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HISTORICAL FORTIFICATIONS IN THE ARCHITECTURAL AND URBAN PLANNING STRUCTURE OF LVIV (ON MARGINES DOCUMENTATION "HISTORICAL AND ARCHITECTURAL REFERENCE PLAN OF LVIV")

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Abstract. Ancient city fortifications are one of the specific types of defensive architecture. Along with the buildings of castles, blocks of urban residential development, monastery complexes and field defensive structures, they formed a special type of architectural and urban planning objects. During their construction, the skills of both an architect, builder, and military engineer were often combined. Not so many objects of urban defence architecture have come down to our time. Therefore, every fragment of the city's defensive walls and earthen fortifications preserved today, as a rule, is a valuable document of its era and needs careful protection and preservation. Urban fortifications (as opposed to fortifications of castles or fortresses) were the objects of priority liquidation in the process of urban development. There are very few of them preserved in Ukraine, so their preservation and study is a matter of extreme importance. Lviv is a unique city on the map of Ukraine in terms of the development of urban fortifications.

The article analyzes the reflection of objects and monuments of defence construction in the scientific and design documentation "Historical and Architectural Reference Plan of the City of Lviv". Data on the stages of development of Lviv fortifications are high lighted. Special attention is paid to the remains of fortifications that have been preserved in the archaeological form. Their identification, conservation and identification is important task for modern urban development projects. The paper makes hypotheses about some hitherto unidentified elements of fortifications of the XVII–XVIII centuries. Special emphasis is placed on the need for a special scientific study on the detailed reconstruction of all stages of the development of defence belts around the city centre and suburbs of Lviv.

Key words: Fortifications, Lviv, XIII–XIX centuries, conservation, urban planning documentation.

Relevance of the study

Many scientific works were devoted to the development of fortifications in the Lviv city centre. First of all, we should mention Franz Kovalishin, who at the beginning of the twentieth century, collaborating with the historian A. Cholovsky, left sketches of objects still preserved at that time or submitted his graphic

reconstructions of their original appearance. The first synthesizing works on the line of fortifications of Lviv include the research of A. Cholovsky (Czolowski, 1891). The next study was by B. Tomkevich, who gives a general outline of the development of the city's fortifications from the XIV to the XVII centuries. This author used a wide range of sources and is responsible for the first comprehensive assessment of urban fortifications and the establishment of the stages of their construction (Tomkiewicz, 1971).

The second famous author who worked in this field was Janusz Witwicki, who owns the reconstruction of the fortifications (three main lines) of the city centre as of the end of the XVIII century. This is the only architect who worked on the topic under study. However, his analysis concerned mainly the reproduction of the appearance of structures as of the XVII–XVIII centuries. But it is he who is responsible for establishing the exact contour of the high and low walls in the planning structure of the city centre, specifying the number of towers, and many other issues (Witwicki, 1971).

I. Kripyakevich, who clarified many dates of Lviv's history, also addressed the issue of covering the history of Lviv fortifications. A. Stepaniv revealed the general schemes of development of the urban structure, Ya. Lobotsky performed a study of the defensive line of F. Getkant (Lobocki, 1982). Historians Gronsky (Gronsky, 1979) and V. Vujtsik revealed the history of individual buildings, clarified the names of fortifiers, clarified the works carried out in the XVII century, etc. (Vujtsik, 1994). Modern authors O. Cherner, A. Rudnitsky, Ya. Isaevich and V. Ovsiychuk touched upon the issue of defence architecture only in general aspects. Some issues of the development of fortifications are touched upon in their research. Hoshko, M. Kapral, Yu. Dyba, M. Bevz, I. Okonchenko et al.

The second author who tried to systematize and clarify the general scheme and reconstruct the stages of construction of fortifications around the centre of Lviv was T. Tregubova. The work of this author describes the main consecutive changes in the construction and modernization of urban fortifications in different periods (Tregubova and Myh, 1987). In the study of R. Mogitich, a hypothesis is put forward about the first stages of development of the territory of the city centre.

Fortification complexes were a particularly important element in the development of urban structures in the past. Their complexes most influenced the planning structure of the city. Fortifications often dictated the development of the city in one direction or another. Therefore, the theoretical reconstruction of the stages of development of urban defence systems is an extremely important task for understanding the architectural biography of the city and should be reflected in great detail in such documentation as a historical and architectural reference plan.

Results and discussion

The enterprise of the association of citizens "Institute of cultural heritage" of the All-Ukrainian Council for the protection of cultural heritage (Kyiv) has developed a scientific and design project documentation "historical and architectural reference plan of Lviv" in 2018–2019 (IAOP, 2020). Even at previous reviews of the documentation, reviewers pointed out the superficial nature of the text presentation and graphical representation of individual sections of the documentation. Special reservations arose regarding the scientific interpretation of the stages of Lviv's development. In the process of correcting the documentation, the authors formally increased (detailed) some stages in the development of the architectural and planning structure of the city, but in the graphic part, four stages do not disclose the purpose of this section according to the requirements of building code B. 2.2-3:2012 (5.4.A). It requires showing "the borders of the locality at each of the stages of development, the most important historical paths, streets, squares, outstanding historical buildings, structures and complexes, tracing the preserved and lost lines of fortifications" (building code, 2012). Below is a fragment of the drawing of the historical and architectural reference plan of the 3rd stage of development of the planning structure of Lviv (Fig. 1), which, according to the author's classification, covers the period from the middle of the XIV to the third quarter of the XVII century (IAOP, 2020). For any specialist who wants to navigate at this stage and distinguish which ones "streets, squares, outstanding historical buildings, structures and complexes" occur in different periods

in the central part of Lviv, there is no such information. In addition, a logical question arises: what is the justification for allocating such a long period? After all, in different segments of this period, there are completely different complexes in terms of planning and architectural features, for example, sacred buildings, and here they are all marked with the same type of cross. One colour in the diagram shows completely different urban planning complexes and formations: a pre–location city, city centre, and suburbs. In addition, the diagram does not show some key objects – for example, the Church of the Holy Cross since 1534 or the Jesuit church (which significantly changed the planning structure of the city centre and the lines of fortifications at the beginning of the XVII century), synagogue buildings, etc. The diagram demonstrates a simplified approach to analyzing the city's development. Lviv, a city with a rich architectural history, which is quite fully represented in scientific publications, does not deserve such a superficial way of performing documentation. We recall the "historical and architectural reference plans" that we had to see implemented by the Institute "Ukrzahidproektrestavratsiya" back in the late 1980s and 1990s. These were real analytical and meaningful works. Unfortunately, today, with immeasurably greater technical performance capabilities of designers, simplified approaches to the implementation of research and design tasks are being implemented.

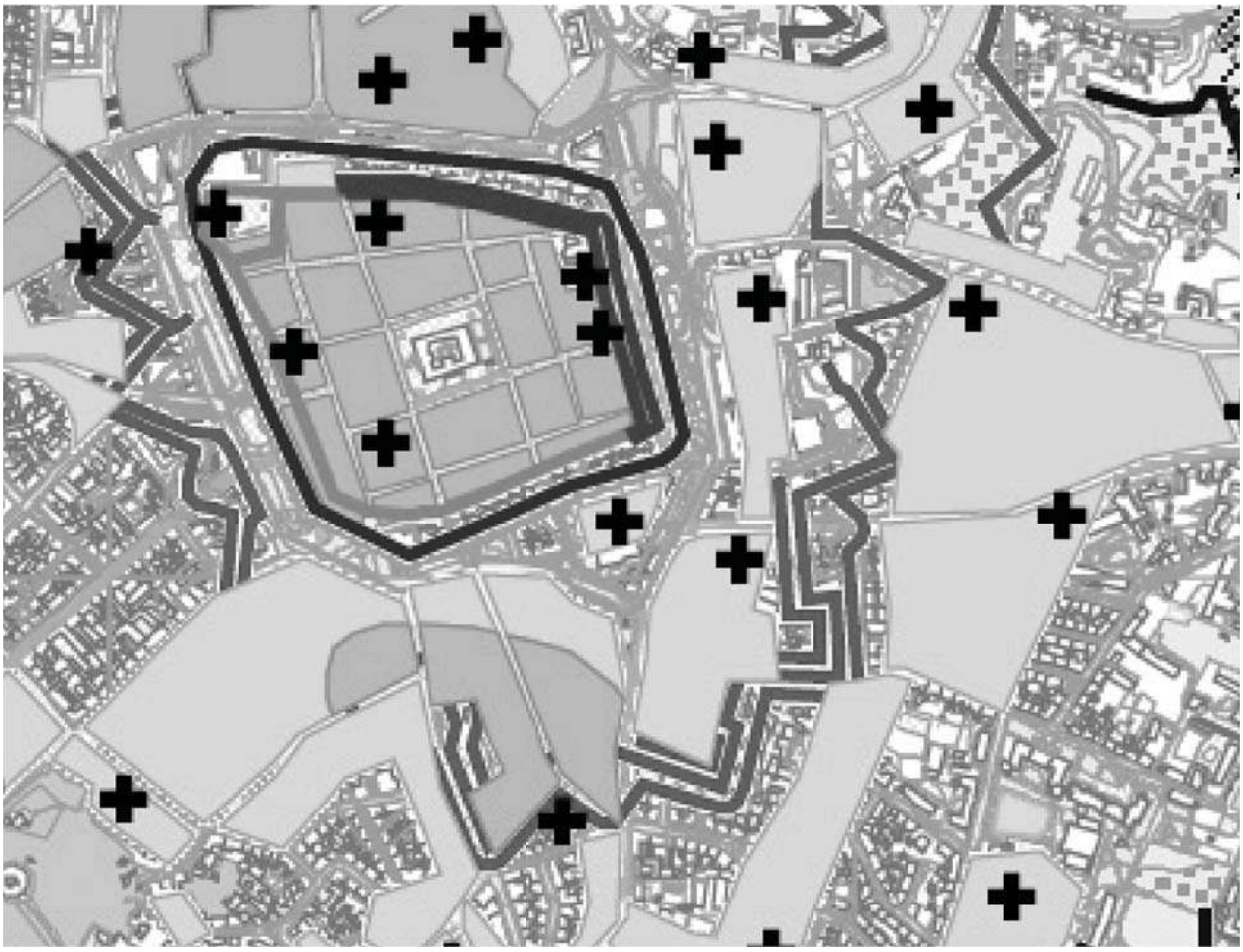

Fig. 1. Fragment of the scheme of the 3rd stage of Lviv development from the IAOP material (IAOP, 2020)

Separately, you should point out errors and inaccuracies in revealing the stages of development and showing the unique system of fortifications of the city. The shown stages of development of the city do not correlate with the stages of development of fortification belts. For example, for the third stage of development of the city in the XV–mid. XVII century (Fig. 1), the fortifications of the oldest part of the city – the so-called pre-location city – are not marked.

Although these fortifications undoubtedly existed and there are scientific publications about their configuration and localization. But on the diagram, in the central part of the city, a line of Bastion fortifications is marked, which could not be implemented here in the first half of the XVII century. A high defensive wall is marked without specifying towers or gates (Fig. 1). Although, the latter significantly influenced the development of the planning structure of suburban territories. With a simple line without specifying bastions, the fortifications of the low wall and the so-called "third defensive line" are shown. The authors forgot to show the southern spinning wheel of a low wall at all. The defence complexes of the Galician and Krakow gates, which had complex and specific different-time defensive structures, were not designated. The authors also forgot about the special system of fortifications of the Bernardine monastery, some of which have been preserved to this day. Similarly, the fortifications of The Barefoot Carmelite monasteries, the Benedictine monastery, and the St. Onufriy monastery Onufriy are not marked.

About the line of Bastion fortifications in the text of the work is said only in one sentence, stating its existence, but not revealing its planning nature and features of structures. None of their characteristics is presented. There is no data on the F. Getkant line, The J. Behrens line is not characterized, and the extent to which the Desro line was implemented is not indicated. But these defensive belts significantly influenced the development of the city's planning and spatial structure.

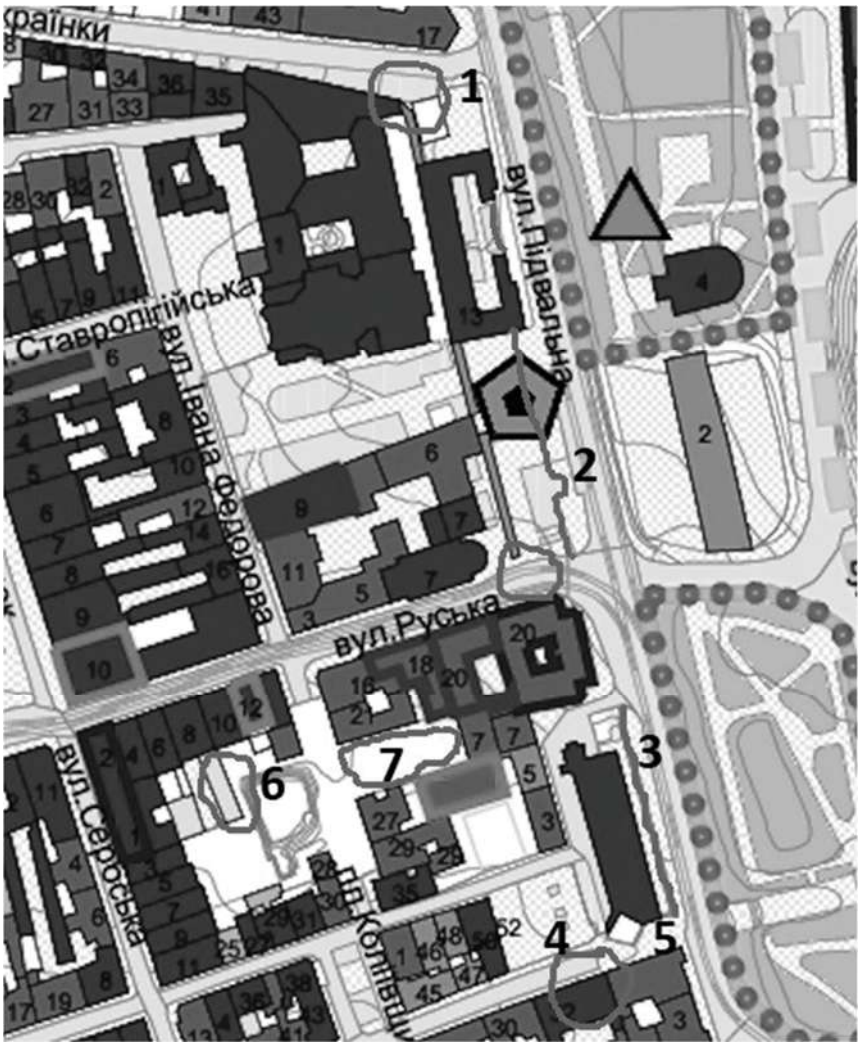

Fig. 2. Fragment of the IAOP drawing. We have marked the remains of fortifications on Pidvalna St the authors ignored: 1 – The Remains of the Rymarska tower and the high defensive wall; 2 – basteya and a fragment of the low wall near the Kornyakta Tower; archaeological remains of the Russian Gate; 3 – the low wall near the City Arsenal, 4 – basteya in the basement of the house on 32 Brothers Rogatyntsi St; 5 – archaeological remains and a recreated fragment of the Shevska tower of the High wall

In the third volume of the publication "monuments of urban construction and architecture of the Ukrainian SSR" (Monuments, 1985) on page 80 is filed under the Security number 327 – "walls of urban fortifications, the end of XIV – beginning of XV century" Of the objects described in this volume, the authors included and marked only a fragment of the wall (high defensive wall) on Svobody Avenue. But the authors did not identify the disharmonious development that completely covered the authentic remains of this defensive monument. Other objects of the high wall – the remains of the Rymarska Tower, a fragment of the wall in the courtyard of the Royal Arsenal, the remains of the Mulyarska tower are not classified as a complex attraction by the authors (position 327). However, some of these objects are offered for registration. But they have already been registered and have a security number. Why the "proposed" also does not include the bastey of the low wall next to the Assumption Church, a fragment of the low wall near the City Arsenal is also unclear (Fig. 2). In the publication we cited under the number 1266, the remains of the Bastei of the low wall in the basements of the house on 32 Brothers Rogatintsiv St are listed as a monument. It is not marked as a separate memo in the drawings (Fig. 2). Since this monument has its number, it should have been marked, even though the authors designate the house itself as a monument.

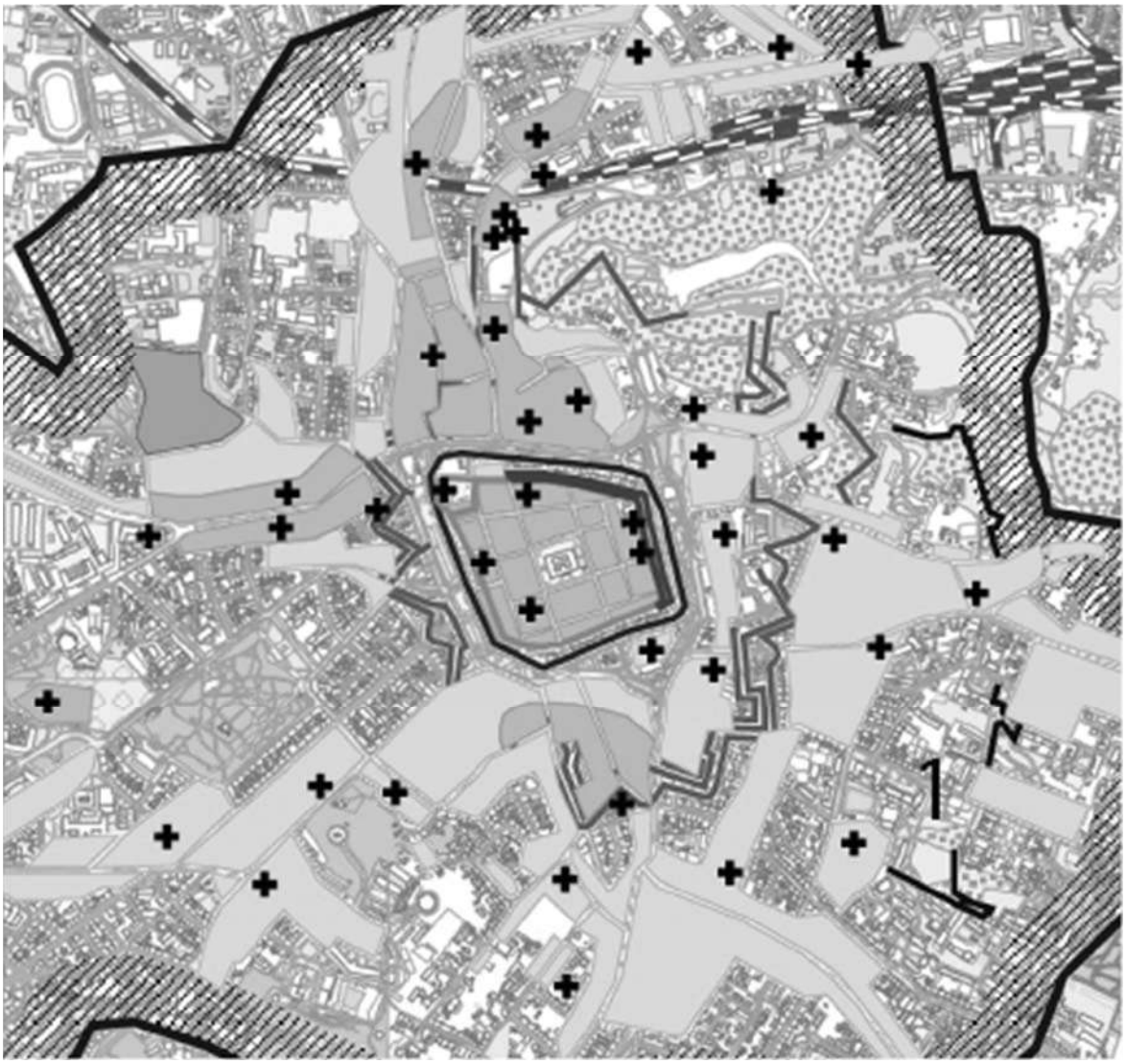

Fig. 3. Combined scheme of the third (mid XIV–mid XVII century) and 4th (second half of XVII–end of XVIII century) stages of development of Lviv according to the IAOP documentation (IAOP, 2020). The remains of F. Getkant's defensive line to the east of the city centre are indicated by the number 4. The authors have not identified or marked the remains of the Getkant line in other parts of the city. I n particular, on The Citadel, on Arkhipenko Str., Zolota Str. and other places

In the table with the objects of archaeology proposed for registration (IAOP, 2020; Vol. V) there are several items (No. 36-41) that are designated as remnants (fragments) of fortifications of the XVII century. They are presented without names, although it would be necessary to indicate which defensive line they belong to and from what time of construction these fragments originate. For example, we point out that positions 36–38 belong to the remnants of the so-called defensive line authored by Jan Behrens from 1678–1680. This line was built at a specific time during the reign of King Jan III Sobieski, and the table shows an incorrect dating of it – "the first half of the XVII century". But positions 38–41 belong to the defensive line, which was built according to the project of Getkant in the 1635–1640s. These objects belong to the first half of the XVII century. The table does not contain names or addresses for any of these objects. Position 38 is the hypothetical remains of several objects – the corner North-Eastern bastion, the curtain shaft, and the 4-corner bastion. It was more expedient to submit the numbers of each of these objects separately: 38a – earthen remains of the bastion; 38b – remains of the curtain shaft, 38b – remains of the 4-corner bastion. Position 37 in our opinion may refer to the fortifications of the territory of the Church of St. Wojciech. This should be reflected in the object name. No 39 is a bastion of Combined Shape with so-called "pincers" at the head of the Spinning Wheel of the Getkant line. The designation of the plan form of this bastion is debatable, as is the designation of another more southern corner bastion (see Fig. 3 and 4, with the bastion configuration designation on the plan of J. Desfile). In our opinion, only fragments of the ramparts of the Bastion are archaeological remains in kind. The rest of its flanking elements are lost, covered with buildings.

The Getkant line had a large length and was built specially. Only bastions were made of earth-stone, and curtains were built using natural terrain features in the form of ordinary low earthen ramparts, which often did not run in a continuous line, but were filled in fragments in the most suitable places (Lobocki, 1982). Unencrypted position 41 can only belong to the defensive walls of the Bonifrath monastery, which we have great doubts about. This object does not belong to the Getkant line fortifications. This should also have been indicated in the drawing and the note.

From a scientific point of view, it looks like a very important task – preliminary determination of the full list of monuments of fortification cultural heritage from various urban planning stages of Lviv's development. Drawing up such a list has both historical, architectural, and monument protection significance. Subsequent identification of the list of objects on the historical plans and the plan of the modern city would allow us to identify the exact places of their localization and develop proposals for their protection and inclusion in the State Register of immovable monuments of Ukraine. In the scientific interpretation of fortification objects, it is very important to consider them not alone, but as defensive complexes from a certain time and purpose. Unfortunately, such an assessment was not made during the development of the IAOP.

Let's try to reveal the features of the construction of fortifications in Lviv on the example of the period of the XVII–XVIII centuries. In urban terms, this period is characterized by two interesting phenomena. The first is that in the XVII century several fortified monasteries and temples were built around the city centre, which created a very interesting system of architectural and spatial dominants and fortified outposts on the slopes of the Poltvynsky Basin.

The second was an attempt to build a new belt of fortifications around the territory of the city centre, along with the suburbs, which would be suitable for increasing the defence capability of the city, which was very often under the threat of enemy invasions and robberies.

