also comfortable. The overall aim is to create an environment where visitors feel cared for. If visitors feel physically and emotionally comfortable, they will spend more time in the garden. This in turn requires that sufficient seating is provided and that it is accessible to all. Seating should be regular and systematically distributed throughout the area, with an optimum spacing of about 25 metres between benches. Benches should also be placed at entrances to allow visitors with limited time to sit down. It is also possible to use movable benches and tables to give visitors a choice, which in turn leads to a sense of control [3; 12; 17].
- The garden needs to be clear, understandable and easy

to navigate - an abstract, unclear environment can create a sense of anxiety, which is unacceptable. Spaces should be arranged in a way that is transparent, easy to find and inviting. The ability to navigate the garden independently can be encouraged in a number of ways: clearly visible paths, signs, landmarks, visible access to the building. The path system should also act as a guide, always leading to the desired destination and helping to find the way back, ideally all paths should lead back to the building entrances. It is equally important to create features that will help visitors remember the garden. The garden should be recognisable and encourage associations. It is advisable to include a striking element that is not competing or off-putting, a distinctive group of plants, a water feature or anything else that will create new memories and associations with the place. The visitor should feel a sense of belonging to the garden and associate it with a familiar space, event or feeling [2; 12].

- Accessibility and universal design should be ensured; the garden should be accessible to everyone, regardless of age, ability or preference. When choosing surfacing materials, make sure they are wheelchair friendly and easy to navigate, and path widths should be appropriate [3; 12].
- Features should be provided to stimulate the senses and help with the practice of mindfulness. This can be achieved by using a variety of materials in the garden. From the use of different textures in landscaping elements to the wide variation in planting. Touching stones that warm in the sunlight, walking on different paths with soft or hard surfaces, touching plants, tree trunks - these activities make you aware of and connected to your surroundings. The full potential of the landscape in terms of views should be exploited, and seating should be arranged to provide as many different perspectives as possible [14].
- The presence of water is clearly a positive aspect. Moving water is soothing in both an auditory and visual context. It creates a psychological screen that helps in the process of rejuvenation. Moving water is also an effective way of reducing ambient noise. Still water promotes meditation and peace [12].
- Garden entrances play an important role, they should be presentable, inviting and appealing. The entrance area is the first impression of the garden, it plays a crucial role in attracting patients and making them feel safe [12; 14].
- The proportion of hard surfaces in the garden should be minimised, so the choice of planting is one of the most important aspects. It is recommended to use as wide a variety of plants as possible - colourful flowering plants, different textures, colours and shapes. Plants that make sounds in the wind, tree canopies, different grasses and others should be used, as well as plants that attract birds and butterflies are positive features in the garden [12].
- Plants can mark the change of seasons and help to create a sense of cyclical rhythm. A sense of cyclicality is extremely important in creating an awareness that nothing is permanent, just as the garden and landscape change, so does the process of recovery and growth [12].
- Healing gardens should provide a sense of security. The garden should be enclosed, the enclosure may not be visible, but the visitor should feel that they cannot accidentally leave or get lost. A garden with living components such as trees, flowers and shrubs creates a sense of security and hope and offers psychological peace, a space to relax. The architecture of buildings should also create a sense of security and not be heavy and intrusive, as patients who are vulnerable and impressionable may perceive depressing and threatening messages from any environment that creates negative associations. To ensure the healing process, the environment needs to be unambiguously positive, which means that the space needs to support the healing process. The use of art (sculptures), garden and building forms should be considered; they should be harmonious and non-competitive, otherwise a negative experience may be created [14].

When planning such specific outdoor spaces, it is important to match their functionality with the resources already available in the area. The choice of the potential target group is also very important, as it determines the guiding principles for the development of the space.

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Kopsavilkums

Saskaņā ar Pasaules Veselības organizācijas definīciju, cilvēka veselība ir pilnīgas fiziskās, psiholoģiskās un sociālās labklājības stāvoklis, ne tikai stāvoklis bez slimībām vai fiziskiem traucējumiem. Daba ir viens no mehānismiem, kas var palīdzēt īstenot šajā definīcijā uzsvērtos aspektus. Rehabilitācijas ainavas, kas ārstniecības iestāžu ārtelpā var tikt skatītas caur ārstniecisku dārzu prizmu, ir nozīmīgs atbalsts sarežģītās dzīves situācijās un var kalpot kā papildinājums klasiskās ārstēšanās veidiem. Tās neaizstāj medicīnisko palīdzību un dažādas terapijas, bet ir kā atbalsta mehānisms un papildinājums ātrākai un kvalitatīvākai rezultātu sasniegšanai. Darba mērķis ir apskatīt iespējas dažādu rehabilitācijas ainavu, tai skaitā pamestu, veidošanai, pielāgojot tās dažādām mērķgrupām, kuru skaits un daudzveidība mūsdienu mainīgajā politiskajā un ekonomiskajā situācijā pieaug, kā arī pieaug to cilvēku skaits, kam nepieciešama īpaša pieeja atveseļošajām procesam, ko var sniegt arī pareizi veidota ārtelpa. Pamestu rehabilitācijas iestāžu ainavtelpu revitalizācija ir būtiska arī ilgtspējas procesu nodrošināšanai, kad tiek pilnveidots šādu teritoriju funkcionālais zonējums un atgrieztas dzīvē ārtelpas, kas savu funkciju var pildīt ilgtermiņā, transformējoties mūsdienu vajadzībām pielāgotās telpās. Pamatojoties uz veikto dažādu pamestu rehabilitācijas iestāžu ārtelpu analīzi un teorētiskajām studijām, sagatavoti priekšlikumi un tematiski modeļi pamestu ūdens tuvumā esošu, apdzīvotu vietu tuvumā esošu un meža ieskautu rehabilitācijas ainavu revitalizācijai, izceļot šādu teritoriju potenciālu atsevišķu ainavtelpu ietvaros, uzsverot katrā no tām rehabilitācijas ainavu nozīmi.

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INDUSTRIAL HERITAGE OF THE 1920S AND 1930S IN RIGA

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Abstract. Riga is best known for its industrial growth at the turn of the 19th and 20th century and in the 2nd part of the 20th century. The interwar period of industrialization (1920–1940) is famous with a number of impressive industrial products while the impact of production activities on architectural and urban development is almost neglected. This paper addresses the industrialization of Riga during the interwar period between the WWI and WWII, examining the actual industrial development and the architectural testimonies still to be found in urban environment of the city, while addressing the perception of architectural heritage in the context of general and art history of Latvia. The methodology of the paper includes survey and analysis of historical sources, fieldwork carried out during a couple of decades, and a comparative analysis of the remaining industrial buildings of the period. Due to the evacuation of machinery and workforce from the factories of Riga at the beginning of the WWI, the vast production halls built recently were empty while the afterwar technological development and consumer demands triggered early reuse of a number of existing factories for new functions including production, storage, industry, repairs etc. The new industries such as transportation and communications, or the blossoming ones like food production, ensured and supported influx of a new, contemporary architecture into the urban space of Riga. The Modern Movement was one of the trends, Art Deco was another, while more modest and rational halls were built for transportation needs. The architectural remains of industrial heritage from this period are in variable condition. Some of the structures were altered during the following decades; some were abandoned since the 1990s due to disappearance of the entire enterprises they were part of. Recognition of the values of the Modern Movement architecture in general and of its features in industrial heritage in particular have helped in preservation and revitalisation of several cases already. As those enterprises were instrumental in the creation of the economic and social efficiency of Latvia during the interwar period, currently might be the right time to reconsider and strengthen their heritage value and protection options in the urban landscape of Riga.
Keywords: industrial heritage, architectural heritage, Modern Movement, architectural history, urban environment

Introduction

Riga emerged as a rapidly growing, contemporary industrial metropolis at the turn of the 19th and 20th century. The urban environment that took shape during that period was one of the key reasons why UNESCO inscribed the historical centre of Riga on its World Heritage List. During the 1920s and 1930s, Riga was the capital of the independent Republic of Latvia, building its economic prosperity upon agricultural success and regeneration of its industrial nerve. Technological development, human know-how and existing industrial buildings made the backbone to build on the industrial growth of the interwar years. During the Soviet occupation of Latvia, a new industrial expansion overshadowed the memories on the achievements of the interwar period. As a result, the scope and value of industrial heritage from this period is not accurately defined, especially in comparison to other historical periods. Therefore, it is crucial to analyse actual architectural testimonies from the interwar period, their current conditions, and protection possibilities of those buildings and sites.

Historically, survey of industrial heritage is a new discipline in Latvia; during the 1920s and 1930s heritage specialists were mostly focused on ancient monuments and artefacts, and not listing industrial buildings at all; a single windmill was protected by moving it to the Open-Air Museum of Riga, one more was listed only after the 2nd World War, and the first cases of the 19th century heritage listings occurred only in 1984 [2]. However, during the interwar period, there were surveys and analyses carried out on current industrial developments in the city [6; 26] and planning proposals developed based on projections about the future industrial development of the city [21]. During the final two decades of the 20th century, research touching upon industrial and architectural heritage from this period was mostly focused either on the economic, social and political development of the city [29] or on architectural history, surveying and defining architectural trends and landmarks among public and residential buildings [19; 20]. Foreign historians saw Riga either as part of the Russian Empire, of Central Europe, or of the Soviet Union if mentioning at all; statistical data from the three Baltic States during the interwar period often were mixed all together [27]. Nowadays, industrial heritage is well researched and promoted internationally [3], its adaptive reuse has become a fashionable trend [10], while the positive gain from contemporary regeneration approaches of previously neglected and depressive ancient ruins has been recognized also in Latvia [28]. At the beginning of the 21st century, research on industrial heritage developed considerably in Latvia, leading to the publication of a guidebook on the most prominent heritage from all the periods of industrialization [4]. Several technological surveys on specific sections of industry [13; 14; 15] and monographies on particular branches of industries [5; 8; 22] were published covering the interwar period as well. The scope and importance of the industrial heritage of Riga was recognized by several researchers, both locally [30] and internationally [25]. A thorough economic history on the industrial development of Latvia was also published [17]. History of art and architecture has mentioned industrial heritage recently [12] while paying a special attention to the new, locally produced construction materials introduced in building industry during the interwar period, too [23]. General surveys on industrial heritage of Riga have been touching upon the specific features and challenges for interwar industrial architecture just briefly [1]. Nowadays, there are many on-line sources available mentioning the industrial past of Riga and Latvia ensuring continuous rise of interest on heritage. While some of them should be cross-checked to verify the information provided, there are reliable sources based upon historical archives, too: The Digital Library of the Latvian National Library and the digital version of the National Encyclopaedia of Latvia; data from those sources along with data from Latvian State Historical Archive's funds of Project Archive of Riga Building Department are used in the

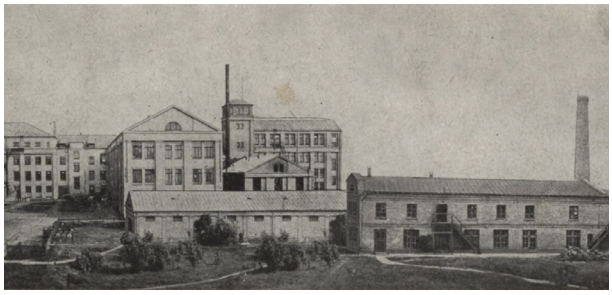

Fig. 1. Rubber factory "Kvadrāts" at Latgales iela 322/324.
Architect Wilhelm Ludwig Nikolai Bockslaff. 1925. The period photo [16]

Fig. 2. Contemporary view of rubber factory "Kvadrāts"
at Latgales iela 322/324 with additions from the 1970s
and on-going process of functional and architectural conversion

article if no caption is provided.

The research discussed above does not provide a thorough survey of architectural legacy of industrial heritage from a particular period, especially of the 1920s and 1930s. There is also no analysis from either functional or stylistic point of view carried out of that heritage. The subject of this paper is industrial heritage from the 1920s and 1930s, and its aim is to examine this heritage, define its dominant features and artistic quality, as well as main challenges and recommendations for its maintenance and protection in the future. Comparative analysis of historical and contemporary sources on general and on socio-economic history as well as on history of Modern Movement architecture and heritage protection supported by fieldwork and photographic surveys by the authors carried out during more than 20 years was used as basis of research methodology. All photos used in the article are taken by Anita Antenišķe if not stated otherwise.

Functional typology of the interwar period industrial heritage in Riga

Industrialization began around the 1770s in Great Britain with the introduction of steam power and development of the factory system; it fostered new social and economic relations, but also called for construction of new types of buildings to satisfy the demands of the production process, energy supply, transportation and other industry-related activities. The first industrial revolution was followed by the second one, marked by the development of internal combustion engine, electricity, and mass production, while the beginning of the third was marked by peaceful application of nuclear power and information technologies [9]. Considering this generally accepted technological and economic periodisation in the context of political circumstances in Latvia, three main periods of industrial development regarding Riga can be discerned: the first from the middle of the 19th century to the beginning of World War I, the second was the interwar years, and the third after World War II.

After the intense first period of industrialization Riga grew from a small fortified town into a huge industrial metropolis [20]. The city had a diverse and technologically advanced scope of factories prior to WWI. The industry was dominated by metalworks and mechanical engineering factories, chemical industry, textile industry, food production, and timber industry. However, at the beginning of the 1920s, Riga was a huge metropolis recovering from the devastating years of WWI and the war for independence. Most of the machinery and workers from the city's factories as well as raw materials were evacuated to inland Russia at the beginning of the war [17], leaving halls of formerly busy and prosperous enterprises vide and empty.

The industrial resume during the 1920s was slow; there were challenging tasks ahead of the entrepreneurs and owners of the factories: to restart the production process, find new machinery, ensure supply chains of raw materials, sometimes relocate the enterprises, or even find a new use for the now empty premises, along with ensuring financial background for all those activities. The leading enterprises in 1925 were the tobacco factory "A. S. Maikapar", leather factory "O. Vildenbergs", and textile factories "Lenta" and "Rīgas tekstilfabrika" [17], all operating on their historical premises. Comparing the data on factories in 1920 and 1930, the number of enterprises grew from 310 to 1147, and the number of employees from almost 9.000 to more than 48.000 in 1930 [6] – a true testimony of a decent recovery. The impact of the global economic crisis led to the highest unemployment rates around 1932. Strong state subsidies to locally produced goods and high taxes on imported ones, the leadership coup in 1934, and restructuring enterprises from private to state-owned in several important industries helped to stabilize the situation [17]. This development of events characteristic

Fig. 3. Telephone exchange at Krišjāņa Barona iela 69.
Architect Dāvids Zariņš. 1928

Fig. 4. Telephone exchange at Krišjāņa Barona iela 69,
before recent renovation [photo: Jānis Krastiņš]

throughout Europe was criticised not only by Soviet historians [29], but also by western ones like S. Pollard [30], advocating for a free flow of goods and concentration of technological development in specialized enterprises and regions. However, the previous industrial experience both in Riga and Liepāja put Latvia in a context different from its nearest neighbours: the country was struggling to regain its former industrial power instead of just striving to become a newcomer in industrial world like Lithuania or Poland.

At the end of the 1930s, metalworking was the leading industry in a number of enterprises in Riga, while textile industry was dominating by numbers of employees; value of production was the highest in food production [29]. Statistical data from 1939 on industrial enterprises of Latvia with more than 100 employees, collected by Edmunds Krastiņš [17], provides an insight into the functional structure of industrial production in Riga. There were 17 large food production companies in Riga (including three tobacco factories), 6 of them were established before WWI, while 6 – after 1934, mostly new state companies created on the basis of already existing factories; most of them were operating inside original premises from the turn of the 19th–20th century. Some of the food processing factories were using adapted premises, for example the dairy company "Rīgas piensaimniecības sabiedrība" (current name – "Rīgas piensaimnieks") operating on the site of the "Russo-Balt/ Russisch-Baltische Waggonfabrik" carriage factory.

Regarding production value, the second most important industrial branch in Riga at that time was the textile industry [29]. There were 24 factories with more than 100 workers operating in Riga (however, the largest textile factory was in Jelgava). A third of them were established before WWI, 9 factories were established during the 1930s – some of them were operating on premises built especially for them, in new areas.

Mechanical and electrical engineering and metalworking industries were following, led by "VEF" (Valsts elektrotehniskā fabrika / State Electrotechnical Factory), operating on the premises of the former factory "Union" (established in 1898). Altogether, there were 19 companies with more than 100 workers in Riga, including 4 large bicycle factories and 3 railway carriage workshops [17]. Most of those companies were either using their original premises built before WWI (even if the company name had changed), or they were located or moved into premises built for another enterprise that ceased to exist. For example, "Foto-radio centrāle A. Leibovics" (established in 1928, renamed "Radiotehnika" after WWII) was moved to former "Zeiss" factory at Mūkusalas iela 41 in 1938 (est. 1914; conversion by engineer E. Stolpers, 1939 [19]); the bicycle factory "Ērnepreiss" moved into their newly built premises at Brīvības gatve 193 (architect Aleksandrs Klinklāvs) in 1936.

Production values of the chemicals and timber industries made them come in the 4th and 5th place in Riga. However, the number of timber production companies was higher than chemicals' – 20. Most of the timber industries were established during the 1920s and 1930s, either sawmills or veneer factories, but also furniture factories. Most of the operating chemical factories were established during the 1920s; "Rīgas eļļas spiestuve" (the former "V. Hartmann") was taken over by the company "Linols", showing once more that the use and re-use of existing facilities was very common in Riga. However, the largest factory of Riga prior to WWI, "Provodnik", was unable to restart production due to 95 % of its actives lost during its evacuation to Russia; the workers were taken on by other rubber factories [17]. New factories "Kvadrāts"

Fig. 5. Administrative building of the confectionery factory "V. Ķuze" at Artilērijas iela 55. Architect Aleksandrs Klinklāvs. 1934

Fig. 6. Orthopaedic workshops of the Red Cross. Contemporary view

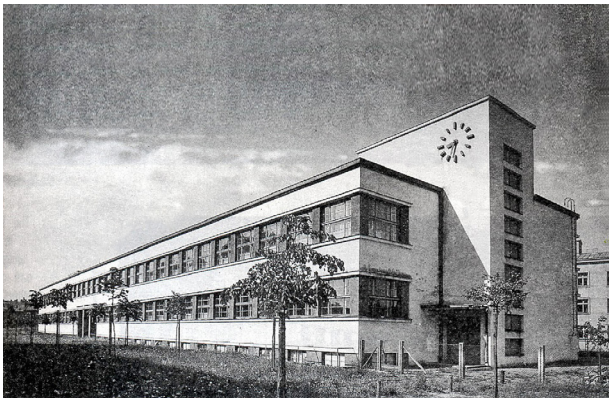

Fig. 7. Orthopaedic workshops of the Red Cross at Pērnavas iela 62. Architect Aleksandrs Klinklāvs, 1933. The period photo [19]

and "Varonis" were opened instead, in other premises, either new or adapted, ensuring the supply of rubber goods and tires.

Clothing and footwear industry that produced mostly for the home market followed the above-mentioned industries with just half of the production values of the previously discussed exporting industries. Only two of the factories were established at the end of the 19th century, while the rest of the 13 were split almost in half on their establishment during either the 1920s or 1930s [17]. Mineral processing industry had even smaller production values, but had long-term brand value regarding china and porcelain products of the factories "Kuznecovs" and "J. C. Jessen porcelāna fabrika", glassware products of "Iļģuciema stikla fabrika" and of five

Fig. 8. Workers canteen, now – changing rooms for employees, Riga Tram Depot at Brīvības iela 191, Architect Nikolajs Bode. 1937

more glassware factories, all operating on the historical premises built before WWI. Last but not least, plasterboard sheets riģipsis were produced by the factory "Rīgas ģipsis" [23]. A few leather factories were also operating in Riga, mostly on their historical premises.

The most important paper industry factories of Latvia operated outside of Riga, but some paper and carton factories operated in the city: one in the centre and two – on the outskirts of the city, all located on premises from the turn of the 19th to 20th century. The printing industry was more prominent regarding production values: 3 companies out of 12 were operating already before WWI, 6 were established by the Latvian state immediately after gaining independence to ensure various government demands [17]. Only one of the printing presses with more than 100 employees was established and built during the 1930s – "Rota", but there were smaller ones, too.

Considering the industrial growth during the beginning of the 20th century and the 1920s, planning of new industrial areas in Riga became a crucial task for the new development plan of the city. To ensure better living conditions in the central areas of the city, Arnolds Lamze, the architect responsible for the design of this plan, suggested moving factories further away from the centre to areas allowing for necessary and unpredictable expansion along with good connections to railroads and port facilities provided [21]. One of the suggested sites for industrial expansion was the Meadows of Spilve, on the left side of the Daugava River. The other suggested site was by the Dole Island, next to the proposed 2nd hydroelectrical plant of Riga; however, this area was outside of the administrative borders of the city of Riga, therefore it was not analysed more deeply (however, recent history has shown that industrial expansion in areas flanking the very borders of Riga is a characteristic and on-going process during the last 20 years for the city). Construction of small-scale satellite towns next to Riga was also Lamze's idea based upon urban planning tendencies in France. The plan was not approved by the government as the construction policies shifted towards creating new government buildings and representational sites; still, the plans and writings by Lamze remain important analytical testimonies to the urban and industrial development of Riga during the first half of the 20th century.

Architectural features of industrial buildings of Riga during the interwar period

Rapid development of structural engineering that begun with the industrial revolution was one of the factors along with cultural and urban transformations that led to the creation of the Modern Movement and contemporary architecture, according to Kenneth Frampton [11], marking "Fiat-Lingotto" factory in Turin, Italy as the earliest case of the white reinforced concrete Modern Movement architecture (1915–1923). The Boat Store in Sheerness Naval Dockyard, UK (1858–1860) is considered the oldest proto-modernist iron-frame structure [7]. The first proto-modernist factories in Riga were built shortly before WWI.

While several of the existing enterprises of Riga in the 1920s were considering re-opening and re-start of production, there were other entrepreneurs looking for new business opportunities. The first factory built in Riga after WWI was Baltic India Rubber Company "Quadrat" (Gumijas rūpniecības akciju sabiedrība "Kvadrāts") at Latgales iela 322 (Fig. 1), designed by architect Wilhelm Ludwig Nikolai Bockslaff and built in 1925 [18]. The massing of factory buildings as well as proportions and elements used for detailing of the brick facades strongly remind of the design approach used for apartment buildings and factories constructed prior to the war: wide lesenes accentuate verticality of facades, windows are also elongated vertically, while pediments and the tower signal of stability and classical values. Despite the competition from other rubber factories soon becoming fierce, "Kvadrāts" survived and achieved great results; it was heavily expanded and architecturally transformed during the 2nd part of the 20th century, therefore being better known by its buildings from the 1970s and its post-war name "Sarkanais kvadrāts" ("Red Square"), currently in the gradual process of functional

Fig. 9. Entrance building and production building of "Rīgas vilnas rūpnieks" at Brīvības gatve 222. 1937

Fig. 10. Textile factory "Brāļi Svetlanovi" at Katoļu iela 21

Fig. 11. Building of printing press "Rota" at Blaumaņa iela 38/40. Architect Alfrēds Birkhāns. 1934 [photo: Jānis Krastiņš]

Fig. 12. Building of printing press of joint stock company "Riti" and newspaper "Segodnya" at Dzirnavu iela 57. Architect Alfrēds Birkhāns. 1939

and architectural transformation (Fig. 2).

The first industrial heritage building reflecting contemporary architectural trends belonging to the industrial heritage from the interwar period was a telephone exchange building designed in 1928 by architect Dāvids Zariņš at Krišjāņa Barona iela 69 (Fig. 3 and Fig. 4) with its impressive jagged gable [19]. A similar detail reminding of a rising sun was repeated on a smaller scale in lunettes above the ground-floor windows. Plastered fluted lesenes stress the verticality of the façade and spiritually elevate the image of telecommunications of this rather modest three-storey building. The details bring the structure closer to Art Deco vibe than to Modern Movement architecture. The building was recently renovated and converted into offices; the light green colour in a shade akin to Art Nouveau period adds a touch of contemporary elegance to the building. Next year the same architect designed a post office at Bāriņu iela 10, in Pārdaugava District [18]. Here, the verticality was accentuated again by lesenes, while the geometry of composition is dominated by rectangular elements, the expressive entrance portal being the most elaborate detail of this building.

A new production building of the confectionery factory "V. Ķuze" was erected in 1923 in the courtyard on the site at Artilērijas iela 55 by architect Wilhelm Hoffmann. In1934, a representative, street-facing administrative building of the factory was built containing a workers' canteen, hall for culture and sports events, and the owner's apartment, designed by architect A. Klinklāvs (Fig. 5). White plaster, horizontal ribbon fenestration, delicate railings on balconies and the elegant placement of the logotype and factory name presented the enterprise as a contemporary and luxurious producer and entrepreneur. Unfortunately, the building is in a bad shape currently; original window frames have survived only on the first and second floor windows, while the lettering in metal is completely lost.

In 1931–1933, another, just two-storey high office and production building for a foreign pharmaceuticals company, "F. Hoffmann–La Roche & Co" was built almost at the same time at Miera iela 25 (architect A. Klinklāvs, Fig. 14) [19]. The building rests on a structurally innovative foundation slab; its facades with ribbon-like fenestration are clad in

Fig. 13. Main building of the chocolate factory "Laima" at Miera iela 22. Architect Staņislavs Borbals. 1939

Fig. 14. Office building of "F. Hoffmann–La Roche" at Miera iela 25. Architect Aleksandrs Klinklāvs. 1931

natural stone and reflect language of the Modern Movement. The building was recently renovated to host the same company who commissioned the original design [24].

Orthopaedic workshops of the Red Cross of Latvia (Latvijas Sarkanā Krusta Ortopēdiskās darbnīcas) at Pērnavas iela 62 (Fig. 7) were designed in 1933 by the same architect [19], and, due to being a production facility can be also attributed to industrial heritage. A horizontally elongated volume possesses a certain monumentality characteristic to international factories of the period, original fine ribbon fenestration accentuates the elegance of the architectural design. The building has not lost its character even after

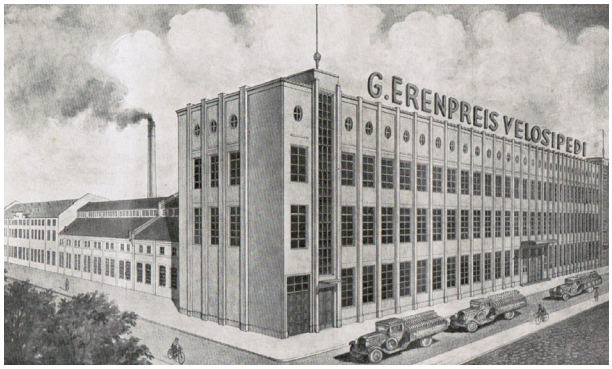

Fig. 15. "Ērenpreiss" bicycle factory at Brīvības iela 193, Architect Aleksandrs Klinklāvs. 1936–1938. Historical image [22]

Fig. 16. Workshop for tram carriages at Klijānu iela (address: Brīvības iela 191). Architect Nikolajs Bode. 1939

Fig. 17. Transformer substation at Stadiona iela 1. Architect Artūrs Ramanis. 1939

Fig. 18. Small transformer substation, typical design, at the corner of Latgales iela and Katoļu iela. 1922–1929

Fig. 19. Small transformer substation, typical design, at the corner of Brīvības iela and Ūnijas iela. 1922–1929

extension two floors higher in the 1970s (Fig. 6).

Characteristic feature of the period was attention directed to the improvement of the working conditions and well-being of factory workers. A number of canteens (sometimes called club houses) were built and organized for workers during the 2nd part of the 1930s all around Riga. For example, a canteen for workers of public transport was built in 1937 at Klijānu iela (address at Brīvības iela 191, architect Nikolajs Bode) [5]. Towards the street, it is a small and simple two-storey building with elongated, low window band on the ground floor and a small, round window on the first-floor façade, while its stairwell is marked by a narrow vertical window characteristic to Modern Movement buildings of the period (fig.87), while more elaborate massing is created for courtyard façade. These details reflect the language both of the Modern Movement and Art Deco. The building was recently renovated, and the fresh, white walls together with red brick lines around the windows and entrance portal provide a fine treat for an eye.