The implementation of the first urban phenomenon was not a specially planned action. To a certain extent, the emergence and development of both Catholic and Ukrainian monastic complexes in Lviv was a missionary in nature. For some, Lviv was a major eastern outpost in spreading its influence. For others, it was, on the contrary, one of the most Western centres of religious and national identity. Armenians and for some time the reformist Protestant church were also noted in the construction of shrines in Lviv. Active competition in the "extraction" of urban territory and the construction of sacred complexes led in the middle of the XVIII century to the emergence of a unique urban planning formation. For about 150 years, around

the city centre on the slopes and hills of the Poltvynsky Basin, a very peculiar belt of monasteries and temples in compositional and urban planning terms was formed, which included 46 objects.

As you can see, this peculiar belt of walled churches and monasteries, which numbered about 50 objects in the middle of the XVIII century, was a special urban planning feature of Lviv. From a historical and urban planning point of view, the presence of such a ring is a very interesting phenomenon that is not found in other Ukrainian and foreign cities. In the XVII century, these monasteries were included as components of the outer belt of defensive bastion fortifications of Lviv, complementing it as independent fortifications and forts. Many objects from this belt were lost in the XIX or XX century. These are the Church of St. Stanislav, Church of the Cherevichkovy Carmelite Monastery (cell building of the XVII century. preserved to this day, but not registered as a monument), the former Church of the Holy Spirit with the buildings of the Greek Catholic seminary, St. Cross church, a church of the same name, and some other objects. The unique urban planning formation of the ring of monasteries and churches of the XVII–XVIII centuries around the city centre is not reflected in any way in the materials of the historical and architectural reference plan, although this ring is an important element of the historical compositional and planning structure of the central part of the city.

In the XVII century, the city was actively developing at the expense of its suburbs. Since the city at this time was constantly under the threat of enemy invasions, accordingly, there was a problem of building new fortifications around the city centre, which would also include the suburbs. Taking care of improving the defence capability, several projects for creating new fortifications were worked out in the city in the XVII century, which included urban and suburban territories. The initiators of the construction of new defensive lines were most often residents of the suburbs. In response to their appeal, some projects were developed with the participation of city architects and Royal fortification engineers, which can be divided into two groups. The first is projects to improve and complete the existing defensive fortifications of the city (works by A. Del Aqua, P. Hrodzytsky, D. Briano). These also include projects for strengthening individual monasteries that were located behind the walls of the city: Bernardine, The Barefoot Carmelites, St. Lazarus, the Basilian Fathers near the Cathedral of St. Yura, St. Onufriy are not marked. Moreover, we meet among them projects for creating defensive walls of the simplest nature (the monastery of St. Lazarus), as well as plans for the construction of perfect bastey or bastion fortifications (monastery of Bernardines, monastery of Barefoot Carmelites, St. Yura Cathedral complex).

The second group is projects to create a new defensive line that would cover the territory of the suburbs for protection. We have drawings of three such projects (these are the works of F. Getkant, Ya. Behrens, Desro). Several other projects have only written references to their consideration by the magistrate (Project of A. Pasaroti, P. Rymlianyn, B. Morando et al.), but their drawings have not yet been found. From the works of architectural historians V. Tomkevich and V. Vuitsyk, you can also cite the names of other fortifiers who worked on improving the Lviv fortifications in the XVII century. These are Bernardo Morando (1589), Aurelio Passarotti (1607), Theophilus Schemberg (1608), Paul the Roman, Ambrosius the benevolent and Wojciech Kapinos (project 1614), Nikola Rutsky (1614), Wilhelm Appelmann (1615), Pavlo Hrodzytsky (1633), Frideric Getkant (1634–1635), Jacob Boni (1647), Andrea del aqua (1652), Jan Behrens (1678–1682), Desro (1695) (Vujicik, 1994b). These facts show that Lviv, which was one of the richest cities in what was then south-eastern Poland, made consistent attempts to build a more advanced system of fortifications.

It is worth noting that the factor of building new fortifications often caused another interesting phenomenon in the cities of this period - the emergence of a “parallel”, a new city near the existing one. The essence of this phenomenon was that in the suburban areas near the old city (outside its medieval city fortifications), another city was laid, but with a more advanced Bastion system of fortifications, designed for autonomous defence or for the creation of an external belt that was defended jointly by the inhabitants of the new and old cities. All Lviv projects provided the second option of creating fortifications.

This new city was probably founded based on a separate location privilege. In Lviv, residents of the Galician suburb at the beginning of the XVII century repeatedly made attempts to form an independent city and build a belt of Bastion defensive structures.

But these intentions were never completed, although a certain part of the fortifications around the Lviv suburbs was still built. For the first time, residents of the Galician suburb turned to King Sigismund III with a request for the privilege of laying a new city called Volodyslav in the suburbs in 1607 (Czerner, 1997). Actually, in response to this request, the king sent engineer Aurelio Passarotti to Lviv with instructions to work out a project for creating a new fortification line. Passarotti completed the project, and residents even began to implement it. However, these plans were not implemented due to the protests of the Lviv magistrate, under whose jurisdiction the suburban grounds were located.

Fig. 4. Fragment of the map of the city of Lviv from 1766 with the designation of the cornerstone of the south-eastern bastion of the Getcant line

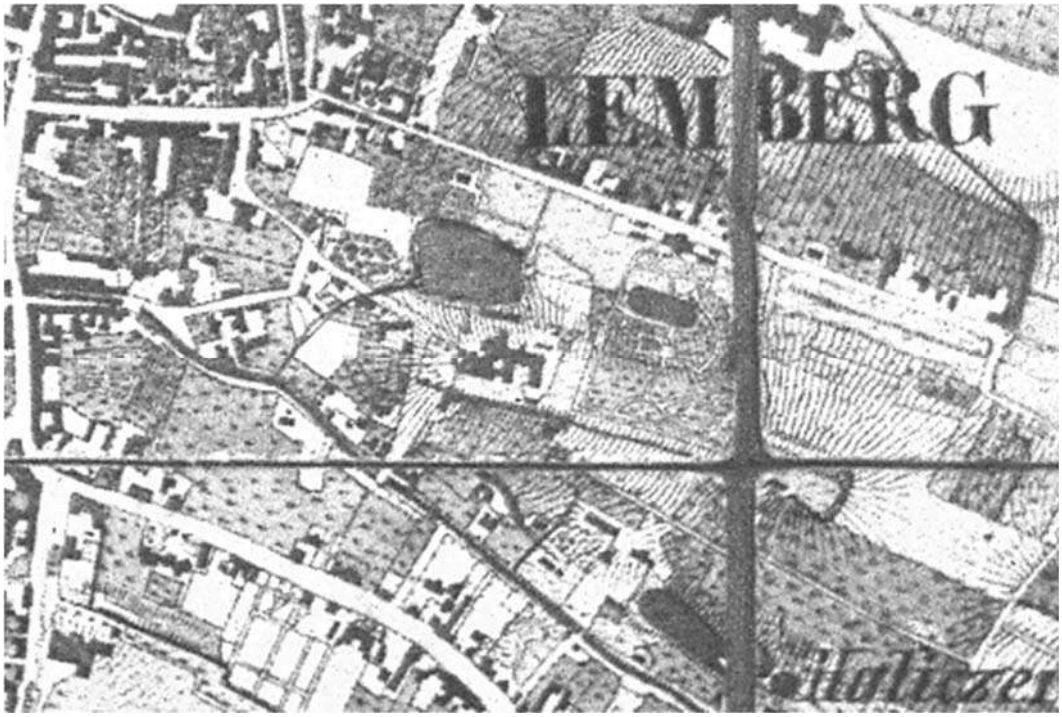

Fig. 5. South-eastern corner bastion of the Getkant line. Fragment of the map of 1829

Subsequently, in 1634–1635, the suburbs of the Galicia organized themselves, made another attempt to strengthen their territory and began to pour earthen bastions and dig foss (Kis, 1961). But, for various reasons, these works were also not completed. This time, the new city was to appear with the consent of King Vladislav IV with the name Casimir (Tomkiewicz, 1971). The project of new fortifications in 1635 was developed by engineer Friederik Getkant.

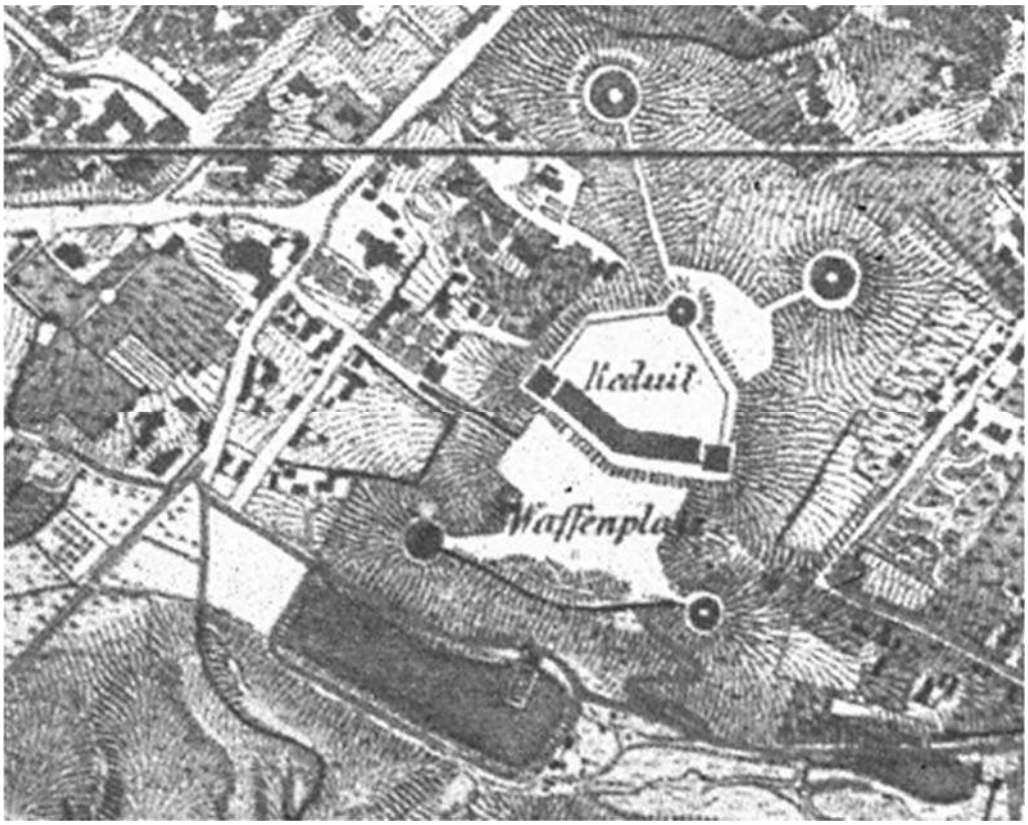

Fig. 6. Citadel fortifications on the map as of 1861 The southern part of the complex is marked with two towers and a rampart between them

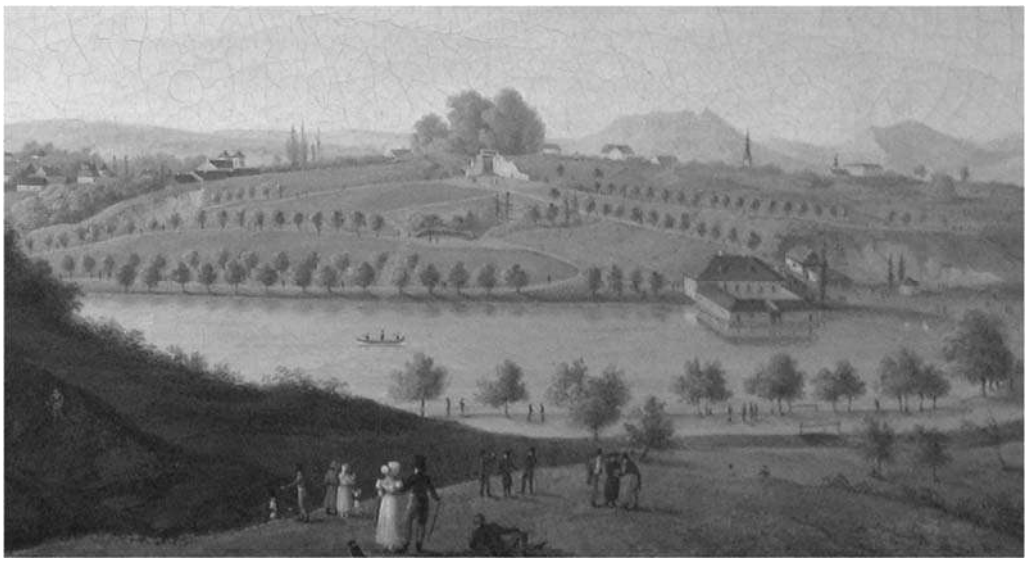

Fig. 7. Pelchinsky arise in Lviv on an oil painting by Anthony Lange in 1824, fragment (Lange, 1824). The Citadel fortifications did not yet exist at the time of drawing the picture, but we see an image of a rampart with a large stone gate on the mountain

remains of the Getcant defensive line are marked on several historical maps, in particular on the plan of Lviv in 1766 made by Jean Ignatius Desfill (Fig. 4), on the map of F. von Miga in 1782, on maps from the beginning of the XIX century (Fig. 4, 5, 6, 10). These fortifications are especially seen in the eastern part of the city, where a fragmentary defensive line can be traced, which, in shape, resembles the bastion line designed by Friederik Getkant in 1635. To more accurately attribute this defensive line, it would be necessary to continue previous studies of Ya. Lobocki (Lobocki, 1982), starting with full-scale surveys of the territory through which it ran, and analyzing its technical and stylistic characteristics to find out whether previously built ramparts were included in it according to a project of A. Passarotti. After all, it is known that the ramparts of Passarotti were started built (Vujcik, 1994). Similar identification works were carried out in the 1980s at the Institute of Ukrzahidproektrestavratsiya.

The main disadvantage of the IAOP documentation is the very schematic representation of the Getkant defensive line in all drawings and the lack of designations for well-preserved fragments of this line. First of all, you should indicate the most preserved object of the line – the rampart, preserved at its original height in the southern strand of Mount Citadel. The stone entrance gate is also preserved in the body of the rampart. Although the walls of the gate represent architectural elements of the XIX century, its image on cartographic and iconographic documents from the end of the XVIII – beginning of the XIX century indicates the construction of this object as earlier than the construction of the Austrian fortifications of the Citadel in 1855. That is, the gate, like the rampart itself, could have been built during the construction of the Getkant line. The gate may appear in connection with some work on the modernization of the Getkant fortifications at the end of the XVII or XVIII centuries. Perhaps the rampart and gate were built as part of the Getkant line, later maintained and modernized as objects that were part of the defensive yard of the Kyiv Voivode Potocki. The Voivode's court existed on the mountain even before the construction of the Citadel fortress by the Austrian authorities. Hypotheses were put forward that this Rampart could be part of the so-called Turkish trenches, which were built on the mountain in 1672 (Okonchenko, 2009; Dubyk, Pinyazhko, 2009). However, these assumptions are questionable, since the trenches were built by the Turks for artillery shelling of the city and should have had the main structures on the north, and not on the south side of the mountain. Preserved to its full height, the seventeenth-century rampart in the southern part of the mountain should have been more thoroughly studied and interpreted accordingly in the graphic and textual parts of the IAOP's work.

Confirmation of the earlier (even before the construction of the Citadel) existence of the rampart in this part of the mountain is its designation on the plans from 1820, 1829, 1844 (Plan, 1820) (Fig. 6). In particular, the plan from 1820 on the mountain on the southern side shows a wide shaft of somewhat irregular outline.

Here, too, in the southwestern corner (this is on the mountainside), there is a powder room, which has a territory fenced with a wall on three sides.

F. Getkant’s defensive bastion line is particularly well marked on the map of Lviv in 1820 from the Vienna Military Archive (Plan, 1820). It is indicated that the ramparts of Getkant start from Mount Leo in the form of a long large line of the rampart of a triangular shape in plan, with a corner opposite the monastery and the Church of St. Wojciech (which is designated as a gunpowder warehouse). An interesting fact is that on this segment, the rampart line does not have the features of a bastion line and the corners are not solved in the form of bastions (is this not a sign of some older system of fortifications to which the Getkant line was added?). The line of the rampart goes south to the later location of the Franciscan monastery, but here it ends at house number 61. On the territory of the quarter of the Church of St. Antony line is not shown. Then the line of Ramparts appears behind the eastern part of the Piyar college building. It shows a two-part bastion with a moat of a very interesting shape. Initially, this is a flattened plan bastion from the southern horn of which a long triangular bastion protrudes, but the triangle is oriented in the field not by the horn, but by the smaller side.

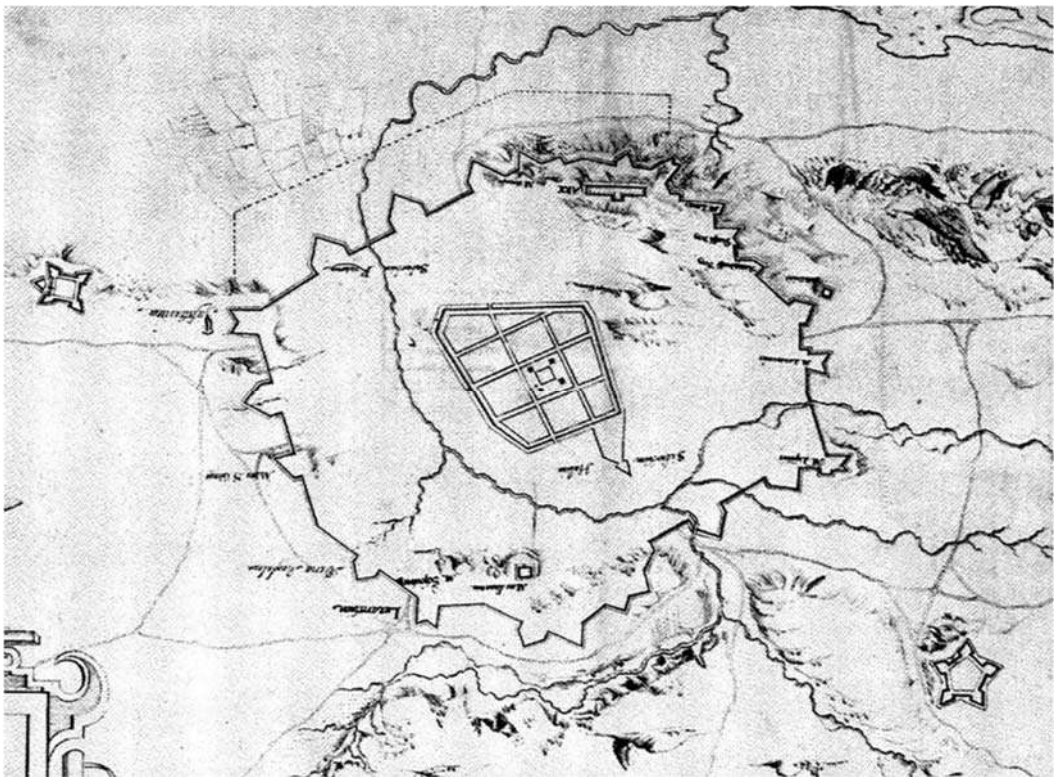

Fig. 8. The project of fortifications of the suburbs of Lviv was carried out by F. Getkant in 1635 (Getkant, 1635)

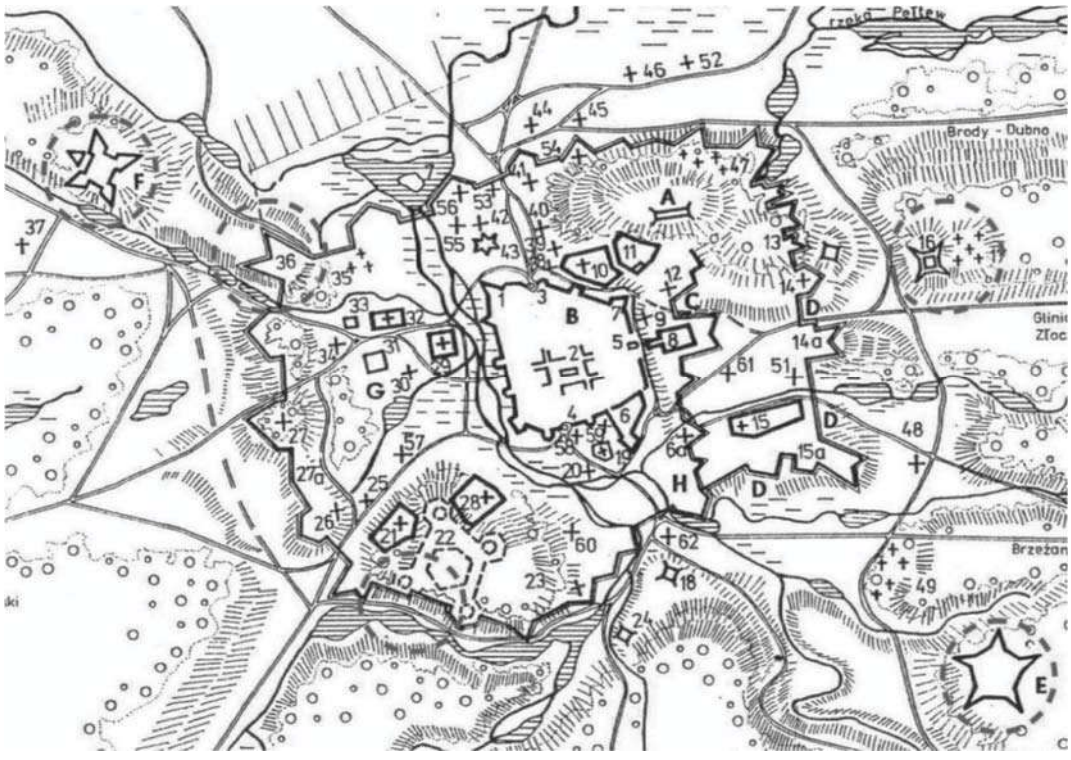

Fig. 9. Diagram of an essay on the fortifications of Lviv of the XVII century with the fortified lines of F. Getkant and Jan Behrens (worked out by Jan Modest Lobocki (Łobocki, 1982). F-north-western "Citadel" on the Krakow suburb from the project of F. Getkant; E – south-eastern "Citadel" on the Galician suburb from the project of F. Getkant; 16 – Castle of the Princes Vishnevetsky; 17 – Church of the Annunciation of the Most Holy Theotokos with a cemetery; 36 – tick-shaped bastion on "Mons Justitiae" (on Mount Strat)

This solution resembles the shape of the so-called “ticks” (Fig. 10). To the south of the bastion, a straight line of the rampart is shown down the relief, which ends approaching the development along Pekarska street. Behind the rampart in the direction of the city is a large regular garden of the College of Piyars.

The Church of the college of piyars is shown not in red but black with grey watercolours filled in (this may mean that it is in a state of construction or ruins?). In the apse part, a rectangular transverse building or aisle is marked.

The shaft is again shown on the right side of the Pekarska St after finishing the garden behind the palace, which is designated No. 422. Some other buildings are shown to the left and right of the palace. In the middle of the garden is a regular rectangular pond.

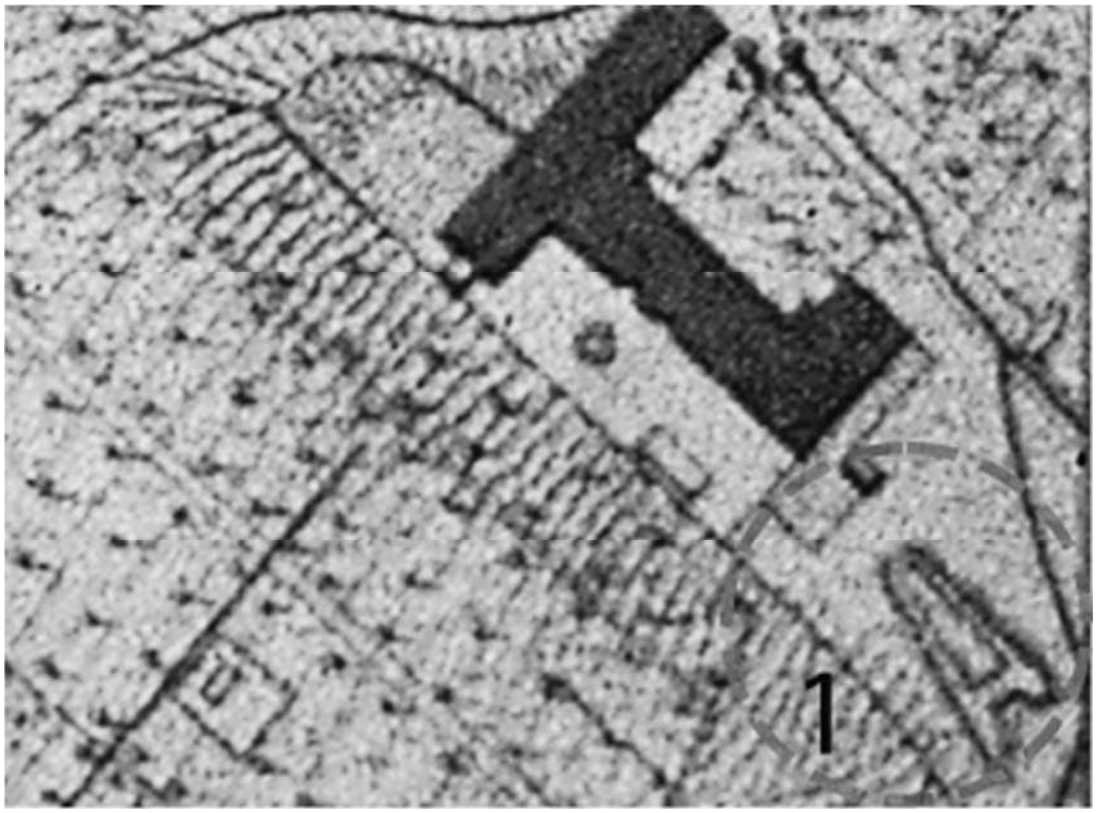

Fig. 10. Remains of the bastion of Getkant (1) near the College of Piyars on the map of Lviv in 1844

The corner of the shaft is drawn completely including a straight section of the shaft that turned here to the west and reaches the site of the Monastery of Sacramentky. The shape of the cornerstone in the plan is decided on the same principles as that of the Piyar college. This is a two-part bastion of elongated rectangular shape, the shaft lines of which are not parallel but slightly diverge in the external direction. Unlike the previous one, in this bastion, a small triangular platform shaft is added to the outer part of the bastion. Only the second outer part of the cornerstone is surrounded by a moat. Near the Monastery of Sacramentky, the rampart breaks off. You can also guess the place of its passage along the narrow strip of territory between the southern border of the Sacramentkymonastery site and the northern borders of two sites (461 and 462) near the Apiary stream (on the K. Levytsky Str.). Further west or south, the remnants of the ramparts of this line are not marked. They are absent on the mountain near the 28th school (here a brick house is marked at the foot) and on the Citadel mountain. In general, the map of 1820 was to be used as a basis for the reconstruction of the Getkant defensive belt.

Special attention should be paid to finding traces of two forts, which are marked with the letters “F” and “E” on the Getkant project plan. These forts were part of the fortifications of Lviv, which

were proposed to be built by Friederik Getkant. It was believed that these forts were not built. They probably were built first.

On the remains of Fort "F" in the time after World War II, a stadium was built, and then a market. The remains of this unique object of the XVII century are preserved to this day (Fig. 11), but they are not reflected in the text and graphic parts of the historical and architectural reference plan.

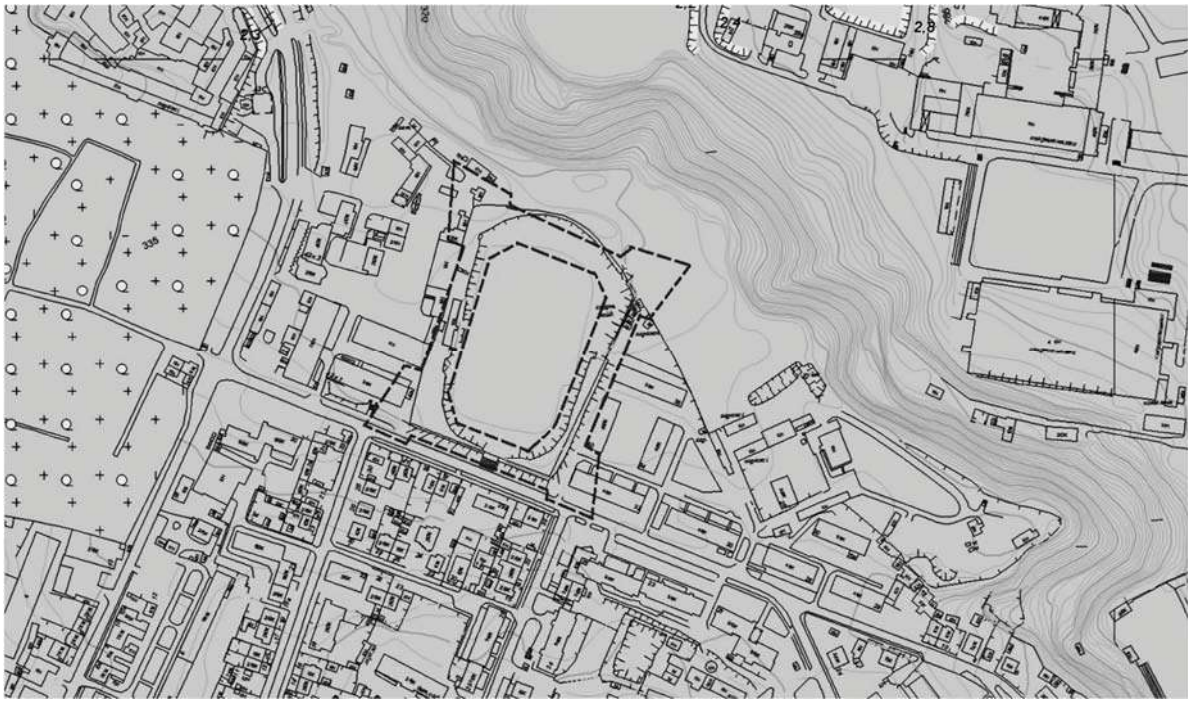

Fig. 11. Hypothetical reconstruction of the bastion fort of the defence line of F. Getkant in 1635 in the area of Zolota Street (M. Bevz, 2020)

We think that similarly, it would be possible to find traces of the pentagonal Fort "E" on the south-eastern outskirts of Lviv in the area of Snopkivska Mountain (Fig. 8 and 9).

On the IAOP drawings, the territories of lost defensive structures should be marked as lost fortifications, because their remains may be preserved in the ground or under construction. Iconic fortifications of all periods need to be accurately localized and shown in drawings since it is known that some of them are fragmentarily preserved and still "read" in the relief structure.

The place of the Church of the Annunciation of the Most Holy Theotokos and the cemetery near Kharkivska Street is indicated as a lost archaeological site in the historical and architectural reference plan. But next to this temple, to the west of it was the fortified courtyard of the Vishnevetsky Princes (Lobocki, 1982). The authors did not search for its location and did not mention this object in the text part. If you look at the maps of Lviv at the beginning of the XIX century, then the location of this object is not difficult to track. Therefore, this object should also be added to the drawings and text part of the work. Fortified with four basteys or towers, the Vishnevetsky courtyard is marked on the map of Jean Desfile (Fig. 12).

The works of Jan Behrens in the development of Lviv suburban fortifications of the XVII century are analyzed in new studies (Bevz M. and Okonchenko I., 1999; Bevz M. and Okonchenko I., 2000). It is recorded that in 1678–1682, at the request of Hetman Stanislav Yablonovsky, in Lviv, under the leadership of Behrens, the construction of earth-stone fortifications of the new Bastion system was carried out (Jozefowicz, 1854). First, work was carried out near the High Castle Mountain (it is possible that the bastions were modernized, which in 1589 were filled in according to the project of B. Morando). Later, according to the project, on the hill, on the eastern side of the city, the Monastery of The Barefoot Carmelites was previously fortified. According to the data provided by T. Jozefowicz, it was a start for a rampart outside the monastery of the Cherevychkov Carmelites (Jozefowicz, 1854).

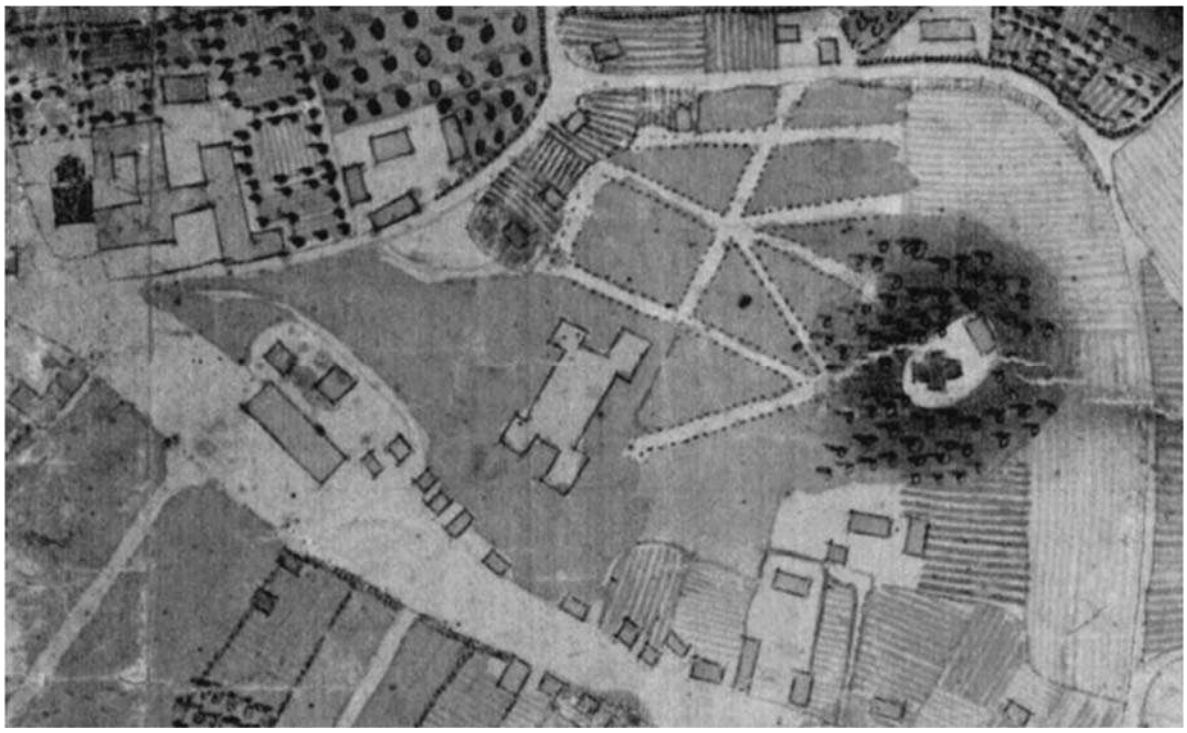

Fig. 12. Fortified courtyard (Castle) of the Vishnevetsky with four corner basteys or towers on the map of J. desfiles in 1766. Near the courtyard, there is a small regular park. To the east of the courtyard is the Church of the Annunciation of the Most Holy Theotokos, surrounded by a dense ring of trees

That the date of construction of this defensive line is mentioned in the Chronicle of T. Josefovich is true, as well as the fact that this rampart was the implementation of the Behrens project is evidenced by archival city documents of the XVII century, which repeatedly mention the costs of the construction of new fortifications by Jan Behrens. This is exactly the version developed in the works by V. Tomkiewicz, Ya. Lobotsky and V. Vujcik, unlike some other authors, believed that Behrens' project was not implemented at all. To confirm the authorship of Ya. Berens and the special scale and architecture of the defensive line implemented in Lviv at the end of the XVII century (Fig. 13, 14), a few additional arguments can be made. The most significant of them is a unique photo from the end of the XIX century, which shows the dismantling of the southwestern corner bastion of the Behrens line (Fig. 15). This bastion was near the Poltva River and, by the plan, there was a nadshanets at the top. The photo clearly shows the dimensions of the structure, which had two-tiered casemates. This bastion with a nadshanets is also depicted on the map of D. Huber in 1777. Photos with the actual dimensions of the remains of the Behrens bastion line are extremely valuable information since, during archaeological studies of the south-eastern bastion of this line, R. Mogitich discovered only one small casemate chamber in 1990 (near P. Rimlyanin St).

Ignoring the interpretation of the city's defence facilities is also present in other sections of the IARP. In particular, the IAOP documentation does not contain the scheme recommended in building code B. 2.2-3: 2012, clause 4.2.3. B – historical districts of the locality (1:10000, 1:25000,1:50000). This scheme should naturally be implemented after identifying and analyzing the stages of city development and linking this zoning with fortification lines, which served as the main barriers and restrictions for the planning and spatial laying of urban areas. If such a scheme could be ignored by performing the historical and architectural reference plan of a small city, then how can you not implement such a scheme for Lviv? After all, this is a synthesizing document, thanks to which we should clearly see from the results of the IAOP, where there are preserved architectural and planning complexes of the XIII or XIV centuries, or XVII centuries, where there are preserved sections of the "garden city", and where there are complexes of the palace and park gentry estates (of which there were about a hundred on the suburbs of Lviv), etc.

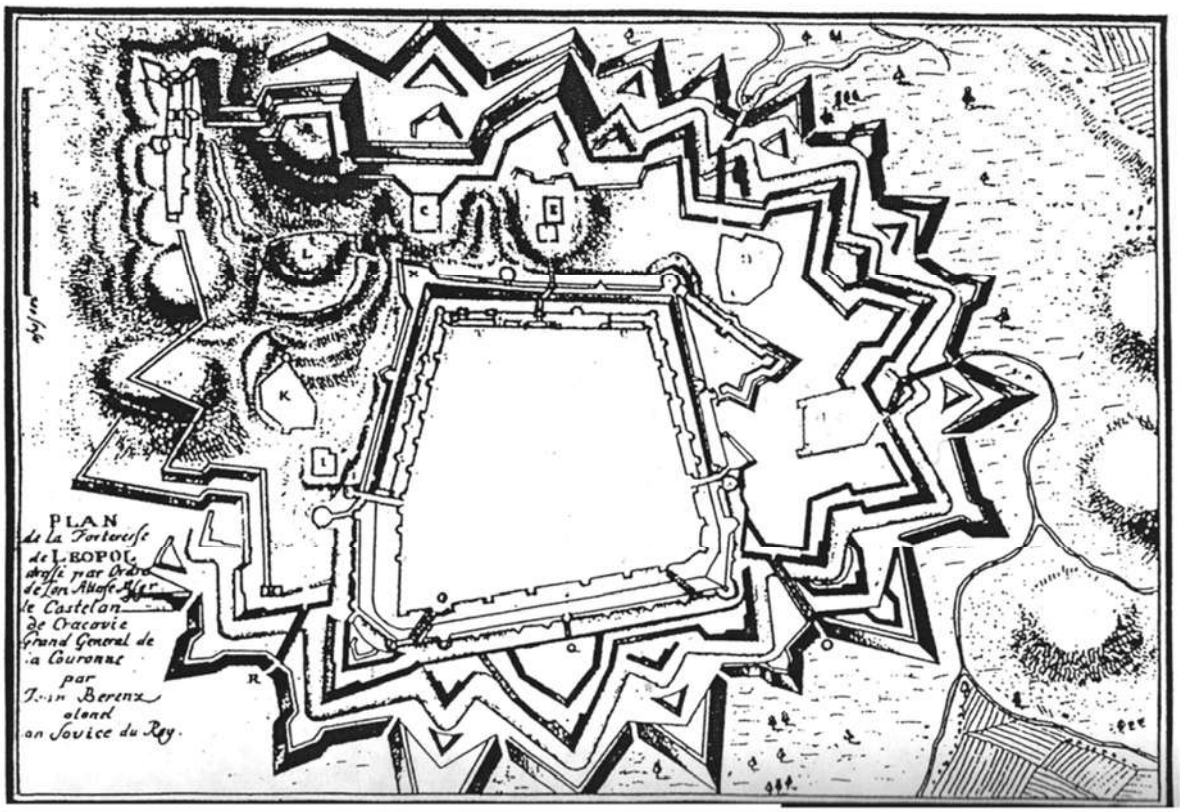

Fig. 13. Plan-project of Lviv fortifications by Jan Behrens (Behrens, 1680)

Similarly, in the documentation of the historical and architectural reference plan, no scheme is required according to the requirements of building code B. 2.2-3:2012 (clause 4.2.3.d) "Specific disclosure of architectural and urban planning monuments (1:5000, 1:10000)". The scheme "Compositional and artistic assessment" presented in the IAOP does not meet the tasks that should be solved and disclosed in this section in terms of content. The diagram formally shows only nodes, axes, dominants, and main viewing points. But according to the requirements of the norms, you will have to submit viewing areas of architectural monuments that are architectural dominants and accents; viewing points, axes, fronts; zones of species formation; characteristic distances (qualitative thresholds) of the view opening of architectural monuments; slope faces, natural dominants, water surfaces, green spaces. The actual lack of a properly performed analysis and view disclosure scheme is the basis for ignoring the task of preserving the historical panorama of the central part of the city in the IAOP. The method of covering this section is fully presented in the works of the Kyiv scientist Ye. Vodzinsky, who perfectly developed this technique to the world level. The authors of the IAOP neglect the developments of this author and the requirements of building code B. 2.2-3:2012.

As part of the documentation of the historical and architectural reference plan, the authors developed a scheme "compositional and artistic assessment". The implementation of such a scheme is a requirement of the state standard (DSTU, 2016), which recommends treating it as a basic material for determining the boundaries of protected areas and their regimes in general for the city. But this scheme does not replace the requirements of the building code (paragraph 5.4. D) on the need to develop a scheme "Architectural and spatial composition of the historical centre of the locality".

Following the requirements of the building code, the following documents must be submitted: historical and modern urban planning dominants, architectural accents, architectural ensembles and complexes, main and subordinate planning and compositional axes and nodes, characteristic types of urban spaces (closed, open, disharmonious), slope faces, water surfaces. Highlighting the characteristic types of urban spaces is an important component of this section, as they are the key to establishing the visual climate of the historical core of the city. In foreign practice, to regulate this issue, a map of the so-called "Blue Lines" is being developed. It is a compositional and spatial regulator of the height of buildings of the historical core.

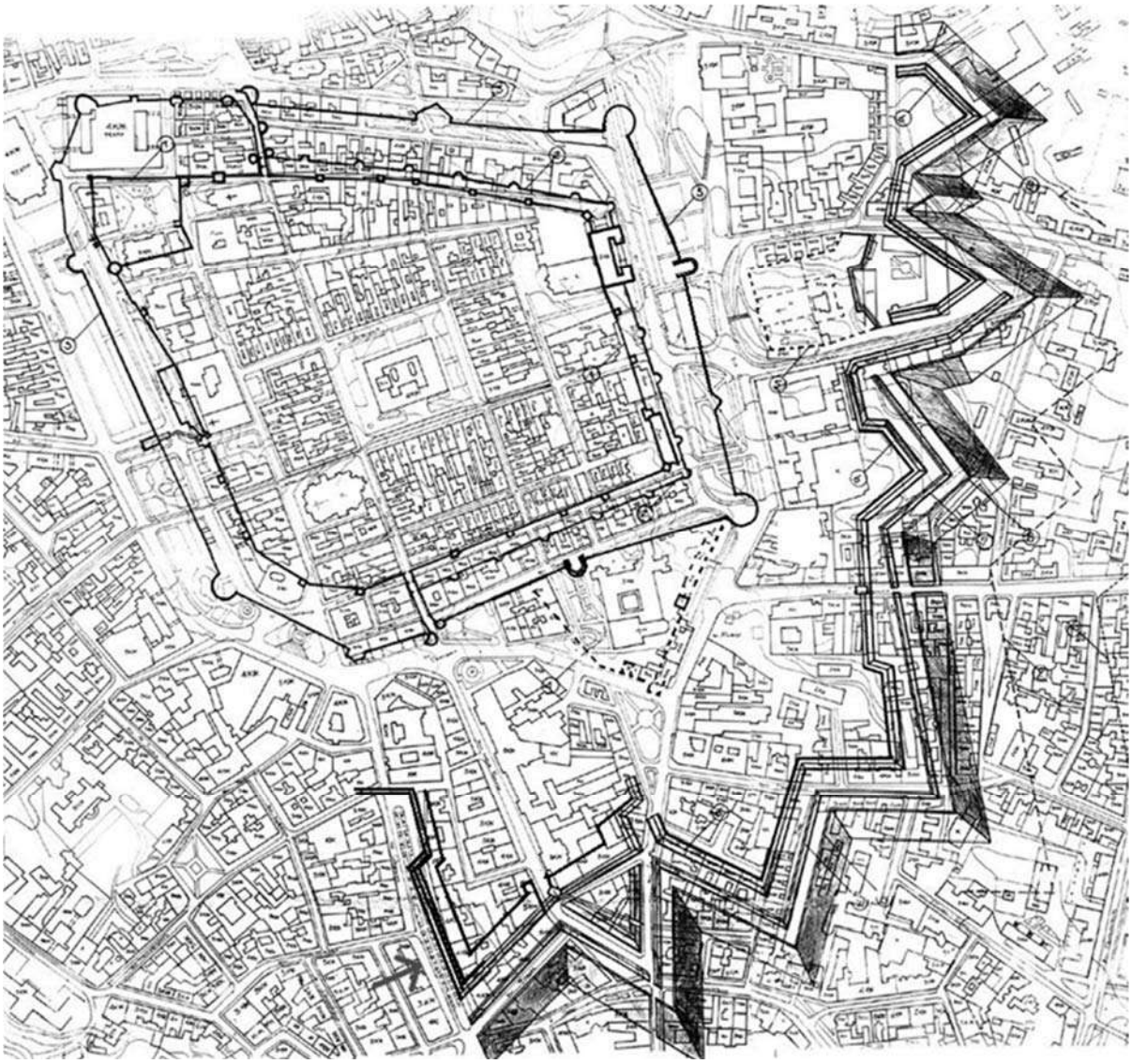

Fig. 14. Reconstruction of a fragment of the planning structure of the defence line of Ya. Behrens in 1682, performed on a modern topographic subsontium (Bevz M., Okonchenko I., 2000; Bevz M.,2021). The arrow indicates the direction of photographing the remains of the southwestern bastion (see Fig. 15), which was still preserved in a state of ruin at the end of the XIX century

Unfortunately, the IAOP material is very far from fully presenting this section. The conclusions to the section contain general phrases, but the unique architectural and spatial composition of the historical centre of Lviv, in the formation of which fortification complexes actively participated, remained undisclosed. The authors with general phrases did not reveal the unique architectural and urban planning compositional structure of the centre of Lviv (in the building code – Architectural and spatial composition of the historical centre of the locality) and in the end, they didn't outline how to preserve its uniqueness. But the city centre is a combination of natural components – the High Castle Mountain and the Svyatoyurska and Citadel Mountains (the latter with architectural dominants) with architectural and urban planning complexes – The Old Town (XIII–XIV centuries), the centre of the so-called New City of the XIV–XVII centuries with the preserved remains of fortifications, the ring system of squares and boulevards of the new city centre of the XIX century, complexes of residential and public development blocks, interspersed with more than 30 monastery complexes are placed horseshoe-shaped around the city centre and the boulevard ring, creating a special urban structure.