Successful development of the textile industry led to new construction and also to the re-use of other, empty and abandoned factories for textile production. For example, the former steal tool production factory "Salamandra" in the Jugla neighbourhood in Riga was reused by the textile factory "Rīgas audums". One of the new wool factories belonging to joint stock company "Rīgas vilnas rūpnieks" was built at Brīvības gatve 222 in 1937 (Fig. 9). Currently the original three-storey grey building is rented out to small businesses and, along with its small original entrance pavilion and buildings from later periods (of the 1970s and 1980s) located deeper inside the plot, awaits regeneration. There is another former textile factory just next to it, with all the structures already altered (also built in 1937; called "Astotais marts" during the 2nd part of the 20th century); in its courtyard, small traces of industrial origin remain still noticeable. Two knitwear factories were established in Riga during this period: "Māra" (most recent name; former textile factory "Zvaigzne" of the joint stock company "Šterns & Meilahs"), established in 1925 at Ernesta Birznieka-Upīša iela 21, its street-facing structures added in the 1970s, and recently redesigned into offices, and "Brāļi Svetlanovi"(renamed "Sarkanā Baltija" in 1940, after WWII one of production workshops of a larger textile enterprise "Sarkanais rīts"), a narrow reinforced-concrete frame structure with large street-facing windows and Art Deco inspired lesenes, still serving for textile production purposes at Katoļu iela 21 (supposedly late 1930s, Fig. 10).

Two printing presses designed by the architect Alfrēds Birkhāns were built: "Rota" at Blaumaņa iela 38/40 (1934, Fig. 11) and the printing press "Riti" and headquarters of the newspaper "Segodnya" at Dzirnavu iela 57 (1939, Fig. 12). The first is a five-storey structure originally built between apartment buildings that line perimetric block of buildings. All its surfaces are coated in artificial stone and displays the canonical language of the Modern Movement with accentuated horizontality and two semi-circular bay windows [19]. The second is a special, more than 32 metres tall building aspiring a sky-scraper image. In this case, the Riga Construction Authority allowed to violate the building height of 21.3 m allowed in the Riga building regulations, justifying it allegedly with the "special urban planning situation", even though the specific plot of land in the corner of the block does not differ in any way from other plots of land in the corners of street blocks. [18]. The verticality of the architectural composition enhanced by lantern on the top of the building reflects the aesthetics of Art Deco, while the series of classical columns on the façade uniting the third and fourth floors reflects neo-eclectic fashion.

Established in 1924, the chocolate factory "Laima" had its main building at Miera iela 22 (Fig. 13, just across the street from "La Roche" building, Fig. 14) completed in 1939 (architect Staņislavs Borbals). Elegant albeit of a special, heavy elegance of the façades, the four-storey structure contained production halls, a shop, workers' changing rooms and a canteen as well as the office areas. Currently, production process has been moved away from the site along with one of the most characteristic industrial features of the factory – the smell of a freshly boiled chocolate that had been permeating the whole district for almost a century; a museum of chocolate remains in part of the building. Several production buildings of modest architectural detailing from the 1930s and the 2nd part of the 20th century formerly situated in the courtyard have been recently demolished providing space for public events.

The prospering bicycle factory "Ērenpreiss" was one of the new enterprises moved from premises rented from another, former bicycle factory "A. Leutner" to newly built headquarters at Brīvības iela 193 (architect A. Klinklāvs, 1936–1938, Fig. 15). Once an unplastered yellow brick building, it still rises prominently next to a railway line crossed by the viaduct "Gaisa tilts". During the Soviet time, the factory was renamed "Sarkanā zvaigzne"; the building was extended adding one floor. It continued producing bicycles and later specialised in the production of mopeds; however, the factory was closed in 2001, courtyard buildings from the 2nd part of the 20th century were demolished soon afterwards, and the original factory building remains empty since then [22]. Due to its urban location and well-proportioned architectural design and contemporary appeal, the factory was one of the iconic landmarks of industrial development and prosperity both during the interwar period and the 2nd part of the 20th century. However, in the last two decades the building has not attracted investors for regeneration, and it remains covered by protective nets and large-scale advertisements.

Large halls were built for the needs of the public transportation sector: a repair workshop (Fig. 16) for the Riga Tram Depot inside the territory of the Depot at Brīvības iela 191, best perceived from Klijānu iela (1939, architect Nikolajs Bode [5]), and a long-span bus garage hall at Klijānu iela 28 (1939, engineer A. Raudseps et. al.), a reinforced concrete structure with barrel roof [5]. Currently both structures belong to the Depot, and the municipally-owned company is working on a controversial renovation of all of its area met by a public outcry on the recent demolition of a few older structures from the turn of the 19th and 20th century.

The construction of Ķegums Power Plant (1936–1939) on the river Daugava marked a new era for Riga and Latvia. It was the most ambitious project of the Republic of Latvian with the intention to rise and develop electricity consumption [26]. The power station was designed by the famous architect Eižens Laube [23] and is now a listed heritage. To ensure the distribution of electricity in Riga, the large transformer substation at Stadiona iela 1 (architect Artūrs Ramanis, 1939 [19]) was built, an impressive and dynamic massing with a semi-circular central avant-corps for the machine hall, and red brick accents on the corners of the building and between the windows (Fig. 17). Regarding electricity supply to the city, a peculiar feature of Riga was local transformer substations resembling small temples decorated with a rising sun on fronton that were scattered all around the city since the 1920s (Fig. 18 and 19); currently, most of them are not serving the original purpose anymore, either conserved or decaying.

Conclusions

Due to intense industrial development of Riga prior to WWI, and due to the economic hardships of the interwar years, most of industrial production activities were carried out on already-existing factory premises during the interwar period; only few completely new factories were built. Compared to the previous period of industrialization, the scope and scale of industrial heritage left from the 1920s and 1930s appears rather modest, scattered in the urban environment of Riga Historical Centre and various parts of the city beyond it. The objects mostly cover one plot in closed-street-block areas of the city.

During the interwar period, the architectural character and style of the industrial buildings was more related to the architectural composition and artistic features of the other types of buildings compared to the first industrial period of Riga when there were stylistic differences between industrial buildings and those designated for the residential and public needs. Art Deco, the Modern Movement and Neo-eclecticism entered the architectural discourse and construction scene each after another in a quick succession, producing representative examples of factories and technical facilities. Yet most of the factories and premises from the period belong to the Modern Movement architecture.

Every scope of particular heritage testifies to the interaction between society, economic processes, and artistic development. On the one hand, the industrial heritage of Riga from the 1920s and 1930s is an impressive example of highly skilled and diverse application of the best principles of the Modern Movement by Latvian architects, executed with great care and responsibility for structures large and small. On the other hand, those buildings testify to the current controversial social and professional attitude towards cultural heritage in general and the industrial heritage from the "independence years" in particular: most of the industrial heritage from the interwar period remains in good condition, still in use or converted for new, contemporary functions, meanwhile there are sad cases of deteriorating or drastically altered structures, mostly due to poor technical conditions or adaptation challenges.

Recent renovations and reuse of the industrial heritage with the Modern Movement features testify that the recognition of its importance is rising. However, the neglected and lost cases suggest that current economic factors have a great impact on protection intentions, asking for more active municipal and state position towards heritage protection, as well as for reconsideration of complex measures in support for maintenance. Defining the architectural and cultural values that the particular industrial heritage expression upholds, along with finding new functions and potential temporary and long-term users are essential for those structures to survive in high competition with other types of cultural heritage. Considering those factors, protection of the industrial heritage from the 1920s and 1930s should be strengthened within the existing heritage protection system, either by listing some more of the particular landmarks or by expanding the boarders of already protected areas, or by marking new urban ensembles as protected areas in order to emphasize the importance of those cases for the cultural and general history of Riga and Latvia.

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Kopsavilkums

Rīga ir slavena ar savu industriālo izaugsmi 19. un 20. gadsimta mijā un 20. gadsimta 2. pusē. No starpkaru perioda (1920–1940) labāk zināmi ir rūpniecības ražojumi, taču ražošanas darbības un uzņēmumu ietekme uz arhitektūras un pilsētvides attīstību ir pētīta maz. Raksta mērķis ir izgaismot šī perioda industriālo mantojumu. Darba metodoloģija ietver vēstures avotu izpēti un analīzi, divu gadu desmitu laikā veiktus apsekojumus dabā, fotofiksāciju un salīdzinošo analīzi par šī perioda industriālā mantojuma ēkām. Rūpniecības uzņēmumu darbagaldu, tehniskā aprīkojuma un darbaspēka evakuācija no Rīgas rūpnīcām Pirmā pasaules kara sākumā bija postoša jaunās Latvijas valsts ekonomiskajai attīstībai un ražošanas atsākšanai; pat nesen uzceltās plašās ražošanas halles bija tukšas. Taču tehnoloģiju attīstība un patēriņa pieprasījums rosināja vairāku esošo rūpnīcu agrīnu atkārtotu izmantošanu jaunām funkcijām, tostarp ražošanai, uzglabāšanai, tehnikas remontam utt. Pamazām uzplauka gan jau esošās, gan arī jaunas nozares un uzņēmumi, nodrošinot un veicinot jaunas, laikmetīgas arhitektūras ienākšanu Rīgas pilsēttelpā. Dominējošā laikmeta arhitektūras stilistiskā tendence bija Modernā kustība, taču jūtama bija arī Art Deko un neoeklektisma klātbūtne, savukārt transporta infrastruktūras vajadzībām tika būvētas arhitektoniski vienkāršas un konstruktīvi racionālas halles. Pašreizējais agrāko un vēl darbojošos rūpniecības ēku stāvoklis ir variabls: dažas ēkas tika telpiski un funkcionāli transformētas jau nākamajās desmitgadēs, citas ēkas tika pamestas 20. gadsimta beigās, jo beidza pastāvēt uzņēmumi, kuri tās lietoja. Modernās kustības arhitektūras vērtības apzināšana un industriālā mantojuma nozīmes atzīšana jau ir veicinājusi vairāku šā perioda ēku atjaunošanu un pielāgošanu jaunām vai līdzīgām funkcijām, tāpēc šobrīd varētu būt īstais laiks pārskatīt starpkaru industriālā mantojuma vērtību un stiprināt tā arhitektonisko liecību aizsardzības procesus Rīgas pilsētvidē un vēsturiskajā urbānajā ainavā.

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RESIDENTIAL BUILDINGS IN WORKERS' VILLAGES IN LATVIA IN THE 1940S AND 1970S. EXAMPLE OF BRICK BUILDINGS IN THE JELGAVA AREA

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Abstract. With the change of political power in Latvia after the Second World War, the country's economy changed. The devastation of the war and the post-war period in the 1940s-1970s brought a new character to Latvia's outer suburbs with workers' villages consisting of apartment buildings with root gardens, barns and cellars. The workers' villages in the suburbs, as well as the centres of kolkhozes or sovkhozes in the rural areas, began to implement new types of housing projects in the post-war years. The buildings in the workers' villages connected with industrial production (wood processing, brickworks, sand pits, peat mines, stone crushing plants, dolomite quarries, etc.) formed their own spatial structure. However, with the wave of collectivisation in the 1940s/1950s and the development of collective farm/sovkhoz centres (MTS or machine and tractor stations, creameries, horse rental centres, seed etching centres, gatherers, sugar beet reception centres, grain dryers, wool carders, etc.), the spatial structure of the built environment changed. The unifying aspect of the villages remained the subsistence farming character, where the residential area coexisted closely with the production area and the farm buildings - cattle sheds, pastures, hay sheds, wood shed, cellar, root garden, potato and fodder beet field. When the Latvian state's economic policy changed in the 1990s, the transformation processes also affected the areas of the workers' villages. Today, the character of post-war Soviet housing is still preserved and should be given the status of cultural heritage.
Keywords: residential apartment buildings, workers' vilage, brickworks, production zone

Introduction

The strong development of brickworks villages in an arc around Jelgava began in the post-war period in the 1940s and 1950s, with the creation of new housing areas outside the city. Bricks, timber, lime and tiles were needed for the urban renewal. The upper reaches of the Lielupe basin were rich in clay and lime deposits, and this contributed to the rapid establishment of workers' villages, mainly for work in the brickworks, lime kilns and gateways, where logs were stacked from rafts coming down the rivers of the Lielupe basin from Selenia. The banks of the Lielupe basin contained large quantities of brick-making material, i.e. good, soft and pure clay... The former farmhouses became large villages, and before the First World War there was an 8 km long town of brickworks and workers' cottages at the mouth of the Bir River.

Historic brickworks along the rivers of the Lielupe basin were already densely established in Jelgava County before the First World War, with 39 brickworks, from which the old brickworks were extended: 1895-3 brickworks, 1897-6 brickworks, 1898-7 brickworks. The demand for bricks increased especially with the construction of Art Nouveau houses in both Riga and Jelgava. This contributed to the increase in the number of clay quarries and the change in the landscape on both banks of the Lielupe River in the second half of the 19th century [1; 2; 5; 8].

When Jelgava burned down in the summer of 1944, brick production increased tenfold in the 1950s and 1960s, changing the landscape along the banks of the Lielupe even more drastically, creating exaggeratedly large bodies of water and a false perception of the centre of Zemgale as a "land of blue lakes". Heavy machinery in the earthworks, heavy transport on the roads and the directives of the occupying power exaggerated the pressure and left an 'industrial footprint' on the landscape. The increasing production of bricks required labour. This encouraged the construction of blocks of flats and outbuildings in the early post-war years [3; 6; 7].

Labour was in short supply, so low-skilled people from the countryside and migrant workers from Belarus and Russia were used. The work in the mines and kilns was physically very hard. There was a lack of machinery as the country's industrial sector had been devastated. Shovels, wheelbarrows, stretchers, footbridges, horse-drawn carts, muddy tracks. Work was seasonal, from spring when the ground thawed to the autumn rains when the mines filled with water [8; 9; 13; 14]

The first four brick-kiln workers' villages - Spartaks, Progress, Sarkanais māls and Kārniņi - were established in the Jelgava region, and their production activity was characterised by the main periods of transformation processes:

- The 1950s-1970s saw a sharp increase in production and the creation of workers' villages;
- Stagnation of brick production and housing development (1980s); sectoral change in the brickworks areas;
- Former clay pits or quarries as a strong landscape element for the prospective growth of residential areas (turn of the 20th/21st century).

The aim of the study is to reflect the processes of transformation in the outer urban area in the post-war years and today, where agricultural areas have been replaced by industrial zones and workers' villages. Objectives of the study:

- to study the character of the construction of residential buildings or barracks in workers' villages in the 1940s and 1950s;
- evaluation of the aesthetic quality of the exterior of the housing estates in the workers' villages in the 20th

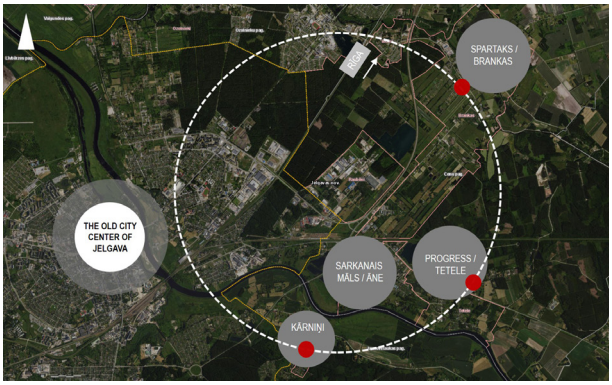

Fig. 1. A circle of brick workers' villages around Jelgava [created by authors, 2024]

century 1970s and 1990s.

- characteristics of residential development in the 1950s next to industrial areas;
- transformation of the village open space as a result of the change in national economic policy at the beginning of the 21st century.

The methodology includes a multidimensional approach based on:

- the study of literature and archival material and comparison with the contemporary situation in Latvia;
- the use of photographic material reflecting the evidence of the historical heritage preserved in the brickworks villages;
- architectural and spatial research of the construction of workers' villages in the period from the 1950s to the 1920s and the transformation processes in the changing identity of the cultural space.

Materials and Methods

The territories of the manors of Tetelminde, Āne, Vecsvirlauka and Dandāle on both banks of the Lielupe River upstream from Jelgava served the business of the brick-kiln owners Ņesterovs, Frišmanis and other large industrialists as early as the 1880s.

Half a century later, these mines were expanded, clay deposits were excavated and impressive water bodies were created. As the brick industry developed, so did the residential areas [15].

The study includes the study of the brickmaking villages of the outskirts of Jelgava to the present day, their transformation into Spartaks (Brankas), Progress (Tetele), Sarkanais clay, Karnini, located in an 8-10 km arc around the burnt Jelgava on both banks of the Lielupe River, and the development of a strong brick industry during the Soviet period. Two opposing trends in the development of building materials production in the post-war Latvian SSR cannot be overlooked: on the one hand, despite its objective importance, it was one of the industries that recovered most slowly, effectively holding back construction throughout the republic - this was particularly acute in housing, where in some cities, such as Liepāja and Jelgava, local authorities were quicker to obtain building materials from rubble than to expect normal materials from manufacturers.

The periods of construction of the workers' villages are architecturally and compositionally distinct. There are 4 periods in the spatial transformation of the workers' villages:

- 1940s-1960s - 1 and 2-storey barrack-type buildings with shared outdoor toilets, shared kitchens, living quarters with shared corridors; highly developed subsistence agriculture;
- 1960s-1970s - Brick apartment buildings with separate apartments with kitchen and dry toilet; livestock and arable farming expanded;
- 1970s - Prefabricated concrete housing with indoor plumbing, sewerage and central heating begins to be built; livestock numbers decline;
- 20th/21st century - prefabricated concrete housing with centralised utilities, reduced subsistence farming; instead of gardens, large lawns with dendrological plants and play and sports areas, terraces, pergolas.

Results and Discussion

The functional and compositional structure of the Progresa (Tetele) workers' village is laconic and the built-up area is the largest of the brickworks workers' villages, covering an area of about 10 hectares. A number of buildings in the village have retained their red brick facades, emphasising the historic identity of the place.

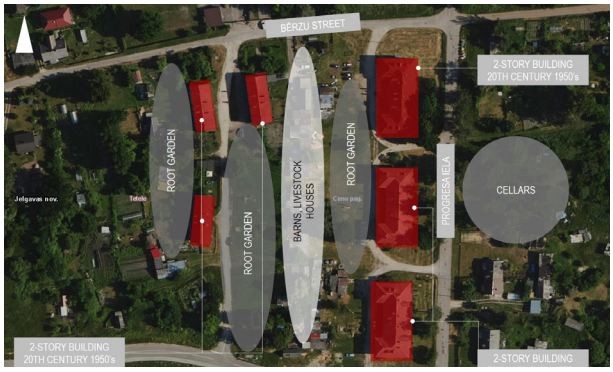

Fig. 2. Spatial functional structure of Progress (Tetele) brickyard workers' village [created by author's, 2024]

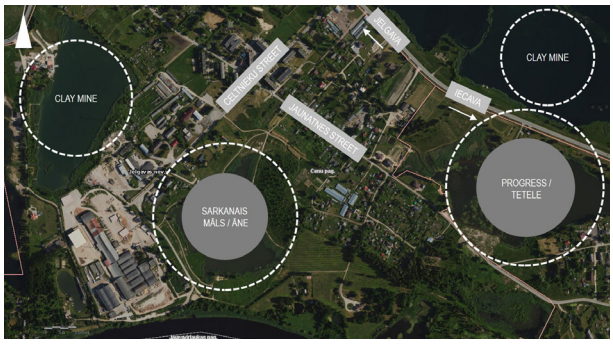

Fig. 3. Workers' village Progress (20th century, 40s-60s) [created by author's, 2024]

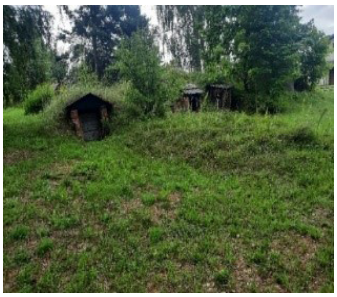

Fig. 4, 5. Villages Spartaks, Progress. Surface brick cellars with sod, 20th century, 50s [photos by A.Ziemeļniece, 2024]

Fig. 6, 7. Villages Spartaks, Progress. Brick houses, sheds and a former vegetable garden area [photos by A.Ziemeļniece, 2024]

Fig. 8, 9. Village Progress. 2-multistory residential apartment buildings with balconies and ventilation windows [photos by A.Ziemeļniece, 2024]

The compositional axis of the village is dominated to the south by the brickworks area on the Lielupe River. To the north is the clay quarry. The residential area forms the central part of the spatial axis. Progresa Street, the axis of the village, is the only street connected by access roads from the residential and farm buildings. The buildings and gardens of the workers' village form a series of narrow parallel functional zones with former root gardens, barns, woodsheds and courtyards. The above-ground cellars are built into the adjacent sand dunes overgrown with Weymouth pine. The cessation of brick production in the 1990s led to the disappearance of the root gardens and their replacement by extensive lawns, play areas and car parks.

The village retains its historic built character of the 1950s and 1960s, consisting of 2-storey standard apartment blocks with 4-pitch high roofs. The facades have small balconies with metalwork railings.

The layout of the one-storey brick dwellings, or huts, consists of a communal corridor leading to one-room dwellings with stove heating, a communal dry toilet and kitchen. One of these buildings was converted to serve as an outhouse for the kiln workers during the early war years, with separate entrances for digging the clay and firing the kilns. In the post-war years, the building was adapted for living quarters with a common corridor. In the 1950s and 1960s, birch trees were planted along Progresa Street, creating an avenue of birch trees that has since been thinned out by the wind. The huge birch canopy covers the adjacent picturesque Weimut pine grove and the gently undulating terrain, smothering the natural base along the right bank of the Lielupe River near Tetele Manor [13; 6; 4].

The Progress village extends 2 km further, where the 1970s workers' village Sarkanais māls is located, with typical 5-storey and 9-storey prefabricated concrete apartment blocks.

The Kārniņi village with its brick factory is situated on an area of 5 ha with some residential buildings (1-storey barracks, 3 units, built in the 1940s-50s and 2-storey buildings, 2 units, built in the 1960s). The small village is surrounded by clay pits, which have turned into huge ponds. The mines are closed and the water bodies have a wooded bank, which hides the overflowing water in the main lines of sight. The new Soviet authorities wanted to develop not only the brick industry but also the tile industry in order to obtain cheap building materials.

The spatial structure of the village is based on a compositional axis, or Pūpolu Street, which historically led to the old clay pits and kilns on the right bank of the Vircava River. In the post-war years, the first barracks were built along Pūpolu Street, using clay bricks from the kiln for the outer walls. The internal walls were made of timber framing with clay fillings to reduce the amount of work needed to fire the kilns. The layout of the buildings includes a common corridor, dry toilet and kitchen. Root gardens are close to the buildings, with sheds, barns and cellars behind them.

The workers' village was extended in the 1970s with 3-storey apartment blocks. Typical prefabricated concrete construction, excluding the historic red brick. The buildings are closely flanked by outbuildings and extensive grounds with root gardens. The spatial compositional structure replicates the subsistence agriculture of post-war workers' villages. The Vārnas (Mežciems) sawmill, 4 km from the brickworks, was also built in the 1950s, setting a fast pace for the reconstruction of war damage [8; 6; 2].

The spatial structure of the Spartaks (Brankas) workers' village is based on a similar compositional structure to the workers' villages discussed above. The axis is formed by a single

Fig. 10. Kārniņi workers' village in the 20th century, 40s-60s.
[created by author's, 2024]

Fig. 11. Workers' village Progress (20th century, 40s-60s)
[created by author's, 2024]

(Spartak) street parallel to the bed of the Iecava River. In the northern part of the axis there is a kiln flanked by several clay pits. On the opposite side of the axis is a residential area with root gardens, pastures and outbuildings. All the buildings are made of clay bricks, which are produced in the village. The northern part of the road axis is planted with fast-growing poplars. These were broken up by wind loads and new lime, maple and birch trees were planted in the 1970s. The village has expanded southwards since the 1970s.

In the late 1940s, one-storey barrack-type buildings (2 units) were built along Spartaka Street, with the front façade facing the street and an external entrance in a common corridor. The corridor leads to one-room apartments, a communal kitchen and a dry toilet. The buildings are characterised by tall, massive brick chimneys, as no firebricks are used.

Along Spartaka Street, two two-storey apartment buildings (12 flats) with two staircases and one-room flats, communal toilet and kitchen were built in the early 1950s. The buildings are characterised by a 4-pitch high roof, creating spacious attics for drying and storing laundry. Like the barrack buildings, they are oriented with the front facing the street. Both the 1-storey and 2-storey houses have root gardens by the windows [15].

In the 1960s, a new type of project was launched: 2-storey apartment buildings with a staircase and entrance from the courtyard, with brick partitions, stove heating, dry toilet. A water tower was built to provide a central water supply. The building has a pitched roof with low attics. The exterior is rendered in clay bricks.

A series of outbuildings with wooden sheds, barns and cellars, which have survived to the present day, are attached to each house. Behind the outbuildings there are root gardens and pastures. The multi-storey housing development of Spartak

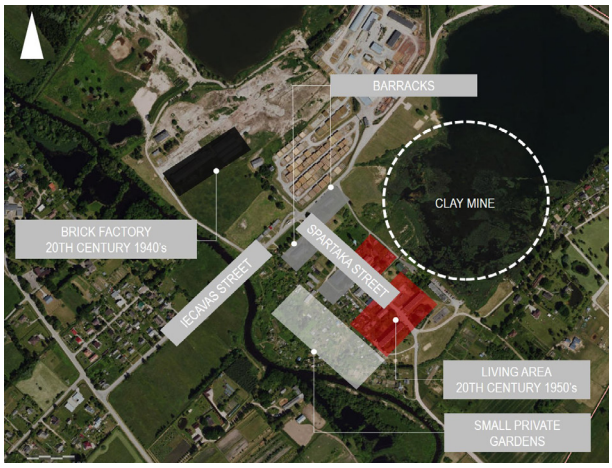

Fig. 12. Spatial structure of Spartaks (Branka) workers' village, 20th century, 50s [created by author's, 2024]


Fig. 13, 14. Villages Spartaks, Kārnini. 1-story residential buildings or barracks [photos by A.Ziemeļniece, 2024]


Fig. 15, 16. Villages Progress, Spartaks. Workers' house was adapted to a multi-apartment building in the post-war years [photos by A.Ziemeļniece, 2024]


Fig. 17, 18. Villages Progress and clay mine overgrowth with pasture meadows and undergrowth [photos by A.Ziemeļniece, 2024]


Fig. 19, 20. Karnini clay mine and rows of mixed-type wood in Spartaks village [photos by A.Ziemeļniece, 2024]

Street increased in the 1970s with the construction of 3- and 5-storey apartment buildings with 3-5 staircases, with external entrances connected to the courtyard. Root gardens were set back about 100 m from the residential area. No outbuildings were built.

Brick production ceased in early 21st century, the 1990s. At the beginning of the 21st century, the root gardens near the barrack-type buildings were replaced by a grass play area and a car park, changing the functional role of the area, which was related to subsistence farming. Clay brick production was discontinued in the 20th century. In the 1960s, the production of silicate bricks increased, giving a new character to the architectural form of the buildings [6; 7; 12].