Fig. 15. Photo of the dismantling of the southwestern bastion of the Behrens line, the 1890s, photographer Marek Munz (Lviv, 2006). From the photo, it can be seen that the height of the bastion reached 11–12 m

In general, the section on archaeological sites is the most advanced in the IAOP documentation. But even here we can make comments on the accounting of historical objects of fortification and sacred architecture. In particular, it is proposed to register only one memo: "only one object is proposed for state registration – a mound on 7 Kamenyariv Str., on the territory of the rest – established zones of protection of the archaeological cultural layer with the appropriate mode of use" (IAOP, 2020). We doubt that this is a good strategy for lost sacred objects, on the site of which nothing can be built - the Church of the Holy Cross on Galytska square, with other objects one hundred per cent known and valuable – in particular, the foundations of the Church of St. Leonard, or the Church of the Epiphany of the Lord, St. Theodore of Tyrone Church, Armenian churches on Khmelnitsky St and St. John the Theologian Church under the High Castle, etc. All of these sites should be on the list of suggested sites for inclusion in newly discovered sites.

The remains of fortifications on the IAOP drawings are listed and indicated only by conventional icons, and not by the exact outline of their configuration, and a very approximate description of the territory they occupied. For example, No 32. "Traces of fortifications of the first half of the XVII century near the Regional Clinical Hospital and Diagnostic Center between streets Nekrasov and Pekarska. Fragment of the line of Bastion fortifications of F. Getkant". Traces of artificially formed relief of bastions (flanking elements) have been preserved. No 33. "Traces of fortifications of the first half of the XVII century near the Lviv National Medical University named after Danylo Halytsky between M. Nekrasov and K. Levitsky streets. Fragment of the line of Bastion fortifications of F. Getkant". That is, it will be impossible to really preserve these remnants of fortifications due to this interpretation in the IAOP.

Fig. 16. Project for the construction of a system of forts on the southern outskirts of Lviv in the area of Stryjska Street (1855 (Pinyazhko, 2013))

Conclusions

It is important for people of our generation to realize that Lviv has always been a well-fortified city since its foundation. It couldn't have been otherwise in medieval times. The very location of the city centre on the ground indicates that territory with good defence capabilities was chosen for it. Lviv, in comparison with other Ukrainian cities, had a very developed system of defensive lines, which represented the military architecture of all periods – from the XIII to the twentieth century. If it were possible to study, preserve and museify the remains of fortifications from each period of Lviv's history at least in fragments, the city would become a living textbook for studying the history of fortification architecture in Ukraine.

Unfortunately, there is very little detailed information about the strengthening of the city in the IAOP materials. Not only the first fortifications from princely times were ignored. Many remnants of defensive structures from the XIV to XIX centuries were not identified or included in the text and graphic part of the work. Failure to reflect objects of fortification architecture in the scientific and design documentation of the IAOP threatens to completely lose their remains in the near future.

Completely ignored in the materials of the IAOP fortification of the XIX century. Only the Citadel complex is represented. However, it should be noted that the Austrian authorities planned the construction of a large complex of external forts around the suburbs and on the suburbs themselves (Fig. 16). Some of them were built and for some time performed their defensive functions. Their balances should also be identified and offered for registration as newly discovered objects.

The development of buildings in the areas of former suburbs is not covered in detail in the analyzed documentation. But these are the areas that were filled in the past with very important defence facilities and functions. The nature of the development of blocks had a different form depending on the time of the site's appearance and its connections with fortifications. The sites themselves developed in leaps and bounds along with the movement of the lines of urban fortifications further from the city centre. The construction of a new, more modern line of fortifications and its extension made it possible to intensify development in areas that were previously outside the fortified territory. Lviv experienced six such major stages of urban transformation associated with the development and modernization of fortifications from the XIII to the XIX centuries. This relationship between the development of fortification systems and the architectural, spatial and planning structure is key to understanding the urban history of the city. Without a detailed reconstruction of the phases of construction of fortifications, it is impossible to correctly navigate the nature of changes in the architectural, compositional and planning structure of the city.

For example, after the removal of fortifications far beyond the central district of the city, active changes and intensification of the construction of residential and public development in the areas of the former suburbs, which were previously dominated by large monastic complexes and courtyards-palaces of the nobility and wealthy burghers. Neighbourhoods here began to change the nature of their urban planning structure, evolving from the form of a quarter with a palace and a garden-park on the suburbs (there were dozens of them in Lviv on the suburbs) to the form of a quarter densely built up during the XVIII-XIX centuries by ordinary buildings. Today, in the wilds of such neighbourhoods, if you carefully study them, you can find hidden relics of the original history of the city.

A network of neighbourhoods arranged in thick lace around the city centre also features coded individual pages of unique urban history. The historical and architectural reference plan of the city is just the scientific documentation that should reveal all the specific features of different – time urban planning formations-including the appearance and development of fortification lines, changes in the hydrography of the territory, changes in the planning network of streets, changes in the nature of the development of each quarter.

Fortifications were a particularly important element in the development of the urban structure in the past. Their complexes most influenced the planning structure of the city. Fortifications often dictated the development of the city in one direction or another. Therefore, the theoretical reconstruction of the stages of development of urban defence systems is the most important task for the historical and architectural reference plan.

From a scientific point of view, it looks like a very important task – preliminary determination of the full list of monuments of fortification cultural heritage from various urban planning stages of Lviv's development. Drawing up such a list has both historical, architectural, and monument protection significance. The next step should be to identify the list of objects on the historical plans and on the plan of the modern city would allow us to identify the exact places of their localization and develop proposals for their protection and inclusion in the State Register of immovable monuments of Ukraine. In the scientific interpretation of fortification objects, it is very important to consider them not alone, but as specific defensive complexes from a certain time of creation and as objects with individual defensive features and purpose, characterized only by their inherent architectural forms.

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ІСТОРИЧНІ ФОРТИФІКАЦІЇ В АРХІТЕКТУРНО-МІСТОБУДІВНІЙ СТРУКТУРІ ЛЬВОВА (НА МАРҐІНЕСАХ ДОКУМЕНТАЦІЇ "ІСТОРИКО-АРХІТЕКТУРНИЙ ОПОРНИЙ ПЛАН ЛЬВОВА")

Анотація. *Давні міські укріплення є одним із специфічних видів оборонної архітектури. Разом із будівлями замків, кварталів міської житлової забудови, монастирських комплексів та польових оборонних споруд вони формували особливий вид архітектурно-містобудівних об'єктів. Під час їх будівництва часто поєднувалося вміння як архітектора, будівельника, так і військового інженера. Не так багато об'єктів міської оборонної архітектури дійшло до нашого часу. Тому кожен збережений сьогодні фрагмент міських оборонних мурів, земляних фортифікацій, як правило, є цінним документом своєї епохи і потребує дбайливої охорони і збереження. Міські фортифікації (на відміну від укріплень замків чи фортець) були об'єктами першочергових ліквідацій у процесі розвитку міст. Їх збереглося в Україні справді дуже мало, тому їх збереження та вивчення є справою надзвичайної ваги. Львів є унікальним містом на карті України власне з погляду розвитку міських укріплень.*

Виконано аналіз відображення об'єктів та пам'яток оборонного будівництва в науково-проектній документації "Історико-архітектурний опорний план міста Львова". Висвітлено дані про етапи розвитку укріплень Львова. Особливу увагу звернено на залишки фортифікаційних споруд, які збереглися в археологічній формі. Їх виявлення, збереження та консервація і відзнакування є важливим завданням для сучасних містобудівних проектів. У роботі висловлено гіпотези про окремі досі неідентифіковані елементи фортифікаційних споруд XVII–XVIII століть. У висновках особливий наголос зроблено на необхідності проведення спеціального наукового дослідження з детальної реконструкції всіх етапів розвитку оборонних поясів довкола середмістя та передмість Львова.

Ключові слова*: фортифікації, Львів, XIII–IX ст., консервація, містобудівна документація.*

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SCIENTIFIC PROFESSIONAL PUBLICATIONS OF INSTITUTE OF ARCHITECTURE AND DESIGN AT LVIV POLYTECHNIC NATIONAL UNIVERSITY (Part II. Statistical observation)

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Astract. The article presents the results of statistical observation of scientific professional publications of the Institute of Architecture and Design of the Lviv Polytechnic National University: Bulletin of the Lviv Polytechnic National University and the English scientific journal "Architectural Studies" for the periods 2007–2021 and 2015–2021, respectively. The analysis of the main thematic categories, issues and articles of both journals, the composition and affiliation of editorial board members and authors of works is carried out. The main directions of improving the periodicals of the Institute of Architecture and Design and prospects for their development are determined.

Key words: scientific professional publication, collection of scientific papers, Bulletin of the Lviv Polytechnic National University, Architectural Studies, scientific activity, Institute of Architecture and Design, scientometric databases.

Problem statement

Interest in unlocking the potential of scientists is one of the indicators of the prestige of a country and a scientific institution in the modern information world. Creating opportunities for recording and distributing creative heritage is the most important vector of development of any scientific school. Our own periodicals have proven themselves well as a method of stimulating the creative search of teachers and students during the educational process. Lviv Polytechnic National University has been developing this field for almost a century, and recently it has been doing so in accordance with international trends and requirements. Against the background of a general drop in the number of scientific publications in

professional publications, the share of articles published in scientific publications of the Institute of Architecture and Design is steadily growing.

Scientific publications, with their leading scientific and educational function, are at the same time not an obvious source of social statistics. Thanks to studies of the percentage distribution of research interests of the community, gender identity of authors, etc., it is possible to study the uniformity and proportionality of disclosure of all areas of the industry, identify those that require optimization and reform and determine the vector of further activities. Such a review will help to determine priorities in the formation of subsequent issues of journals and adjust the editorial policy of scientific publications. The observation was made on the basis of an analysis of the issues of the Bulletin of the Lviv Polytechnic National University Series: "Architecture" for 2007–2021 and the scientific journal "Architectural Studies" for the entire period of its existence (from 2015 to 2021) and the works published in them during this time.

Analysis of recent publications and research

The number of scientific publications in the country reflects the research activity of scientists and the country's place in the world scientific community. For the scientific community, this is an important communication tool. According to the reports of the Ukrainian Institute of scientific and technical expertise and information, Ukrainian authors in 2019 published 170.5 thousand articles or 467 articles every day in scientific journals, in 2020 their number decreased to 148.6 thousand, or 407 articles/day (Pisarenko T. V., Kuranda T. K. et al., 2020), (Pisarenko T. V., Kuranda T. K. et al., 2021). This was influenced, in particular, by the rapid reduction of scientific organizations and researchers. The number of researchers from 133.7 thousand people in 2010 to 2020 decreased to 51.4 thousand, and compared to 2014 it halved. In contrast to global trends in attracting and motivating young scientists, the rate of leaching of highly qualified personnel from the scientific and innovative sphere is growing in Ukraine. The trend of reducing the number of researchers leads to a gradual degradation of scientific potential and creates the basis for a significant technological lag in the country (Pisarenko T. V., Kuranda T. K. et al.2021, P. 13). The dynamics of the number of printed works in scientific professional publications of Ukraine in the period 2016–2020 is derived on the basis of official data and scientific and analytical notes (Pisarenko T. V., Kuranda T. K. et al.2021, P. 16) (fig.1).

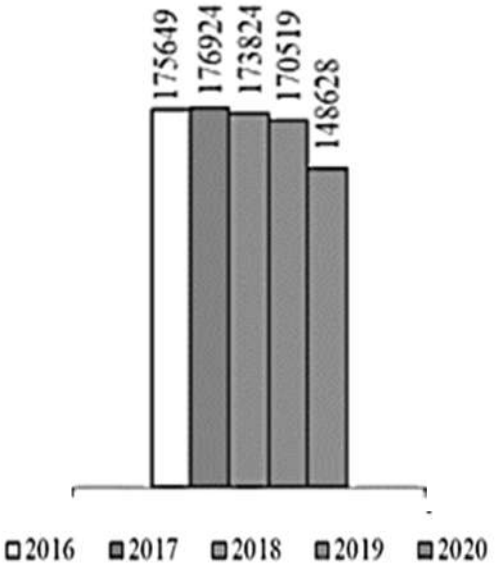

Fig. 1. Dynamics of the number of publications in scientific professional publications of Ukraine in the period 2016–2020

The share of scientific articles by Ukrainian authors in journals included in the Scopus database of the previous year was less than 9 % of their total number (SCOPUS Database). Therefore, the vast majority of domestic articles continue to be published in periodicals of professional scientific publications of Ukraine. There are almost no studies devoted to the problems of domestic scientific periodicals in the field of architecture. Therefore, the authors decided to continue the series of articles that explore the history, problems and prospects of professional publications of the institute (Cherkes B. S., Shuldan L. O., 2018).

Results and discussion

The list of Ukrainian professional publications is quite extensive. After all, it is periodicals that quickly respond to industry news, discuss the most relevant topics on their pages, present current research, describe innovative methods, consider work experience, and much more. Recognition of professionalism becomes a necessary condition for the existence of a scientific publication. Strict rules for including journals in the list of professional journals should help improve the quality of scientific publications. Periodicals of scientific professional publications of Ukraine classified as "A" and "B" are considered permanently included in the list if their status does not deteriorate. (List of scientific professional publications of Ukraine, 2021).

As of 06.29.2021, 1.199 periodicals of Ukraine were recognized as specialized, and only 6 of them were specialized in the field of architecture in the speciality 191. They can publish the results of dissertation research for the degree of Doctor of Architecture, Candidate of Architecture and degree of Doctor of Philosophy. The list of architectural journals awarded Category "B" is shown in Table 1. Two of them are publications of the Institute of Architecture and Design of the Lviv Polytechnic National University. The first is the Bulletin of Lviv Polytechnic National University – one of the oldest scientific traditional magazines, founded in 1964, which gave birth to the eponymous magazine of the Series: "Architecture" *(SA*). Among domestic architectural publications, a special place is occupied by the scientific journal "Architectural Studies" *(AS)*, an English-language publication that very quickly became authoritative in the Ukrainian and foreign architectural community (Fig. 2, Fig. 3).

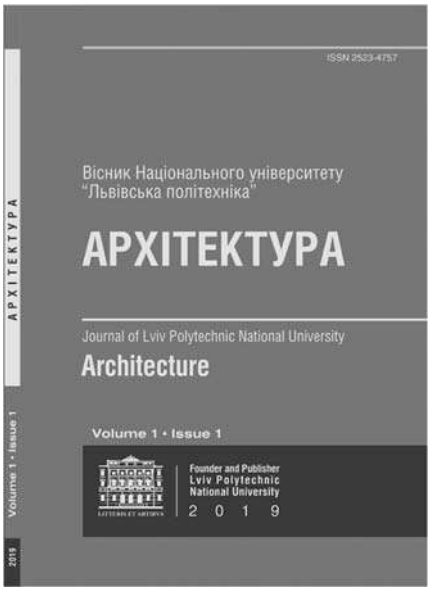

Fig. 2. Cover of the Bulletin of the State University "Lviv Polytechnic" Series: Architecture

Fig. 3. Cover of the scientific journal "Architectural Studies" Lviv Polytechnic National University

They were included in the list based on Appendix 3 to the order of the Ministry of Education and Science of Ukraine No. 420 dated 15.04.2021. This is not the first time that magazines have been recognized as professional. The Bulletin of the Series: "Architecture" has been recognized for 25 years, and "Architectural Studies" has been recognized since its foundation. The previous period of stay in the

list for SA lasted from 22.04.2011 to 12.03.2020, for AS – from 22.12.2016 to 12.03.2020. After obtaining the status of professionalism of a certain category, journals are necessarily subject to monitoring by the Ministry of Education and Science regarding their compliance with the requirements.

One of the conditions for entering journals in the list of Ukrainian professional publications is the indexing of "Architectural Studies" (index: ICV 2017: 64.59, ICV 2018: 79.76, ICV 2019: 96.03), and subsequently the Bulletin (ICV 2019: 72.19, ICV 2018: 47.06) in the scientometric database Index Copernicus, placement of full texts of scientific publications in search engine Google Scholar and timely inclusion of journal Issues in the electronic catalogue of scientific periodicals of Ukraine (National Library of Ukraine named after V. I. Vernadsky). This status must be updated and confirmed annually. The strategic goal of the editorial board is to increase the status of journals, index them in the scientometric databases Scopus and Web of Science, and, consequently, move from Category "B" to Category "A".

Table 1

Sample of scientific professional periodicals of Ukraine in the field of science – architecture, specialty – 191*

Publication title / Founder (Co-founders)	ISSN	Date of inclusion, update (making changes) Category	Databases
Architectural Studies Lviv Polytechnic National University	ISSN (Print) 2224-0977	15.04.2021 **Category "B"**	Google Scholar, Scientific Periodicals of Ukraine (National Library of Ukraine named after V. I. Vernadsky), Index Copernicus
Bulletin of the Lviv Polytechnic National University *(Series "Architecture")* Lviv Polytechnic National University	ISSN (Print) 2523-4757	15.04.2021 **Category "B"**	Google Scholar, Scientific Periodicals of Ukraine (National Library of Ukraine named after V. I. Vernadsky), Index Copernicus
Urban planning and territorial planning Kyiv National University of Civil Engineering and Architecture	ISSN (Print) 2076-815X ISSN (Online)2522-9206 (online)	26.11.2020 **Category "B"**	Google Scholar, Scientific Periodicals of Ukraine (National Library of Ukraine named after V. I. Vernadsky), Index Copernicus
Scientific Bulletin of Construction Kharkiv National Technical University of Construction and Architecture, Kharkiv regional territorial branch of the Academy of Construction of Ukraine	ISSN (Print) 2311-7257	24.09.2020 **Category "B"**	Research Bible, DRJI, CrossRef, Google Scholar, Scientific Periodicals of Ukraine (National Library of Ukraine named after V. I. Vernadsky)
Problems of theory and history of architecture in Ukraine. Odessa State Academy of construction and architecture	ISSN (Print) 2519-4208	28.12.2019 **Category "B"**	Google Scholar, Scientific Periodicals of Ukraine (National Library of Ukraine named after I. Vernadsky), Index Copernicus
Modern problems of architecture and urban planning Kyiv National University of Civil Engineering and Architecture	ISSN (Print) 2077-3455	26.11.2020 **Category "B"**	Google Scholar, Scientific Periodicals of Ukraine (National Library of Ukraine named after V. I. Vernadsky)

** The selection was made by the authors*

An important stage in the promotion of these scientific professional publications was the creation of websites in compliance with the requirements for their design (Bulletin of the Lviv Polytechnic National University, Series "Architecture", 2021), (Architectural Studies, 2021). Today, websites are maintained in two languages (Ukrainian and English) and have the following main structural blocks: editorial board; instructions for authors; instructions for reviewers; review process; publishing ethics; contacts; archive of issues. Here you can find information about the issues considered in the publication; frequency of issues, ISSN (International Standard Serial Number) - it identifies the periodical regardless of the country of origin, registration in the Accreditation Commission of Ukraine, DOI index (digital object identifier) – it is assigned by the CrossRef agency. The journal archive should be updated on time, and the content of issues and metadata about publications should appear together with the release of the current professional publication.

Periodicals formed by them are an indicator of the quality of the scientific level of institutions. The Lviv Polytechnic National University has established 29 scientific journals, the printing of which is provided by the modern publishing and printing complex of the publishing house of Lviv Polytechnic National University. The number and statuses of journals, as well as the importance and thoroughness of the materials published in them, contributed, in particular, to the fact that in 2021 Lviv Polytechnic entered the top 25 best universities in the world in two areas: Co-Publications with Industrial Partners, International Joint Publications according to the U-Multirank rating.

Publications in professional journals are a criterion for evaluating the scientific work of institutes and individual scientists and teachers. Both journals are headed by the director of the Institute of Architecture and Design, Professor, Doctor of Architecture, full member of the Ukrainian Academy of Architecture and the Saxon Academy of Arts B. Cherkes, who determines the current policy and development prospects. The editor has to work to expand the issues of journals, and new authors and those who have already published their works have sent their articles to the next issues. In addition, if necessary, they attract reviewers – leading experts on narrow professional topics, to provide authors with constructive comments on their articles. The editor-in-chief invited well-known scientists in the field of architecture and urban planning to cooperate and create a reliable editorial commission and council (Table 2).

The authors of the article conducted a study of the composition of editorial boards of these architectural publications in dynamics. In previous years, in the editorial board of Architectural Studies, among 20 respected scientists, men accounted for 75 % and, accordingly, women only 25 %. Today, the editorial board and editorial council of this periodical include 14 specialists (Table 2), 43 % of whom are women (Fig. 4). A positive trend is also observed in the changes in the editorial board of the Bulletin of Lviv Polytechnic National University, Series "Architecture", where out of 16 specialists, women made up 19 %, and from 2021 out of 15 members (Table 2) it is already 40 % (Fig. 5).

Over the years, the editorial board of Architectural Studies has collaborated with representatives of foreign institutions: New York and Princeton Universities (the USA), Milan Technical University (Italy), Vienna Technical University (Austria), Delft Technical University (Netherlands), Cambridge (Great Britain) University; Krakow Polytechnic University (Poland), Darmstadt Technical University and the University of Stuttgart (Germany). In 2018–2020, there were 50 % of scientists from foreign institutions. The current editorial staff retains this ratio.

However, the number of members of the editorial board of the Bulletin, which were represented by foreign scientific institutions, was 37.5 %. Now their representation has been increased to 47 %. The geography of editors' affiliations has also been expanded: Technical University Darmstadt, Germany; Vienna Technical University, Austria; Cambridge University, Great Britain; Jagiellonian and Krakow Economic Universities, Poland; Technical University "Krakow Polytechnic", Poland; University of Groningen, Holland.

Scientists working at their main place of work in Ukrainian higher education institutions: Kharkiv National University of Construction and Architecture and Kyiv National University of Construction and Architecture are invited to join the team of experts that determines the editorial policy of the publication. Thus, in the editorial boards, the share of foreign and domestic scientists who are not affiliated with Lviv Polytechnic National University is 71 % *(AS*) and 60 % (*SA*) respectively (Fig. 6, 7).