Conclusions

The period of the brick industry in the 1940s-1970s provides a vivid picture of the transformation of the Latvian landscape in the growth of workers' villages in the post-war period:

- The spatial structure and architectural form of the residential buildings in the workers' villages of the 1940s-1970s are similar; brickworks roads were built in the immediate vicinity of clay pits; 300-400 m from the production site, residential areas with an agricultural zone and a strong subsistence farming infrastructure were developed in the post-war years; the spatial layout of the villages is similar, consisting of one street with thinned out buildings; tree plantations;
- The residential area is closely linked to the farm buildings, gardens and pastures;
- The diverse ethnic, spiritual and social expression that the occupation period brought to Latvia's cultural space is reflected in the overall image of the workers' villages;
- The facades of the houses and outbuildings in the kiln workers' villages are characterised by historic red clay brickwork with lime mortar joints; the post-war workers' villages should be granted cultural heritage status;
- With the changes in the country's economic policy in the 1990s, the spatial structure of the villages changed: most of the subsistence farming - pastures, hay sheds, cellars, root gardens, potato fields - disappeared. In their place are meadows, courtyards with lawns, flowering shrubs, groups of trees, children's playgrounds and car parks.
- At the beginning of the 21st century, there is a growing demand from residents of working class villages for local authorities to improve the quality of the environment - roads, communications infrastructure, lighting, waste management, demand for sports and play areas, places for mass events, reclamation of former mines or quarries.
- In the context of the closure of brickworks, municipalities should consider the possibility of developing industrial heritage areas (industrial parks, technological facilities, infrastructure, etc.);
- With delays in municipal action, self-financing is developing in workers' villages: new parking areas, good solutions for access to the farm area, improvements to utilities, etc;
- As the economic and political character of the country changes, the housing in the historic brickworks villages retains a high blue-green landscape quality. This aspect has strongly influenced the property market, with modern single-family homes being built on these sites in the 1920s, facilitated by the proximity of the Riga conurbation and easy road connections.

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Kopsavilkums

Mainoties politiskajai varai pēc 2. pasaules kara Latvijā, mainās valsts ekonomika. Kara postījumi un pēckara laiks 20. gs. 40.-70. gados Latvijas ārpilsētas teritorijām ienes jaunu apbūves raksturu ar strādnieku ciematiem, kurus veido daudzdzīvokļu dzīvojamās ēkas ar sakņu dārziem, kūtiņām, pagrabiem. Strādnieku ciemati ārpilsētu teritorijās, līdzīgi kā kolhozu centri lauku teritorijās, pēckara gados aizsāka jaunu daudzdzīvokļu dzīvojamo ēku tipveida projektu realizāciju. Strādnieku ciematu apbūve, kas bija saistīta ar industriālo ražošanu (kokapstrāde, ķieģeļnīcas, smilts karjeru izstrāde, kūdras raktuves, akmens drupinātavas, dolomīta lauztuves utt.) veidoja savu telpisko apbūves struktūru. Savukārt, 20. gs. 40. / 50. g. aizsākoties kolektivizācijas vilnim un apbūvei kolhozu centros (MTS jeb mašīnu un traktoru stacijas, zirgu iznomāšanas punkti, sēklu kodināšanas centri, gateri, cukurbiešu pieņemšanas punkti, graudu kaltes, vilnas kārstuves utt.) apbūves struktūra veidojās atšķirīga. Vienojošais aspekts ciematiem saglabājās - naturālās saimniekošanas raksturs, kur dzīvojamai zonai cieši līdzās pastāvēja gan ražošanas zona, gan saimniecības ēkas - lopu kūtis, ganības, siena zārdi, malkas šķūnis, pagrabs, sakņu dārzs, kartupeļu un lopbarības biešu lauks. Mainoties Latvijas valsts ekonomiskajai politikai 20. gs. 90. g., transformācijas procesi skar arī strādnieku ciematu teritorijas. Mūsdienās ir vēl saglabājies padomju pēckara gadu dzīves telpas raksturs, kuram ir jāiegūst kultūrvides mantojuma statuss.

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WATER AS A TYPICAL COMPONENT OF HISTORICAL MANOR PARKS OF THE POLTAVA REGION (UKRAINE)

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Abstract. The article highlights the issue of formation of manor parks of Poltava Region in the 18th-19th centuries, one of the left-bank territories of Ukraine. The water elements of such parks, their functional role, aesthetic and artistic significance and influence on the formation of the landscape and compositional structure of manor parks are the main focus of this study. A number of methods used in the work – historical-theoretical, field survey, complex analysis – became important assistants in the research. Four stages of the development of courtyard parks have been identified. The first, early stage, is characterized by a combined compositional scheme based on regular and landscape methods of territory organization. The second stage is characterized by a gradual departure from clear regularity. Techniques of free landscape planning prevailed in the compositional solution of park areas. This extended not only to the palace territory, but also to the front of the palace. The third stage of manor park construction demonstrates the further improvement of the style of classicism, architectural and spatial composition of manor and park complexes and landscape compositional solutions. The fourth, final stage is characterized by the formation of manor and park complexes on small territories, a departure from external splendor and pomp. The relationship between reservoirs and manor-park complexes was revealed, depending on the landscape and hydrological characteristics of the territory, the size of the complexes, and the compositional idea of the authors of these objects. The aesthetic characteristics of manor parks with water features are revealed. These data are confirmed by the memories of visitors to the estates, given in the article. The role and place of water elements in the compositional and architectural and planning decision of manor parks is clarified. The significant importance of the reservoir was emphasized due to its inclusion in the representative part of the manor park, its location on the main compositional axis, and the use of various landscape techniques. They either opened the reservoir for the owners and visitors of the estates, or hid it in the thickets of woody vegetation, providing a visual view through the so-called "backstage". The arrangement of artificial islands on these reservoirs served as an additional compositional technique. Green plantations on the islands created picturesque volumes against the surface of calm mirror water, the reflection of which emphasized its deep characteristics. This attitude to water and water elements has been inherited from those distant times and is actively used in modern riverside parks. Here, the best park landscapes are always focused on a mirror of water, which significantly enriches the landscape composition and the overall impression of the object.
Keywords: manor park, water element, relationship, landscape organization, aesthetic and artistic expressiveness

Introduction

Water charms and attracts a person. It evokes a large number of positive emotions in him – from peace and relaxation to lifting the mood with its dynamics and active movements. Water is a symbol of purity and new life. But at the same time, it has incredible power, capable of flooding and destroying everything in its path. Thanks to water, landscape objects have a pleasant microclimate with refreshing coolness, expressive aesthetic landscapes, exquisite water and landscape compositions with light and shadow effects, and reflections. The use of water, its transformation in case of need, enriches park landscapes, saturates them with new emotions. At the same time, it creates the impression of the necessity of such a decision in each specific situation. The best park landscapes are always focused on a mirror of water, which significantly enriches the composition.

In historical objects, water is primarily a source of aesthetic and artistic pleasure. This is reflected in waterfalls, canal systems, various fountains with the inclusion of sculptural compositions, comfortable grottoes with waterfalls, artificial islands with gazebos and other small architectural forms, etc. This is characteristic of both foreign and domestic riverside parks and is explained by the historical and stylistic development of landscape objects as a whole. Such parks were preserved in the former palace and park objects of wealthy owners, where the water body was generally included in the structure of their main compositional axis (as in the palace and park complexes of Versailles and Vaux-le-Vicomte in France, the villas Lante and Dieste in Italy, the Taj Mahal garden in India).

The historical experience of creating objects of garden and park art shows the active use of water and water devices in private gardens and parks regardless of time and territorial boundaries. Initially, it was justified by utilitarian needs – taking baths, storing water for economic needs, breeding fish and medicinal aquatic plants (estates of a noble Egyptians, villas of Ancient Rome, ets.). Later – religious aspects (for Islamic countries, water is sacred and symbolizes life, soul, wealth), as in palace and fortress complexes Alhambra and Generalife in Spain. And, finally, due to its decorative characteristics, water was used to satisfy aesthetic needs. According to its physical properties, water is the most rich and diverse natural material. Water elements make a significant impression when visiting landscape objects. The physical qualities of water (transparency and fluidity, the ability to take any shape, change color, sound, reflect the surrounding environment) can cause a variety of emotions – from sadness, peace, dreaminess to joy and cheerfulness.

The historical manor complexes of the Poltava Region are a significant part of the region's rich manor and park, and architectural heritage. Among them are palace and park complexes in Dykanka, Berezova Rudka, Khomutets, Sokyryntsi, and others. Their architectural and landscape organization, long-term functioning over several centuries testify to the high professionalism of their park builders –

architects, gardeners. According to their design, the ideas of various combinations of the main landscape components – relief, water, vegetation, architectural structures and small architectural forms were implemented. Manor parks were not only a reflection of the aesthetic preferences of the then upper class of society and examples of garden and park art. They were an example of a unique form of synthesis of the arts – painting, architecture, music, poetry, philosophy.

The study of the experience of architects of the past centuries in solving issues of landscape organization of the territory and the identification of characteristic compositional techniques determine the relevance of this work. The results of this research can become a scientific basis for the reproduction of the lost, restoration and reconstruction of the still existing manor parks not only of Poltava Region, but also of Ukraine.

Materials and Methods

The purpose of this work is to reveal the role of one of the typical components of landscape objects – water elements – in the formation of the subject and spatial environment of the historical manor parks of the Poltava region of the 18th-19th centuries.

The object of the study is water in the structure of the manor park, in its various forms and manifestations. The following tasks are outlined to achieve the purpose:

- to reveal the degree of interconnection of reservoirs and manor and park complexes;
- to find out the role of water in manorial parks of Poltava region;
- to reveal the place of water elements in the compositional, architectural and planning solution of manor parks.

When preparing the scientific article, the authors used the historical-theoretical method in the analysis of scientific sources on the topic of the work. Until the beginning of the 19th century, any information about manor and park complexes was stored in the vast majority in the personal private archives of their owners. Almost none of them have survived to this day. Significant objects known far beyond the borders of Poltava Region and even Ukraine (manor and park complexes in Dykanka, Berezova Rudka, Sokyryntsi) are an exception. Information sources of that period, deeds of sale for acquired lands, hetman orders and universals for land grants are almost the only ones. They are kept in small quantities in state archives. Therefore, the documented memories of the then residents of Poltava region, next generations of estate owners, and travel notes of researchers of the region are valuable materials. Information on similar objects in other regions of Ukraine was also useful. The comparative-historical method made it possible to compare these objects, find common features and, most importantly, identify regional landscape and planning solutions.

The discovery of manor and park complexes that have survived in Poltava Region to this day gave an impetus to their visual survey. Some objects stand desolate, overgrown... Their condition does not give an opportunity to reveal a clear picture of the planning, compositional and landscape solution. But together with the theoretical base, documentary materials, it is possible to reproduce it in general terms. In some manor and park complexes, there are currently public facilities – educational institutions, museums, etc. This situation makes it possible to maintain not only the buildings, but also, most importantly, the park territory in more or less proper condition, without fundamentally violating the established decisions. Using the method of complex analysis, it is possible to give answers to questions related to the functional and spatial organization of estates, the landscape and dendrological solution of their parks, and their compositional solution. It is even possible to find certain areas of the park based on ancient descriptions – alleys, certain types of plants (such as old oaks), groups of green spaces. There is an opportunity to record their current state in serial visions, graphic sketches, watercolors.

Historiographical materials from the manor and park construction of the Poltava region in the 18th-19th centuries became a significant basis for the research. V. Timofienko [30], V. Vecherskyi [6], I. Ignatkin and L. Vaingort [11], Yu. Nelgovskyi [19], N. Novakovska [20], K. Cherkasova [34], O. Tyshchenko [31], O. Rodychkina, and I. Rodychkin [24] worked on these objects in Ukraine. Young researchers joined the team of scientists. At present, a number of dissertation works have been developed in our country, which directly relate to manor and park complexes of specific regions of Ukraine. These are the works of O. Mykhaylyshyn – on Volyn and Podillia [18], N. Sosnovai and N. Levkovych – on Halychyna, V. Malanyuk – on Kyiv Region and the author's – on Poltava Region [27; 28]. Such a comprehensive approach makes it possible to reproduce a complete picture of the development of estate and park construction in Ukraine as a whole. And Kosarevskyi [15; 16], the aforementioned I. and O. Rodychkin, scientists and local historians O. Bayrak, V. Samorodov, T. Panasenko [1], V. Hanko [33] and V. Kishik [13; 14] made a significant contribution to the study of manor parks in Ukraine. The authors of this article also have a number of important studies that are related to these issues [3; 29]. The latter applies to urbanized and recreational areas [5; 21; 22; 26; 32]. Their previous publications testify to this.

A reservoir in landscape objects is considered their soul. Therefore, in manor parks, it adds even more expressiveness to the landscape composition. The reservoir is a decoration of landscapes. The authors developed materials that highlight the artistic and aesthetic component of the architectural and landscape environment. These questions are presented in the works of K. Belyaeva, H. Osychenko, A. Sychova and N. Titova, S. Tsyhychko, A. Zhirnov, and the authors' works. It is difficult to talk about various aspects of the formation of a landscape object, especially with the inclusion of a water element, without touching on its aesthetic characteristics. Therefore, most of the presented scientists in their writings to one degree or other touch on the issues of the aesthetics of the landscape environment, its beautiful landscapes and species.

In the course of this study, the authors also used literary sources, which to one degree or another have descriptions of estates (both in prose and poetry), memories of travelers, visitors to manor-park complexes [2; 12].

The main milestones of the development of manor parks of the Poltava Region

The development of manor parks took place in stages. Based on previous works in the field of park art development in Ukraine (by Kosarevskyi, Rodychkin and other authors), the stages of the evolution of courtyard parks and their peculiarities are determined. According to [Kosarevskyi, 16], the first stage of the park development took place in the second half of the 18th century. The active development of baroque in the landscape architecture of that time, which was gradually replaced by classicism, also affected the Poltava Region. New fragments of classicism from the time of Catherine II began to be superimposed on the not yet completed palace and park ensembles of the Peter's and Elizabeth's times [16]. At that time, a combined composition scheme was characteristic of manor parks in the region. It was based on regular and landscape methods of territory organization. Regular compositional techniques were

Fig. 1. The landscape solution of the manor park in Khomutets [from the stock of L. Shevchenko]
1 - view of the park in front of the palace; 2 - park alley; 3 - scheme of the manor park; 4 - three oaks that have grown into one (in honor of the estate owners' sons); 5 - reservoir of the park

manifested in the decision of the central representative territory in front of the main house of the owners – the palace. Such a solution is characteristic of the manor and park complex in the village of Khomutets. There, this part of the park was divided into geometric squares and rectangles, along the perimeter of which trees were planted. But the natural appearance of trees, without trimmed forms, also indicates some departure from pure regularity.

Landscape composition techniques are typical for the palace territories of all manor and park complexes in the region of this period. The landscape solution manifested itself not only in the layout of roads, but also in the free placement of plants, landscape outlines of water bodies, and the creation of picturesque groups of trees. Despite the more or less flat nature of the park topography of the estate in Khomutets, there is not a single straight path here. I. Kosarevskyi noted at the time: "they smoothly curve around the reservoir and dense arrays of trees, in the middle of the glades, without violating the integrity of the natural environment" [16]. The authors of the article had the opportunity to see for themselves when they visited the territory of the palace and park complex (see estates' photos in Fig. 1). This part of the park is characterized by the lack of clear boundaries between the territory of the estate and the forest massif. They are interconnected by paths. The park and palace territories were also emphasized by the free arrangement of the main array of trees: linden, birch, maple, willow, chestnut, and birch. A characteristic feature of the Khomutets complex was the high artistic expressiveness of park landscapes. It was achieved by simple combinations of large massifs of trees, detection of color spots, highlights, open spaces.

The second stage of manor park construction in the Poltava Region is characterized by a gradual departure from clear regularity. The compositional solution of park areas was dominated by techniques of free landscape planning. They extended to the territory not only behind the palace, but also to the front of the palace. Even with the rectilinear solution of the main alley (Berezova Rudka), its design (plantation of plants) was carried out according to landscape techniques. In such cases, great attention was paid to the placement of plants, the creation of small and large groups of plants taking into account their decorative characteristics: crown shape, color. The authors of the parks acted not only as park builders, but as painters. They created pictures of living nature, connecting them with perception from the corresponding points (such as in the estates in Berezova Rudka, Yagotyn). The planning decision of the manor park in Berezova Rudka was made taking into account the dominant value of the central rectilinear axis. All the main elements of this manor and park complex are strung on the main axis: the entrance, the main alley, the front yard, the palace and the lawn behind it. The peculiarity of this complex is the presence of clear straight roads in the territory far beyond the palace, which divide it into rectangles of various sizes. The typical use of only one type of tree when laying the alleys and roads of this park: chestnut, linden, birch, pine, etc. (according to [16] and the author's own field surveys). Large lawns of the park (up to 100 hectares) were covered with grass or wild flowers. In general, all the landscapes of the meadows are included in the perspectives that open from the park area.

Yagotyn Park was founded at the beginning of the 18th century. on the site of a small estate with a clear regular planning composition. In the second half of the 18th century the main construction of the park began on the territory of more than 4 km along the Supoi River. Here, taking into account the local flora, the first plantings of plants were carried out: oaks, conifers, tall ash trees, poplars, wild peach and chestnuts, acacia, rowan, walnut, birch [17]. A vineyard was created. Work on the creation of the park was especially intensive at the end of the 18th century, when the construction of the palace began, the main compositional core of the manor and park complex. "The palace was separated from the lake by a flower garden and stands opposite an island covered with dense forest, and the wings, consisting of individual houses, jut out into the green area of the courtyard, from them alleys are led through the park, directed to the same island" [17]. Foreign experts also worked on the construction of the park – gardeners Peltz (he created parks in Paris and London), Omelyanskyi from Warsaw, who laid the foundations of the park in Yagotyn. Local talented masters refined the landscapes to a high artistic expressiveness, but without violating the laid foundations. Among them were Dyrkach, Lavrenenko, Komisar (according to [16]). Thanks to them, manor parks had their own features and each of them became unique.

The third stage of manor park construction in the Poltava Region is characterized by the further improvement of the style of classicism and landscape compositional solutions. This was reflected in the decision of the architectural and spatial composition of manor and park complexes. The location of the palace on the territory of the complexes bears the imprint of the last century, which is clearly demonstrated by the palace and park ensembles in Sokyryntsi, Digtyari, and Dykanka. It should be noted the characteristic combination of regular, clear straight lines, characteristic of classicism urban planning, and natural outlines of existing landscapes. I. Kosarevskyi noted "the park builders of this period, forming the landscapes of the park, borrowed the laconicism of the past and at the same time showed great skill in detailing large forms and, no less important, were able to show the beautiful in the most spectacular color and volumetric combination of plants" [16]. The manor park in Digtyari was created with similar methods. Regarding the palace and park ensemble in Dykanka, some techniques borrowed from baroque

complexes can be traced. Photographs preserved to this day [20] make it possible to confirm the presence of a clear, regular heraldic flower garden in the palace territory of the park.

The fourth stage of development of manor parks was in the 50s and 60s of the 19th century. During this period, the connection with the 18th century can be traced. According to the researchers, this was typical of the estate and park ensembles of Ukraine in general. A characteristic feature of this period was the formation of park complexes on small territories, not the use of strict forms of classicism, external splendor and grandeur, but the desire for an asymmetrical arrangement of buildings, creating a picturesque silhouette. The parks formed in this period in the Poltava Region are distinguished by their planning composition and the character of the landscape design. For example, in the manor and park complex in Zgurivka [17], the planning decision of the park area was based on mixed composition techniques – characteristic of the end of the 18th century and the 19th century. This is the use of a regular style when deciding the central part of the complex and a landscape style when planning the organization of alleys, roads, placing plants in groups.

Water as a typical component of historic manor parks of Poltava Region of the 18th-19th centuries

Interconnection of reservoirs and manor-park complexes

Water elements were an important formative factor in the landscape composition of manor parks. Poltava Region was characterized by the use of the horizontal plane of water surfaces of ponds and the calm flow of rivers against the background of plastic, curvilinear and undulating landforms. The degree of interconnection of reservoirs and estate-park complexes was determined by the landscape and hydrological characteristics of the territory, the size of the complexes, and the compositional idea of the authors. The landscape-spatial organization of the territory of the estates was based on the compositional unity of the main components – relief, water elements, plant groups, small architectural forms, and the block of main buildings. Preserved archival materials made it possible to identify the most characteristic inclusions of reservoirs in the spatial structure of manor complexes (Fig. 2). With one-sided adjacency to the territory of the estate, the reservoir determined the boundaries of its territory. It served as the final element, the last compositional link on the longitudinal axis of the manor complex. On the territory of significant estates, the reservoir demarcated the main recreational area with the palace complex and the forest park zone (the reservoir adjoins the territory on two sides).

In the manor parks of the region, water was used mainly in a static state (calm, mirror-like), less often – in a dynamic state (mobility, gurgling). The emotional and decorative qualities of water pushed the owners to build artificial reservoirs on the territory of their estates (Yagotyn, Kybyntsi, and others). The calm horizontal surface of the water is a significant open space that provides the opportunity to view the coastal landscape from any distance. The water pool makes it possible to create both deep multi-dimensional perspectives and closed landscape views from more local corners of the park. This provides a variety of species pictures. It is possible to combine landscapes and architectural structures compositionally and spatially with the help of revealing perspectives through a calm mirror of the water.

The size and configuration of water bodies, the nature of their natural environment significantly affect the perception of water and surrounding landscapes. The emotional

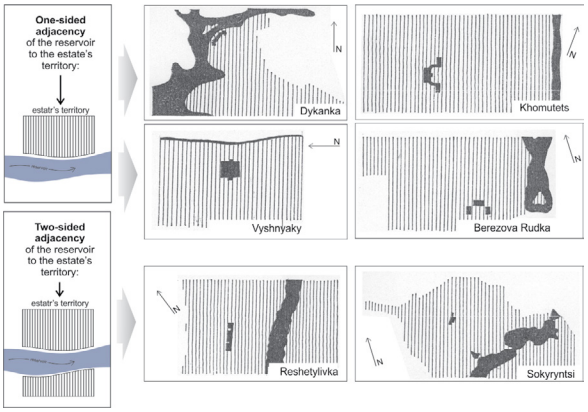

Fig. 2. Inclusion of reservoirs in the architectural and landscape composition of manor parks of the Poltava Region [from L. Shevchenko scheme]

component is significantly enhanced by water objects, rich in content and artistic images. It was this that formed the general impression of what the visitors of the estates saw. We will cite some memories that confirm this:

- "But the special beauty was provided by the Supoi River with its bays and backwaters, which, with the help of a whole series of dams, formed a lake here about 10 versts long with two high islands densely planted with trees" (Memoirs of Georgievskyi about the reservoirs of the estate in Yagotyn, [7]);
- "Painted boats for skating stood on the water channels that cut through the entire garden and park. On the main canal stood a glass booth in which a 40-member horn choir played during the folk festival... Most of the park is cut by canals that create a whole system and feed a whole series of ponds. These ponds have the most diverse forms, sometimes they are cut by dams, etc. In the river part of the park there is a huge pond with undulating irregular outlines of the banks and an island-slide in the middle. This island and the banks of the pond are guarded by hundred-year-old balsam poplars. Only memories remain of the swans swimming here" (Memories of V. Buchnevych about the reservoirs of the estate in Reshetylivka, [4, p. 15-16]);
- "When the river enters its banks, the meadows are covered with tall grass, sown with flowers, trees and groves turn green, the wheels of the mills make noise with their waterfall noise and every time they remind me of my father's poems, where he says:
- And the quiet, silent noise
- Swift waterfall
- Induces sleep amidst sweet thoughts.
- Suddenly twenty wheels are spinning there,
- Hurrying circle after circle,
- Diamonds from shining arcs,
- Opals and yachts are pouring like rain,
- Pearls are beating all around them" (Memories of S. Kapnist-Skalon about the area of the estate in Velyka Obukhivka, [12, p. 262, 573]);
- "In the center of the park was the so-called "Khivryn Sea" - a tributary of the Supoi River. This reservoir was cleared, deepened and turned into a wonderful pond... Next to the first pond, a second, lower one was made, and an artificial island was poured on it. Various willows, vines and poplars are planted along the banks of the ponds and on the island" (Memories of O. Lypa about the reservoirs of the estate in Zgurivka, [17, p.168-169]);
- "I will not describe the wonderful situation that nature has prepared for this place, but I cannot remain silent

about the impressions I received here: the species of this area argue with each other about their advantages, and the impressions that remain in me will always represent in my imagination this pleasant picture" (Memories of Prince Kurakin about the estate in Dykanka, [8, p. 86]).

Water has a comprehensive effect on a person. She is able to attract, enchant with the play of light reflections, shadows, different states. Therefore, its inclusion in the composition of manor historical parks guaranteed the creation of interesting sophisticated landscape compositions.

The role and place of water elements in the compositional, architectural and planning decision of manor parks

Until the last quarter of the 18th century, reservoirs performed an important protective function. This is about water objects of both natural and artificial origin. Later, with the loss of the protective function, the presence of natural water objects (lakes, rivers, etc.) on the territory of the manor and park complex was determined mainly by aesthetic, economic and useful qualities. In general, Poltava Region had favourable conditions for settlement and the development of estate construction. Among them are the climatic conditions, the fertility of the land, as well as the existence of an extensive network of small rivers in the mid-latitude part of the then Poltava province. The economic situation of that time contributed to giving water arteries not only a transport function. And these were the most optimal transport routes of that time. Water objects had the status of the main source of energy, which was used for economic and utilitarian purposes. The presence of water mills in manor and park complexes of the region testifies to this (according to the historical descriptions and photos found) [12].

Water nourishes the natural landscape, gives deep content to the composition of landscape objects. Water has a special importance in different cultures of the world. It is connected with traditions and beliefs, imagery and symbolism. Reservoirs are a means of aesthetic enrichment of the landscape, giving it deep meaning, imagery, and emotionality. As a rule, the reservoir was an integral element of manor parks of the Poltava Region, often playing a leading role in their composition. Here, reservoirs were given one of the prominent places in their architectural and planning structure of the manor. Sometimes the reservoir was considered as the initial planning element of the estate (Khomutets). Most often, the reservoir was located in the landscape part of the manor park behind its main building (Dykanka, Sokyryntsi). In some estates, the reservoir demarcated the main part of the estate park with the main complex of buildings, a recreation area, etc. (the so-called zone of intensive intervention) from the secondary, forest park area. The territory behind the reservoir was a forest massif transformed into a forest park by changing closed (massifs and groups of trees) and open areas (lawns, meadows), with wide curvilinear roads and sometimes small architectural forms. The forest massif for walking and hunting in the estate in Sokyryntsi, the dormant forest "Stinka" in the estate in Reshetylivka, the hill "Ararat" with coniferous plants in the estate in Zgurivka are well-known.

Most often, the reservoir was included in the central representative part of the estates. Two main trends in the placement of reservoirs in relation to the main compositional elements of estates were revealed (Fig. 3):

1. placement of reservoirs on the main compositional axis (Dykanka, Reshetylivka, Sokyryntsi, Yagotyn), which is confirmed in the works of scientists [9; 10; 15; 16; 17; 23];
2. placement of the reservoir on the secondary composite axis (Berezova Rudka, Khomutets).

Water objects acquired such a significant importance not only due to their own decorative characteristics, but also due to their spatial qualities.