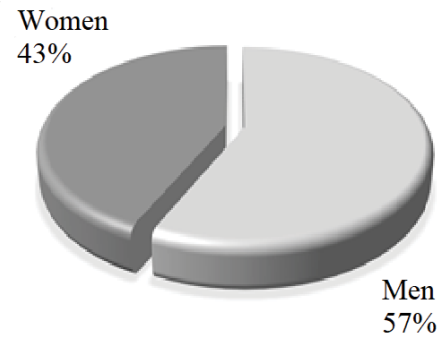

Fig. 4. Gender ratio of women to men among embers of the editorial board of the journal "Architectural Studies" (as of 2021)

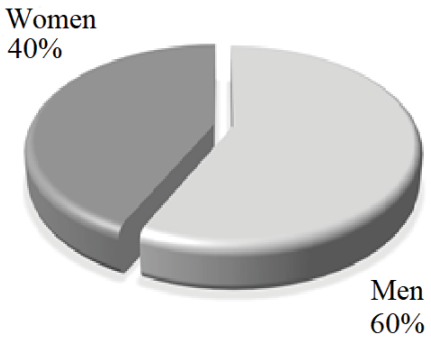

Fig. 5. Gender ratio of women to men among embers of the editorial board of the Bulletin of Lviv Polytechnic National University, Series "Architecture" (as of 2021)

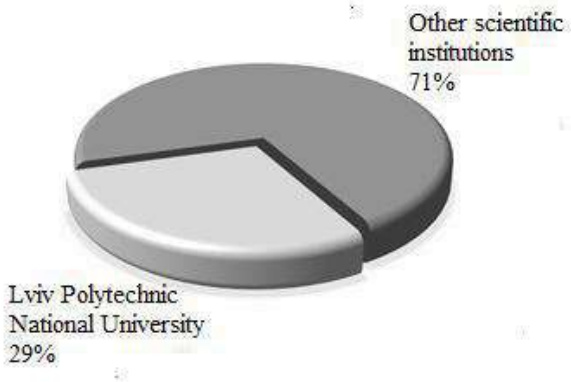

Fig. 6. Ratio of members of the editorial board of the journal "Architectural Studies" to scientific institutions

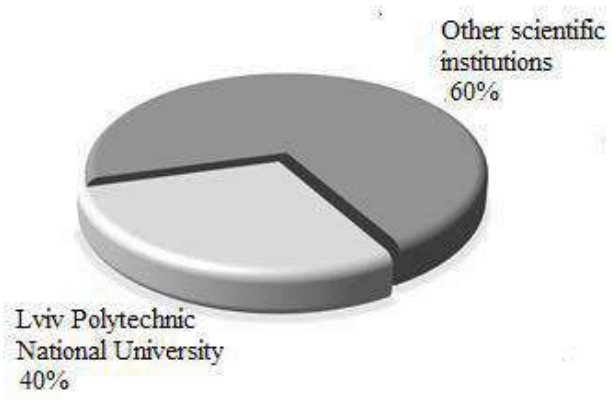

Fig. 7. Ratio of members of the editorial board of the Bulletin of Lviv Polytechnic National University, Series "Architecture" to scientific institutions

The Institute of Architecture and Design employs more than 160 scientists. 70 % of them published their articles in our scientific publications. A total of 818 articles were published during the sample period, with 342 authors participating in the creation. The number of articles in each issue varies, with an average of 24. Throughout the entire time, there is a positive trend in the quality of publications.

The number of scientists-correspondents of the studied publications by the gender ratio of men to women reflects the situation in the scientific field of Ukraine, where in 2020 45.4 % of researchers were women (Pysarenko T. V., Kuranda T. K. et al., 2021, P. 15). The authors of articles published in Bulletin and Architectural Studies were also divided into two almost equal groups: 51.2 % are men, 48.8 % are women (Fig. 8). During the study period, the percentage of female authors increased annually, which indicates equal access to the scientific sphere of life. The number of articles by authorship was divided in

almost equal parts: 30.9 % of publications were prepared by men, 31.7 % – by women, 37.4 % – in collaboration with several authors (Fig. 9). This trend continues in both publications.

Table 2

Composition of editorial boards and councils of periodical professional publications Institute of Architecture and Design at Lviv Polytechnic National University

<table>
<tr><td colspan="4">Editor-in-chief,
director of the IAD, Professor, DArch Bohdan Cherkes</td></tr>
<tr><td colspan="2">Editorial board journal
“Architectural studies”</td><td colspan="2">Editorial board
Bulletin of Lviv Polytechnic National University.
Series: “Architecture”</td></tr>
<tr><td colspan="2">Editorial council</td><td colspan="2">Editorial council</td></tr>
<tr><td colspan="2">1</td><td colspan="2">2</td></tr>
<tr><td>Technical University Darmstadt, Germany</td><td>DArch, Prof. Werner Durth</td><td>Technical University Darmstadt, Germany</td><td>DArch, Prof. Werner Durth</td></tr>
<tr><td>Technical University of Vienna, Austria</td><td>DArch, Prof. Andreas Hofer</td><td>Technical University of Vienna, Austria</td><td>DArch., Prof. Andreas Hofer</td></tr>
<tr><td>Technical University of Vienna, Austria</td><td>DArch, Prof. Caroline Jäger-Klein
Caroline Jäger-Klein</td><td>Technical University of Vienna, Austria</td><td>DArch, Prof. Caroline Jäger-Klein</td></tr>
<tr><td>University of Cambridge, United Kingdom</td><td>DArch, Prof. Sebastian Macmillan</td><td>University of Cambridge, United Kingdom</td><td>DArch, Prof. Sebastian Macmillan</td></tr>
<tr><td colspan="2">Executive Secretary</td><td>Jagiellonian and Krakow Universities of Economics, Poland</td><td>PhD, Prof. Jacek Purhlya</td></tr>
<tr><td>Lviv Polytechnic National University, Ukraine</td><td>PhD, Assosiate Prof. Larysa Shuldan</td><td colspan="2">Executive Secretaries</td></tr>
<tr><td colspan="2">Editorial board</td><td>Lviv Polytechnic National University, Ukraine</td><td>PhD, Assosiate Prof.
Shuldan L.
PhD, Assistant
Yasinsky M.</td></tr>
<tr><td>Lviv Polytechnic National University, Ukraine</td><td>DScTech, Prof. Mikola Gabrel</td><td colspan="2">Editorial board</td></tr>
<tr><td>Kyiv National University of Civil Engineering and Architecture, Ukraine</td><td>DArch, Prof. Yulia Ivashko</td><td>Lviv Polytechnic National University, Ukraine</td><td>DScTech, Prof. Gabrel M.</td></tr>
<tr><td>Lviv Polytechnic National University, Ukraine</td><td>DArch, Prof. Halyna Petryshyn
Halyna Petryshyn</td><td>Kyiv National University of Civil Engineering and Architecture, Ukraine</td><td>DArch, Prof. Ivashko Yu.</td></tr>
<tr><td>Kharkiv National University of Civil Engineering and Architecture, Ukraine</td><td>DArch, Prof. Elena Remizova</td><td>Lviv Polytechnic National University, Ukraine</td><td>DArch, Prof. Petryshyn H.</td></tr>
<tr><td>Kyiv National University of Civil Engineering and Architecture, Ukraine</td><td>DArch, Senior Lecturer Nadiya Antonenko</td><td>Kharkiv National University of Civil Engineering and Architecture, Ukraine</td><td>DArch, Prof. Remizova O.</td></tr>
<tr><td>New York and Princeton Universities, the USA</td><td>DArch, Prof. Jean-Louis Cohen</td><td>Kyiv National University of Civil Engineering and Architecture, Ukraine</td><td>DArch Antonenko N.</td></tr>
</table>

Continuation of Table 2

1		2	
Technical University "Krakow Polytechnic", Poland	DArch, Prof. Boguslav Podhalański	*Technical University "Krakow Polytechnic", Poland*	DArch, Prof. Boguslav Podhalański
University of Groningen, Holland	DArch, Prof. Cor Wagenaar	*University of Groningen, Holland*	DArch, Prof. Cor Wagenaar

The next step of the research was to search for materials that best reflect the situation in architectural and urban planning professional publications and, accordingly, determine the most popular topics of scientific research. For statistical analysis, three main categories were taken that correspond to the rubrication adopted in previous years: architecture of buildings and structures, history and theory of architecture, and urban planning. The dominant direction of both publications in total is, in fact, the architecture of buildings and structures, to which almost half of the publications are devoted – 49.0 %, the second position (33.4 %) is occupied by historical and theoretical surveys. Urban planning, as a more specific industry, is represented in 17.6 % of articles (Fig. 10). If we provide data separately for each of the publications, then for Bulletin the topic of architecture of buildings and structures remains the leader (52.7 %), and in Architectural Studies the first position is occupied by articles on the history and theory of architecture (41.8 %). Among the not permanent, but popular topics, the anthology of the Lviv architectural school, architectural structures and architectural physics, methodological approaches to special education take place. The number of categories in journals varies from 1 to 9.

An analysis of the number of authors by country of origin yielded the following results. The main number of articles created by domestic authors is 94.3 % (Fig. 11), which is the expected result due to the target audience and geographically oriented topics of the main number of publications of the studied publications. Among Ukrainian institutions, most publications were submitted by representatives of Lviv Polytechnic National University (84.1 %), which confirms the weight of their periodicals as a mouthpiece of scientific ambitions in the professional information space. 15.9 % of articles are the works of authors from other reputable institutions: the National Academy of Sciences of Ukraine, the National Union of Architects of Ukraine, the National Academy of Arts of Ukraine, the Kyiv National University of Construction and Architecture, Kharkiv National University of Construction and Architecture, Ivano-Frankivsk National Technical University of Oil and Gas, Lviv State Agrarian University, Vinnytsia National Technical University, Odesa State Academy of Construction and Architecture, Poltava National Technical University named after Yu. Kondratyuk, National University of Water Management and Nature Management (Rivne), National Aviation University (Kyiv), Prydniprovska State Academy of Construction and Architecture, Research Institute of Monument Protection Research (Kyiv), Kharkiv National Academy of Urban Economy and others.

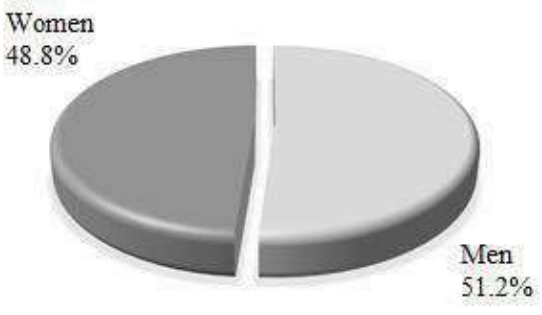

Fig. 8. Gender ratio of women to men among authors of works in scientific publications of the Institute of architecture

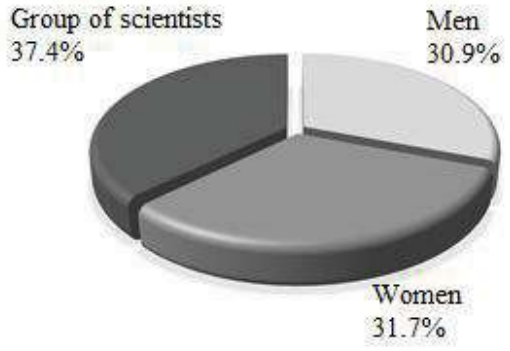

Fig. 9. Ratio by gender and number of authors of the publication among the authors of works in scientific publications of the Institute of architecture

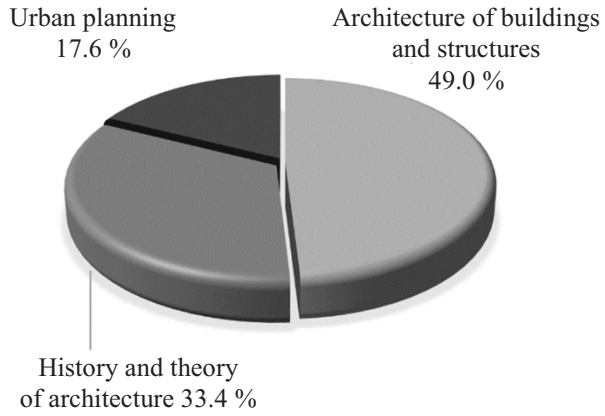

Fig. 10. Ratio by thematic direction of scientific works in accordance with the three main categories identified

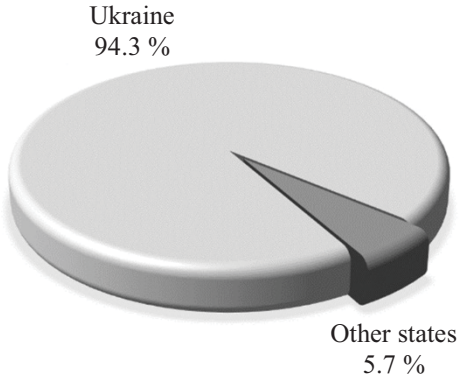

Fig. 11. Ratio by country of origin of authors of publications

The share of foreign authors of both publications is on average 5.7 % (Fig. 11). It is growing every year, which indicates a positive trend in the integration of these Ukrainian publications into the world scientific space. Moreover, in the scientific journal "Architectural Studies", the percentage of research by foreign authors is 12.4 %. Both Bulletin and Architectural Studies publish individual works of scientists from Poland, Germany, Austria, the Czech Republic, Great Britain, the USA, and Canada, as well as in collaboration with domestic colleagues, which indicates the active international cooperation of the Institute of Architecture and Design.

Several criteria that are important in achieving the strategic goal set by the Institute's staff and the editorial board headed by the editor-in-chief are also investigated. This is indexing in the scientometric database Scopus or Web of Science, and, consequently, the transition from Category "B" to Category "A" in the list of professional publications in Ukraine. Improving the status of journals is associated with compliance with international standards for publications. Today, the average volume of articles is almost 7 pages. It is necessary to make it typical, similar to the best international magazines, increasing it to 10–15 pages. The authors refer to approximately 8–10 references in their articles. The recommendations for the development of scientific journals suggest standardizing the number of references to 45 ± 15 for experimental studies and up to 90 ± 20 for review articles, as well as carefully adhering to international bibliographic standards. The share of articles of the studied publications of a review nature is 48 %. Publications containing experimental studies – 43 %, and scientific reports – 9 % of the total number of published works. An increase in the percentage of publications covering experimental research results would contribute to the growth of popularity and international recognition of journals.

Magazines are published twice a year. In addition to regularity, scientometric databases recommend publishing volumes consisting of 4 issues of the journal per year with end-to-end page numbering of all issues of the volume. The selection of manuscripts will bring the level of the journal to international standards. In particular, quarterly monitoring of the number of external links to journal articles, especially in the Web of Science, Scopus and Google Scholar databases, will allow you to choose in the future for publication manuscripts of the topic that received the highest number of links.

The statistical review conducted by the authors of the article for two publications of the Institute of Architecture and Design of Lviv Polytechnic National University allowed us to determine the prospects and outline the immediate plans of editorial boards in the context of reforming science and higher education and increasing the requirements for scientific periodicals. Changes and development

of journals are not a targeted action, but a constant process and painstaking work that requires stimulation and real support of journal editors from both the university management and representatives of the Ministry of Education and Science of Ukraine.

Conclusions

The development of periodicals is a mandatory policy vector for a successful scientific institution that strives for the internal development of its specialists and the expansion of the network of international relations. The Lviv Polytechnic National University actively supports this branch of scientific and educational activities, thanks to which it entered the international rating U-Multirank in the top 25 best universities in the world in two areas: Co-Publications with Industrial Partners, International Joint Publications.

As of 06.29.2021, 6 publications were recognized as professional in the field of architecture in speciality 191 in Ukraine. Two of them are publications of the Institute of Architecture and Design of Lviv Polytechnic National University: Bulletin of Lviv Polytechnic National University, Series "Architecture" and "Architectural Studies". Their further stay on the list is determined by the mandatory annual monitoring of the Ministry of Education and Science on compliance with the requirements. One of the requirements is the timely placement of full texts of scientific publications in the search engine Google Scholar and entering issues of journals in the electronic catalogue of scientific periodicals of Ukraine, as well as annual indexing in the scientometric database Index Copernicus.

Statistical observation conducted by the authors will help to meet the requirements, determine priorities in the formation of subsequent issues of journals, adjust the editorial policy of scientific publications and improve their status. The study of the issues of the Bulletin for 2007-2021 and Architectural Studies for 2015–2021 allowed us to draw some conclusions and generalizations, identify positive developments and outline prospects for further work.

More than 60 % of scientists who are not affiliated with Lviv Polytechnic National University are invited to join the team of experts that determines the editorial policy of the publication. About 50 % of the members of editorial boards are outstanding scientists representing foreign scientific institutions. The share of foreign authors of both publications is growing, averaging 5.7 %. Moreover, in the scientific journal "Architectural Studies", the percentage of research by foreign authors is 12.4 %. Almost a third of the authors (27 %) are affiliated with other Ukrainian and foreign scientific institutions. This indicates the active integration of the Lviv School of Architecture into the world scientific community. In the future, it is necessary to encourage the involvement of foreign authors in publications in journals; set a goal to increase the share of foreigners among authors by 10–15 % annually.

The average ratio among the authors of articles was: 51.2 % – men, 48.8 % – women. The number of women involved in editorial boards has significantly increased – from 22 % to 41.5 %. Today, almost parity has been achieved both among the members of the editorial board and the authors of articles, which indicates accessibility to the scientific sphere of life.

The number of categories in journals varies from 1 to 9. The dominant direction of both publications in total is, in fact, the architecture of buildings and structures, to which almost half of the publications are devoted – 49.0 %, the second position (33.4 %) is occupied by historical and theoretical surveys. Urban planning is represented in 17.6 % of articles. The average volume of articles is about 7 pages, and the number of links to literary sources is 8–10. The share of articles of the studied publications of a review nature is 48 %. Publications containing experimental studies account for 43 %, and scientific reports – 9 % of the total number of published works. These indicators require correlation with international standards for scientific publications. The strategic goal of the editorial board is to

increase the status of journals, index them in the scientometric databases Scopus and Web of Science, and, consequently, move from Category "B" to Category "A".

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НАУКОВІ ФАХОВІ ВИДАННЯ ІНСТИТУТУ АРХІТЕКТУРИ ТА ДИЗАЙНУ НАЦІОНАЛЬНОГО УНІВЕРСИТЕТУ "ЛЬВІВСЬКА ПОЛІТЕХНІКА" (Частина ІІ. Статистичне спостереження)

Анотація. *Фаховими в галузі архітектури (спеціальність 191) у 2021 році в Україні визнано 6 видань, два з них є науковими журналами Інституту архітектури та дизайну Національного університету* "*Львівська політехніка*" – "*Вісник*" *Національного університету* "*Львівська політехніка*" *серія* "*Архітектура*" *та англійськомовний часопис* "*Architectural Studies*" *("Архітектурні дослідження").*

Для визначення пріоритетів у формуванні наступних номерів цих журналів, коригування редакційної політики наукових видань та підвищення їх статусу проведено розгорнуте статистичне дослідження. Опрацюванню підлягали випуски Вісника за 2007–2021 рр. та Architectural Studies за 2015–2021 рр. До вибірки увійшли 818 статей 342 авторів. Понад 70 % усіх науковців Інституту архітектури та дизайну опубліковували в них результати своїх досліджень. Відзначена позитивна динаміка якості статей. Кількість тематичних розділів вуномерах журналів коливається від 1 до 9. Панівним спрямуванням досліджень є архітектура будівель і споруд (49,0 %). Друге позицію займають історико-теоретичні архітектурні вишукування – 33,4 %. Містобудування представлено в 17,6 % публікацій. Частина статей

оглядового спрямування становить 48 %. Середній обсяг статей – близько 7 сторінок, а кількість посилань на літературні джерела – 8–10. Це параметри, які слід переглянути відповідно до сучасних вимог. Відсоток експертів, які були запрошені з інших наукових установ для визначення редакційної політики періодичних видань, становить понад 60 %. Орієнтовно 50 % членів редколегій – видатні вчені, які представляють іноземні установи. Поступово збільшується частина іноземних авторів в обох періодичних виданнях, досягаючи в середньому 5,7 %. До того ж в науковому журналі "*Architectural Studies*" *відсоток досліджень зарубіжних науковців удвічі більший (12,4 %). Майже третина дописувачів (27 %) афілійована в інших українських та зарубіжних наукових установах. Ці факти відображають успішну інтеграцію Львівської архітектурної школи в українське та світове наукове співтовариство. Надалі необхідно заохочувати іноземних авторів та збільшувати відсоток їхніх публікацій на 10–15 % щорічно. Значно зросла кількість жінок задіяних у редколегіях – з 22 % до 41,5 %. Співвідношення серед авторів статей у середньому становило: 51,2 % – чоловіки, 48,8 % – жінки. Сьогодні практично досягнено паритету як серед членів редколегії, так і авторів статей, що свідчить про рівність доступності до наукової сфери життя.*

Таким чином визначено основні напрями вдосконалення періодичних видань Інституту архітектури та дизайну, атакож перспективи їх розвитку. Адже стратегічною метою редколегії є підвищення статусу журналів, їх індексації у наукометричних базах Scopus і Web of Science, а відтак і переходу з категорії "*Б*" *до категорії* "*А*" *у Переліку фахових видань України.*

Ключові слова: *наукове фахове видання, збірка наукових праць, Вісник Національного університету "Львівська політехніка", Архітектурні дослідження, наукова діяльність, Інститут архітектури та дизайну, наукометричні бази даних.*

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SCULPTURE WORKSHOP: PROFESSIONAL REQUIREMENTS FOR CREATING A LEARNING ENVIRONMENT

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Abstract. One of the necessary and mandatory conditions for high-quality professional art education is training in an environment that encourages creative work and provides the necessary level of comfort, ergonomic, technological, sanitary and technical requirements and proper organization of labour protection. Compared to other artistic professions, the working environment of a sculptor is more complex. It must be equipped with the necessary technical equipment (mostly quite large) and manual and mechanical tools, take into account functional requirements and complex technological processes, as well as provide the necessary and diverse indicators of lighting level, temperature, humidity, noise, etc. All these requirements also apply to sculpture academic workshops, where students learn the basics of the profession. Subsequently, graduates of sculpture departments use the acquired skills in their creative activities. Stating a certain degradation of the requirements for the profession of the sculptor, the authors of the publication express worries about the obvious underestimation of requirements for the workplace of a professional sculptor, which can be observed in numerous examples, and remind the reader of these basic requirements.

Key words: professional art education, educational environment, sculptor's workshop, sculpture academic workshop, workplace, professional requirements, creative activity.

Problem statement

The authors were prompted to write this article by a heated discussion in social internet networks about the feasibility of installing a monument to Xavier Mozart by Sebastian Schweikert in Lviv (Fig. 1) (Yarema, 2021). Such discussions sometimes turned into a tough theoretical confrontation (Kublikov, 2021) and, finally, it led to the creation of a petition for the dismantling of this work, which received the necessary number of votes (Krynychanka, 2021).

In addition to purely aesthetic reproaches regarding the artistic qualities of this monument, which will not be considered in this publication, S. Schweikert received a number of comments of a purely professional nature,

based on a photo of a model of the statue in his creative workshop (Fig. 2). Among other things, the author was pointed out that the full-size plaster model of the monument was made in a completely unsuitable room, with insufficient ceiling height, which, according to critics, forced S. Schweikert to tilt the statue's head, and noted that this slope was not in the sketch of the work (Fig. 3). On this basis, the author was reproached that the composition of the work arose for purely utilitarian reasons that have no connection with the creative search.