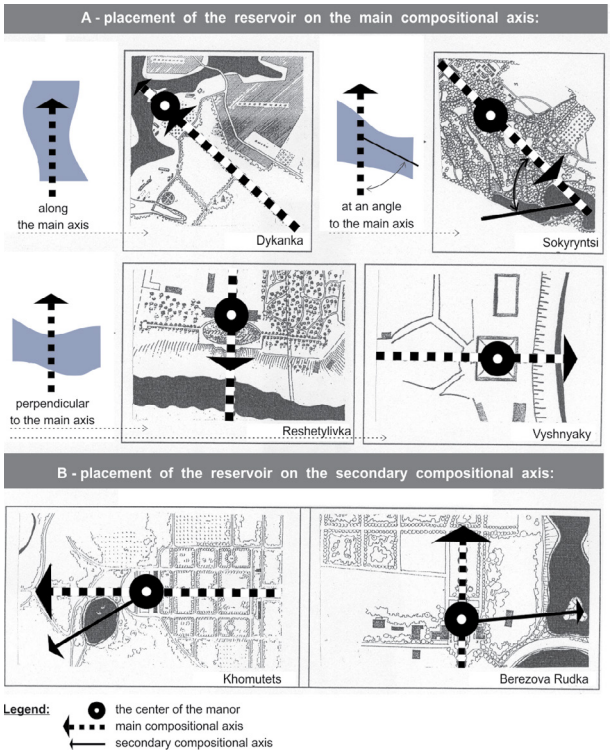

Fig. 3. The connection of manor and park complexes with reservoirs [from L. Shevchenko scheme]

The floodplain in the form of ponds, lakes and bays has a calm character and its own characteristics. First, such a static composition determines their main advantage – a smooth water surface. It was this completely horizontal water surface that was most often used in manor parks. She created a distance between the viewer and the landscape outline of the coastline, creating panoramic views and deep perspectives. Secondly, a static reservoir has reflective properties. In the studied manor parks, this quality of water objects was interpreted in several ways. On the one hand, during the formation of the coastline, shrubs and grasses were involved, without tall trees. This made it possible to form a more planar nature of the banks and reveal the reservoir, to demonstrate it as a wide visible space illuminated by the sun's rays. This effect was significantly enhanced when the reservoir was located along a secondary axis, perpendicular to the main axis (latitudinal location, Fig. 3, A). Sun reflections on the water surface created a playful pattern. On the other hand, park builders used tall tree stands in succession along the shoreline, thereby forming a "backstage" (or backstage system). The reservoir gradually opened up through them. In this way, a deep perspective was created, which was further strengthened when the reservoir was located along the compositional axis. And sometimes, in order to change and enliven the flat, monotonous character of the area, small mounds with plant plantations were piled up near the banks of reservoirs (Zgurivka). The reflective properties of water objects contribute to the visual approximation of reflected objects. Along with enhancing the contrast of light and shadow, the mirroring process created an environment rich in colors and their tones. Real landscapes were supplemented with water reflections under new light, shadow and weather conditions. The latter factor also contributed to changes in the colors and texture of the water surface.

An interesting technique is the opening of the space in front of the reservoir, which prepares the audience for new visual

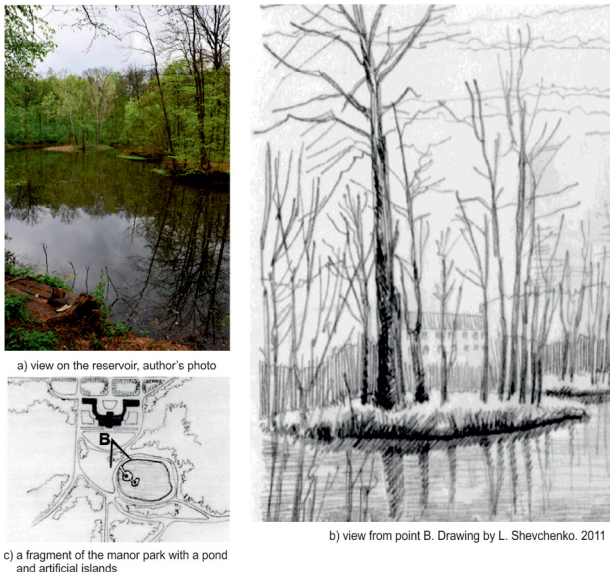

Fig. 4. A pond with artificial islands of the manor and park complex in Khomutets [from L. Shevchenko scheme]

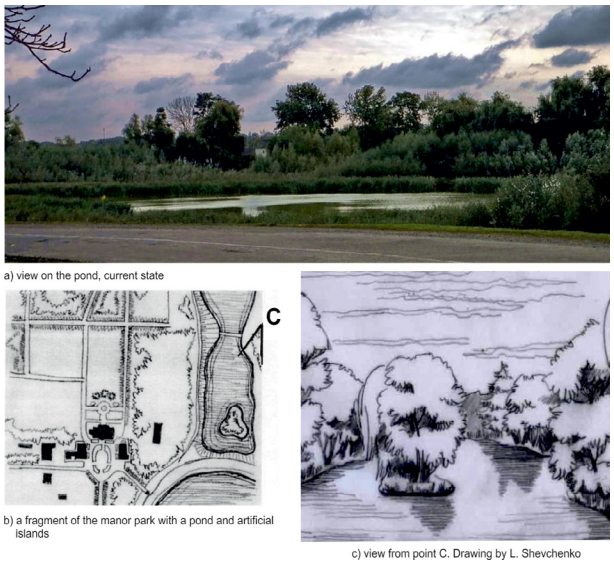

Fig. 5. A pond with artificial islands of the manor and park complex in Berezova Rudka [from L. Shevchenko scheme]

pictures and emotional impressions. The most used was the formation of a system of lawns in the part of the palace along the main compositional axis. Each meadow had its own boundaries ("backstage"), therefore, as you approached the reservoir, a number of landscape paintings focused on the water surface were revealed.

Artificial islands on reservoirs in manor parks of Poltava Region

The effect of a calm water mirror, created by certain sizes and shapes of the water surface, was enhanced by such specific elements as floodplains, capes, peninsulas and islands. This was noted by the landscape architect John Symonds at the time: "with the sky playing the role of the upper plane, and the water being the plane of the base, attention is concentrated on the vertical plane, where the cape and the bay create the depth of the plan" [25, p.139]. In the presence of such intermediate plans, formed by the protrusions of the shores and islands, when viewing the landscapes, it is possible to achieve the illusion of a significant spatiality of the water surface.

Artificial islands on the water surface in manor parks were not only original compositional accents. They played a special role in shaping the volumetric and spatial composition of the landscape of the reservoir and significantly expanded the aesthetic and decorative qualities of the park environment. Fragments of the landscape seem to be detached from the bank and float on the water surface. Several principles of the organization of artificial islands in regional manor parks are traced:

- as an independent park zone with the introduction of plant components and small architectural forms – gazebos, bridges, benches for rest (Dykanka; Khomutets (Fig. 4); Berezova Rudka (Fig. 5); Yagotyn; Zgurivka);
- as a decorative element on the water (a house for storks in the Dykanka estate, Fig. 6).

The islands had landscape outlines and perfectly fit into the natural environment. In Yagotyn's manor park on the Supoi River, "two high islands densely planted with trees" were formed, opposite one of them, across the parade flower garden, the prince's house was located (Capital and estate). In the manor park in Reshetylivka, a large artificial pond was created in the river territory. It was distinguished by irregular outlines and an island-mountain in the middle (Buchnevich, Reshetylivka artist). An artificial reservoir in the part of the manor park in Khomutets behind the palace was arranged at

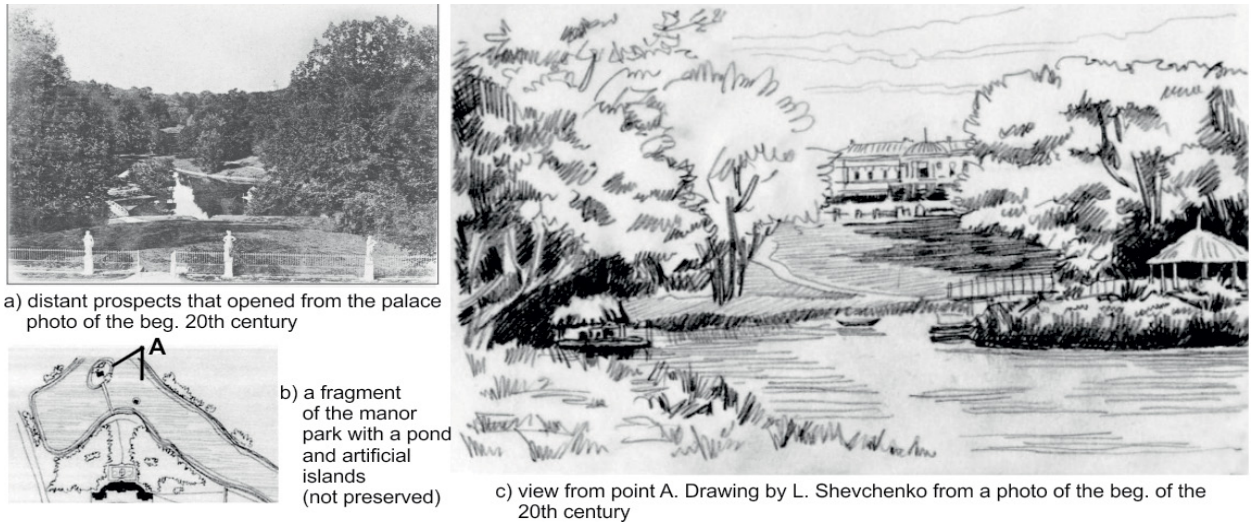

Fig. 6. A pond with artificial islands of the manor and park complex in Dykanka [from L. Shevchenko scheme]

the tributary of the Khorol River and intensive ground water. It had natural outlines with single stands of trees. Two small artificial islands with gazebos connected by bridges were arranged in the eastern part of the reservoir. These gazebos served as stage platforms for the performance of kobzars with Ukrainian folk songs.

In both cases, plantations and small architectural forms on the islands formed picturesque volumes on the background of the water surface, the reflection of which emphasized its deep characteristics. Such compositional elements contributed to the spatial versatility of water perspectives and ensured their great artistic expressiveness.

Natural rivers in some manors were also used for economic purposes, but in the end they became a decoration of the manor park. Thus, water mills were created on the Psel River in the Obukhivka estate. "20 wheels were spinning, scattering iridescent sprays of greenish village water in all directions. The melody created by splashes of water was enchanting and gave additional charm to the manor park. A water mill was built on the large artificial pond of the manor in Gogolevo" [2].

In some cases, artificial water channels (Reshetylivka) or cascades of ponds (Kybyntsi) were created next to natural water object for entertainment events. This was also facilitated by the surface groundwater. Most of the manor park in Reshetylivka was cut by channels, which created a whole system, including for feeding ponds. The ponds had various shapes, sometimes with dams. These channels were intended for boating. A glass booth was set up on the main channel for a choir of horn music. One can only imagine the beauty of this event, where beautiful musical works sounded in the picturesque area among the water objects and vegetation.

Conclusions

In the historic manor parks of the Poltava Region of the 18th and mid-19th centuries, water pools were their integral elements. They were coordinated with the spatial, subject, landscape and planning organizations of the territory. The basis for this was the landscape and hydrological characteristics of the area. The decorative and aesthetic qualities of the water contributed to their inclusion in the central representative part of the estates and to their leading role in the compositional organization of the park territory. As well as relief, plants and small architectural forms, they were equal compositional components of parks, united by a common architectural and landscape solution of the entire manor complex. Thanks to the water, the manor parks had a pleasant microclimate with refreshing coolness, expressive aesthetic landscapes, exquisite water-landscape compositions with light and shadow effects, and reflection.

A reservoir in modern landscape objects is considered their soul. This attitude towards it, among other things, was inherited from the time of the formation of palace and park complexes, highly aesthetic landscape culture. Just as in those times, in modern riverside parks, water acts as an "artistic palette" and adds even more expressiveness to the landscape composition. The use of water, its transformation when necessary, enriches park landscapes, saturates them with new emotions and, at the same time, creates the impression of the need for exactly such a solution in each specific situation. The best park landscapes are always focused on a mirror of water, which significantly enriches the composition. Just as in the past, from the open terraces of exquisite palaces, picturesque distant perspectives on the water objects with artificial islands were revealed

The aim of the study is to reflect the processes of transformation in the outer urban area in the post-war years and today, where agricultural areas have been replaced by industrial zones and workers' villages. Objectives of the study:

- to study the character of the construction of residential buildings or barracks in workers' villages in the 1940s and 1950s;
- evaluation of the aesthetic quality of the exterior of the housing estates in the workers' villages in the 20th century 1970s and.1990s.
- characteristics of residential development in the 1950s next to industrial areas;
- transformation of the village open space as a result of the change in national economic policy at the beginning of the 21st century.

The methodology includes a multidimensional approach based on:

- the study of literature and archival material and comparison with the contemporary situation in Latvia;
- the use of photographic material reflecting the evidence of the historical heritage preserved in the brickworks villages;
- architectural and spatial research of the construction of workers' villages in the period from the 1950s to the 1920s and the transformation processes in the changing identity of the cultural space.

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Kopsavilkums
Zinātniskajā rakstā tiek akcentēts jautājums par muižu parku veidošanu Poltavas apgabalā 18.-19. gadsimtā, kas ir viena no Ukrainas kreisā krasta teritorijām. Pētījuma galvenais akcents ir muižas parka ainava, tā ūdens elementi, funkcionālā loma, estētiskā un mākslinieciskā nozīme un ietekme uz kompozicionālās struktūras veidošanos. Izpētes procesā tika izmantotas vairākas metodes: vēsturiski teorētiskā, lauka izpēte un kompleksā analīze. Apzināti četri pagalmu parku attīstības posmi. Pirmajam, agrīnajam posmam ir raksturīga kombinēta kompozīcijas shēma, kas balstīta uz regulārām un ainaviskām teritorijas organizēšanas metodēm. Otro posmu raksturo pakāpeniska atkāpšanās no skaidras regularitātes. Parka teritoriju kompozicionālajā risinājumā dominēja brīvas ainavas plānošanas pieejas. Tas attiecās ne tikai uz pils teritoriju, bet arī uz pils priekšpusi. Muižas parka apbūves trešā kārta demonstrē klasicisma stila tālāku pilnveidošanu, muižu un parku kompleksu arhitektoniski telpisko kompozīciju un ainaviskos kompozīcijas risinājumus. Ceturto, pēdējo posmu raksturo muižu un parku kompleksu veidošanās nelielās teritorijās, atkāpšanās no ārējā krāšņuma un pompozitātes.

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DESIGNING FOR HEALTH: ARCHITECTURAL PROGRESS OF LITHUANIAN TUBERCULOSIS SANATORIUMS IN THE 1920S AND 1930S

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Abstract. At the turn of the 19th and 20th centuries, to isolate and treat people suffering from tuberculosis, special sanatorium buildings began to be built in various countries. In the case of Lithuania, more serious care of tuberculosis patients began in the period of independence, during the 1920s and 1930s, when the matter was taken care of by various institutions and voluntary societies operating in the country. As a result, several tuberculosis sanatoriums were established in the country, and a number of design projects of sanatorium buildings were developed. The article aims to present the architectural development of implemented and unimplemented tuberculosis sanatorium buildings and the peculiarities of their designs in Lithuania during the 1920s and 1930s. It is assumed that despite the difficulties in the design and construction of these buildings, in most cases, their architecture was shaped by the pursuit of continuous progress, which was influenced by the latest stylistic trends and the need of functionality to meet the treatment requirements of patients suffering from tuberculosis.
Keywords: sanatorium architecture; Lithuanian architecture; tuberculosis sanatoriums; interwar architecture

Introduction

Although tuberculosis is known for a long time, the disease's treatment became more active only in the 19th century, when the bacterium that causes it was identified. Thus, "the opinion began to spread among doctors that tuberculosis is a public disease, that isolation and prevention is the only way to reduce the number of patients" [5]. To isolate and treat people suffering from this disease, at the end of the 19th century and especially at the beginning of the 20th century, new special building types – sanatoriums – were started to be built. Such buildings were mainly built in areas with pine forests, and in them the best treatment for tuberculosis patients "centered on bedrest, fresh–air–and–sunlight regimes and controlled diet throughout the first part of the 20th century" [29]. Therefore, in the architecture of tuberculosis sanatoriums, open spaces – balconies, terraces, glazed verandas, which helped to treat patients by means of climatotherapy and heliotherapy, were considered as necessary elements, since it was well–known that the sunlight had antibacterial properties. To ensure that the patients received enough sunlight, their rooms in sanatoriums often faced the south [6]. The disease was also treated with quartz lamps, and more severe forms of tuberculosis were sometimes treated surgically.

The construction of tuberculosis sanatoriums became widespread at the beginning of the 20th century. In an architectural sense, their design coincided with the processes of architectural modernization and the spread of modernism that began at that time. Modernism in sanatorium architecture was not only an aesthetic change. Such programmatic aims of modernism as functionality, sufficient sunlight, fresh air, convenient layout of rooms was applied in the architecture of hospitals and sanatoriums, where these architectural possibilities contributed to the treatment of patients [42]. Thus, "as a building type, the tuberculosis sanatorium became the most convincing public symbol of the new architecture. The actual medical treatment then recommended for tuberculosis <...> coincided exactly with the cultural metaphor of good health so central to the philosophy of modern architecture" [28]. Consequently, the new tuberculosis sanatorium buildings, based on the principles of modern architecture and the tuberculosis treatment requirements were built in most European countries during the early 20th century [7].

In the context of Lithuania, until the beginning of the 20th century, "tuberculosis was ignored and there were no measures to combat it" [25]. The isolation and treatment of tuberculosis patients began in the 1920s and 1930s, i.e. during the period of independence. Tuberculosis was a very common disease in the young country, from which in the 1920s about 3.5 thousand people died every year. Meanwhile, there were around 40 thousand or more people with this disease, of which the largest part was those with pulmonary tuberculosis [2]. Throughout the 1920s and 1930s, the prevention and treatment of tuberculosis in Lithuania was engaged in by both the state and various voluntary organizations, which, as far as conditions allowed, established tuberculosis sanatoriums and developed their infrastructure.

However, in modern studies of interwar Lithuanian architecture, the healthcare objects, including sanatoriums, are largely overlooked. Thus, only the development of hospital buildings built in the early 1920s in the country was analyzed more widely [30]. In the context of tuberculosis sanatorium architecture, their architecture is more studied only in the general context of interwar Lithuanian resort architecture [27]. While other research regarding tuberculosis sanatorium architecture is fragmentary [16]. In this case, only the development of infrastructure for the prevention of tuberculosis in children, known as summer colonies, is studied a little more [36]. Therefore, the purpose of this article is to reveal and analyze the development of the architecture of tuberculosis infrastructure and sanatoriums built in Lithuania during the 1920s and 1930s.

The need for tuberculosis sanatoriums and efforts to construct them in the 1920s

Despite its prevalence, the development of tuberculosis treatment infrastructure was not a high priority in the first years of independence of the young Lithuanian state. At the beginning of the 1920s, the country basically had to create a new healthcare infrastructure and the attention was primarily directed to the establishment of public hospitals and the construction of buildings for them. Meanwhile, the lack of infrastructure for the prevention and treatment of tuberculosis led to the fact that in the early 1920s "patients turned to doctors late" which "diagnosed the disease too late" [37]. At that time, the establishment of tuberculosis sanatoriums, which did not exist in the country at that time, was considered the most effective way to treat the disease.

In theory, already in the early 1920s, based on the example of foreign countries, the benefits of tuberculosis sanatoriums in the treatment of the disease were known in the country: "The necessary conditions for sanatorium are its seclusion from city noise, a high, clean, dry and quiet place, without dust, dry, fresh air. It is good if there is a forest or a pine forest

Fig. 1. Reconstruction design of the State Lung Hospital building in Jurbarkas (eng. arch. Karolis Reisonas, 1931).
[Lithuanian Central State Archive, f. 1622, ap. 4, b. 150, l. 8]

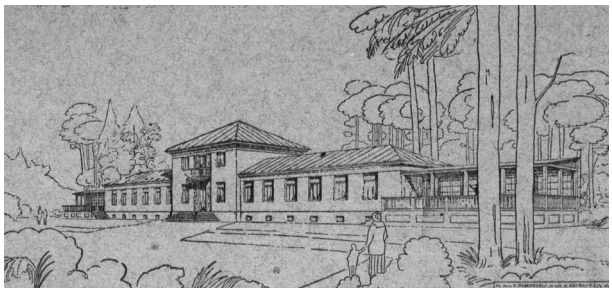

Fig. 2. Design of the Society for the Fight Against Tuberculosis sanatorium in Panemunė (arch. Vladimiras Dubeneckis., civ. eng. Klaudijus Dušauskas–Duž, 1928). [Kova su džiova, 1928, No. 7, p. 35]

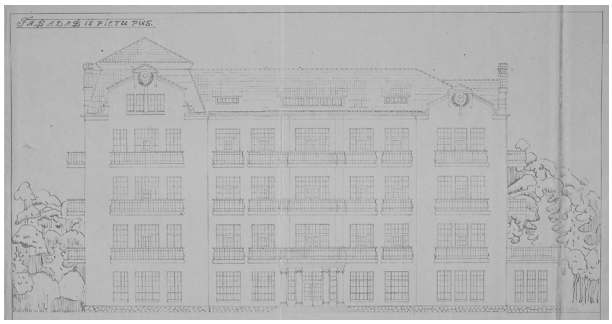

Fig. 3. Design of the Lithuanian Red Cross tuberculosis sanatorium in Panemunė (eng. arch. Romanas Steikūnas, 1928). [Lithuanian Central State Archive, f. 1622, ap. 4, b. 1297, l. 7]

nearby, as the clean air there is very useful for the patients. <...> Buildings for sanatoriums are built in a place protected from the wind by forests or mountains, no more than 2–3 floors, <...> with small wards for a maximum of 5–7 patients, facing the sunny south side. <...> The sanatorium must have all the means to diagnose and treat the disease, such as a laboratory, X–ray rooms, a pharmacy, and equipment for artificial light treatment. <...> Patients use fresh air and sunlight very widely. For this purpose, there are verandas in sanatoriums, where patients lie for whole days. <...> General hospitals cannot provide similar conditions to tuberculosis patients" [35].

Although it was ruled that the country needed to establish and build tuberculosis sanatoriums, there was no consensus on where they should be built. There were opinions in favor of their construction near Kaunas, the temporary capital of Lithuania at that time, while other opinions advocated for their concentration in the country's provinces [24]. Therefore, since the early–1920s, efforts began to be made to do it both ways.

To combat the disease, in 1923 a tuberculosis department was established at the State Hospital in Kaunas and later other public hospitals had a part of the wards assigned to patients with this disease. Additionally, in 1924 on the initiative of the country's doctors, the Society for the Fight Against Tuberculosis was established in Kaunas which had branches in various cities of Lithuania. The Society also established tuberculosis dispensaries for the diagnosis of the disease and for the patient registration. The State also got involved to combat tuberculosis – in 1925 on the initiative of the Department of Health under the Ministry of the Interior, the State Lung Hospital with 50 beds was established in a pine forest near Jurbarkas, and in 1927 the State Tuberculosis Sanatorium also with 50 beds started operating in Varėna [14]. Later, in the early 1930s, a small sanatorium was also established in Varėna by the Kaunas City Health Fund. Since these health institutions began operating in pre–existing former military buildings built during the tsarist period, they were not convenient to use and had shortcomings. For example, the State Lung Hospital in Jurbarkas at first did not have a constant electricity supply, which prevented it from promptly performing X–ray examinations. It also had no water supply and bathrooms, while the interior was damp, requiring major modernization [38]. Thus, in the early 1930s the building was modernized by adding the second floor (Fig. 1).

However, it was understood that to treat the disease more effectively more sanatoriums were needed where treatment could be carried out more efficiently than in general hospitals. Thus, at the end of the 1920s, new tuberculosis sanatoriums began to be established in resorts and resort–type locations around Kaunas. In 1928, two projects of the first sanatorium buildings specially designed for the treatment of tuberculosis began to be implemented. Both were started to be built in the pine forests of Panemunė resort (southeast of Kaunas city), which provided a green environment with fresh air and sunlight for the successful patients' recovery. The first building, the construction of which was initiated by the Kaunas branch of the Society for the Fight Against Tuberculosis, was initially intended only for children, later adults were also treated there. The construction of the second one was started by the Lithuanian Red Cross. Both buildings were masonry and had different planning and volumetric compositions, as the first was two–stories built on an elongated plan, while the second had an impressive four–story volume and L–shaped plan (Figs. 2–3). Since the buildings were large, their constructions lasted until the early–1930s. Wealthier patients were treated at these sanatoriums at their own expense, while the treatment costs for poorer ones were compensated by the municipalities. After the completion, the first building housed around 50–80 patients, while the second one could treat up to 150 patients. Both buildings were modern and well adapted for treatment, as tuberculosis was treated in them not only with sunlight and fresh air, but also medically. For example, the sanatorium of the Lithuanian Red Cross, in which the patients with pulmonary and bone tuberculosis were treated, had "an operating room, an X–ray room, and a laboratory. Modern methods of active treatment were applied in the sanatorium: pneumothorax, thoracoscopy, thoracoplasty. <...> All patient wards were ventilated, equipped with electric light alarm, water supply, central heating, radio network" [22]. Thus, the patients had hygienic and comfortable conditions to recover in balconies and beds. In terms of style, the building's architecture, although rational looking, was "characterized by exceptional representativeness. The stylistics of modernized historicism were interwoven here with features of the national style" [27].

In the 1920s, when the first tuberculosis sanatoriums were established in Lithuania, the rule was adopted that "the country is sufficiently equipped with tuberculosis sanatoriums if they have as many beds as there are annual deaths" [18]. Therefore, the country needed sanatoriums that could treat

about 3 thousand patients in total. Since all sanatoriums founded in the 1920s had only a few hundred beds, it was necessary to expand the existing sanatoriums and build new ones. However, it was thought that it would take up to 25 years to build all the necessary sanatoriums in the country [2].

The concentration of tuberculosis sanatoriums in resorts and resort–type locations around Kaunas during the 1930s

During the early–1930s, tuberculosis sanatoriums began to be established and buildings for them began to be constructed mainly in the vicinity of Kaunas. This was since most doctors were concentrated in the temporary capital at that time, the voluntary healthcare organizations were active there, and there were quite a few suitable places for sanatoriums in the nearby pine forests. For example, in 1931, on a 5–hectare plot in a pre–existing building in the forests of Romainiai (north–west of Kaunas city), the Jewish Tuberculosis Sanatorium Society established a summer sanatorium to combat the disease. In it the patients "lived for several weeks, received good food, <...> and returned home after 6 weeks. There was no question of their complete cure, as the sanatorium only operated during a few summer months each year" [44]. The wooden building was modernized in 1936 by installing central heating, an X–ray room, and a laboratory, and the patients began to be treated there with fresh air, sunlight, and a healthy diet all year round. In 1937, a second two–story masonry building was built for the sanatorium [41]. After the expansion, it had around 80 beds for the patients suffering both from pulmonary and bone tuberculosis. Although the new building's exterior was modern, it did not stand out more from other analogues in Lithuania, as it was designed without large open spaces (Fig. 4). This was compensated by the fact that most patients were housed in single rooms with wide windows which provided enough sunlight and allowed them to recover in solitude. In 1939, there were plans to further expand the sanatorium by building a wooden building for its medical personnel (Fig. 5).

The concentration of sanatoriums in the vicinity of Kaunas was further expanded in 1933, when a wooden two–story building for the children's tuberculosis sanatorium was built in Panemunė by a private initiative which by the late–1930s housed around 80 children [19].

In 1936, in the forests of Romainiai the second sanatorium was established by the Kaunas branch of the Society for the Fight Against Tuberculosis and several new buildings were built for it, which had a total of 50 beds [21]. In 1938, it was planned to begin a significant expansion of the sanatorium by constructing a new main building, which could accommodate up to 100 patients [11]. Thus, a young civil engineer Bernardas Žintelis, who in 1936 graduated from the Technical Faculty of Vytautas Magnus University in Kaunas, was commissioned to prepare several design proposals of the building (Figs. 6–7). Based on it, the three–story building was planned to be built on an elongated plan. The building's modernist–inspired façade, which lacked plastic décor, was to be composed of simple geometrical shapes. The exterior walls were designed with a strong horizontal emphasis achieved by the dense rhythm of wide window openings in imitation of ribbon windows and connected by the narrow strips. The building's horizontality was to be further emphasized by the south–facing deep recessed terraces and sleek balconies, designed on each floor, which were planned to be used for effective heliotherapy.