Fig. 1. Monument to Franz Xaver Mozart in Lviv (Chmil L. August 31, 2021)

Fig. 2. Sebastian Schweikert is working on a sculpture model in his studio (Lishchenko Y. May 27, 2021)

Fig. 3. Sketch model of the monument to Franz Xaver Mozart (Lishchenko Y. April 30, 2021)

Another comment that arose from the inspection of the workshop photo was the location of the figure against the wall of the room, which deprived the author of the possibility of an all-around view of the figure. This means that S. Schweikert did not see the back of the figure during its execution. This remark is related to another observation. The model could be viewed from all sides if it was located on a rotating machine, but the author performs it in an unshakable form, on the floor. And the rotation would be hindered by the figure's arm, which is supported by a cable connected to the ceiling and a pipe on the wall.

The list of comments was not limited to this, and the audience drew attention to the modest technical tools and uncharacteristic for the plastic method of forming a model. Usually, the model is created in wet clay, the plastic properties of which allow the author to make changes and adjust details during operation. But the author performed the model immediately in a cast. This material has the property of quickly setting (hardening), which significantly limits the repertoire of plastic tools of the sculptor. According to traditional technologies, gypsum is used to remove the mold from the clay model.

Thus, the list of technical and technological comments on the process of creating a model of the monument of Xavier Mozart in Lviv is quite significant. These comments were the impetus for the authors of this article to raise the topic of professional requirements for the sculptor's workshop. Whatever it was with the professional skills of S. Schweikert, but in Lviv and Ukraine as a whole, the artistic environment and educational institutions with traditions have been preserved, for which the proposed topic may be of interest.

Analysis of recent research and publications

The list of literature that mentions the requirements for the creation and operation of a creative workshop of a sculptor is not very extensive. Usually, the sculptor learns about these requirements in the course of training and using an academic training workshop equipped with experienced teachers who have acquired these skills from their teachers. Thus, these skills are passed down from generation to generation and skipping the stage of training in a professional environment gives grounds to create a sculpture at your own discretion.

One of the opportunities to get acquainted with the sculptor's workplace is provided by memorial museums created in the workshops of famous artists. There are such museums in many cities of the world, they exist in Ukraine, and in Lviv in particular. Such, for example, is the Museum of Theodosia Bryzh in Lviv, created in the room where the artist worked in 1956–1999, which is part of the Lviv National Gallery of Art named after B. Voznytsky (Muzey Teodoziyi…). Ivan Kavaleridze Museum-Workshop operates in Kyiv (Muzey-maysternya…), in St. Petersburg, there is a Memorial workshop of Mikhail Anikushyn (Masterskaya ...) and in Moscow, there is a Museum-Workshop of Anna Golubkina (Muzey-masterskaya…). There are many such museums, but it should be noted that most sculptors worked in unsuitable buildings, which could not provide a full cycle of sculpture creation and models of monumental works of sculpture had to be performed in areas adapted for this purpose. In Lviv, such needs were provided by an Experimental Ceramic and Sculpture Factory. But even a visitor to these museums can get a sufficient idea of the features of organizing the sculptor's workplace. There are rare examples when workshops were built specifically for the needs of sculptors. These are several creative workshops located on Karpatska Street in Lviv. According to an individual project, the house workshop of sculptor Alice Trepp in Switzerland was built (Bozhko O. Dom-masterskaya…).

Fig. 4. Nanni di Banco, relief showing stone and woodcarvers, c. 1416, marble, commissioned by the Guild of Stone and Woodcutters (Culotta A. The role…)

Each of the sculptors created comfortable and cosy conditions for themselves, adhering to the general requirements formed over the centuries and millennia of practical activity of their predecessors (Fig. 4). The main skills of forming a sculptor's workplace are described in a the literature, which we will refer to here. It is more about guidelines and manuals for the subject “Sculpture”, in one of the sections of which there are usually brief references to the arrangement of the workplace of the sculptor (Vasylyk, 2020),(Yakunin, Shtershtein, Telishev, Overchuk, 1970).

Objective of the article

The purpose of the publication is to convey to the reader the basic requirements for creating a sculptor's workplace and a professional creative environment. The authors pay special attention to the organization of an academic sculpture workshop, where the educational process of future professionals in the field of sculpture takes place.

Results and discussions

An important component in the education of a sculptor is the formation of the first positive impression of the educational process in the sculpture workshop. This primarily depends on the state of the workplace and its arrangement. Working in an academic workshop takes up the vast majority of the time allocated to the student's curriculum. It is in this professional environment that the student will gradually form as an independent artist. The first impression is very strong and remains in the memory for a long time, or even for life. Therefore, such a workshop should have appropriate conditions. What should a student workshop look like? First of all, unlike a personal sculptor’s workshop, a student workshop is a room for collective work. And this feature should be understood not only by students (study group) but also by the supervisor (teacher) and support staff. After all, not only specialists, professionals, but also citizens and members of the staff are brought up in an art educational institution during their studies.

The workshop should be bright and spacious. The area of such a workshop should, if possible, correspond to the number of students in the group, at the rate of 6–7 sq. m. per person. The desired workshop height is 6 m. Departing from work for its inspection, the student should not be less than at the distance in which 2–3 heights of the standing figure could fit, the dimensions of which allow the height of the workshop room.

The room should be illuminated by natural light, and the windows should be located on the north side and allow a sufficient amount of even side daylight to enter the workshop. The window in the wall should be arranged on the north side, at a height of 1.5 m from the floor, and end at the top almost under the ceiling. An important condition for the comfortable work of the sculptor is the presence in the workshop, in addition to side lighting, also upper one (Fig. 5).

Fig. 5. Sculpture workshop at the Academy of Fine Arts in Prague (Akademiya izobrazitelnykh iskusstv…)

Fig. 6. Sculpture workshop at the Academy of Arts of St. Petersburg, 1913 (Akademiya khudozhestv …)

Overhead light enters the room through a window opening in the ceiling – a light lantern. The need for overhead light is justified by the fact that in its absence, student works that will stand near the side windows will be illuminated better than works that stand further away from them. Depending on the lighting mode, the team (course) leader or master should choose a place where to equip the podium for nature, and where to put the machines for work. In addition, to protect against direct sunlight, it is necessary to provide protective curtains and blinds (Fig. 6). The workshop should also have sufficient electric lighting to work in the dark and in cloudy weather (Fig. 7).

Fig. 7. Sculpture workshop at the School of Art in Bombay, India (Inside view…)

Fig. 8. Sculpture workshop at the Dohto University in Hokkaido, Japan (Teaching)

An important requirement for determining the location of the machine is to ensure that the student has the opportunity not only to look at it up close, analyzing details and small plastic effects, but also to look at it from afar, from distant points of general view, to check the relationship between fragments, analyze the overall composition for plastic completion and generalization, coordination of hard and soft shapes, convex and concave planes, etc. The supervisor should indicate how best to arrange easels to provide comfortable lighting, create convenient conditions for each student to contemplate the model and ensure a convenient departure from their work (Fig. 8).

Heating the workshop is also important. Regardless of the type of heating devices, heat sources must be kept away from clay work and evenly heat the room to 22–24 °C. Excessive heat causes clay works to dry excessively, increases humidity in the room and creates an uncomfortable microclimate, worsening the working conditions for students.

One of the requirements for students is the correct use of the material – clay, which provides for its storage prepared for work – soaked in a clay storage facility and plastic. Do not spread it on the floor, over-dry it, or clog it with pieces of metal frame, wood, or fabric used for soaking. Special attention should also be paid to the fact that dry clay is not rubbed on the floor, which will protect the room from harmful dust particles in the air that all participants in the educational process breathe.

The workshop floor must be strictly adjusted relative to its ground level. It is especially important to observe horizontality in those places where the workbenches will stand. It is best to lay the floor with dry boards 50 mm thick. The floor can also be covered with ceramic tiles with insulation. The floor of the sculptor's creative workshop does not require painting, because in workplaces where the work is moistened, the painting will peel off. Carpets or walkways in a sculpture workshop are completely inappropriate.

The walls of the workshop should be pale gray, with a slight admixture of green. This color is neutral and does not tire the eyes. Useful in the arrangement of a sculpture workshop is the presence of classic

sculptural samples – models, masks and reliefs that make a creative working atmosphere in the workshop (Fig. 9). But these samples should be located in the part of the workshop where the sculptor goes, and not in the part where there are machines and a podium for the model. In no case should you decorate the wall that serves as the background for the sculpture that the author (master, student) is working on.

Fig. 9. Sculpture workshop at the Pennsylvania Academy of the Fine Arts (Sculpture facilities)

Fig. 10. Brancusi's sculpture workshop in Paris (Brancusi's Studio…)

A clay storage room should be provided in the workshop. It is arranged in a concrete pit, on the floor, with a capacity of 3–4 m^3 of clay. Such a clay storage room must be insulated to prevent the spread of moisture in the workshop. It should be covered with a roof fitted to the floor level. It should be tightly closed, isolating wet clay from the room, ensuring that it does not dry out, and the room is protected from the spread of moisture. To do this, the clay should additionally be covered with plastic wrap. A sculptor who loves art mixes clay only once in his life when he delivers it to the workshop. In the future, you just need to make sure that it does not dry out. You should ensure that the clay is not clogged with gypsum fragments during molding, wood and metal during the dismantling of the frame, and pieces of fabric or film that the sculptor uses to wrap (cover) the clay model.

Next to the clay storage facility, you need to place a washbasin with a soap dish, a cabinet with a mirror and a towel. A separate requirement when installing a washbasin is to place a clay collector under it, which ensures that the drain sewer is not clogged with clay. In such a clay collector, clay will settle, which is washed off from the hands of the sculptor.

It is much more difficult to keep the clay moist in the figure itself, but this problem is easily solved if the sculptor is used to discipline. The easiest way is to wrap the clay model with a wet cloth and film. When carefully wrapped, the work can remain wet for a long time in working conditions. A large work is wrapped around a frame made of light but strong slats in the form of a booth, carefully covered with film. Three walls and the ceiling of such a booth are made stable, and the fourth side can be hung from top to bottom with the fabric, like an apron. In the middle of such a structure, despite the walls, a wet cloth is hung on stretched strong wires. The "apron" of the booth can be lowered and hermetically fixed to the side rails (racks) of the frame. With this method, the sculpture will be long-lasting. The constantly wet fabric eventually becomes covered with spots and mold. To prevent the spread of mold, rot and mildew, the fabric should be sprayed from time to time with a solution of potassium permanganate, tincture of strong tobacco or other antiseptic agents, or replaced with a new one.

In the workshop, it is also extremely necessary to arrange a place for the model with a chair and a clothes hanger, separated from the main space by a screen. Behind such a screen, the model will be able to change clothes, leave things and get ready for work.

The sculptor's workshop should be located on the first floor, preferably on the same level of the ground surface, which allows to conveniently bring materials – clay, gypsum, metal, wooden lumber or stone. The arrangement of the workshop floor at ground level allows you to work with impact power tools without restrictions, process stone manually with heavy blows and input (output) forms, working models and complete works of sculpture without fear of damaging them on steps or height differences. Next to the workshop, it is desirable to have a small courtyard connected to the street, where you can store currently unnecessary materials under light canopies – stone, lumber, metal for frames, etc.

Elements of the equipment of a sculpture workshop on which a round sculpture is molded (created in clay) are called machines. There are several types of machines: 1) for modelling sketches of a round sculpture; 2) for modelling a head or bust; 3) for modelling a human figure up to 1.2 m in height; 4) for modelling a human figure from 1.2 to 2.5 m. The larger the height and width of the clay model, the wider and stronger the machine will be.

In order for the sculptor to reach the high-placed parts of his work with his hand, coasters, podiums and ladders with supports (stepladders) are additionally used. The following basic requirements are set for ladders: they must be light, strong and, most importantly, stable. In the upper part, such ladders should have a shelf where the sculptor could put clay, tools (stacks, loops, hammer, etc.), and if necessary, even stand himself. To work on reliefs, you need easels, shields and podiums, stands and ladders designed for various occasions.

It is very important in the workshop to determine a place for students to relax with a small desk, 2 or 3 chairs and a hanger with separate places for everyday clothes and workwear, in which they work near the sculpture.

The main tools for modelling are, of course, the fingers and the edge of the sculptor's palm. But you can't work without different shapes of stacks, loops, hammers, rulers, compasses, squares, and the like. Sculptors usually make their own stacks from wood (boxwood, lilac, acacia), metal (brass, copper, stainless steel) or plastic (polystyrene, rubber), etc. The loop is always metal with a wooden handle. The tool should be cleaned, washed and kept clean after use. It is advisable not to wash wooden tools, but to clean them, since the wood swells from moisture. With good care, the tool serves the sculptor for a long time (Fig. 10).

Every sculptor must have some degree of knowledge of such professions as blacksmithing, locksmithing, welding and carpentry. For blacksmithing, a small utility room should be allocated, equipped with an anvil, hammer, smaller hammers, welding machine, etc. With their help, the sculptor can make a "glagol", cut or chop into pieces metal wire and everything necessary to perform the frame or repair sculptural equipment. For locksmith work, you need a machine tool, a vise, hacksaws, keys, drill, cutters.

Carpentry also requires a separate room. Shields for reliefs, auxiliary stands, podiums and wooden frame elements are produced there. In this part of the workshop, you must have a machine, planes, saws, drill, small circular saw, chisels, etc.

When the work is completed in clay, it must be immediately formed in gypsum and a gypsum working model must be made. To do this, you need a separate workshop with the necessary equipment – tables, machines, buckets, knives, whorls, stacks, dividing plates, reinforcing nets, etc.

After removing the rough or lumpy form and casting the plaster model (Fig. 11) the work is transmitted into a solid material: bronze, wood or stone (Fig. 12) or remains in the gypsum and is being prepared for tinting. This process requires completely different tools and materials – varnish, paints, wax, solvents, etc.

With the development of the latest technologies, adhesives, formoplastics, and silicones are used for molding. These processes require an electric stove to heat materials or make glue or formoplast. In this work, the sculptor works with chemicals, and therefore exhaust ventilation is extremely necessary here for ventilation of the room and a separate cabinet for storing these materials.

Fig. 11. Sculpture workshop at the Pennsylvania Academy of the Fine Arts (Sculpture facilities)

Fig. 12. Sculpture workshop at the Pietrasanta, Italy (Passion…)

A workshop for working with wood is different from a workshop for working in clay or gypsum. This workshop should be dry, well-lit with overhead and directional light. It should be equipped with machines, a dotted machine, staples, clamps and chisels.

A workshop for working in stone should be isolated from the technological processes associated with clay and wood, as stone powder clogs the wood and blunts the tool. This room must have direct access from the outside so that blocks of stone can be delivered. To do this, the workshop should be equipped with a hoist or winch. The room for work with stone should have overhead lighting and directional lighting. In the room, you should provide machines for gypsum models and stone, and a dotted machine.

In the last year of training, the diploma holder should, if possible, provide the opportunity to work in an individual workshop. Working in a separate room should be a transition link for the graduate to an individual creative workshop, where he will work after graduation. If this is not possible, it is necessary to reduce the number of students in the joint workshop to 2 or 3 people. The head of the student's diploma is his last teacher (mentor) who completes the professional, artistic, scientific and social education of a young person – a future professional artist. Organizing work in the diploma workshop is not only a matter for the manager, but also the diploma holder. The head of the thesis acts more as an adviser. The workshop, depending on the nature of the thesis, should have everything necessary for models and its implementation (from manuals, illustrative educational materials to machines, podiums, ladders, draperies) and, of course, for models.

According to the manager's advice, everything in the workshop should contribute to creating a working atmosphere and a comfortable space. Cleanliness and rational and constructive approach to business provide confidence and focus on work, study and creativity. Only a well-organized process will prevent fuss, nervousness and chaos and will ensure such a state at the final stage of training, when the graduate student is set up for creative success.

Conclusions

Discussion in social internet networks about the expediency of installing a monument to Xavier Mozart by Sebastian Schweikert in Lviv, provoked the authors to highlight the influence of the working environment in which the sculptor works, on the final result of his activity – a sculptural work that will be

installed in a certain architectural and spatial environment. It is established that the process of performing a work and its aesthetic and technological qualities largely depend on the conditions in which the sculptor works. Inattention or neglect of traditional technological procedures, ignoring established practices and requirements for the equipment of a creative workshop, which are based on the practical experience of more than one generation of sculptors, negatively affect the process of sculpture execution, bind the artist in his artistic design and limit the quality characteristics of technical execution and implementation of the work. Practical skills of forming a sculptor's workplace are formed in the course of his training, so full-fledged and high-quality equipment of an academic workshop is a necessary condition not only for his high-quality education, but also affects the artistic qualities of works.

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СКУЛЬПТУРНА МАЙСТЕРНЯ: ПРОФЕСІЙНІ ВИМОГИ СТВОРЕННЯ НАВЧАЛЬНОГО СЕРЕДОВИЩА

Анотація: *Однією з необхідних та обов'язкових умов якісної професійної мистецької освіти є навчання в середовищі, що спонукає до творчої роботи, забезпечує необхідний рівень комфорту, ергономічні, технологічні, санітарно-технічні вимоги та належну організацію охорони праці. Порівняно з іншими мистецькими професіями, робоче середовище скульптора є складнішим. Воно має бути оснащене необхідним технічним устаткуванням (здебільшого досить габаритним) і ручними та механічними інструментами, враховувати функціональні вимоги та складні технологічні процеси, а також забезпечувати необхідні та різноманітні показники рівня освітлення, температури, вологості, шуму тощо. Усі ці вимоги стосуються і скульптурних академічних майстерень, де студенти освоюють ази професії. Згодом випускники скульптурних факультетів використовують набуті навички у творчій діяльності. Констатуючи певну деградацію професійних вимог до професії скульптора, автори публікації висловлюють застереження щодо очевидного заниження планки вимог до робочого місця скульптора-професіонала, яке можна спостерігати на численних прикладах, та нагадують читачеві ці основні вимоги.*

Ключові слова: *професійна мистецька освіта, навчальне середовище, майстерня скульптора, скульптурна академічна майстерня, робоче місце, професійні вимоги, творча діяльність.*

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CHRONOLOGY AND ARCHITECTURE OF ST. PETER'S CHURCH IN PRZEMYSL FROM THE OLD RUS ERA TO THE XVII CENTURY

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Abstract. The article analyzes the complex of historical and archaeological materials related to the architecture of the lost St. Peter's Church in Przemysl (Peremyshl), which existed approximately from the XII–XIII centuries to 1679. Based on the systematization of the available data, an attempt is made to recreate the chronology of changes in the planning structure and appearance of the structure from the time of its appearance to dismantling.

Key words: Przemysl, church, archaeology, architecture, reconstruction.

Problem statement

The architecture of Przemysl (Peremyshl) of the Rurik dynasty era is mainly associated with acropolis ("dytynets") and a complex of monumental buildings associated with the power and authority presence here. At the same time, most of the urban planning space of the second most important city of the Galician principality was located eastward, where important architectural accents were also placed, first of all sacred structures. Except for the St. Nicholas rotunda; the level of interest in them and the state of research is significantly lower. Among the buildings located in this vast area was the Church of St. Peter (Peter and Paul, Apostles), for which there is both historical documentary evidence and more recent data of archaeological research, which should receive their own comprehensive interpretation.

Analysis of recent research and publications

Since the building, although in a rebuilt form, existed until the second half of the XVII century, evidence of it has been preserved in some documents, as well as image on an print from 1617/18. On the basis of these data, with the beginning of the modern era, attempts to create a historical (Pawłowski, 1869; Dobryansky, 1893), and then – in the second half of the twentieth century – the architectural interpretation of this building (Żaki, 1958; Kunysz, 1981) are being made. This interpretation, however, was based primarily on a late medieval schematic image, which shows the contours of the structures of the Jesuit complex, which appeared here in the XVII century. The new array of material appeared after archaeological excavations, which were started in 2015. (Koperski, 2017).

The historical interpretation of the temple, first of all, is connected with the clarification of its confessional affiliation and, probably, was influenced by the author's own identity. The definition of the architectural qualities of the structure was based on two iconographic sources mentioned above – a print and a scheme of the XVII century, the hypothetical variability of which, in the absence of more reliable material, was quite wide.

Highlighting outstanding issues

As a result of archaeological research, it was found that the structure had a larger size than expected, a slightly different location and has two construction periods. At the same time, it was revealed that the remains of the foundations and floors were significantly destroyed by Jesuit college built in the late Middle Ages and placed in the centre of the former temple. In addition, other sites suffered significant losses after laying sewers. In this regard, the task of interpreting opened fragments remains relevant, both in the context of the appearance of a later temple and an earlier one, which probably existed in its place since the XII century.

Purpose of the article

The article aims to reconstruct the probable chronology of the development and architectural image of the medieval St. Peter's Church in Przemysl based on the generalization of source, iconographic and archaeological material.

Results and discussion

Chronology of mentions. The first information about St. Peter's church dates back to the period of the establishment of *Latinocratic rule* on the territory of Galician Rus in the second half of the XIV century. This time is characterized by uncertainty about the political and ecclesiological status of new power and institutions in the newly conquered lands. There were several concepts of the "transition period", including the annexation of all the acquired territories to the Lublin Roman-Catholic Diocese, the strengthening Lebus bishops power, the preservation of certain separate character of Galicia, or it full incorporation into the Hungarian kingdom. If in the second half of the 1370s, from a political point of view, the Sub-Carpathian region was put on the path of direct Hungarian rule, then in an ecclesiological sense, Pope Gregory XI, with his bulls (1372, 1375), approved the concept of Latin expansion as a kind of "correction" of the church network historically already compiled here (Maciejowski, 1839). Therefore, the way was opened to seize and use all the church buildings of the Galician Metropolitanate of the Constantinople Patriarchate. This model was a repeat of the strategy already used in the Balkans after the Fourth Crusade (1204), when a significant part of Eastern Roman Empire, including Constantinople, was under the rule of Western feudal lords (Fine, 1994).

It was in this context that the interpretation of the seizure of the Rus church by the newly arrived Latin Bishop of Przemysl Eric Vinsen arose as "ecclesiam cathedralem s. t. S. Petri cum possessionibus suis de minibus schismaticorum revindicavit, revindicatam restauravit, ac restauratam sub novo titulo" ("church of St. Peter, which was in the hands of schismatics, was returned and restored under a new title") (Pawłowski, 1869). It also follows that the re-consecrated church has become a cathedral (*Łękawski 13–14*). Subsequently the building, already as a Roman Catholic one, under the administration of canonic Jan, was mentioned in 1398. In 1406, the church burned down (Orłowicz, 1917) after which the process of restoring began. After the conversion to Latin the old Orthodox Cathedral on Castle Hill, worships continued to be held here on Wednesdays (*Łękawski 13–14*). Also mentioned in the Przemysl book in 1421 (Księga Ławnicza, 1402–1445). In 1618 it was transferred to Jesuits. Two images of the structure also belong to the same time – one on a well-known print by H. Brown (1617–1618), which shows the upper parts of the building (Fig. 1), the second in the scheme of Jesuit possessions from the first half of the XVII century, which shows the contours of the plan (Fig. 2). In 1679, it was dismantled by the Jesuits, after which, on the site where it was located, the college building was erected.

Fig. 1. Construction on the print of H. Brown, beginning of the XVII century

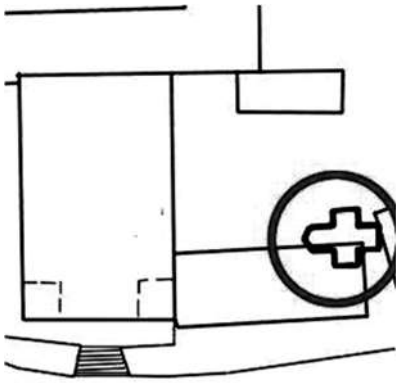

Fig. 2. Outline of the plan in the drawing of the first half of the XVII century

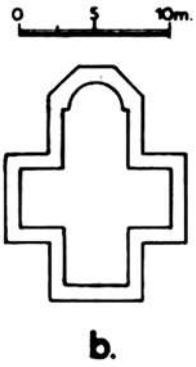

Fig. 3. Reconstruction of the plan according to A. Kunysh

In addition to this historical information, there is also fictional information associated with the structure. In particular, a fragment of the inscription found in the Stare Misto in 1900 refers to the consecration of the church by the Latin Bishop John on May 12, 1212, but further, Saint Jadwiga of Silesia is mentioned, who was canonized only in 1267. In addition, in the XVIII century, appeared some note that tells about the arrival of the Franciscans to Rus and their use of the Church of St. Peter in 1235. However, the text says that the brothers sent by Pope Gregory IX first settled in Lviv and Halych, and only then in Przemysl (Łękawski, 7). Thus, the realities of later times were adapted for 1235, when Lviv did not yet exist, especially it was not a city more important than Halych and Przemysl.

In the historiography of modern times, which coincided with the formation of modern national collectives, there is an increase in unambiguity in the interpretation of the ethno-confessional affiliation of the building (Holubets, 1928). Fundamentally at this time new data on the history and appearance of the structure did not appear.

Archaeological research. In the second half of the XX century, in the area of the building's location, a small area with the remains of a medieval foundation was explored. The nature of its execution on lime mortar allowed the archaeologists A. Żaki and A. Kunysz to claim that the temple was made of stone. In addition, this was confirmed by the length of time during which the Jesuits dismantled it after the construction of a new baroque building (Żaki, 1958*;* Kunysz, 1981). However, at that time, Kunysz accepted as reliable the contours of the structure placed in the scheme of Jesuit parcel of the XVII century, in respect of which he made his attempt to reconstruct the plan of the lost building (Fig. 3). To outline it, he uses the diminutive form "kostiolek" (from Polish "kosciol"), and compares it with a similar church of St. Salvator in Krakow.

During 2015–2017, new excavations were carried out at the location of the temple, during which were obtained material that revealed new information about the structure. It was revealed that its location does not coincide with one indicated on the Jesuit scheme, and its dimensions are significantly larger. Although the archaeological layer was damaged by the later construction of the college and engineering networks, a brick floor and a stone foundation were discovered, and below them an earlier floor made of clay tiles and two fragments of an older foundation on a sand-lime mortar (Koperski, 2017).

Architectural interpretation. The materials obtained as a result of archaeological research allow us to speak about the existence of two temples on the same site. The character of the older one corresponds to the traditions of Rus architecture (XII–XIV centuries), the later one – the Gothic era (from the XIV century); the ancient structure was somewhat larger than the later, and its plan probably had the shape of a "Greek cross", as it is depicted in the Jesuit scheme of the XVII century. Due to the current data, we can question: a) what was the nature of the architecture of both temples? b) at what moment did the destruction of an ancient structure occur, replaced with a new one?

Iconographic materials that date back to the XVII century are not literal and give only approximate data about the structure. Since in Brown's print the temple looks like a small one nave basilica, and in the Jesuit scheme the plan of the "Greek cross", T. Lenkavsky attempted to reconstruct it as a wooden church

(this was indicated by Brown's print) with wide but low projections of the transept (Fig. 10). Thus, the author of the reconstruction agreed on both iconographic sources, since only the upper part of the building is visible on the print. It is also difficult to say unequivocally about the structure of the building of the Gothic period as a result of the excavations carried out in 2015–2017. Stone foundations indicate it as wooden. The opened fragment of the stone foundation has a small opening, probably for a door, followed by brick pavement identical to that of nave. This combination suggests that "hands" of the "Greek cross" had an even lighter solution than on the reconstruction of Lenkavsky. These could be two porches in front of the entrance (Brown's print shows a small single-pitched roof), and the Jesuit scheme shows not the plan in the modern sense, but the general contours (as well as the neighbouring new basilica).

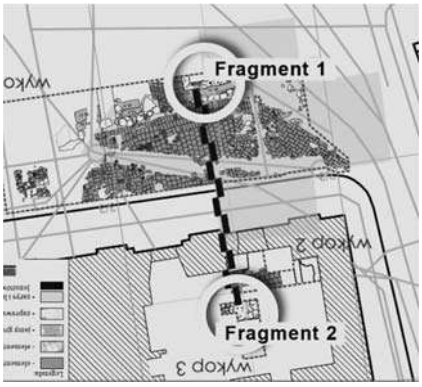

Fig. 4. Fragments of the foundations of an ancient temple on the excavation diagram of M. Krzemińska (archive WUOZ – Wojewódzki Urząd Ochrony Zabytków z siedzibą w Przemyślu)

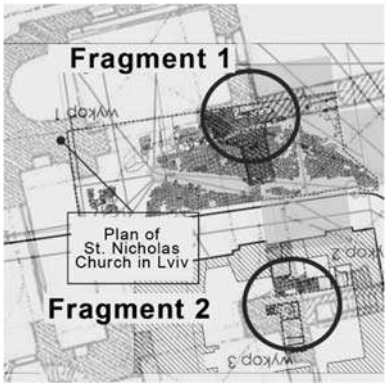

Fig. 5. Fragments of the foundations f an ancient temple on the excavation diagram of M. Krzemińska (archive WUOZ) combined with the plan of the Church of St. Nicholas in Lviv

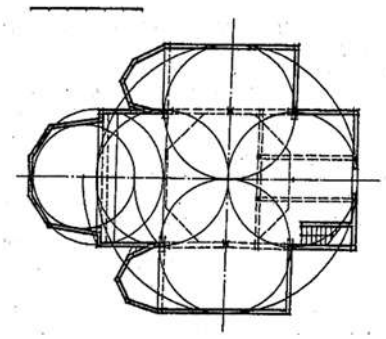

Fig. 6. Planning structure of the early church in the Tsarynka tract by Y. Lukomsky

The developed extensions, however, reflected the tradition of an older temple that existed in the Rurik dynasty era. This is evidenced by the nature of the foundation fragment, in the form of a rectangular break (Fig. 4, fragment 1), which formed the transition of different sides of the "Greek cross". A fragment on a sand-lime mortar was also found on a site located almost symmetrically – on the north side (Fig. 4, fragment 2). This gives an idea of the size of one of the sides of the central, possibly under-dome space.

Such data indicate that in ancient Rus times, St. Peter's Church in Przemysl could have had a planning structure close to the early church in the Tsarynka tract in Halych (Fig. 6), but noticeably larger. Interesting results are obtained by comparing two ancient Rus fragments of the Przemysl church with the domed space of the Church of St. Nicholas in Lviv, which has a similar cross-shaped planning structure. Although the available materials from the excavations in Przemysl are too fragmentary, it is worth noting that the corresponding dimensions in both temples are almost the same (Fig. 5).

Fig. 7. Reconstitution of the church in the Tsarynka tract in Halych (~XII century), according to Y. Taras

Fig. 8. Reconstitution of St. Nicholas church in Lviv (~XIII century), according to Y. Taras

Fig. 9. Church f Ραχιδιωτισσα XII–XIV centuries on the island of Naxos, (photo by M. Sihalas)

Fig. 10. Temple of Carmravor of the VII century (photo by T. Hokhar)

Fig. 11. Reconstruction of the building according to Lenkavsky

As a result of summarizing the above data, it can be assumed that the original Church of St. Peter in Przemysl had a planning and three-dimensional structure similar to the churches of St. John in Halych (Tsaynka tract) and St. Nicholas in Lviv (Fig. 8). Although the nature of the foundation on a sand-lime mortar does not allow us to talk about the large thickness inherent in most stone buildings of the Galician school, nevertheless, the very fact of its construction, as A. Kunysh wrote about it, is an argument for the stone nature of the original structure (the so-called "Poligon" in Halych had thin foundations (Dyba, 2005)). This type of temple, although less popular than the cross-domed one, is also found in the East – for example, the Church of the Virgin Ραχιδιωτισσα (XII–XIV centuries, Naxos Island) (Fig. 9), the Church of St. Paraskeva in the Amari Valley (XIII century, Crete island) in Greece, the Church of St. Stephan, Lmbatavank monastery (VII century, Artic) Karmravor temple (VII century, Ashtarak) in Armenia (Fig. 10) or some objects in Croatia. A significant number of burials, under the floor of the side parts of the planning cross of the ancient temple, as well as a large cemetery around, indicate that the structure and the area around was an ancient necropolis, which was used both in the Rurik Era and after the Polish-Hungarian conquest. Hypothetically, it can be assumed that the structure could be associated with a community of urban fishermen, whose patron was considered St. Peter.

An important issue in the history of the Church of St. Peter in Przemysl is the establishment of time and circumstances, the destruction of an old building and the emergence of a new one. It is important to note that there was no question of expansion or reconstruction: the new building was smaller and simpler than previous. There are three most obvious events when the destruction of an ancient structure could have occurred. The first was in 1380 when the building was seized by the newly arrived Latin Bishop Erich. The second one is connected with the fire of 1406, after which a long period of its restoration began. The third may be the Volokh`s attack on Przemysl in 1498, during which some Franciscan monks were killed.

The tradition of interpreting Orthodox structures after the establishment of Latinocratic rule, which was developed in Greece after the Fourth Crusade, meant their mandatory transformation without the possibility of long-term existence of parallel ecclesiastical systems. Therefore, churches that were subordinate to the patriarch of Constantinople should be interpreted as sacred objects, but already of a new subordination. Therefore, in the large cities of Galician Rus, "Latin" temples often appeared on the basis of existing "Greek" ones. In this sense, the phrase "renovabit restavrabit" for the Church of St. Peter, referring to the activities of the newly arrived Latin Bishop Erich in 1380, can be understood as an adaptation of the building to the specifics of the western liturgy.

The largest recorded destruction of the structure was the fire of 1406, after which the transfer of the ancient Rus cathedral on Castle Hill to the Latin community took place. This indicates that the Church of St. Peter was in a state that did not allow its full functioning. At this time, the main church of the Latin community was probably the rotunda of St. Nicholas. Analysis of documents related to the construction of new sacred objects in Przemysl at that time indicates a constant lack of funds and a long construction time. Thus, it is the period after 1406 that can be considered the most likely time for the appearance of a new temple. Since in that time, it did not have the status of a cathedral, for its construction was used wood. In general terms, it followed the outline of the old one, whose remains were probably still visible on the spot. The narrow foundations of the old structure may indicate that some elements of the upper levels were probably made of wood, which led to such strong destruction by fire. The materials of the old building, apparently stone, could have been used for the construction of urban fortifications, which, in the newly conquered country, were given great importance.

Conclusions

1. Analysis of the source and recently obtained archaeological data allows us to make an assumption about the appearance of the first of the two temples of St. Peter in Przemysl, which belongs to the old Rus` era. Based on various data, it can be supposed that its planning structure was similar to that used in the early Church of St. John in Halych in the Tsarynka tract. The closest in size and structure to the Przemysl Church, in this case, is the Church of St. Nicholas in Lviv, the dimensions of the middle cross (~underdome space) of which are almost the same. In this case, the appearance of the Przemysl church is reconstructed by analogy with these two structures.

2. A comparison of the available data about architectural image transformation of the building suggests that the most likely time for the disappearance of the ancient temple and the construction of a new, slightly smaller one in its place is 1406. It is this date that is associated with the largest recorded destruction of the structure as a result of a fire. Since it was followed by the transfer of the ancient Orthodox cathedral on Castle Hill to the Latin community, this may indicate that the Church of St. Peter was in a state that did not allow its full functioning. Other possible dates of the disappearance of the building of the ancient Rus era, for example, 1380 or 1498, require additional arguments.

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ХРОНОЛОГІЯ ТА АРХІТЕКТУРА ХРАМУ СВЯТОГО ПЕТРА У ПЕРЕМИШЛІ ВІД ДАВНЬОРУСЬКОЇ ДОБИ ДО XVII ст.

Анотація. *Архітектура Перемишля Княжої доби здебільшого асоціюється із дитинцем, пов'язаним із перебуванням тут осередку влади та авторитету. Водночас рівень зацікавленості рештою містобудівельної тканини, другого за значенням міста Галицького князівства, що розташоване східніше, є відчутно нижчою. Серед будівель цього великого ареалу була розташована і церква св. Петра, щодо якої є як історичні документальні свідчення, так і новіші археологічні матеріали, котрі потрібно комплексноінтерпретувати*

Аналіз джерельних та недавно отриманих археологічних матеріалів дає змогу уявити виглядпершого із двох храмів св. Петра у Перемишлі, котрий належить до Давньоруської доби. На основі врахування різних даних можна припустити, що його планувальна структура була аналогічною до використаної у ранній церкві (св. Івана) у Галичі в урочищі Царинка. Найближчим за розмірами та структурою до перемиського храму є церква св. Миколая у Львові, габарити середнохрестя (~підкупольного простору) яких майже однакові. Томузовнішній вигляд перемиського храму реконструюється за аналогією до цих двох споруд.

Зіставлення наявних даних про трансформації архітектурного образу будівлі дають можливість припустити, що найбільш ймовірним часом зникнення давнього храму і будівництво на його місці нового, дещо меншого за розміром, є 1406 р. Саме з цією датою пов'язане найбільше зафіксоване руйнування споруди внаслідок пожежі. Оскільки після неї відбулась передача латинській общині давнього руського собору на Замковій горі, це може свідчити про те, що храм св. Петра знаходився в стані, який не давав йому змоги повноцінно функціонувати. Інші ймовірні дати зникнення споруди давньоруської доби, наприклад 1380 або 1498 роки, потребують додаткових аргументів.

Ключові слова: *Перемишль, церква, археологія, архітектура, відтворення.*

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PROGRAMS FOR FORTIFICATION AREA CONSERVATION IN THE NETHERLANDS

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Astract. The article is aimed at familiarizing readers and specialists with programs for the preservation of fortification territories and methods of using historical landscapes in the Netherlands, the legal aspect of preserving the remains of fortifications and terrain. The project method of integrating the territory into the tourist observation network is considered. Over the past 30 years, the Netherlands has been developing a legal framework in the intersectoral branch for the protection of a significant historical landscape, including existing or lost objects of fortification art of the XVIII and XX centuries. Reasonable protection criteria, a well-formed strategy for systematic use and subordination of the territory prevents violation of the legal framework of the monument and its physical integrity accelerates the process of developing architectural and design proposals for restoring the spatial appearance of the fortification object.

Key words: monument protection, historical landscapes, valuable territories, the Netherlands, conservation programs, fortifications, renovation of areas.

Problem statement

Ukrainian monument and security activities have a long history, many published materials, critical views and professional recommendations by industry specialists. On paper, all innovations and recommendations are special – they are real and emphasize relevance. In practice, the situation looks different. The isolation of monument protection from other branches of economic development of the state leads to a conflict of interests between scientists and enterprises. On the one hand, specialists study and add new monuments to the list of the state register or prepare documentation on making changes to security zones. On the other hand, the agricultural sector does not stop production facilities near existing security facilities (Public Relations Department, 2015) and destroys part or all the territory of a historical object. This is evidenced by numerous aerial photographs that record plowed areas of fortifications and mounds. Quite significant in the field of archaeology is the decrease in the number of mounds in the Kherson region, where since 1995 the difference in the number is 25 % from lost to newly found (Havryliuk, Mykhalchyshyn, 2008). There are no markings in cadastral registers or at the places.

Similarly, fortifications, that nowadays in Ukraine are not systematized and have an unspecified status, are subject to aggressive actions of entrepreneurs and municipalities. The integral architectural structures and complexes, archaeological sites and territories, the legal field of conservation are spelled out in sufficient detail in the Law of Ukraine and Methodological Recommendations[1]. However, some individual sections of earthen fortifications have a different state. The answer to the question "What do we protect?" gives a divergence of opinions: historical territory, historical object, valuable historical landscape. The unspecified use of the term "monument-protected object" leads to significant speculation in society and complicates the system for evaluating this object from the point of view of the economy, budgeting, culture and history. Some objects fall under the law without significant justification by the fact of historical value, while others, that tangent to the territory of this object, are intentionally lost over time, being previously taken from the socio-cultural dialogue.

At the time of significant social and cultural changes in Ukraine, came the period of introduction of new relevant methods and approaches in monument protection. The issue of cultural heritage should go beyond narrow-profile research groups and professional publications, intersect with other budget-forming sectors of the Ukrainian economy: land and water resources, united territorial communities.

The experience of specialists and politicians in the Netherlands shows a significant amount of work done to implement the principles of sustainable development of the territory in the legal field of monument protection activities. The process of changes affected the combined branches of the territorial and economic structure of the country. It gradually formed a legal framework for the development of strategies and programs for the economic and cultural development of provinces. The changes affected the national idea - the cultural core of the nation.

Analysis of recent research and publications

Since the 1990s, a program for restoring the cultural identity of the Dutch has been operating on the territory of the united communities in the Netherlands, which provided for the search and development of methods for restoring cultural heritage sites. Small settlements received financial and regulatory support through sustainable local development projects and the integrated economy program. The Action program on Spatial Planning and Culture 2005–2008 (Summary, 2008) and the municipal regional development program Ruimtelijke atlas 2015–2025 were developed and the regulatory and legislative documentation was approved (legal documents in the field of urban planning and architecture: the Space for Architecture (1991); Architecture of Space (1996)[2]; Shaping the Netherlands (architecture policy 2001–2004); The Nota Belvedere policy document (2000-2009[3]); Cultuur als confrontatie; uitgangspunten voor het cultuurbeleid 2001–2004); "Protecting and Developing the Dutch Archaeological-Historical Landscape" (PDL / BBO). They formed the conceptual boundaries of architectural intervention in the spatial development of settlements; the term "cultural landscapes" was introduced[4] for the entire territory of the country without

[1] Order of the Ministry of culture and tourism of Ukraine No. 956/0/16-09 dated 02.11.2009

[2] The policy document De architectuur van de ruimte ("The architecture of space") 1996, states that the cultural-historic perspective is essential to an integrated policy aimed at quality, and is summed up as "an analysis of the historic and spatial development" (The Belvedere, 1999, p. 15).

[3] The Nota consisted of integrated plans in which the more protection-driven care for monuments was combined with the ongoing transformation of the landscapes. (Verschuure, 2014).

[4] Under the motto 'conservation through development', the Belvedere policy fosters a development-oriented approach that increases the prospects for main-taining the cultural heritage while enabling spatial planning to benefit from cultural history considerations. The aim of the policy is to strengthen the importance of cultural history in spatial planning and design. As a source of inspiration, cultural history can lead to a wide range of interpretations and applications: from restoration, reconstruction and borrowing to contrasting or ignoring. In the frame-work of the

exceptions, and the future spatial development of which should emphasize national cultural significance, contribute to the reassessment of cultural identity and diversity of our living environment (Schuurman, 2003). And most importantly – a change in the paradigm of historical and cultural research – better use of area-oriented approach instead of traditional object-oriented approach for the protection of cultural heritage (The Netherlands Ministry of Education, Culture and Science, 2005). Over time, the understanding of the term "cultural" has been deepened and expanded to 3 components (Verschuure, 2014): a landscape in situ (the physical place or landscape), a landscape in visu (the constructed image of the landscape or a text) and a landscape in mente (mental landscape or ideas (from earlier times) which formed the landscape) (Uytenhove, 2012). In the mental landscapes, defined as landscapes of memory, ideas of the past leave marks in the physical landscape. These specific places were defined as 'lieux de memoire' or memory places (Nora, 1989)

Objective of the article

The author suggests examining the process of changes in the attitude and interpretation of the object of protection in the field of architecture and urban planning in the Netherlands, the introduction of which made it possible for rapid and sustainable development of the territory of communities, strengthening the socio-cultural significance of cultural monuments. The article also aims to reveal the interdisciplinary significance of this issue in the further design and strategic development of the territories of Ukraine.

Results and discussions

Due to significant urbanization and the development of agriculture during the 1970s, the earth and river areas of the provinces of the Netherlands underwent significant changes: the networks of small and medium-sized rivers, which in the XVII century served as a natural element of strengthening the territory were almost completely disrupted; stone and earth fortifications were destroyed or forgotten. Nowadays, Ukraine also faces challenges of large-scale land transformations. The lack of tools to protect earthen fortifications as a part of fortifications leads to the loss of spatial characteristics, destruction by economic equipment. Experts in the field of history and architecture of the National Academy of Sciences of Ukraine now pay attention to the issues that the Netherlands began to solve at the end of the twentieth century, namely: historical-cultural identification[5], preservation of cultural and historical monuments, restoration of memorial spaces.

The main discrepancy between the state and regulatory acts of the two countries is the internal core of the approach – the formation of philosophy and national consciousness of citizens through highlighting the high value of inheritance. In the case of the Netherlands, open state propaganda of national identity can be traced at all levels. A geographically small country after the Second World War set a goal not only to get out of the territorial and economic crisis but also to form the foundation of national dignity and the spread of national history as the idea of uniting communities, where cultural heritage becomes a catalyst for urban and regional revival (Janssen, 2012; Janssen, 2013).

Belvedere Policy Document (2000–2009), the government stimulated initiatives aimed at increasing the influence of cultural history on spatial development in the Netherlands.

[5] Cultural-historic identity is to be seen as a determining factor in the future spatial design of the Netherlands, for which the government shall aim to create appropriate conditions. (The Belvedere, 1999, p. 6)

Fig. 1. Comparison of the territory of Ukraine and the Netherlands (available at https://mistosite.org.ua/uk/articles/kompaktne-misto-niderlandskyi-dosvid)

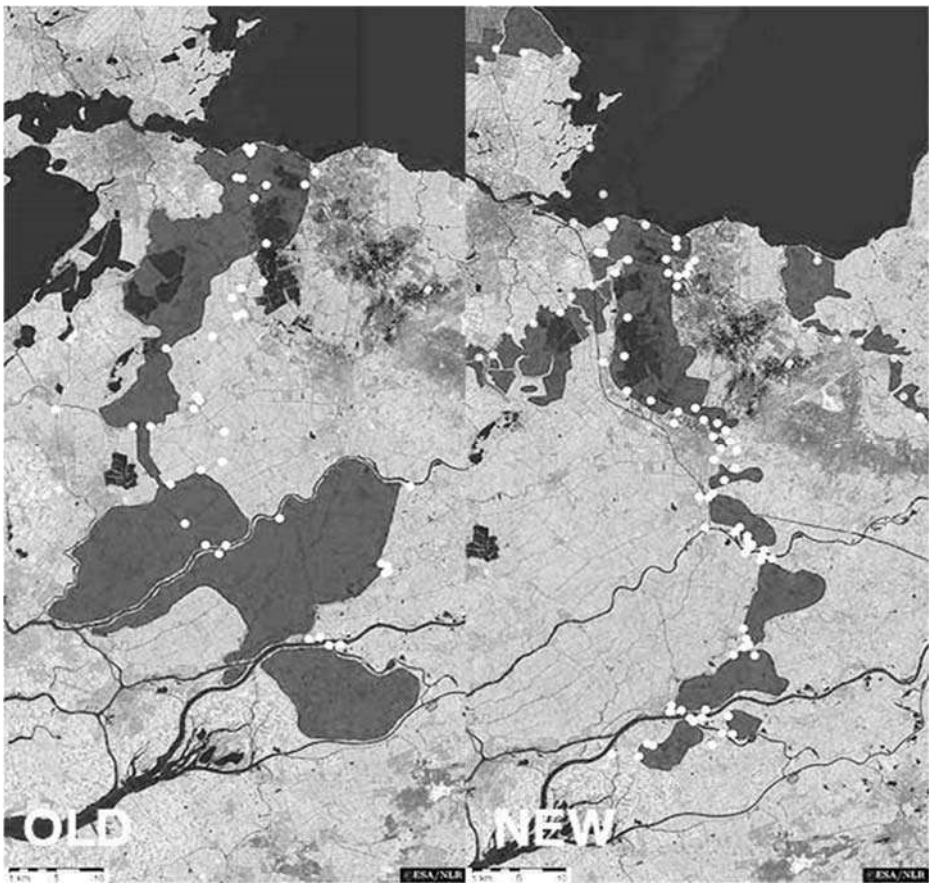

Fig. 2. The Old and New Waterlinie, superimposed on satellite imagery of the modern Netherlands; [Online] Available at: http://www.forten.info/index.htm?http://www.forten.info/catalogus/ohw/hoofd.htm

As noted above, the reform of the field of monument protection in the Netherlands has been closely linked to changes in regional management approaches and tools. The introduction of sustainable development and environmental safety required an appropriate intersection of intersectoral interests. Architecture and urban planning in this grand scheme of transformation played a spatial-forming aspect. The above documents[6] determined the limits of influence and vectors of state development. The Nota Belvedere – Memorandum, a policy document examining the relationship between cultural history and spatial planning. *By using the historic structure based on the structure of the landscape, the identity and the continuity of the landscape were not only explained but maintained and used as a guideline for new spatial development*. (Verschuure, 2014), the motto „Conservation through development"[7]. This approach involves investing in projects that will benefit the future generation. A non-confrontational combination (a love-hate relationship) of two areas of activity – conservation and development – requires a well-structured professional discussion, acceptance of the need to reorganize, rebuild and renovate existing facilities, taking into account the current needs of society.