Based on the proposals, the building was planned to house

Fig. 4. Former Jewish sanatorium building in Romainiai in the 1950s (eng. arch. Levas Rabinavičius, 1937) [author's personal collection]

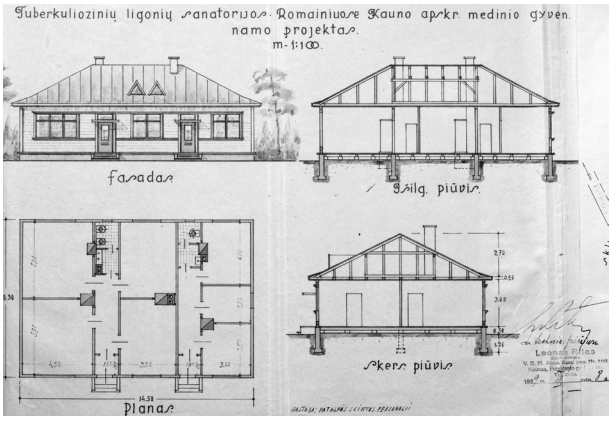

Fig. 5. Design for residential building for the personnel of the Jewish sanatorium in Romainiai (civ. eng. Leonas Ritas, 1939) [Kaunas Regional State Archives, f. 17, ap. 1, b. 72, l. 100]

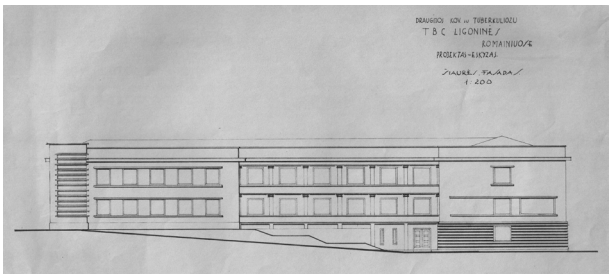

Fig. 6. Design proposal for the Society for the Fight Against Tuberculosis sanatorium in Romainiai (civ. eng. Bernardas Žintelis, 1938) [10]

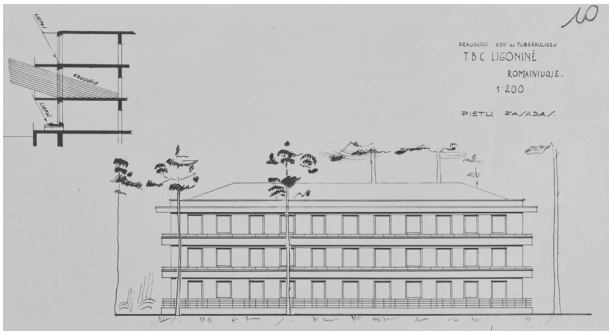

Fig. 7. Design proposal for the Society for the Fight Against Tuberculosis sanatorium in Romainiai (civ. eng. Bernardas Žintelis, 1938) [10]

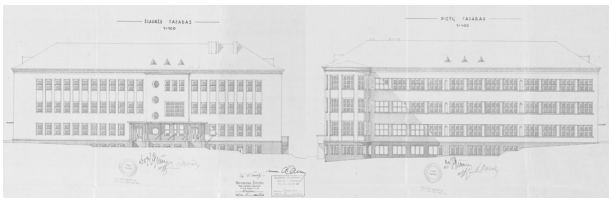

Fig. 8. Unimplemented design of the Society for the Fight Against Tuberculosis sanatorium in Romainiai (civ. eng. Bernardas Žintelis., eng. arch. Algirdas Šalkauskis, 1939)
[Lithuanian Central State Archives, f. 380, ap. 1, b. 1894, l. 1–2]

up to 84 patients (28 on each floor) in double, triple and five–bed rooms facing the south. It was also planned to be equipped with X–ray rooms, quartz lamps, a laboratory, an operating room, a pharmacy, bathrooms, elevators, and a canteen. All the rooms were planned to be connected by double–sided corridors [10]. Thus, its unified, modernist exterior was to be combined with a functional economy in the planning structure of the inside. If one of the design projects had been implemented, the new building in Romainiai could have been one of the first truly modern sanatoriums in 1930s Lithuania. However, none of the preliminary projects were selected as the final design version.

In 1939, another design was drawn–up for the new sanatorium building in Romainiai which was selected as the final design. Compared to the previous preliminary projects, the building was designed with a less modern and more restrained appearance (Fig. 8). The building's main façade was to be accentuated by the narrow vertical windows rhythmically dividing the exterior's entire length, while the entrance was to be emphasized by the narrow columns. Thus, from the front, it could have resembled a representative–looking administrative building more than a functional sanatorium. The rear part where the patient rooms were to be concentrated, however, was designed with a more modern appearance, since its flat walls were to be divided horizontally in imitation of ribbon windows providing more air and sunlight inside. Although the building's design did not feature terraces and balconies, the treatment therapy of the patients was planned to be carried out in the glazed rounded corner veranda. However, this design was also not implemented, as in 1939 the Department of Health belatedly ruled that Romainiai was not a suitable area for the development of tuberculosis sanatoriums and forbade their further expansion [23].

Efforts to establish and construct new sanatoriums in the Lithuanian provinces during the 1930s

From the 1920s, the tuberculosis infrastructure was mainly developed in the vicinity of Kaunas. Thus, in the late–1930s, five tuberculosis sanatoriums operated there all of which could house about 460 patients [17]. Meanwhile, elsewhere in Lithuania, the network of tuberculosis sanatoriums was poorly developed, as the State Lung Hospital in Jurbarkas and two sanatoriums operated Varėna had a total of 150 beds. In addition, up to 200 patients were housed in the county hospitals [15]. Therefore, until the mid–1930s, not a single new sanatorium building was built in the country's provinces, and the ones that were already operating were often overcrowded and were not fit for their function: "there are tens of thousands of people with tuberculosis, and only a few sanatoriums, and those are often not the best equipped and medically not the best served" [44]. More progress was made in the country's provinces to isolate and treat children prone to tuberculosis, as during the 1930s several children's summer colonies were established (mostly by the initiative of the Society for the Fight Against Tuberculosis) and a few special buildings were built for some of them [36].

However, to effectively combat tuberculosis in the provinces of Lithuania, it was necessary to expand the existing sanatoriums and establish new ones. As a result, outside the vicinity of Kaunas, the development of tuberculosis sanatoriums became more active only in the second half of the 1930s. For example, from the mid–1930s, the State Tuberculosis Sanatorium in Varėna was modernized by the construction of a one–story wooden barrack of a simple appearance, which accommodated 20 patients and a canteen [39].

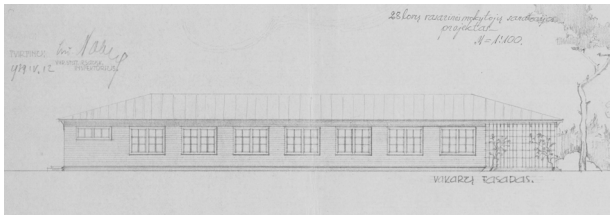

Fig. 9. Design of a standard 28–bed barrack for the teachers' sanatoriums in Jurbarkas and Varėna (civ. eng. Alfonsas Maculevičius, 1939) [Lithuanian Central State Archives, f. 380, ap. 1, b. 1730, l. 89]

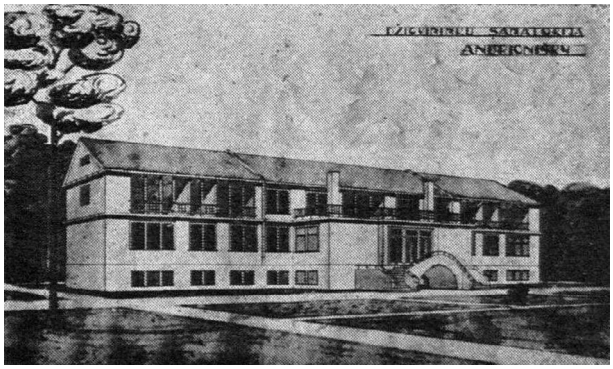

Fig. 10. Unimplemented design of the Society for the Fight Against Tuberculosis sanatorium in Andrioniškis (civ. eng. Kazys Germanas, 1937) [Kova su džiova, 1937, No 11, p. 25]

Fig. 11. Unimplemented design of the Society for the Fight Against Tuberculosis sanatorium in Andrioniškis (eng. arch. Algirdas Mošinskis, 1939) [40]

At that time there were also plans by the State to establish new summer sanatoriums in the country's provinces for the teachers. Such a decision was determined by the fact that they had great risks of contracting and transmitting tuberculosis, as a significant number of school children suffered from it. The new teachers' sanatoriums were planned to be established in Jurbarkas and Varėna, next to the already operating tuberculosis treatment facilities. For that a standard design of a one–story wooden barrack of an elongated volume was developed in the late–1930s (Fig. 9). Based on the design, the barrack was intended to house only 28 teachers, all in double rooms, while for their treatment a small, covered terrace was designed in front of the structure. Initially, it was planned to build one barrack in Jurbarkas, and two in Varėna [1].

However, due to the small amount of support by the State and municipalities for the development of tuberculosis infrastructure in the provinces of Lithuania, the Society for the Fight Against Tuberculosis demonstrated the most initiatives for this [13]. In the 1930s, to further expand the network of tuberculosis sanatoriums, it was planned to establish a new 25–bed sanatorium in the country's northeastern region – in the forest near the small town of Andrioniškis [34]. This initiative was taken by the Panevėžys branch of the Society for the Fight against Tuberculosis. In 1936–1937 Kazys Germanas, who was a municipal civil engineer of Panevėžys County, was commissioned to design the new two–story masonry building for Andrioniškis sanatorium. The elongated building was planned to be built with its main façade, where the patient rooms were to be concentrated, facing the south. Its exterior was designed in pursuit of stylistic modernity and was planned to be composed of the plain–looking minimalist

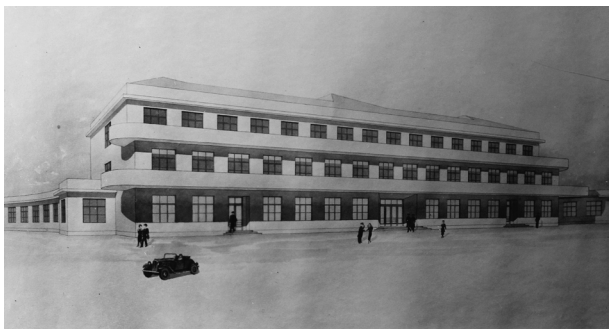

Fig. 12. Diploma project "Tuberculosis sanatorium in Alytus" by Petras Buškevičius of the Vytautas Magnus University's Technical Faculty, 1935
{Lithuanian Central State Archives, f. 631, ap. 19, b. 29, p. 1]

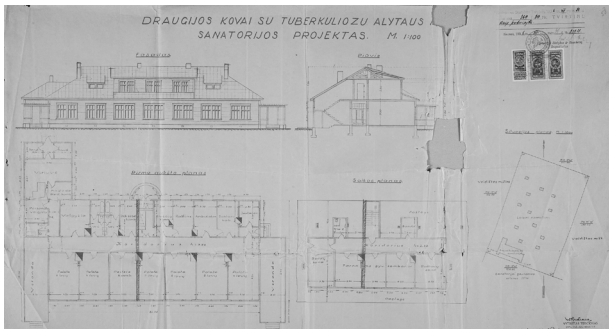

Fig. 13. Design of the Society for the Fight Against Tuberculosis sanatorium in Alytus (tech. Andrius Radvila, 1937) [41]

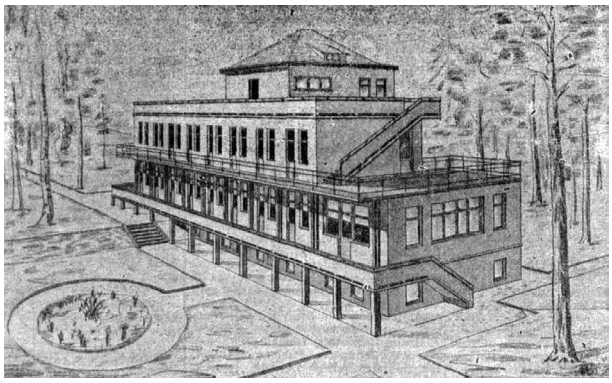

Fig. 14. Design of the Society for the Fight Against Tuberculosis sanatorium in Alytus (civ. tech. Jeronimas Juškėnas, 1939)
[Lietuvos žinios, 1939 June 14, p. 8]

cubic forms. The exterior's modernity could also have been emphasized by the simple wide windows, dividing the smooth, undecorated walls, and by the loggias and terraces (Fig. 10). Due to the simple–looking appearance and the flatness of the facades, the building could have resembled early sanatoriums of the 20th century, such as the Purkersdorf sanatorium in Austria by Josef Hoffmann. However, the lack of funds resulted in the project not making it past the design stage.

Despite that, the Panevėžys branch of the Society for the Fight against Tuberculosis did not abandon the idea of establishing a sanatorium near Andrioniškis and another impressive–looking design of a new sanatorium building was developed in 1939 [40]. It was designed by engineer–architect Algirdas Mošinskis of the Lithuanian Red Cross, who in 1928–1935 studied architecture at the Technische Hochschule in Charlottenburg, Berlin [3]. Based on the design, the sanatorium was supposed to be the largest building of such a function in the country, since it could house about 150–200 patients, mostly in triple rooms. The elongated rectangular volume was to be 79 meters long, almost 13 meters wide and was to have two floors above the basement level (Fig. 11). The building was to have masonry walls with foundations and ceilings made of reinforced concrete. The volume, capped by a low roof, was to be more unified compared to the other buildings of such function in Lithuania. Since it was to be plain windowed, without any superfluous details, and with deep terraces stretching along the entire length of the southern façade. These features could have emphasized the robust form of the volume, whose aesthetic quality had to exude in its simplicity. The building by its longer part was planned to be built along a north–south axis, with the patient wards facing the south. This was dictated by the aim to take advantage of the sun for the treatment of the patients, who were to be treated with heliotherapy while lying on the terraces, accessed directly from their wards. The rooms for the doctors, staff and medical equipment, based on the functional division of the interior spaces, were planned to be in the building's northern side.

Thus, it was to be a simple–looking building which was to be more in–line with the modern international tuberculosis sanatorium buildings of the 1930s. For example, its modernist architectural language could have resembled the exteriors of such sanatorium buildings as the one built in Vordingborg, Denmark (by Kay Fisker) or the one in Tervete, Latvia (by Aleksandrs Klinklāvs) [32], [20]. Yet the sanatorium building, the construction of which was planned to be massively supported by the municipalities of the northeastern Lithuanian counties, was fated not to be built. As by the summer of 1940, when the country lost its independence, there were still not enough funds collected for its construction.

By the mid–1930s there were also plans to establish a new sanatorium in southern Lithuania, near the city of Alytus (Fig. 12). Thus, in 1936, on the initiative of the Alytus branch of the Society for the Fight Against Tuberculosis, a new lung and bone tuberculosis sanatorium was founded in sandy pine forests near the city. However, up until the late–1930s the institution was expanded by the construction of the two vernacular–looking one–story wooden buildings, capped by the pitched roofs (Fig. 13). The lack of modernity of their exteriors (the only modern feature being the wide horizontal windows) was probably determined by the aim to make the buildings as simple in appearance and construction as possible due to the limited resources of the Society, which is why from the outside they looked more like barracks than modern sanatorium buildings. Inside, however, both buildings were quite modern and housed several dozens of patients. The patient wards faced the south, and the treatment rooms, facing the north, were equipped with quartz lamps, an X–ray, and an ambulatory. In addition, in the late–1930s, 36 wooden tuberculosis huts were built on the site of Alytus sanatorium for the patients to recover during the summer months [9].

Due to the large number of patients, the wooden buildings were soon overcrowded. Therefore, in 1939 a modern masonry building for 50 patients was built next to them. Its construction was carried out from the donations collected by the Society. The L–shaped building was designed by local civil technician Jeronimas Juškėnas and displayed a progressive architectural language (Fig. 14). It is probable that its architecture, as was in the case of unimplemented designs of sanatorium buildings in Romainiai and Andrioniškis, was inspired by the ideas of western modernism, which were sufficiently well–known in 1930s Lithuania [31]. The new sanatorium was characterized by an ascetic stepped volume of rectangular forms, whose appearance was dominated by the simple looking, yet functional elements. Most of the undecorated exterior walls were rhythmically divided by the composition of narrow vertical windows, while the sides were

emphasized by the wide horizontal windows. The image of modernity and functionality was also given to the building by its wide south–facing terraces. They were designed on the first and second floors, were raised above the ground on pillars and had metallic tubular railings. All the terraces were accessed directly from the patient rooms. Additionally, other terraces were installed on the building's flat roof – a modern feature rarely used in the country's architecture of that time. The application of these elements in the building's design was based on its function – to provide enough sunlight and healthy pine forest's air to the patients' treatment. Thus, the building's design demonstrated architectural ambitions of both the designer and the Society.

Inside the building, the rooms were grouped based on their function. The building's longer part accommodated the patients, all in double rooms, while the perpendicularly placed shorter part housed the personnel and auxiliary rooms. Both parts on the inside were connected by the corner staircase and one–sided corridors [4]. The building's functionality was further emphasized by the heating, electricity, water supply and sewage systems. Thus, the sanatorium both internally and externally demonstrated a close relationship between architecture and medicine, as it was designed for the comfort of the patients. After the completion of the new building, a total of about 150 patients could be treated in the Alytus sanatorium, which became one of the largest tuberculosis treatment facilities in the country in the late–1930s [43].

It is worth emphasizing that this building was perhaps the only object that met the international architectural features of modern sanatoriums, which was built during the period of independent Lithuania. Therefore, due to its modern and functional appearance, it can be named the seminal example of modernism in Lithuanian sanatorium architecture of the 1930s. As the design projects of other sanatoriums with a similar appearance were not implemented, and most of the other previously built sanatorium buildings and barracks had an appearance without prominent modernist features.

The plans to further expand the network of tuberculosis sanatoriums in the country in the late–1930s

Despite the efforts carried out by the various institutions to expand the network of tuberculosis sanatoriums in the country, by the late–1930s it became evident that it was being done without a long–term plan. Also, it became obvious that the network of tuberculosis sanatoriums in the country's provinces was still not sufficiently developed, in contrast to their more–or–less successful establishment and construction in the vicinity of Kaunas. At that time, for example, there were less than ten tuberculosis sanatoriums in the country (the majority, three, of which were established by the Kaunas and Alytus branches of the Society for the Fight against Tuberculosis) [13]. Although in the 1930s the number of deaths from tuberculosis decreased and averaged about 2.5 thousand per year, all the country's tuberculosis sanatoriums had a total of about 1000 beds in a dozen buildings – much less than it was needed for the successful disease's treatment [33].

Since most of the country's tuberculosis sanatoriums operated near Kaunas, in late–1930s the country's Department of Health recommended "to stop the unplanned establishment of sanatoriums, especially their concentration in the vicinity of Kaunas" by establishing more sanatoriums in the country's provinces [26]. Thus, in 1939–1940 it was planned to develop an ambitious ten–year plan for the construction of tuberculosis sanatoriums in Lithuania. Following the example of foreign countries, in the coming years it was planned to establish large "sanatorium towns" in pine forests near Kaunas and Varėna, by constructing not only new sanatorium buildings, but also cinemas, churches and other service infrastructure for the patients. There were also plans to build new sanatorium buildings in the country's provinces near largest cities, while a special sanatorium building for the patients suffering from bone tuberculosis was planned to be built on the country's seaside [8]. These constructions were planned to be jointly carried out by the state, municipalities, the Society for the Fight against Tuberculosis, and the Lithuanian Red Cross. Such plans, however, were not implemented, as they were interrupted by the Soviet occupation of the country in June 1940.

Conclusions

Between the wars in Lithuania, tuberculosis was a serious disease that affected tens of thousands of people. Thus, it was necessary to establish and develop an infrastructure for the prevention and treatment of the disease, which was expected to be sufficiently developed only in a few decades. It was chosen to develop this infrastructure by establishing sanatoriums for the treatment of the disease in remote, forested areas of the country. The most important means of combating this disease was the new type of buildings, sanatoriums, the construction of which began in the country in the late–1920s and continued throughout the 1930s. Although the establishment of sanatoriums and the construction of their buildings was carried out by both state, voluntary and private initiatives, the greatest influence on the development of this infrastructure was exerted by the Society for the Fight Against Tuberculosis which, although had limited finances, alone built several new sanatorium buildings. However, since most tuberculosis sanatoriums were designed and built in the vicinity of Kaunas, in country's provinces, due to the limited finances and insufficient initiative, the establishment of sanatoriums and the construction of the buildings for them lagged and began to be developed more only in the late–1930s.

In terms of architecture, up until the late–1930s the several sanatorium buildings and barracks which were built in the country were designed with different planning and architectural compositions. But they all were characterized by the convenient interiors, which housed the patients and the necessary medical equipment to battle the disease. While on the exterior, following the established norms of such building type, they were emphasized by the deep open spaces providing the benefits of clean air and sunlight for the patients. Thus, the buildings' architecture played an important role in having a positive impact on the patients' health and well–being. Despite the early architectural achievements, tuberculosis sanatorium, as a building type, began to be developed the most in Lithuania in the late–1930s, as at that time the most ambitious and progressive–looking design projects of such buildings were drawn–up and were planned to be implemented. The architecture of the late Lithuanian sanatorium designs was characterized more than before by the ascetic modernist–inspired, almost functionalist–looking similar exteriors and elongated volumes, with abundant open spaces, which demonstrated the ambitions of both the architects and engineers, and the institutions that commissioned the projects. Consequently, the late sanatorium designs displayed an architectural language similar to the progressive foreign examples of modernist sanatoriums of the 1930s and emphasized the late evolution of sanatorium as a building type during the independent Lithuania. However, a large part of such sanatorium building projects of the late–1930s, which could have significantly improved the conditions for battling tuberculosis in the

country, did not make it beyond the design stage and were not implemented.

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Kopsavilkums

19. un 20. gadsimtu mijā, lai izolētu un ārstētu ar tuberkulozi slimojošus cilvēkus, dažādās valstīs sāka būvēt īpašas sanatorijas ēkas. Lietuvas gadījumā nopietnāka tuberkulozes slimnieku aprūpe aizsākās brīvvalsts laikā, 20. un 30. gados, kad par šo lietu rūpējās dažādas valstī darbojošās institūcijas un brīvprātīgās biedrības. Rezultātā valstī tika izveidotas vairākas tuberkulozes sanatorijas, izstrādāti vairāki sanatoriju ēku projektēšanas projekti. Raksta mērķis ir iepazīstināt ar realizēto un nerealizēto tuberkulozes sanatorijas ēku arhitektonisko attīstību un to projektēšanas īpatnībām Lietuvā 20. gadsimta 20. un 30. gados. Tiek pieņemts, ka, neraugoties uz grūtībām šo ēku projektēšanā un būvniecībā, vairumā gadījumu to arhitektūru veidoja tiekšanās pēc nepārtraukta progresa, ko ietekmēja jaunākās stilistiskās tendences un nepieciešamība pēc funkcionalitātes, lai atbilstu ēku aprūpes prasībām, priekš pacientiem, kas cieš no tuberkulozes.

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ABOUT THE CONCEPT OF IMPROVING BORDER DEFENSE LINES BY MEANS OF LANDSCAPE ARCHITECTURE

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Abstract. The article presents the authors' scientific work on the improvement of border defense lines with the help of landscape architecture. The highlighted issues are extremely relevant for the entire European community, especially for the residents of Ukraine. The territories of the states bordering the aggressor country must be strongly fortified, have defensive positions, points, fortifications and fences. Publications related to the war, the protection of the population, and the arrangement of life under martial law appeared in Ukraine. But the question of inclusion of landscape architecture means in defensive fortification lines rarely occurs in practice. The authors use an environmental approach to address these issues. The authors monitored the environment and considered the natural framework. It includes pronounced natural components - forests, open spaces, hydrographic network, etc. The methods and concepts of landscape architecture are also used in this study. A brief history of the development of the fortification case is presented. Fortifications that were built in European states in the period between the two world wars are considered. The most famous of them are: the Siegfried Line (Germany), the Maginot Line (France), the Mannerheim Line (Finland), the Metaxas Line (Greece), the "dragon teeth" tank barrier in the Alpine Mountains ("Alpine Wall"). An analysis of the current situation in the Russian-Ukrainian war was made. When strengthening borders, it is important to build dual-purpose artificial objects, use objects of natural or natural-anthropogenic origin, in particular – means of landscape architecture. It was found that, first of all, communication routes should have a clear system of defensive engineering structures. They must be activated immediately after the start of armed aggression against the country. The conditions of the geographical environment have always had a significant impact on the character, methods of conducting hostilities and their organization. This is also essential for arming soldiers, clarifying the possibilities of using the types and kinds of armed forces. Therefore, the influence of natural factors in military activity is significant. Analysis and assessment of the situation on the ground is an important step in the development of a preliminary plan of combat tasks. Those means of landscape architecture that are useful in the development of defense affairs have been identified. Among them are the relief of the area and vegetation, their characteristics, options for their solution. A system of fortified areas equipped with long-term fortifications and fences along the state border should be Ukraine's nearest prospect. Areas of land of natural origin should become defensive fortifications during the period of active offensive actions of the enemy. In the southern and eastern regions of Ukraine, there are no natural barriers for enemy ground forces. Therefore, it is worth using agro-recreational and agro-production areas. It will be a significant addition to the main system of long-term fortification.
Keywords: fortification district, defensive line, dual purpose objects, means of landscape architecture

Introduction

Since ancient times, for all peoples, the protection of borders and the territory of their residence is an integral part of military affairs. In order to solve the problems of countering enemy attacks, they learned to prepare in advance – they strengthened borders and settlements, created artificial shelters and obstacles. This strengthened the defense capability of the army. In general, such artificial shelters and obstacles are divided into long-term and field. Long-term – are early fortifications of extremely important directions for the purpose of defense. At the same time, in the course of improving the types of offensive weapons, there was a need to reconstruct defensive objects of long-term fortification. There was even a need to dismantle them and build modern fortifications in their place.

The historical experience and events of the current aggression of the russian federation against Ukraine show that the country must have fortified lines. We mean having a system of fortified areas, defensive positions, nodes of resistance and strongholds, equipped with long-term fortifications and barriers. They should be built primarily along the state border to cover important directions. At the same time, the cost-effectiveness or environmental friendliness of such valuable structures is usually ignored. Therefore, in our opinion, other approaches and means should be used to strengthen the country's borders. It can be about the construction of artificial objects of dual purpose and the involvement of natural or natural-anthropogenic objects, in particular, means of landscape architecture, for defense purposes.

Materials and Methods

The purpose of this publication is a brief analysis of the history of the fortification's development and the identification of ways to improve border defense lines by means of landscape architecture.

The authors of this article are specialists in the field of urbanism, planning organization of settlements, their recreational areas, landscape architecture and design. Considerable theoretical and practical experience in these issues and the situation in Ukraine pushed the authors to search for effective measures capable of strengthening the defense capability of the country and its military formations. The author's previous works concern a number of important landscape issues related to the formation of park areas [1], boulevards [2], courtyards of multi-story residential buildings [3; 4], historical park areas in the palace and park ensembles of Ukraine [5; 6] and the issue of landform architecture [7]. At the same time,

the author's experience in the formation of recreation systems in Ukraine is important in these matters [8; 9; 10], ecological and agroecological settlements [11]. Separately, some issues of the development of defensive urban planning should be highlighted [12]. Recently, a number of publications have appeared covering issues related to the war, the protection of the population, and the arrangement of life under martial law. Among them, scientific developments in this area are relevant, in particular, by such authors as Koval M. [13], Khandiy O., Karachevtseva M. [14]. Materials authored by teachers of military higher education institutions are valuable. They are based on the experience of tasks performed by the country's defense forces in the russian-Ukrainian war, including personal experience [15; 16; 17]. These materials are presented in special educational manuals, access to which is limited to the general public.

In general, the issue of including the means of landscape architecture in the defensive lines of long-term fortification is not widely covered in literary sources and rarely occurs in practice. Therefore, these issues remain relevant not only for Ukraine, which is fighting for its right to its own independent life in European society. It is also timely for other countries, especially those that border the aggressor country.

In general, methodology as a teaching about the system of scientific principles, forms and methods of research activity has a four-level structure. There are philosophical principles, general scientific principles (which constitute the actual methodology), scientific principles of a specific scientific field, as well as a system of specific methods and techniques for solving special research tasks. This constitutes the methodology itself – a collection of research methods, together with techniques and various operations with actual material [18]

Among the existing trends in the development of the methodology for the analysis of urban planning objects, it is appropriate to focus on the environmental approach in this scientific study. It uses such concepts as environmental monitoring, natural framework, which includes pronounced natural components – forests, open spaces, hydrographic network, etc. In turn, the possible landscape character of the natural framework is determined at the level of local settlement systems. This is the composition of components, their potential, structure and degree of connection. In this case, the use of the geographical conceptual and terminological system should also be correct. In particular:

- location – the specific state of the distribution of certain phenomena on the territory;
- density – a degree of saturation of a certain territory with any objects;
- dispersion is a concept opposite to density, that is, it is the area of the territory that falls on each object of this class (average distance between objects, average radius of the territory that falls on a certain object);
- limit density - the maximum possible density of the phenomenon in a certain territory;
- the potential of the territory – the ratio between the actual density and the marginal density in changing conditions, and others.

The methods and concepts of landscape architecture are also used in this study.

A brief history of the fortification development

In general, the history of fortification can be divided into the following four periods [19]:

- 1st period – from ancient times to the appearance of fire artillery, that is, to the XIV century;
- 2nd period – from the XIV century before the introduction of rifled artillery, that is, until the middle of the 19th century;
- 3rd period – the middle of the 19th century – 1885, invention of high-explosive bombs;
- 4th period – the period of high-explosive bombs – to the present time.

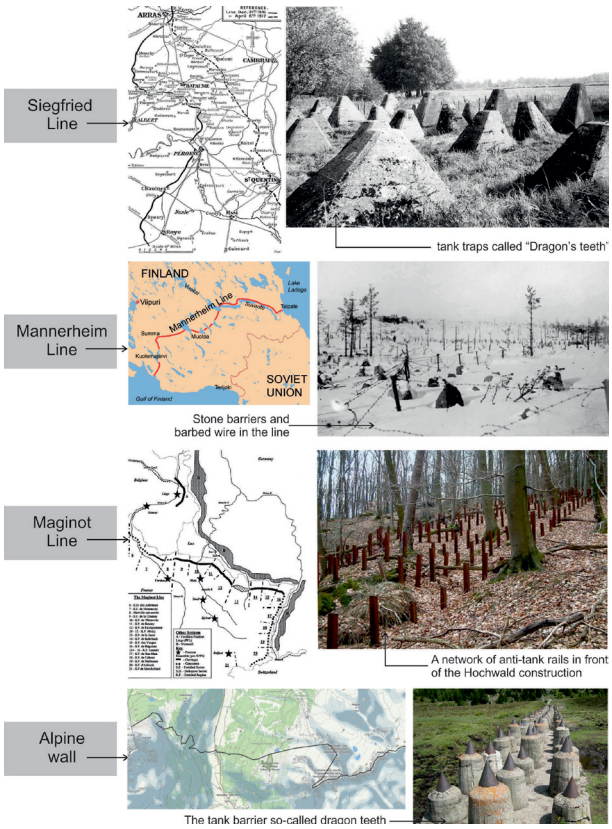

Fig. 1. Fortified fortification lines in European countries [from V. Shulyk scheme]. Photos are from open sources [21, 22, 23, 24]

In general, fortification is a military science of artificial shelters and obstacles that strengthen the location of the army during battle and are called fortification structures (from the French fortifier – to strengthen). It is believed that the theory of fortification was developed by Albrecht Dürer.

Fortification as a science of artificial shelters and barriers is divided into 3 groups: I – field, II – long-term, and III – temporary [20]. Among them, it is long-term fortification that considers shelters and obstacles that serve to strengthen the defense of particularly important military strategic points or directions of the country. Their meaning is usually established in advance before the war and is preserved for the entire duration of hostilities. This kind of fortification is interesting for us, and its filling can be enhanced by means of landscape architecture.

The gradual development of artillery and other military systems prompted the emergence of new options for long-term fortification. After the 20s of the 20th century, the idea of "Feste" was implemented. It no longer represents a reference point, but a reference area. It looked improved as follows: fortified lines, consisting of fortified areas, began to be used to prepare the territories of countries for fortification [20]. In the period between the two world wars, such fortifications were built in many countries of Europe and Asia. The most powerful of them are known under generalized names: the Siegfried Line (Germany), the Maginot Line (France), the Mannerheim Line (Finland), the Metaxas Line (Greece), the "dragon teeth" tank barrier in the Alpine Mountains ("Alpine Wall"), Fig. 1. A powerful fortified line was built in Manchuria

Fig. 2. Map of the main directions of movement of the Russian army on the territory of Ukraine (as of March 6, 2022) [from V. Shulyk scheme]

and on many Pacific islands by Japan after the occupation of a number of Southeast Asian countries. England, Argentina and other countries also built their fortified areas.

Fig. 1. Fortified fortification lines in European countries [from V. Shulyk scheme]. Photos are from open sources ([21, 22, 23, 24])

Taking into account the way in which such objects were created, the following can be stated:

- defensive objects of long-term fortification in the course of their formation required not only skill from the performers, but also long time and significant financial costs for construction. The economic efficiency of this issue was not usually the main one.
- with the change or improvement of the types of offensive weapons over a long period of time, the need arose for the reconstruction of defensive objects of long-term fortification or even their dismantling and the construction of modern fortifications in their place.

Analysis of the current situation in the russian-Ukrainian war

Having considered a current example – the invasion of the army of the russian federation on the territory of Ukraine, starting from February 24, 2022, it is possible to establish how the army of the aggressor country moves on the territory of another country, its certain directions. Consider, for example, the situation at 10:00 a.m. on March 6, the 11th day of the invasion (according to Yuriy Butusov) [25]. Here it can be seen that the directions of the enemy's movement mostly coincide with the directions of the existing communication routes with a hard surface (Fig. 2).

You can also quite clearly observe the directions of movement of russian army deep into Ukraine in the first days of the war based on data from the Center for Countering Disinformation at the National Security and Defense Council of Ukraine. The department explained that the russian occupiers do not control the territories – instead, they temporarily control the roads and some settlements. The map presented by Nathan Ruser from ASPI Cyber Policy (Fig. 3) displays the most up-to-date and correct information - without manipulation of the territory [26]. This map should not necessarily be considered

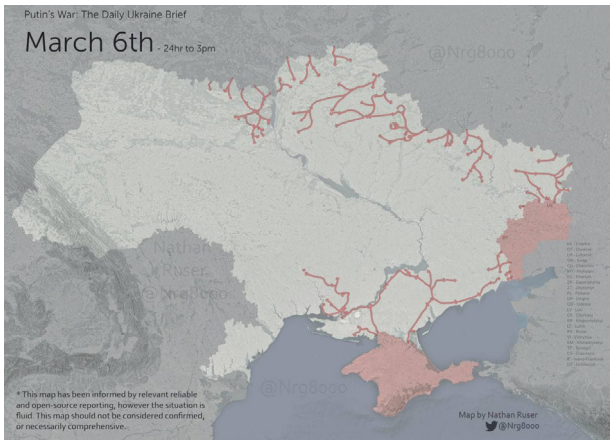

Fig. 3. Map by Nathan Ruser as of 03.06.2022 [from V. Shulyk scheme]

exhaustive. However, despite the above, it is clearly visible here that the russian army is moving deep into the territory of Ukraine along the existing paved roads. They capture primarily the areas adjacent to highways. That is, it can be clearly indicated that the capture of the Ukrainian territory by the aggressor took place using the anthropogenic framework existing in the border regions of Ukraine. Its content and design features already have separate generalizations [8, 9, 10].

Such a framework includes international and state highways, railway lines, as well as paved roads of local importance, along with streets and roads of nearby cities and other settlements. Taking into account the existing experience of previous years, it can be indicated that the transformational processes during and after the resolution of the military conflict on the territory of Ukraine include the decentralization of power, changes in the sectoral structure, strategic management of the use of internal resources and their recovery, balanced development of all regions, international and state support for the recovery of the affected territories, application of self-development tools [14]. Strategic orientations and plans for the recovery of territories from military operations should change in general in the conditions of post-conflict transformation. As for the conditions for arranging the border, we can agree that in the best case, the border between Ukraine and Russia will be

like the border between North and South Korea, only more powerful and full of weapons. Exclusion strip, minefields, anti-tank ditches, surveillance cameras, patrolling drones, fortifications, targeted map [27].

Means of landscape architecture in the development of defense affairs

Taking into account the history of the development of architecture, starting from the time of Vitruvius (usefulness, reliability, beauty) to the present day, the requirements for architectural objects have changed in the direction of their increase. Today, their list can be defined as: beauty, convenience, reliability, environmental friendliness and economy. Such a list is not possibly the most comprehensive, but it allows a more balanced approach to making certain decisions in the field of construction in general, and in the construction of defense objects of long-term fortification in particular. From the point of view of the system approach, we know that any architectural system has its limits and exists in a certain "external" world. They are outside the set of elements of this system and influence it. Such influence is external factors: demographic, social, economic, spheres of production and consumption, scientific and technical, climatic, topological and others. They are perceived by the corresponding elements of the system, interpreted by the system into internal factors. Those, in turn, cause one or another reaction of the system or individual groups of its components (subsystems) [28]. That is, fortification objects are also influenced by various factors. And most importantly, they lack such criteria as economy and environmental friendliness. Therefore, in our opinion, other approaches and means should be used to strengthen our borders. It can be about the construction of artificial objects of dual purpose and the use of objects of natural or natural-anthropogenic origin, in particular, means of landscape architecture.

First of all, here it is possible to clearly single out the opinion that the communication routes should have a clear system of defensive engineering structures. They should be activated immediately after the start of armed aggression against our country. Such objects, and a sufficient list of them can be found [29], in our opinion, should be designed as dual purpose objects – both civil and military. At the specified time, it should be possible to quickly transform them into a defensive object by moving supporting or other structures or, finally, by blowing up supports or walls. Special specialists should work on this issue regarding the construction of dual purpose artificial objects within fortified areas. Such objects are not considered in this study.

Secondly, when assessing the role of natural factors in military activity, it should be assumed that the conditions of the geographical environment have always had a significant impact on the nature, methods of conducting hostilities, their organization, and armament, the possibility of using weapons, and the types and kinds of armed forces. The connection of natural conditions in military affairs has a historically variable character. Depending on the development of means and methods of armed struggle, the scale of wars, it acquires new features and trends. It is known that forest massifs and wetlands are impassable for ground military equipment. Such areas of land served and can continue to serve as excellent defensive fortifications during the period of active offensive actions of the enemy. The network of such territories has already been used today for defensive purposes and may be widely used in the future in the northern regions of Ukraine.

An important step in the development of a preliminary plan for solving combat tasks is the analysis and assessment

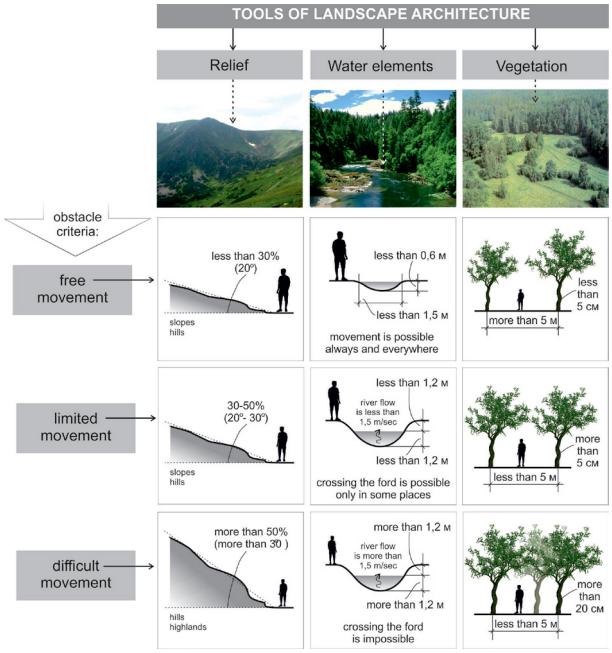

Fig. 4. The influence of landscape architecture tools on determining the criteria for obstacles to themovement of military formations [from L. Shevchenko scheme based on the materials of D. Okipnyak, O. Neshchadin, G. Kovalov]

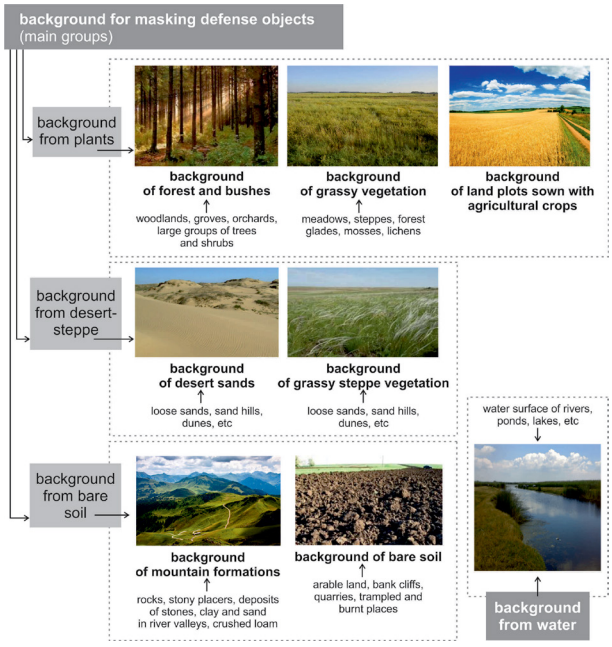

Fig. 5. The background texture of the terrain as the main carrier of visual structural and color characteristics for camouflage [from L. Shevchenko scheme based on the materials of A. Karshen, S. Tsybulya, O. Galushka]

of the situation on the terrain. Here we consider how the territory, terrain, as well as weather (climate) conditions can affect the performance of the task. The area is considered from the point of view of military aspects [15]:

- obstacles on the terrain;
- avenues of approach;
- key terrain areas;
- observation conditions;
- concealment and cover.

The analysis includes all elements of the environment of the given area, which significantly affect the performance of the task. A general picture of the surface of the area is being developed. It reveals the existing natural and artificial obstacles that can limit the army's performance of its assigned tasks, its movement and mobility (stop, redirect, impede movement). As a result of such an analysis, the terrain is

divided into three main types – passable (absolutely does not hinder the movement of armies), limited passable (slows down the pace of movement, complicates movement at the required pace), impassable (greatly hinders the advance of the army, therefore requires additional engineering actions) [15]. In military terms, natural obstacles include "rivers, forests, mountains, gorges, gaps, ravines, and ditches more than 3 meters wide, tree stumps and large rocks higher than 18 inches (45 cm), forests with trees 8 inches (20 cm) thick) and more with a distance between trees of less than 4 meters" [15]. Based on the received data, the military determined the criteria for obstacles that in one way or another affect the movement of army (Fig. 4).

This study makes it possible to reveal those qualities of the existing territory, its topography, which become important natural assistants in the creation of defensive structures. According to one of the concepts of the European Charter of Cities (1992), human activity takes place within the boundaries of an urban center based on the archaeological and topographical foundation. This is evidenced by the first such settlements on elevated terrain (cliffs, plateaus, heights, hills, mountains, rocks, etc.). This made it difficult for enemies to access them. Even better, such a solution "worked" in combination with water elements. Our ancestors used all possible means of landscape architecture (relief, water elements, and vegetation) to create a safe and protected environment for their life activities.

In the modern realities of life during war, one of the key terms of our daily existence is "quick" – quick response to a threat, quick strengthening of defenses, quick defense and self-defense. In such cases, the use of objects and elements of the existing environment is important and effective. Speaking in the language of the military, this is "adaptation of local objects" when there is not enough time for engineering work [16]. At the same time, "only those local objects that occupy a sufficient area, have a long length, or are located on the terrain in a significant number" [16] can be used in battle. That is, everything that maximally reflects the naturalness of the territory, its relief, the landscape as a whole, without arousing the suspicion of the enemy. This process is complicated by the diversity in the actions of the enemy camp. Currently, in the 21st century, a complex approach to obtaining intelligence data, the maximum use of various modern high-tech means for air, space and ground visual surveillance has become characteristic. In particular, the use of optical devices, optical-electronic, thermal, radio and radio engineering equipment, radar and sound devices for this purpose. Such an arsenal of intelligence tools testifies to the vulnerability of our army and its locations from different angles of the enemy's view. This encourages the maximum use of the terrain, its characteristics (both positive and negative), landscape means for protection, camouflage, deployment of our military in open terrain, as well as for disorientation and misinformation of the enemy. Currently, military specialists have confirmed the effectiveness of using landscape architecture tools as:

- obstacles to the movement of enemies;
- masking the movement routes and location of our army;
- imitation of the activities of our army to mislead the enemies;
- ground observation of enemy actions;
- locations of firing points, shelters for protection against enemy attacks [16].

The surrounding environment and characteristics of the terrain have a significant influence in the process of determining the organizational and engineering measures that must be carried out by the military in a particular place. On the one hand, they act as a background for defense and military objects when they are camouflaged, and on the other hand, they are an object of the enemy observer's field of vision. Here, such characteristics of the area as color, texture, surface pattern are taken into account. The background has a different texture – from rough, typical of freshly excavated earth and rubble, and shaggy, like a grass or mossy surface, to smooth, showing sand and concrete. The mirror surface is demonstrated by polished metal, glass and the calm surface of water. The vast majority of characteristics are formed by the vegetation that prevails in a particular area, and climatic and seasonal characteristics. According to data [16] the following main groups of backgrounds are distinguished: vegetation, desert-steppe, and bare soil backgrounds (Fig. 5).

Among them, the group that forms the plant background is the most effective. It is dense vegetation in the form of combinations of trees and shrubs that create favorable conditions for camouflage from ground, air and space reconnaissance. Forests are the best natural camouflage. Their masking quality depends on the species composition, density of plantings, their height, structure (tiering), and the level of urbanization (the presence of roads, footpaths, or vice versa – overgrowth, brushwood, etc.). The color scheme of the background is dependent on both weather conditions and the season. After all, some plants change their leaf color in autumn and remain without it in winter. Therefore, the background formed by coniferous forests with evergreen plants, coniferous groves and shrubs that keep their leaves all year round is considered the most stable.

On the basis of military studies and real events, it was found out how one or another means of landscape architecture can be used for the above purposes.

Vegetation

High vegetation is used in the form of tree plantations, medium and low in the form of shrubs and crops of various herbs, respectively. Dense plantings like a dense forest with trees and shrubs can make it much more difficult for enemies to observe, take photos and video. Dense green plantings act as shielding elements. They make it possible to hide objects from enemy optical, electronic, and thermal reconnaissance means. Forests are also an effective countermeasure to enemy sound reconnaissance [16]. The process of masking with living vegetation involves the implementation of certain works. Among them is turfing of surfaces followed by sowing of herbs and planting of trees and shrubs. The most effective is the planting of plants that provide a significant masking volume – seedlings and cuttings. A number of factors influence the choice of plant material: time, available resources and forces, as well as the local climate, soils and vegetation of a specific area. Local species of trees and shrubs with a branched root system are chosen for such tasks. They are able to grow quickly, regenerate with sprouts, and form extensive thickets. Some methods of using plants are shown in Fig. 6.

Relief

The characteristics of the earth's surface are actively involved in arranging firing points with various firearms (machine guns, mortars). Notches, ditches, steep banks of ravines, their bottoms are most actively used on flat and sloping surfaces. When setting up the points, it is important to observe the visual characteristics of the terrain – not to violate the relief lines, its structure, color, not to unmask the appearance with freshly dug earth, especially from a slope open to enemies. The hilly terrain does not allow you to go deep. Therefore, fortification structures are recommended to be constructed

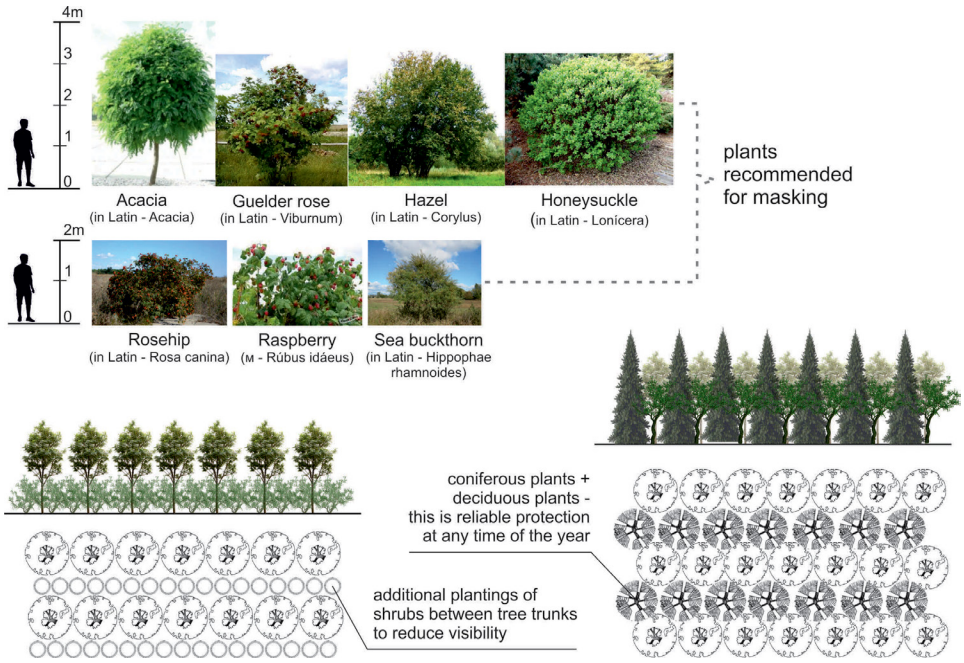

Fig. 6. Recommended plants and methods of their use for camouflage and barrier purposes [from L. Shevchenko scheme based on the materials of A. Karshen, S. Tsybulya, O. Galushka]

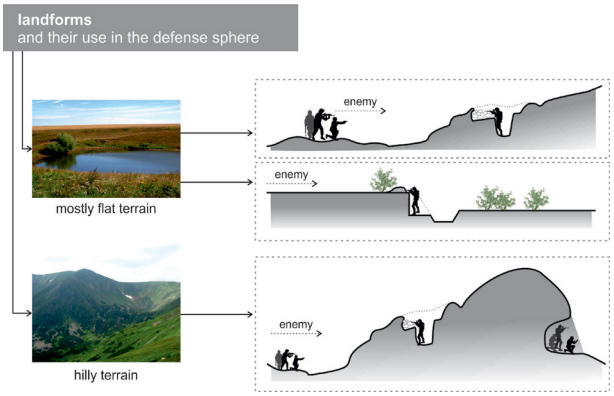

Fig. 7. Relief forms and methods of its use for camouflage and barrier purposes [from L. Shevchenko scheme based on the materials of A. Karshen, S. Tsybulya, O. Galushka]

of a semi-buried or bulk type using stones, soil, and earth bags [17]. But in this case, there is an opportunity to use caves, tunnels, other natural storages in such an area, to create stone rubble (Fig. 7).

Gabion structures are actively used in landscape architecture and design to strengthen slopes and shorelines of reservoirs. It is interesting that they found their application in the defense field as well – for the equipment of machine-gun installations, the arrangement of checkpoints, "fortification structures in the areas of hostilities, for the rapid construction of protective barriers along the perimeter of the military units location" [17]. Gabion constructions proved to be especially effective in extreme conditions – in the absence of sufficient time for the construction of fortifications without mechanizations' means and limited material support [17]. They are quickly built, dismantled, and can be filled with materials at hand available in the relevant area, such as stone, soil, sand.

Water elements

Water elements in a calm state have a mirror surface. Such a surface is the most vulnerable to all types of enemy intelligence. In addition, water surfaces are landmarks during aerial reconnaissance of the enemy. Therefore, water can be considered mainly as a water obstacle for the enemy, which is difficult to overcome.

Conclusions

The history of the development of military science shows that defense objects of long-term fortification require a long time and significant financial costs for construction. Economic efficiency is usually not considered here. The expediency of such construction is determined by increasing the level of the country's defense capability. With the beginning of the russian-Ukrainian war in 2022, the aggressor invaded the territory of Ukraine in certain directions. That is, it can be clearly indicated that the capture of the Ukrainian territory by the aggressor took place using the anthropogenic framework existing in the border regions of Ukraine.

In the future, Ukraine should have fortified lines - a system of fortified areas equipped with long-term fortifications and barriers. They should be built along the state border to cover important directions. Artificial objects of dual purpose and objects of natural or natural and anthropogenic origin should also be used. They significantly improve the efficiency and environmental performance of such buildings.

Areas of land of natural origin (forests and swampy areas) should serve as defensive fortifications during the period of active offensive actions of the enemy. In the southern and eastern regions of the country, where there are no natural barriers for the enemy's ground forces, agro-recreational and agro-production territories (rice plantations, plantations with fast-growing trees, etc.) should be used. It will be a significant addition to the main system of long-term fortification. This approach will allow to increase the indicators of economy and environmental friendliness in the general structure of defense facilities of Ukraine. In general, taking into account the specifics of these defense measures, decisions about the directions of deterring a potential aggressor, certain types of fortifications, their filling, should be made by specialists in the field of military strategy and tactics. The system of fortified areas, defensive positions, nodes of resistance and strongholds equipped with long-term fortifications and barriers should remain a basic element of the defense infrastructure. It should be erected along the state border of the country to cover its important directions.

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ARCHITECTURAL IDENTITY: LITHUANIAN EXILES' DEBATE ON NATIONAL STYLE IN 1950S AND 1960S NORTH AMERICA

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Abstract. The article examines the architectural endeavours of the Lithuanian diaspora in North America, with a particular focus on the ways in which World War II refugees leveraged architecture to strengthen Lithuanian identity and communicate the Soviet occupation to the international community. It delves into the use of architecture as a political tool by the exile community, highlighting how national dignity served as a key architectural motivation. The research leads to the assumption that despite the tension between national romanticism and the prevailing mid-century modernism, Lithuanians managed to link national sentiment with a broader critique of modernism, which was evident in the 1950s and 1960s. Additionally, the article outlines the primary architectural strategies employed to demonstrate a distinct Lithuanian character. Through this analysis, the article sheds light on the intellectual framework that facilitated the creation of unique architectural monuments emblematic of the Lithuanian spirit in North America.
Keywords: architecture in exile, identity, WWII refugees, regionalism, symbolism

Introduction

Traditionally, the first identifiable American of Lithuanian descent is Aleksandras Karolis Kuršius, the founder of the first Latin school, which is considered to be the beginning of the University of New York [2]. The consistent history of Lithuanian-Americans dates back to 1868, when the early Lithuanian colonies began to be established in Pennsylvania. Stasys Michelson, in his popular book on the Lithuanian diaspora, states that with the first wave of emigration, "by 1914, about half a million people had arrived from Lithuania" [35]. Another Lithuanian public figure Kazys Gineitis, in his book on the USA and its Lithuanians, which was published in Kaunas in 1925, described America as a "thriving country of inexhaustible opportunities" [20]. This vision was the impetus for a second wave of over 100,000 Lithuanians to leave for the New World from independent Lithuania between World War I and World War II [16].

The third wave of Lithuanian immigrants to the USA were World War II refugees. Fleeing the repression of the Soviet Union, almost 50000 Lithuanians left the refugee camps in Germany for the USA and other countries: "30000 went to the USA, 7700 to Canada, 3000 to Great Britain, 5000 to Australia, 2000 to Venezuela, and 7550 Lithuanians stayed in Germany" [41]. According to the Displaced Persons Act of 1948, the first 168 Lithuanians docked on the US coast on 22 November 1948, together with 388 Poles and 257 refugees from 9 other European countries [3]. Despite their smaller numbers, the third wave's contribution to Lithuanian-American culture was very pronounced and even crucial in areas such as architecture. Architects not only formed a professional organisation (the American Lithuanian Association of Engineers and Architects), continuously published a professional journal "Technikos žodis", but also fundamentally changed the Lithuanian community's attitude towards architecture. It was the generation that shaped the expectation of a unique Lithuanian character of architecture while in exile.

When the Soviet Union occupied Lithuania during World War II, along with the other Baltic countries, the primary political and cultural imperative for the exiled community was twofold: the pursuit of independence restoration and the safeguarding of national identity. This sentiment found expression in the ideas articulated by the young intellectual Vytautas Kavolis. He claimed that "Lithuanian identity must be understood as any form of social activity, as a way of life" [49]. Consequently, the preservation of nationality became a fundamental "question of personal existence and personal destiny" [9]. Gradually it formed the imperative that any public activity must contribute to the efforts "to do everything possible to preserve culture and liberate Lithuania from Soviet occupation" [15].

In the broadest sense, the mission of fostering Lithuanian identity was primarily associated with education, language proficiency, family traditions, song festivals, activities of secular and religious organizations, and even sports events. However, around the 1950's, the increasing frequency of publications on architecture, and particularly the debate over the largest monument of Lithuanian architecture, the church in Marquette Park Chicago, gradually shaped the expectation of a specific, Lithuanian architecture. During the 1950's and 1960's "Draugas", "Aidas", "Dirva", "Lietuvos dienos" and other popular periodicals published a series of texts that debated the possibility of giving a distinctive national character within newly erected or renovated buildings and encouraged architects to engage in the search for Lithuanian-ness.

Despite the clear and unquestionable political objective, the idea to search for a Lithuanian character in architecture has provoked intensive debates. These discussions not only focused on the form that Lithuanian architectural identity should take, but also questioned whether pursuing a distinctive style was prudent in the context of the mid-twentieth century. The research primarily focuses on this debate, aiming to clarify the architectural strategies used to give objects constructed in exile a distinct national character. Such efforts not only represent a significant fragment of the history of Lithuanian architecture but also contribute significantly to our understanding of global architectural and political connections during the second half of the 20th century.

Although Lithuanians were dispersed across continents after the Second World War, most of them settled in the United States, primarily in the East Coast or northern cities such as New York, Boston, Cleveland, Philadelphia, Detroit, or St. Louis. Chicago emerged as the most significant center of the Lithuanian community, with Lithuanian colonies established in neighbourhoods such as Bridgeport, Marquette Park, Brighton Park, Town of the Lake, North Side, Cicero, and Roseland. It was in Chicago where the most prominent Lithuanian buildings were erected, making it the focal point of this research.

Paradoxically, in 1970, when a section of 69th Street in Chicago, from Western to California Avenues, was renamed Lithuanian Plaza [30], the transformation of the area and the migration of Lithuanians to other locations began. Already "around 1960, Chicago's neighbourhoods began to change rapidly" [1], and

the residents of the so-called "bungalow belt" started moving to the suburbs. As the ethnic composition changed, the first thing to transform was the everyday urban environment. The Lithuanian signs that once stood disappeared, and only the more change-resistant public buildings, such as such as the Church of the Nativity of the Virgin Mary, the Lithuanian Youth Centre, the "Draugas" editorial office and the former Marian monastery complex, the St Casimir Lithuanian Monastery, and the Balzekas Lithuanian Culture Museum, remained as vestiges of the community. These buildings, still under Lithuanian ownership, serve as bastions of Lithuanian identity, offering testament to the phenomenon explored in the article.

The chronological boundaries of the article begin in 1949, when the first war refugees arrived in the USA, and end around 1970, when Lithuanians began to leave the places they had settled. The debate on Lithuanian identity in architecture also weakens in the early 1970s when there was a growing sense that "the exilic generation is aging and gradually withdrawing from active engagement" [14]. Simultaneously, young architects were increasingly engaging in international processes. As Algimantas Bublys claims "the concern and rebellion of young people know no national or cultural boundaries" [12]. It can hardly be argued that the principal task of Lithuanians living in exile to liberate Lithuania from Soviet occupation has become less important. Rather, in 1970's we observe a gradual detachment of architecture from political objectives.

Challenging mid-century modernism

Folk songs or theatrical performances were obvious forms of fostering Lithuanian identity, while architecture was much less suited to this purpose due to the significant impact of technological progress on architectural form. Therefore, national sentiment had to intertwine with the general development of mid-century modernism. Fortunately, the political aspirations of Lithuanians emerged at the same time as the critique of modernism was beginning to become evident.

In the American tradition, after the famous Philip Johnson's exhibition, modernism became associated with the "international style" which rests on the dogmas of universalism and functionalism. Henry-Russell Hitchcock claimed that all "that was used to called "traditional" architecture is dead if not buried" [23]. Meanwhile, from the perspective of critics of modernism, "as long as there is no international man, as long as there is no international language, there is no international culture, there is no international architecture" [47]. Therefore, the search for Lithuanian identity resonates with international doubts about modernism. A symptomatic example of this attitude is found in the "Lithuanian Encyclopaedia", published in 1953 in Chicago, which provides a highly critical description of modernism: "the absurdity of the forms of mass-produced housing has led to the perception of the house, especially the dwelling house, as a soulless box, in which one feels oneself to be a true slave to technology" [7].

There were also voices of scepticism about the uncritical attitude of interwar Lithuanian modernists, who unquestioningly embraced international architectural trends . For instance, Vytautas Kazimieras Jonynas, a notable Lithuanian expatriate artist, articulated that the new Lithuanian "houses were more like those built in Germany, Italy, or France. In one leap we have reached the architectural cultural progress of Western Europe. Unfortunately, it was mostly just borrowing someone else's shirt" [28]. Not only Jonynas, but also Edmundas Arbas-Arbačiauskas [5], Mikalojus Ivanauskas [24], Stasys Goštautas [21], Povilas Jurėnas [29], and other cultural figures believed that "our architects worshipped foreign gods" [38]. This critical stance reveals the intellectual atmosphere of the 1960s, characterized by a substantial amount of scepticism directed towards the international style.

Ironically, although modernism appears in classical historiography as a narrative of great masters who are "obsessed search with personal expression, each architect insisted on his own "Siganture"" [37], it is precisely the lack of originality that has become one of the fundamental arguments in the criticism of modernism. In the US context, Frank Lloyd Wright was sceptical of European modernism even before the Second World War. In the milieu of the mid-century, the levelling nature of modernism became the subject of general debate. While the school of modernism that Mies van der Rohe was forming in Chicago was slowly transforming into corporate modernism, Peter and Alison Smithson warned that "the influence on mass standards and mass aspirations of advertising is now infinitely stronger than the pace setting of avant-garde architects, and it is taking over the functions of social reformers and politicians" [46].

For the critics of modernism, the formula "form follows function" devolved into uncritical imitation and replication in mass construction. As vividly expressed by Jonathan Hill, the aspiration to legitimize efficiency as the paramount aspect of human life was not merely an efficient architectural strategy, but rather a form of technological blindness: "the enslavement is not, strictly speaking, to machines, nor to people who built and own them, but to the concept models, values and systems of thought the machines embody" [22]. Perhaps a similar sentiment was conveyed by Lithuanian architect Arbačiauskas, who stated that "the new generation has grown up in a modern spirit that demands comfort, but not necessarily beauty" [6]. Thus, while Lithuanian exile architecture has been associated more with a political message than a pursuit of the avant-garde, parallels with international architectural trends can be discerned in public discourse.

The critique of standardization that permeated the Lithuanian community evolved into an argument for cultivating a distinct style rather than adhering to or imitating modernist norms. It was lamented that, in line with the trends of corporate architecture, "Lithuanian public buildings, particularly churches and banks, are often constructed not by individual creative architects but by commercial architecture firms more concerned with business than with aesthetics" [18]. Thus, in the discourse on national style, one of the most compelling assertions was that the Lithuanian aesthetic should counteract the doctrine of efficiency associated with modernism: "the more such 'practicalities' we embrace, the sooner our own creativity will die" [50].

However, the pivotal inquiry emerges: how did these abstract statements of the modernist critique manifest themselves in architectural practice? The resolution lies within a considerably broad creative spectrum. On one hand, exemplified by works such as the Church of the Transfiguration of Christ in Maspeth, New York, for instance, "the Lithuanian-ness took on a modern form appropriate to its time" [4]. On the other hand, more radical voices advocated not for interpretation, but for pure Lithuanian-ness, fearing that "Lithuanian art will lose its uniqueness because of the one-day pursuit of avant-garde Western art" [35]. Within this range, various architectural strategies can be discerned.

Symbolic signifiers of identity

Symbols and signs are one of the easiest ways to assign readable content to a building. The political content of space, therefore, as a rule, starts with symbols. Symbolic

Fig. 1. Central part of the Lithuanian Youth Center in Chicago, 1974, architect Jonas Mulokas [from personal archive of the Mulokas family]

Fig. 2. Lithuanian room in Wayne State University, Detroit, 1978, architect Jonas Mulokas [from authors private archive]

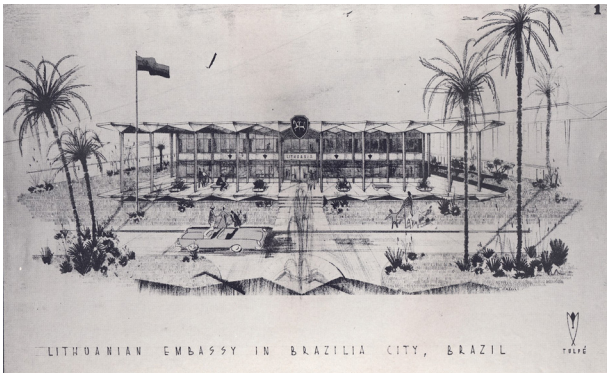

Fig. 3. Proposal for the Lithuanian Embassy building in Brasilia, 1959, architect Edmundas Arbas-Arbačiauskas [from Balzekas Museum of Lithuanian Culture]

meanings can be attached to urban names, monuments, or even entire buildings, if they are given that meaning. From the point of view of architectural semiotics, these symbols serve as obvious signals that "are deliberately produced for the purpose of communicating" [10]. In the case of Lithuanian exile architecture, using Lithuanian symbolism has been one of the main strategies to give the spaces a sense of Lithuanian identity. Crosses, ornamented chapels, heraldic signs, and other attributes adorning the facades or interiors were a primary and simple way of indicating the presence of a Lithuanian community.

One of the most well-known examples of this kind is the figure of Vytis on the facade of the Youth Center in Chicago (Fig. 1). Over time, the stylized Vytis made of coloured bricks on the central wall has become one of the most prominent signs of Lithuanian architecture in the USA. Another example of visually active Lithuanian symbolism is the Lithuanian Room in Detroit. As described by Detroit Lithuanian community activist Stefanija Kaunelienė, it is „a floor-to-ceiling room with colourful pictorial illustrations of the most important moments in Lithuanian history, various architectural monuments, coats-of-arms, stamps, seals, etc., with oak frames, highlighted by beams and columns" [32] (Fig. 2).

Symbolic meaning was often assigned to a specific purpose, usually churches, or to buildings of exceptional significance. The priest Andrius Baltinis described this feeling quite aptly: "Lithuanian-style churches express the spirit of our exile. <...> Such churches will be living witnesses of the tragedy of our exile and the revelation of our national consciousness" [8]. Some of these churches or chapels were specifically designed to promote the name of Lithuania. For instance, in the Basilica of the Immaculate Conception of the Virgin Mary in Washington, D.C., one of the chapels was dedicated to Lithuania. The Šiluva Chapel of the Virgin Mary, by its very presence, showed that "both the inhabitants of Soviet-occupied Lithuania and the political refugees outside the country do not give up their desire to regain the independence of the state" [25].

A symbolically significant project, which made the international community aware of Lithuania's statehood, was a competition for the Lithuanian Embassy in Brazil. The winning design featured the Lithuanian symbol Vytis on its central façade, and the very existence of the building on the capital's "Avenue of Nations" between the Indian and Greek embassies sent a strong political message (Fig. 3). Consul Petras Daužvardis, in his opening remarks at the competition exhibition, stated that "the State Palace of Lithuania, designed by Lithuanian sons and built in Brazil, will be a message to the world about the Lithuanian nation and Lithuania – It will represent Lithuania's existence and its determination to be an independent state, in the family of independent states" [33]. Unfortunately, the project could not be implemented.

The construction of significant public buildings attracting Lithuanians, the presentation of Lithuania's name at international exhibitions, or even the simple symbols of Lithuanian identity on the facades were the most obvious ways to establish a Lithuanian presence in the physical environment. However, while significant and indicative of the sentiments of the Lithuanian community, they offer a symbolic rather than an architectural approach to interpreting the Lithuanian character in architecture.

Inspirations from history

Since the American architectural tradition of the Lithuanian diaspora was not yet established, the debate among the newly arrived Lithuanians about the style that would represent Lithuanian identity naturally turned to the homeland. The

Fig. 4. Old St. St. John the Baptist Church in Zapyškis, Lithuania, 16th c. [from authors private archive]

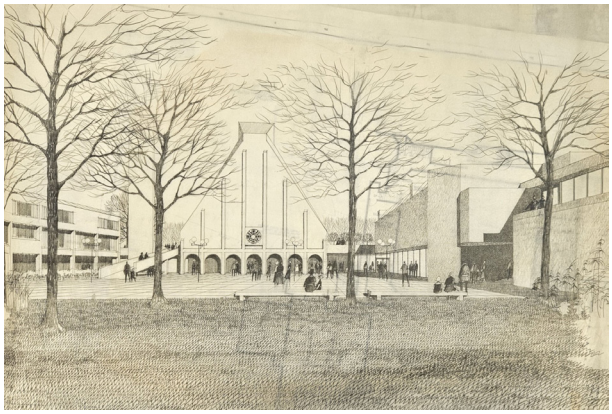

Fig. 5. Proposal for the Lithuanian church in Missisauga, Canada, 1969, architect Vaclovas Liačas [from personal archive of the Liačai family]

Fig. 6. Castle to commemorate the 700th anniversary of the death of Mindaugas, the King of Lithuania, Putnam (CT), 1963, project and construction by priest Stasys Yla [from authors private archive]

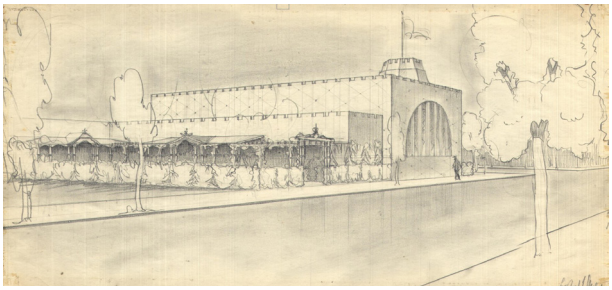

Fig. 7. Proposal for Lithuanian center in Chicago, c. 1957, architect Jonas Mulokas [from personal archive of the Mulokas family]

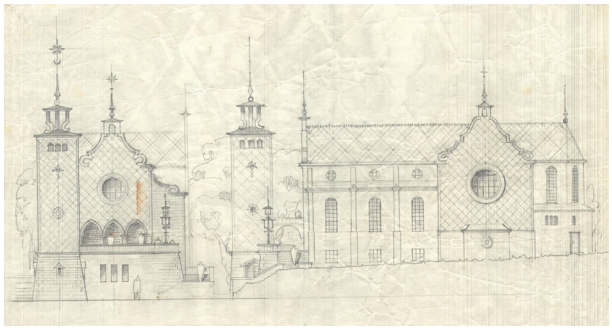

Fig. 7. Proposal for Lithuanian center in Chicago, c. 1957, architect Jonas Mulokas [from personal archive of the Mulokas family]

Fig. 7. Proposal for Lithuanian center in Chicago, c. 1957, architect Jonas Mulokas [from personal archive of the Mulokas family]

perspective of looking at Lithuanian architectural history holistically, without distinguishing specific periods, functional types, architectural materials, or stylistics, became quite widespread. According to the architect Jonas Stelmokas, Lithuanian architecture is "everything that was designed and built by our people and our nobles. It is the architecture of the people, the architecture of towns and manors" [48]. Thus, from this point of view, almost any element of the architectural past could have been a source of inspiration for a new building.

The press discussed a whole kaleidoscope of styles, architects, and buildings which, in the opinion of individual authors, could embody architectural Lithuanian identity. Some considered Classicism to be the closest to Lithuanian identity, arguing that "architect Laurynas Stuoka is known as the author of Vilnius Cathedral or the Old Town Hall, which are the finest examples of Lithuanian genius" [48]. Jonas Mulokas mentioned Gothic architecture, especially the Church of St. Anne in Vilnius, as a valuable example of Lithuanian architecture [39]. One of the most convincing examples of the synthesis of the old and the new was provided by Vaclovas Liačas, a student of Paul Rudolph, who proposed a subtle yet clearly identifiable reference to the old church in Zapyškis (Fig. 4), Lithuania, for the new church in Mississauga, Canada (Fig. 5).

Architectural references to Lithuania also include rather unexpected initiatives, such as the "King Mindaugas Castle", built by the priest Stasys Yla with his own hands. In its architectural expression, like the folly structure of an English landscape park, the stone castle had a clear political message: it was built "to commemorate the 700th anniversary of the death of Mindaugas, the King of Lithuania" [43] (Fig. 6). There were also historical references in other unrealized projects: in the sketches for the Youth Centre in Chicago, there is a reference to the Vilnius University Observatory; in the sketch proposal for the Lithuanian House of Culture in Chicago, there is a clear reference to the Gediminas Castle in Vilnius (Fig. 7) and other.

The Lithuanians paid somewhat more attention to the Baroque. Bishop Vincentas Brizgys, for instance, saw this style as the most appropriate representation of Lithuanian identity and encouraged "attention to the Baroque architecture of the churches in Vilnius region, especially their towers" [11]. This approach continued the tradition, established by Vladimiras Dubenetskis in independent Lithuania, where the Baroque was used as an indicator of Lithuanian style because it was seen as a "crystallised echo of Vilnius" [17]. Despite the importance of the neo-Baroque, manifestations of historicism in the architectural projects of the war refugee generation were the exception rather than the rule. Apart from a few unrealized projects (Fig. 8), perhaps the most striking example was the Parish house for the Holy Cross church in Chicago with its spiral columns typical of the Baroque (Fig. 9).

Although significant historic buildings and styles were often cited as an important part of the Lithuanian identity, in the mid-twentieth century, historicism was hardly an acceptable way of contemporary design. As if echoing the position of Herman Muthesius, who argued that „every borrowing of old or foreign precedents in architecture harbors the danger of inducing formalistic misdirections" [40], one of the authors who wrote on the subject of architecture, Jurgis Gimbutas, warns that "the repetition of historical styles, such as Gothic, Baroque, etc., in a new epoch, lacks the authenticity of the original and degrades it to the level of a copy" [19].

Exploring folk art

A subtler approach in the pursuit of Lithuanian character involved integrating various forms of folk art into new architectural designs. This strategy was partly in line with the global architectural trends of the time. In the 1960s, Bernard Rudofsky's renowned exhibition and book "Architecture without Architects" [42] revived interest in style-less architecture, which drew from the traditions of local construction, serving as a significant source of creative inspiration. This approach persuaded many architects worldwide and played a substantial role in the development of critical regionalism. This sentiment is encapsulated in Moshe Shafdie's observation that traditional buildings constructed without professional designers "indeed appeared to be more responsive to their environment than anything we had accomplished in the design profession" [44].

In the context of the US, ideas of regionalism were linked to the growing popularity of vernacular architecture, which was described as "built without benefit of an architect" [13]. The search for local architectural character was particularly pronounced in the so-called San Francisco Bay tradition, the American Colonial Revival, or the Shingle style. The latter was introduced into the circulation of architectural ideas by one of the most prominent authors – Vincent Scully [45]. Hence, the turn to tradition and non-professional architecture, both in the US and in a wider context, became a significant architectural strategy of the post-war decades. It offered an alternative to the growing uniformity of mid-century modernist buildings and cities. In the context of these processes, the transfer of Lithuanian folk-art traditions into professional architecture seemed logical and at least partly in the spirit of the times.

Fig. 10. Traditional Lithuanian pillar-chapel [from Balzekas Museum of Lithuanian Culture]

Fig. 11. Comments of V. K. Jonynas for the tower of the church of the Nativity of the Blessed Virgin Mary in Chicago, c. 1955, architect Jonas Mulokas [from personal archive of the Mulokas family]

Reflecting the old tradition of cross-cutting and the experience of interwar architects, architects in exile were determined to create a whole new wave of interpretations of the ethnic tradition. Perhaps the most striking symbol of Lithuanian identity in architecture was the "crowns" inspired by the traditional wayside shrines (Fig. 10–11). Based on this form, there were attempts to find links with the distant Lithuanian landscape. As Jonas Kaunas observes: "the pyramidal towers could symbolize the stem of a plant. The plant, as a product of the earth's nourishment, is a very important element of the old Lithuanian traditions" [31]. The special meaning of a roadside cross or a chapel-pillar became established in the Lithuanian consciousness in the second half of the 19th century when repressions of Tsarist authorities "inspired the association of political resistance with the wood carving tradition of crosses" [34]. Eventually, these forms became the most prominent symbol of Lithuanian-ness in the architecture of the exile (Fig. 12–13).

The equally powerful and widely used inspiration of ethnic art was conveyed through ornamentation that echoed traditional textile patterns. A characteristic example of this approach was the reconstruction of the Church of the Holy Cross in Chicago, where the artist Bronė Jameikienė decorated the floors with Lithuanian textile patterns (Fig. 14). Jonas Mulokas further developed this idea in the reconstruction of the Church of the Holy Cross in Dayton, OH (Fig. 15). Such ornamentation, which does not reject historical or modern styles but complements them, has perhaps become one of

Fig. 12. Church of Immaculate Conception in East St. Louis, 1956, architect Jonas Mulokas [from Balzekas Museum of Lithuanian Culture]

Fig. 13. Church of the All Saints in Roseland, Chicago, 1960, architect Stasys Kudokas [from Balzekas Museum of Lithuanian Culture]

Fig. 14. Floor design for the Holy Cross Church in Chicago, 1950, artist Bronė Jameikienė [from authors private archive]

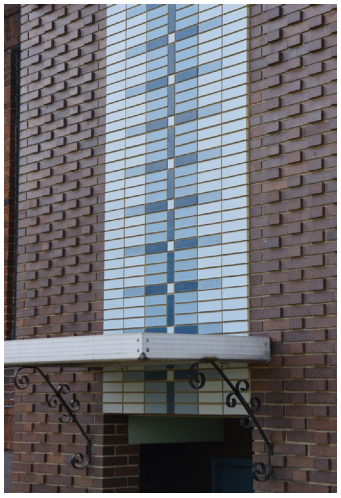

Fig. 15. Wall fragment from the Holy Cross Church in Dayton (OH), 1964, architect Jonas Mulokas [from authors private archive]

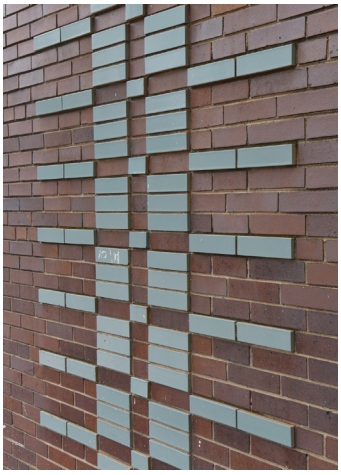

Fig. 16. Wall decoration for the "Parama" company building, 1963, architect Jonas Mulokas [from authors private archive]

Fig. 17. "Parama" company building, 1963, engineer Jonas Stankus [from Balzekas Museum of Lithuanian Culture]

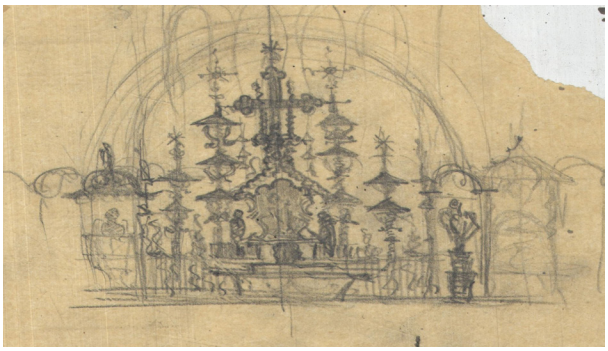

Fig. 18. Concept drawing for the altar of church of the Nativity of the Blessed Virgin Mary in Chicago, c. 1955 architect Jonas Mulokas [form personal archive of the Mulokas family]

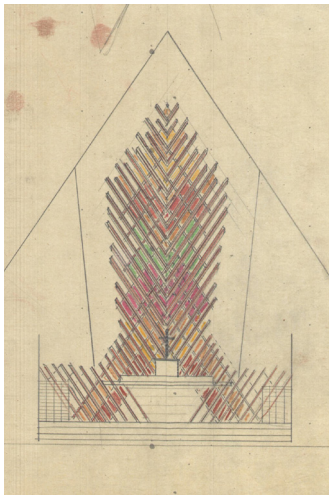

Fig. 19. Concept drawing for the altar of church of the Transfiguration, Maspeth, New York, c. 1961, architect Jonas Mulokas [from personal archive of the Mulokas family]

the most successful manifestations of modern nationalism in Lithuanian exile architecture.

The vitality of this idea is evidenced by the fact that this strategy has been adopted in everyday architecture. The "Parama" company building, erected in 1963 in Chicago's Marquette Park, Lithuanian Plaza, was a vivid example of this process (Fig. 16–17). According to Jurgis Janušaitis, one of the owners of the "Parama" company and an active promoter of Lithuanian identity through social activities, "even in private construction, our traditional character must prevail" [27]. The functional, ascetic modernist building, designed by the engineer Jonas Stankus, was adorned with a decorative coloured brick wall by Jonas Mulokas, which, according to the owner himself, "has given this building a beautiful national character" [26]. After the Lithuanians left the area, the brick ornamentation remained one of the rare physical reminders of the Lithuanian presence.

The use of folk-art references ranged from romantic, straightforward imitation to stylized modern solutions. The diversity of approaches is particularly evident in Jonas Mulokas's proposal for the altars of two Lithuanian churches in Chicago and New York. Although both were never implemented, a comparison of these concepts, separated by only six years, shows a clear evolution in architectural thought. While Chicago tries to directly echo the Lithuanian tradition of the Hill of Crosses, the altar of New York represents Lithuanian identity through modernized ornamentation and a specific colour palette (Fig. 18–19).

Conclusions

Although the Lithuanian community in exile agreed on the importance of fostering national identity and achieving the liberation of Lithuania in all possible ways, the role of architecture in this process has been a source of debate. Some architects, while acknowledging the importance of a distinctive architectural character, were sceptical about the idea of a Lithuanian style. First, they questioned the attempt to artificially create a Lithuanian style, as if solving an intellectual puzzle. Perceiving style as a testimony of the epoch, as an embodiment of the zeitgeist, the aspiration to create new style as from a clean sheet of paper seemed an unnatural expectation that contradicted historical logic. Such an attitude did not always mean a rejection of the search for Lithuanian architectural character, but rather challenged the attempt to interpret architectural experiments as a single, crystallized style.

A sober assessment of mid-century technological advances and the international environment has not diminished the homeland nostalgia of the war refugees, nor their hope that architecture can contribute to their cause. By observing the global manifestations of mid-century modernism critique, Lithuanians appropriated these ideologies to align with their own objectives. The critique of the straightforward rationality inherent in modernism by advocates of critical regionalism or vernacular architecture provided a rationale for Lithuanians to pursue deeper architectural characteristics rooted in national identity.

However, being far away from the geographical, urban, and natural environment of Lithuania, World War II refugees did not have the conditions to create architecture sensitive to the environment and in line with the progressive tendencies of regionalism. Even in metropolitan districts where many Lithuanians were concentrated, the urban structure remained American and lacked distinct Lithuanian features. As a result, the desire to express national identity in architecture was constantly balanced between an overly romanticized, politically engaged, and symbolism-oriented approach, and attempts to legitimize this position through the means of critical regionalism, particularly through innovative interpretations of folk art.

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Kopsavilkums

Pētījumā aplūkoti lietuviešu arhitektūras centieni Ziemeļamerikā, īpašu uzmanību pievēršot veidiem, kā Otrā pasaules kara bēgļi izmantoja arhitektūru, lai stiprinātu lietuviešu identitāti un informētu par padomju okupāciju starptautiskajā mērogā. Rakstā aplūkota informācija kā trimdas kopiena izmanto arhitektūru kā politisku instrumentu. Pētījums liek domāt, ka neraugoties uz spriedzi starp nacionālo romantismu un valdošo gadsimta modernismu, lietuviešiem izdevies nacionālo sentimentu saistīt ar plašāku modernisma kritiku, kas izpaudās 20. gadsimta 50. un 60. gados. Turklāt rakstā ir izklāstītas primārās arhitektūras stratēģijas, kas izmantotas, lai demonstrētu atšķirīgu lietuviešu arhitektūras raksturu. Izmantojot šo analīzi, raksts izceļ intelektuālo ietvaru, kas veicināja unikālu Lietuvas gara simbolu arhitektūras pieminekļu izveidi Ziemeļamerikā.

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STUDENTS' EMOTIONAL INTELLIGENCE AND THEIR ATTITUDES TOWARDS CREATIVITY INTERFERENCES: LITHUANIAN AND LATVIAN CASE

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Abstract. Emotional Intelligence (EI) has been an important and controversial topic in recent decades. The level of emotional intelligence and creativity among students is an essential dimension of a successful study process, a topic that has not been sufficiently explored. This study, however, is a groundbreaking attempt to investigate this relationship among Landscape Architecture students in Lithuania and Latvia. Creativity, the skill to find new and valuable ideas to react to challenges, problems or needs, is a crucial aspect of this process. Moreover, creativity can usually be a new combination of known knowledge. Different generations are creative but should have a better background and theoretical understanding of emotional intelligence. This understanding is lacking, and this study aims to fill this gap. On the other hand, different generations look at the same reality from various perspectives. Therefore, the study seeks to look at the creativity interferences from the student's point of view. The pilot study, conducted using a questionnaire created by the authors, aims to determine the peculiarities of student's creativity interferences for their successful studies. It also analyses the theoretical background of emotional intelligence and creativity proposed by the scientific literature. It determines students' level of emotional intelligence that would enhance their creativity to manage creativity interferences in achieving success during the study process.
Keywords: landscape architecture students, emotional intelligence, creativity interferences, attitudes

Introduction

More and more learners feel constant tension, emptiness, lack of energy, and inability to concentrate and work productively. Many students feel the factors of burnout while studying, wanting to combine both work and learning at the same time. Unfortunately, such a phenomenon has become entirely normal and socially acceptable. In this way, managing emotions and the ability not to deplete the body's resources become an acute problem in educational and production organizations. Landscape architecture covers the entire range of outdoor design: the fascinating scope of this field ranges from open space planning near, on or even interior design [23]. Therefore, landscape architecture students must be more productive and often meet their expectations of themselves and the organization. This leads to dissatisfaction with each other, a decrease in students' learning activities, and a level of loyalty to the learning organization.

Another strong argument is landscape architecture students' sufficient level of creativity interferences, the inability to cope with frequent stress, fear of making mistakes, excessive flow of information, and too high demands [1]. Unfortunately, most students seek to look like very successful people. In this way, they exhaust their minds and destroy resources, and later, realising their emotions, feelings, and goals is difficult. The consequence is decreased active interest in the pleasures of life and casual communication. Nowadays, the duality of people is observed, as if two lives are lived - in reality and the social space, as a person lives only to solve constantly arising problems, often willing to align not with their strengths but with others; they want to be "like them" to achieve the same results.

Emphasizing the development of emotional literacy, which is determined by emotional intelligence and creativity, should be a crucial aspect of the learning process. However, this dimension must be addressed in higher education organisations, as it creates a significant gap in students' learning experience.

This study aims to analyze the theoretical background of emotional intelligence and creativity proposed by the scientific literature and determine students' level of emotional intelligence that would promote their creativity to manage creativity interferences in achieving success during the study process. A pilot study was carried out using a questionnaire created by the authors to assess the level of emotional intelligence of students and disturbances in creativity.

The study's results showed the central creativity interference identified by students of Latvian universities. The results were processed using the Microsoft Excel tool.

The importance of emotional intelligence during studies

Screens, (e.g., devices such as smartphones, computers and televisions) emotional intelligence and the development of creativity have become apparent in recent years. Students' emotional intelligence help to create internal environment for creative thinking. "Emotions are part of creative process" [27]. Unfortunately, it must be noted that students are not always able to recognize their emotions, which often leads to many misunderstandings. For others, it is terrifying to admit that all feelings can be felt— such as anger, fear, disgust, wonder... and so on.... it is essential to be able to recognize and name them. Then, students can calmly think about it, let go of a destructive emotion but not keep it inside, and constantly return to it. This is especially true when communicating and learning, which can lead to verbal and even physical conflicts. On the other hand, in any dispute, it is crucial to find out the emotions that have engulfed the participants. Then, there is no need to blame anyone but to clarify the essence of the conflict, what problem can be solved, and what new opportunities may arise. Harmony and balance should be the goal in communicating, learning, working, or creating... "Emotions range from eye-clouding rage to pure love, an instantly manifested physiological reaction of the body to the most important signals of the outside world" [5].

A deficit in emotional intelligence (EI) manifests itself in various ways, such as the inability to recognize and name one's emotions, difficulty controlling emotional outbursts, and inadequate stress response [17]. These difficulties can hurt the lives of the individual and those around them. Salovey and Mayer (1990) were the first to define EI as recognising, understanding, and managing one's and others' emotions to promote emotional and intellectual growth. Daniel Goleman popularized this concept by emphasizing that EI consists

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Emotional flexibility is the ability to regulate one's emotions flexibly and respond to situations appropriately. It also includes the ability to calm down and relax, which can help one cope better with stress. Viktor Frankl's (1984) works implicitly support emotional flexibility, emphasizing the search for meaning in life and a conscious lifestyle that can help develop greater control over one's emotions.

Emotional flexibility helps us use the "gap between stimulus and response" to choose our response rather than letting our emotions automatically guide our behaviour. This allows us to deal more effectively with difficulties such as negative self-esteem, anxiety, depression and other emotional problems.

Emotionally flexible people are usually more energetic, adapt better to change and can act according to their values even in difficult circumstances. The concept of emotional flexibility has been influenced by social, organizational and clinical psychology research. A growing number of studies show that lower skills related to emotional flexibility lead to lower achievement and well-being; emotional flexibility is the most crucial factor on which spiritual health and success depend; without that, emotional flexibility cannot be learned [15].

Often students cannot correctly name their existing emotional competencies and cannot present them. Personal burnout threatens many full-time students who study and work. Experiencing personal burnout affects the mind, body, and emotions, negatively affecting creativity. Apathy, anger, and indifference appear. This syndrome occurs due to prolonged stress, and often, such individuals strive for extremely excellent results, wanting to move up the learning career ladder. Therefore, to avoid burnout syndrome, it is essential to develop psychological resilience, monitor needs, and control the study and workload.

Today's young students are active entrepreneurs who take proactive change and responsibility for their actions and lives. Entrepreneurship development is about creativity, the path, and the different futures. It is essential to believe that mistakes are a normal process in life, learning from them,

and success does not necessarily come from the first time. It is necessary to encourage young people to try again as it requires non-standard solutions and empathy for other products, services, etc. Young people are now preparing for the future and for futures that, unfortunately, we do not know. We are all the creators of the future because no one can say what will happen in fifteen years. It is necessary not only to have a vision but also to be able to change oneself constantly, continually learn, respond flexibly to situations, and act accordingly to the requirements of the environment, to young people's business ideas: innovation; social sensitivity and environmental impact. It is important to them how to reuse waste, care for nature, buy less, etc. This generation is a digital generation that uses innovative technological tools perfectly. However, the biggest fear of the young is to take risks. The modern generation is a seeker not only profit, but also meaning, freedom, openness, and very high ambitions. This generation breaks stereotypes and all boundaries and tries to do more, faster, but through its own mistakes and experiences.

In 2013, David published an article about his research discoveries. She pointed out that most of today's people often fall on the hook of inflexible negative patterns of behaviour and thinking. The author presented how to develop emotional flexibility, get rid of templates, and successfully change life. Some magazines (Harvard Business Review, HBR) have declared the management's best idea of emotional flexibility for the year. Other magazines (Forbes, Fast Company, The Wall Street Journal) have called emotional flexibility the emotional intelligence of the new generation, a revolutionary thought that will change people's conception of feelings. Emotional flexibility is an event that allows one to be in the here and now with the understanding of when to change behaviour and when to act as always so that life habits do not conflict with a person's aspirations and values. It is necessary to keep down when faced with tricky feelings and thoughts - just let them flow freely, evaluate boldly and uncritically, and then move forward and let the significant changes into one's life.

Emotional flexibility spans four essential phases: acknowledging one's feelings, stepping back and looking from the outside, seeing a broader perspective, going one's own way to create the necessary distance between oneself and one's thoughts, and never stopping [2; 5; 6].

Creativity: importance and challenges

Creativity is the skill to create new and valuable ideas as a reaction to challenges, problems or needs. Creativity is developing a product, process or idea that did not exist before. Landscape architecture students have to know how to help them realize their landscape dreams [26]. However, creativity can usually be a new combination of known knowledge [3]. The five phases of the creativity process demonstrate that the creator needs knowledge about problem formulation, idea stimulation, sorting, selection, validation and application [3] (Table 1).

Table 1. Phases of Creativity process [construction by Amabile,1996]

Phases of the process	Phases explanation
Problem formulation: Analytical Phase	The formulation constitutes the exhaustive inventory of all information referring to the problem (reasons, objectives... of the problem, release of the constraints and the variables...).
Stimulation of the ideas: Intuitive Phase	Two large currents of techniques coexist: Divergent Techniques: This is a group of divergent techniques for beginning the debate and reframing the situation from several angles. Convergent Techniques: This step combines the forces between the problem and the subjective elements resulting from the divergence phase.
Sorting and selection: Intuitive Phase	Definition: This stage consists of sorting the ideas according to decisive criteria. Finality: To support innovative solutions that answer the initial problems.
Validation of the ideas: Evaluation	This phase consists of formulating the possible solutions and evaluating the solution which will be implemented.
Application of the ideas: Implementation	Solutions that will be applied to the problems after the idea is validated. Selection of indicators to follow the idea's good progress within the innovating/creative process "project."

Creativity can be identified by the following:

1. invent something which has never existed before;
2. invent something which exists elsewhere, but you are not aware of;
3. invent a new process for doing something;
4. reapply an existing process or product into a new or different market;
5. develop a new way of looking at something (bringing a new idea into existence);
6. change the way someone else looks at something.

There could be defined different types of creativity, for example:

1. scientific creativity (Mathematic, Discoveries...);
2. organizational creativity and social creativity;
3. artistic creativity (Architecture, Painting...);
4. practical creativity (e.g. Rescue of the crew of Apollo 13 thanks to "do-it-yourself" of the "mailbox");
5. strategic creativity (e.g. The Trojan horse in Greek mythology) [1,9].

For several years, following the transition to market economies in the early 2000s, post-Soviet countries' politicians recognized the need to shift from resource-intensive economic growth towards more sustainable models. These new models emphasize conservation, waste reduction, and efficient resource use.

These could be defined as some cross-cultural approaches to creativity.

Western concepts of creativity are often defined as the quality of a creative product or result, which must meet two main criteria: new and appropriate. This means that creative products and results must be both original and valuable. Originality is the central concept that characterizes creative products, as it provides their unique value and ability to solve problems or satisfy needs in a new way. There is an intense focus on innovative products.

Creativity as a process:

A person can solve problems they may have yet to learn. Procedural creativity is closely related to problem-solving skills [17].

Creativity as a personality:

Personality creativity is how a person's cognitive skills and emotional experiences shape creative outcomes. It is an "aesthetic cognitive and emotional activity" that seeks solutions to problems. Intuition is critical for personality creativity – a person uses it productively to form a connection [28].

Creativity as an environment in which people live and/or work:

The environment nourishes, enriches and stimulates human creativity [4]. For example, socio-cultural environmental elements can "create a context in which creative work is inhibited or facilitated"; they can also "serve to evaluate results and performance" [16].

Eastern concepts:

Product creativity: Less emphasis is placed on the result.

Procedural creativity: The importance of process is strongly emphasized, which may include meditation, "spiritual invocations," chanting, or deity mantras.

Table 2. The West and the East – conceptions of the creative process [construction by Shaw, 1985]

Descriptors	West	East
Preparation	Preliminary analysis of the problem.	Preparation involves prayer/meditation for inspiration.
Incubation	Active unconscious work.	Alignment of inner self / being with the spirit of the deity.
Illumination	A sudden burst of insight/ imagination/idea/solution to the problem.	Insights: rather self-focused than subject-focused.
Verification	Evaluation of idea/solution; Development .	Personal realization; social communication of achievement.

Creativity of personality: There is a strong emphasis on personality, but not in the way of the West. Personality creativity is related to personal fulfilment.
Environmental creativity: Less attention is paid to the environment. Cross-cultural approaches to creativity: West meets East? The West and the East's conceptions—or descriptors—of the creative process differed significantly regarding techniques and procedures.
The West and East's conceptions of the creative process were analysed more deeply to understand landscape architecture's future.
The creative process can also be detailed in four phases: Preparation, Incubation, Verification, and Illumination [26]:

1. Preparation – a creative person becomes interested in the problem and gathers all the information to address it.
2. Incubation – a creative person unconsciously works on the problem.
3. Verification – ideas are worked into a communicable form.
4. Illumination – possible ideas start to come to light.

There could be some summary of West and East's conceptions of the creative process, designed by authors according to [26, 29] (Table 2). The West's conception of the creative process is somewhat "rational" and requires more evaluation and control than the East's. The East's vision, on the contrary, is more "spiritual" and attaches more importance to concentration and the consideration of the inner self.
The current generation is very creative, but they need the empowerment of others to create, encourage, and praise their unique ideas. The biggest challenge for all of us is screens. When near the screen, it is challenging to concentrate and read. As the child grows up, the time in front of the screen increases (and the desire to hold it in one's hands becomes stronger. It's not just the younger generation is that different, we're all different, and we are all affected by social media. We experience many challenges, and we need to learn to control ourselves.

Emotional intelligence and creativity development

People can demonstrate their talents and abilities, and be curious to know how others feel them when they play Life. Playing, as a way of behaving, is very appropriate in childhood when we learn to be and communicate with others. Unfortunately, this game can even be harmful later in life. In training, it is essential to teach 'WATCH'. From what perspective do we see? Landscape architecture students must have intuitive and emotionally friendly feelings about the environment [13]. Creativity primarily manifests in the game, and art was born from the need to feel commonality with others. Changing to the side of playing would be pretty risky. Living for entertainment and consumption and constant satisfaction, a person loses more and more humanity. All kinds of benefits are suitable for a person, but ... it's a detriment to society. Universal virtualization threatens the creation of relationships between people. No technological leap comes for free. Unfortunately, going out into a cheap and comfortable space can be costly in the future: deteriorating health, a deteriorating ecological situation, increasing wealth inequality, sustainability, etc. Landscape architects can learn about composite materials, fractures, etc. They could create the world as a place of chasing pleasures and excitement. New technologies excite the imagination [7], and birth to new social realities. In addition, it creates aggression because it is not enough for everyone. Religion and myths are necessary and can help reduce outbreaks of aggression and increase communalism, which has led to the formation of democracy. The basis of human innovation is the creation and adoption of quick and high-quality decisions, the practical solution of problems, the management of the situation of rest and play, critical thinking, dreams, and travel when new connections are created in the brain between new and existing information – creative ideas.
Therefore, by developing EI, students can become more productive and successful in their activities and help others become such, too [24]. People with higher emotional intelligence are characterized by greater job satisfaction and organizational commitment [20]. Such employees can control themselves and their emotions regardless of stress, pressure, current disadvantage or emerging challenges [21]. The increased emotional intelligence of landscape architects strengthens communication skills and promotes greater resilience, constructive use of emotions, and excellent adaptation to the changing work environment and needs [22]. However, in all organizations, landscape architecture students have difficulties that lead to frustration. Still, emotionally intelligent people usually understand that there is no need to hold the organization responsible for every negative emotion they experience [18].
Distinguish four phases of learning emotional intelligence [14]. As can be seen, to develop your emotional intelligence, you first need to understand what it is and its components, and then you need to do self-assessment; for this purpose, you can use ECI, EQ-i and similar tests, then improve the competencies using various methods, and it is important to apply new knowledge and skills in real life. It has been observed that practising emotionally intelligent behaviour helps the brain adapt to making such behaviours automatic and changing less valuable behaviours [12].
The already mentioned [14] method distinguish both ways and tools for developing emotional intelligence:

1. distinguish between emotions that are negative and use them effectively,
2. to choose answers wisely, not to draw hasty conclusions,
3. ask yourself questions to highlight changes in behaviour,
4. try to convey your thoughts better and more clearly to those around you,
5. use various tools for stress management, for example, to avoid the use of alcohol or tobacco products, to spend quality time with loved ones,
6. write gratitude journals that develop positivity and reduce stress,
7. practice empathy and think about situations from another person's position.

Creative thinking involves breaking free from habitual and inflexible thought structures, allowing the generation of new and original ideas. This process is essential when generating innovations and new solutions. It involves the fusion of ideas that have not been brought together before and thus leads to the emergence of new concepts.
One form of creative thinking is brainstorming, which involves

combining different ideas to generate new perspectives. This process uses other people's ideas as inspiration and stimulates individual creativity. Creative thinking processes can be accidental or deliberate; for example, sometimes new ideas emerge unexpectedly, but other times, they develop gradually through intelligence and logic [4].

Landscape architects who support "smart growth" seek to develop innovative design solutions to achieve an optimal balance between land use and daily travel. In this context, it is essential to note that there is "good density" and "bad density" in design, just as there is "good design" and "bad design".

Creative thinking can happen spontaneously without specific methods, but deliberate methods, such as brainstorming, can significantly accelerate the development of ideas. These methods encourage the emergence of various ideas that can lead to new lines of thinking and creative processes. Product development using these deliberate approaches is much faster than spontaneous thinking.

Intuitive thinking, which involves imagining or understanding without conscious analysis, is another aspect of creative thinking that allows people to make decisions and generate ideas based on gut feeling and experience.

Methodology

There was pilot quantitative research about students' emotional intelligence and creativity interference in the learning process. The authors created a questionnaire based on scientific literature analysis to determine students' attitudes. The mentioned method enables information gathering and helps discover original facts that are useful for scientific interpretation and discussion. In investigating students' experiences regarding the level of emotional intelligence and creativity interferences, respondents were asked to mark their answers based on the Likert scale.

The anonymous questionnaire consisted of two statements: level of emotional intelligence and creativity interferences. The first block of the questionnaire consisted of fifteen statements based on Goleman's model of emotional intellect. The second block of the questionnaire included five types of creativity interferences, each composed of 5 – 6 statements. The groups of creativity interference were personal and organizational. Personal creativity interferences were perception, rationality, emotionality, expression, and organisation. The respondents answered the questionnaire using the Likert scale, and their answers were interpreted using the Microsoft Excel tool. The questionnaire was created online, and students answered it by indicating the link address in two Lithuanian and Latvian universities from April to June 2024: 141 in Lithuania and 122 in Latvia. The distribution of respondents by gender is shown in Figure 1.

The respondents were primarily women in the first age group (18-20). Lithuanian and Latvian students were from various undergraduate programs: landscape architecture, politics, social sciences, informatics, arts, criminology, law, economics, management, and environmental engineering.

Study results

The development of emotional intelligence is essential for both students and educators, especially in industries that are intertwined with the arts. Students with a high or average level of emotional intelligence will have more opportunities to adapt to difficult situations in studies, research, and work. The study results confirmed that respondents perceive emotional intelligence as essential for studying and working, interacting with others, and personally.

The research revealed that the respondents can identify individuals with high emotional intelligence by evaluating

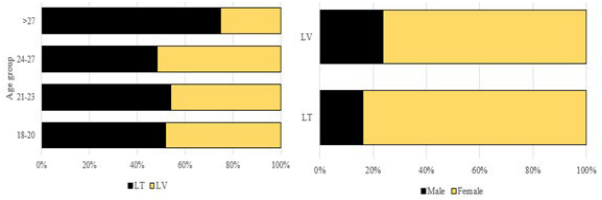

Fig. 1. Distribution of Lithuanian and Latvian respondents by age groups and gender in %
[created by the authors based on the data of the 2024 survey]

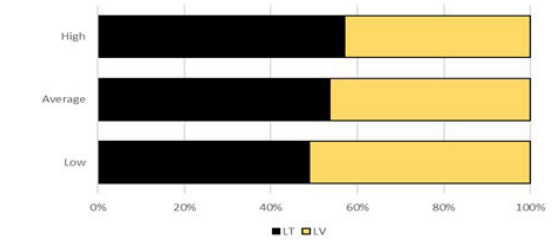

Fig. 2. The level of Lithuanian and Latvian respondents' emotional intelligence in %
[created by the authors based on the data of the 2024 survey]

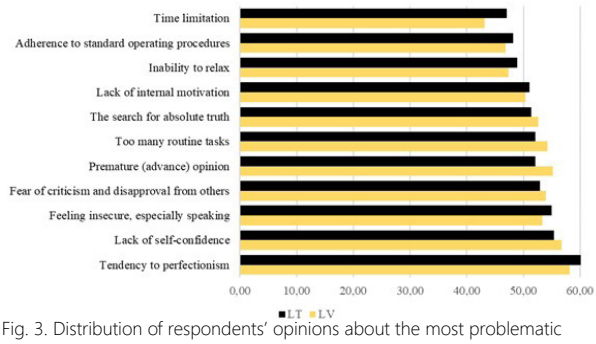

Fig. 3. Distribution of respondents' opinions about the most problematic creativity interferences in Lithuania and Latvia in %
[created by the authors based on the data of the 2024 survey]

their qualities, such as empathy, attention and patience, and those with low emotional intelligence, who will collide with aggressiveness, selfishness and impulsiveness. The results show that most respondents in both countries rate their level of emotional intelligence as average (Figure 2).

Summarising the social skills of the respondents, the majority of them like to organise groups, teach others, avoid conflict, do not find it challenging to build relationships with others, and feel that others share their feelings and experiences with them. It is also quite common for respondents to choose the neutral option and not to have a strong belief in their social skills. To summarise the study in Lithuania and Latvia, the emotional intelligence of students of a higher educational institution can be assessed as not very high, but at the same time, not very low. Several things need to be developed, both on the part of the organisation and on the part of the students themselves.

The following questions revealed respondents' attitudes about creativity interferences in the study process and workplace. The questionnaire was designed using 22 statements about creativity interferences: Too much control; Passiveness; Envy and lack of ideas; Group pressure; Insecurity, Apathy; Lack of perception; Fear of failure; Lack of tolerance; Stress; Lack of rationality, Lack of emotional support; Lack of self-expression; Lack of supportive environment; Lack of problem-solving interest; The search for absolute truth; Compliance with the usual modes of operation; Strained relationships with others; Lack of inner motivation; Lack of persuasion; Fear of theft of ideas; Red tape and instructions.

The respondents identified the most problematic creativity interferences. Figure 3 shows the level of creativity interference.

Conclusion

Sufficient research supports the essential role of emotional intelligence in managing stress and implementing change. It indicates that study/work satisfaction and relationship building depend directly on emotional intelligence. Emotional intelligence can be developed using the materials and methods of various study programs, especially in landscape architecture. Research shows that high emotional intelligence could be benefitial for students and professors in academic institutions. Moreover, high emotional intelligence helps students to accept the stress of change, build good relationships with educators, and increase attachment and pride in your university.

Consequently, students must first develop a good understanding of the process and components of emotional intelligence before they can develop creativity. Then, they need to use self-assessment. It is essential to develop competencies using various methods, and applying new knowledge and creativity skills in real life. Moreover, it has been observed that while practising creative behaviour helps the brain adapt to make the right decisions in studies a well as workplaces. Music therapy is very useful for development of emotional intelligence and creativity too. This active participation is crucial for students' personal and professional growth.

Many authors emphasize emotional intelligence and creativity as the most essential global skills in the 21st century. Most students will work in international organizations, therefore they must gain and develop the creativity skills.

The pilot study results reveal that students need to improve their emotional intelligence and creativity skills, which are crucial in every study and workplace in order to increase their studies and job satisfaction. Therefore, the pilot study allows us to claim that most Lithuanian and Latvian students have a medium level of emotional intelligence. Moreover, emotional intelligence can influence creative expression, which is essential in landscape architecture and art programmes. Gamification and digitalization play a crucial role in offering a more favourable learning environment to develop creativity skills and overcome challenges – (creativity interferences). Most of the respondents in the study agree that creativity is a valued skill and could be developed as students are encouraged to become more creative at university. Thus, emotional intelligence is highly valuable competence in an educational institution. However, the study results indicate that the students mentioned some personal reasons that hinder the development of creativity which is about understanding, appreciating, and learning different skills or competencies and using and applying them in everyday life. Moreover, some respondents gave reserved answers, indicating the need to clarify whether they consider the development of emotional intelligence and creativity essential during their studies. This proposition could be interpreted as the fact that students still need explanation of the significance and value of the development of emotional intelligence and creativity skills while studying at university.

To sum up, educational institutions, especially universities, play a vital role in developing creativity skills. Research shows that most respondents consider creativity competence in great demand, and recognize that universities offer opportunities and conditions to promote students' creativity. Due to these circumstances, it can be concluded that the development of emotional intelligence and creativity are essential competencies both in education and the labour market, and educational institutions must consider to promote them.

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Kopsavilkums

Emocionālā inteliģence pēdējo gadu laikā ir bijis svarīgs un pretrunīgs temats. Emocionālās inteliģences un radošuma līmenis studentu vidū ir būtiska veiksmīga studiju procesa dimensija, tēma, kas nav pietiekami izpētīta. Šis pētījums ir jauns mēģinājums izpētīt attiecības starp ainavu arhitektūras studentiem Lietuvā un Latvijā. Radošums, prasme atrast jaunas un vērtīgas idejas, lai reaģētu uz izaicinājumiem, problēmām vai vajadzībām, ir būtisks šī procesa aspekts. Turklāt radošums parasti var būt jauna esošo zināšanu kombinācija. Dažādas paaudzes ir radošas, taču tām vajadzētu būt labākai pieredzei un teorētiskai izpratnei par emocionālo inteliģenci. Šīs izpratnes trūkst, un šī pētījuma mērķis ir aizpildīt plaisu arī starp dažādām paaudzēm. No otras puses, dažādas paaudzes skatās uz vienu un to pašu realitāti no dažādām perspektīvām. Tāpēc pētījuma mērķis ir aplūkot radošuma traucējumus no studenta viedokļa. Pilotpētījums, kas veikts, izmantojot autoru izveidoto anketu, paredz noskaidrot studentu radošuma traucējumu īpatnības sekmīgām studijām. Tajā analizēts arī zinātniskajā literatūrā piedāvātais emocionālās inteliģences un radošuma teorētiskais pamatojums. Tiek noteikts studentu emocionālās inteliģences līmenis, kas veicinātu viņu radošumu.