Based on the results of interdisciplinary and industry research, the Cultural-historical Values Map of the Netherlands was created, which determined the priority of territorial development, territories and objects that should be preserved (natural landscapes) and those that can acquire further development (high combined cultural-historical values and areas with high sectoral-historical values); historical areas and cities were identified.

The National Project[8] New Dutch Water Line is the current name of the Dutch Cultural Heritage Site category, which was proposed for inclusion in the UNESCO World Heritage List in 1996, and contains more than 49 individual structures and engineering communication networks. The nomination included a network of fortifications dating back to 1629, when Prince Frederick Henry, inspired by the successful use of floods as a defence mechanism during the Dutch War of independence, began implementing a plan to build a "line of flooded land protected by fortresses". Locks were built in dams and forts, and fortified cities with cannons were created at strategic points along the line. The water level in the flooded areas was carefully maintained at a level sufficient for pedestrian progress to be unstable and shallow enough to exclude the effective use of boats (other than the flat-bottomed cannon barges used by the Dutch defenders). Additional obstacles such as ditches, cables, and later barbed wire and mines were hidden below the water level.

The idea of hydrology using weapons was firmly established in the national consciousness, and after the formation of the United Kingdom of the Netherlands in the early 19th century strengthened national borders, a new Dutch waterline was built east of the original Waterlinie. Three to five kilometres wide, the potential flood zone extended "approximately 70 kilometres from Muiden (located on the Zuidersee, now Isselmer), past the city of Utrecht to the east, up to the area of the great river (Nyuwe Merwede) and Bisbosch" at a depth of 35 to 50 centimetres (deep enough to prevent crossing with artillery, but not deep enough for boats) – approximately one hundred and seventeen thousand cubic metres of ominously empty space riddled with military potential. The system consisted of 6 so-called flood pools, which could be regulated by dams, culverts, channels, dams, and sluices. A system of defences, such as forts (2 to 32 hectares), was located on flood approaches, such as near higher roads or where flooding could cross existing dams, lakes, or rivers and wherever it was necessary to protect flood sites. There were more than 60 defensive structures of various types in this flood line. Unfortunately, in World War II, the Waterlinie proved obsolete, as German troops parachuted down behind the Waterlinie to capture key targets, including

[6] The Space for Architecture (1991); Architecture of Space (1996); Shaping the Netherlands (architecture policy 2001–2004); The Belvedere policy document (2000–2009), Protecting and Developing the Dutch Archaeological-Historical Landscape (PDL/BBO)

[7] *By seeking new uses, old landscapes and buildings can be saved. However, it is just as much a question of 'development through conservation. By using our cultural heritage in a frugal and responsible manner, we are investing in the development and strengthening of our identity, knowledge, comfort, business climate and potential for tourism*. (The Belvedere, 1999, p. 19)

[8] Italics are saved by (Verschuure, 2014) as an underscore of the value.

bridges in the heart of the Netherlands, and forced the Dutch to capitulate due to the crushing aerial bombardment of Rotterdam, in both cases bypassing it. Waterlinie. Although in the Fifties there were attempts to restore Waterlinie as an obstacle to the invasion of the Soviet Union (reinforced by the deployment of anti-aircraft weapons), now all Waterlinie are outdated. (Rob Holmes, 2009).

The regional tourism development program RUIMTELIJKE ATLAS (eng. "spatial atlas") is a municipal program for the regional tourism development of small towns and a project of a network of tourist points in the province (Fig. 6). The project initially provided for the creation of a common tourist route, which would include a newly created camp for children and places for comfortable rest (camping), the restoration of the earthen characteristics of the bastion fort, the construction of an observation deck, and the adaptation of the part. This program provided an opportunity for the development of a local community and a small historical town.

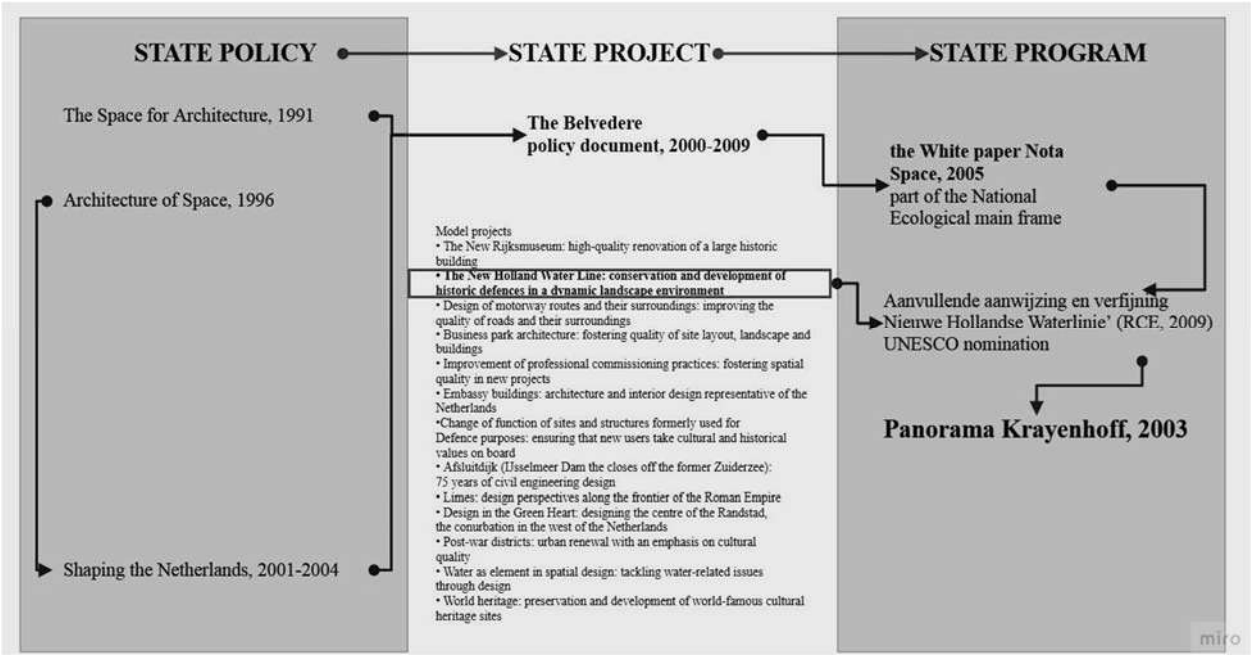

Fig. 3. Regulatory and legislative documents of the Netherlands have been implemented, which have formed a model of modern renovation of fortifications in the country

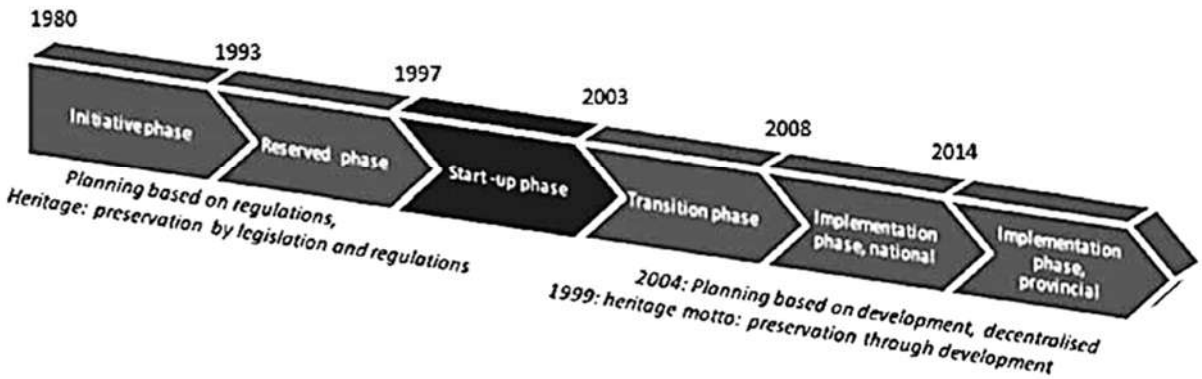

Fig. 4. Six stages of the transformation process of The New Dutch Line from the 1980s to the present day. (Source (Verschuure-Stuip, 2020, p. 261))

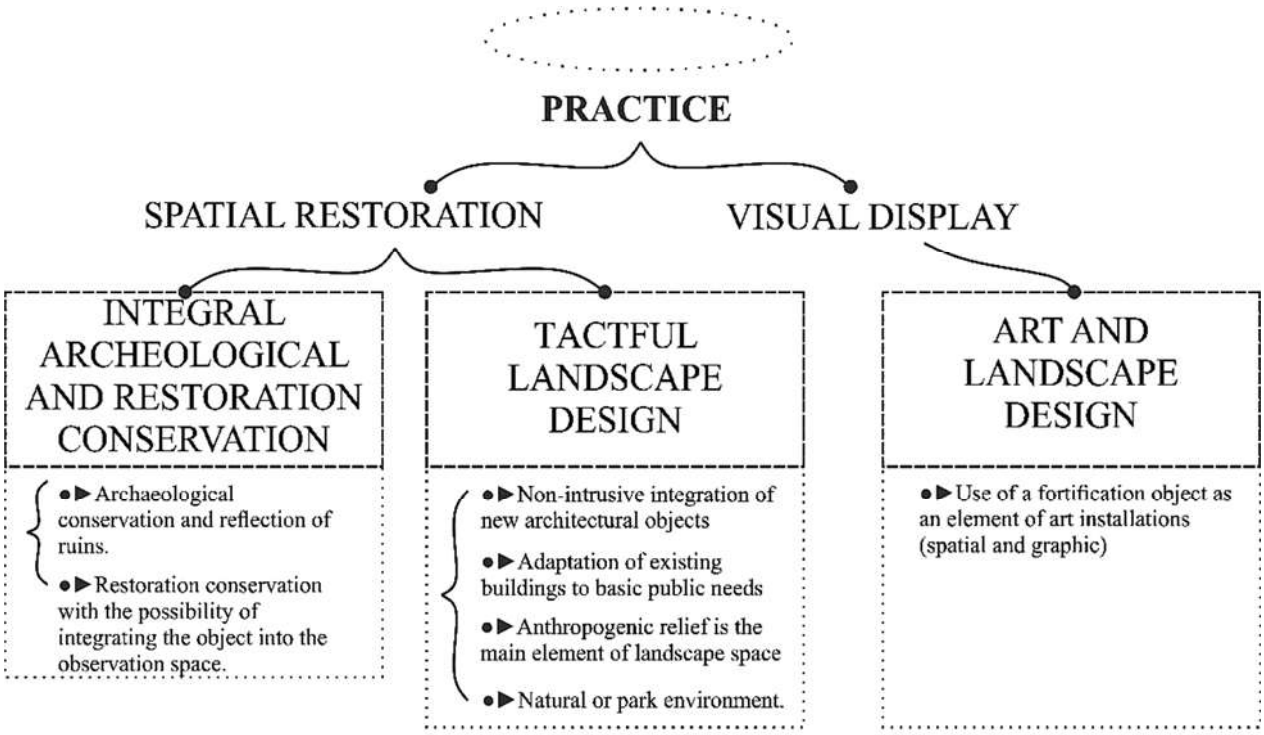

Fig. 5. Summary list of means of restoration and reflection of the fortification complex in the practice of specialists in the Netherlands. (researched by the author)

Waterlinie museum – a museum on the territory of Fort Wehten, the authors of the project are the architectural firm Studio ANNE HOLTROP. Project implemented in 2011–2014. The project provided for the restoration of the water ditch and the walls of the stone fort, strengthening existing structures and integrating a new spatial element – a large movable model of the water border, a symbol of the fortification art of the Netherlands authored by ___. A significant element of this project, in addition to museumification of the general state heritage of fortification art and interactive exhibition methods, is also a *tactical attitude to the field of fortification*. A small part of the territory of Fort Wehten was cleared of landscaping to create a "clean" historical panorama, a strip of spatial viewing of the fortress, and the layout of the historical line of fortifications with new museum premises is integrated into the plane of the land moat of one of the bastions, thus not violating the overall architectural solution of the fortification object (Fig. 7).

Landscape environment project of the preserved fragment of the Green Road (Groene Weg), New Waterline, Ultrecht province, the Netherlands. Author of the REDscape Bureau Project (arch. Philip van Roosmalen Andreas Mulder), the Netherlands. Implementation date: 2014. The project provided for the preservation of 36 bunkers and trenches on the territory of 10 hectares, transformation and improvement of it into a landscape park of a militaristic character. Glacis, trenches, and waterlogged areas that simulate tactical flooding were spatially restored. (Fig. 8). The park is combined with a general network of tourist visits by ferry.

Projects for the restoration of fortresses in the Netherlands have attracted attention with a new and relevant approach for Ukraine in the use of fortification construction facilities. It turned out that the newly created fortification museums and restored defence facilities have three common features: 1) they are included in the state register of monuments and have the status of especially important for the national idea; 2) they are included in the large network fortification museum, have a combined route of visiting; 3) the development of the restoration project was transferred to local architectural

bureaus. Thus, it becomes possible to introduce the approach of "preservation through development", when each monument of architecture and history becomes an integral part of the modern society of the country.

For Ukraine, this approach can become innovative, flexible and strategically realistic. After all, it is now problematic to carry out large-scale complex restorations of large objects for a centralized budget, also due to the obstruction of investment and the complexity of the procedure for approving the restoration project. "Preservation through development" can also become a Ukrainian restoration strategy. An architectural monument can receive new functions and be adapted to the needs of local communities.

The practice of spatial restoration and visual display of fortifications in the Netherlands involves the use of tactical landscape design tools with the integration of modern architectural objects into the space of the fortification complex. New architectural structures are designed in such a way as to have a minimal visual impact on the historical site. Earthen bastions fortifications, water ditches and foss are used as elements of park improvement, with the restored geometric characteristics and a network of pedestrian connections between objects. There are no themes for such park areas because the fortifications themselves give it a historical mood and military aesthetics. Almost all areas of the fortification complexes contain information stands and interactive planes that provide the necessary information about the inspection route and the general regional system of museums (all fortresses are combined into one large map of local tourism).

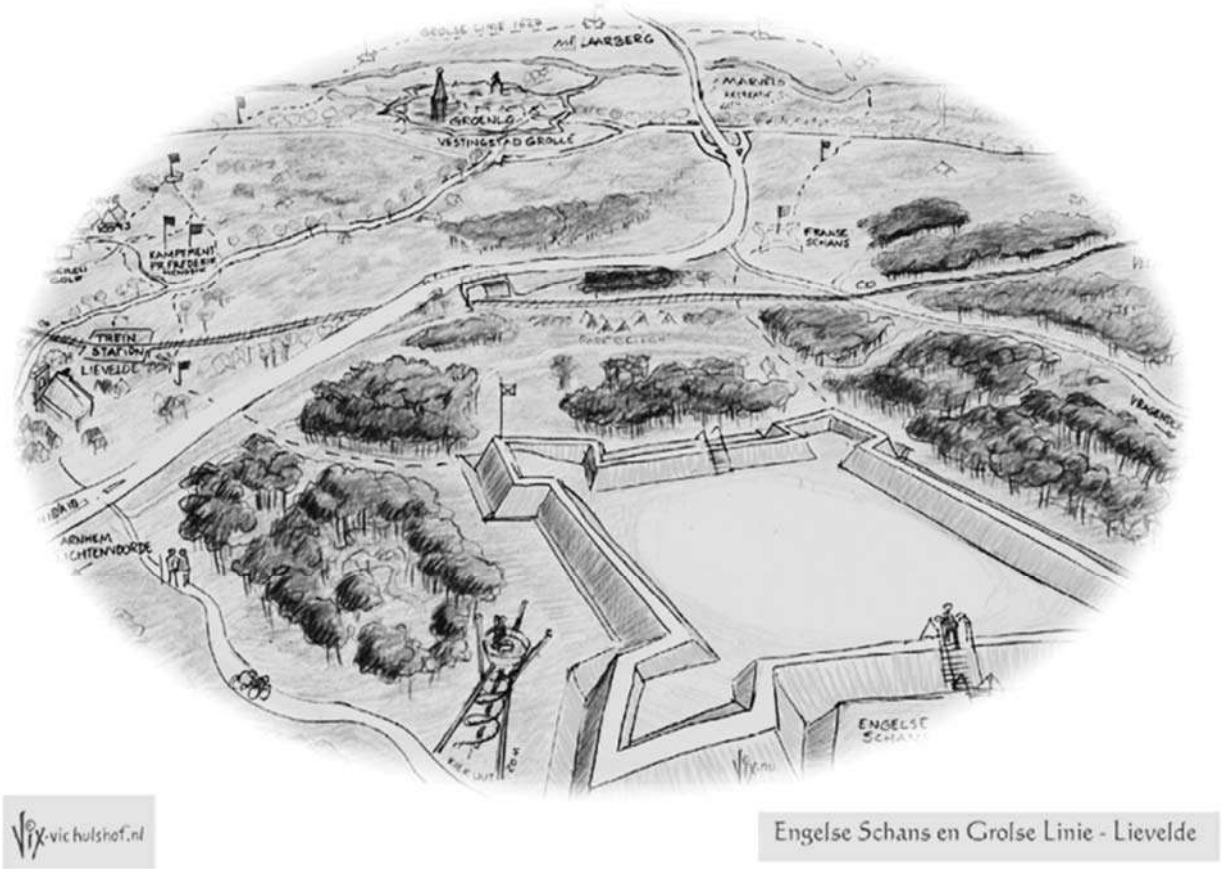

Fig. 6. The fortress as an object of attraction in the general route of a tourist visit. Example from the program "RUIMTELIJKE ATLAS"

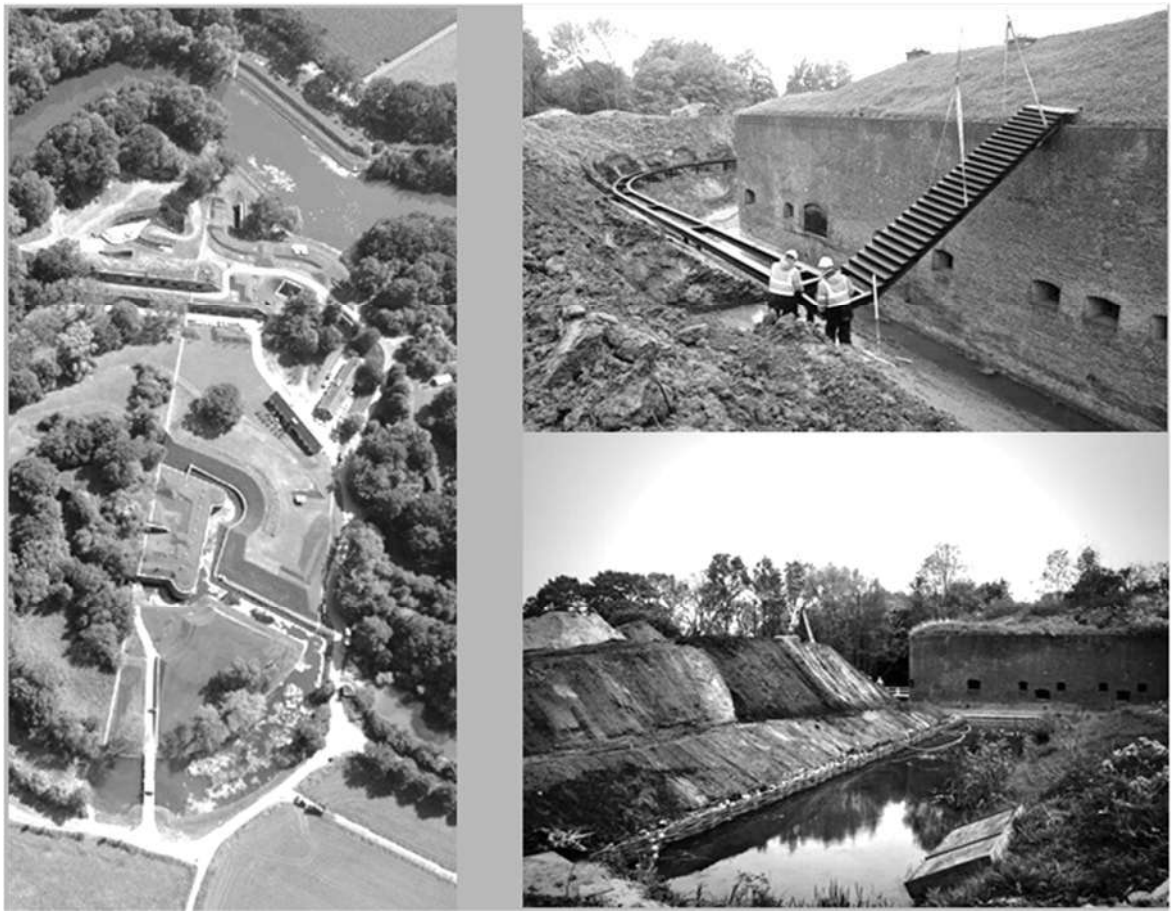

Fig. 7. Waterlinie museum. An example of tactical and environmental use of a fortification object in modern conditions of a tourist visit

Fig. 8. Restored fragment of the defensive New Waterline, Ultrecht province, the Netherlands. (available at https://www.redscape.nl/portfolio/new-military-park-for-nature-and-recreation-2/)

Conclusions

Strong professional work for almost fifty years has led to significant cultural changes in the way of life and politics of the Netherlands. Theoretical developments, public events and discussions, constant support at the legislative level of the process of decentralization of management and the formation of territorial communities, the formation of a common strategic vision for the development of the territory formed the foundation for the sustainable renovation of cultural heritage sites. The experience of our colleagues-specialists in conservation and tactical landscape design shows interesting results. The territories of fortifications are in long-term year-round use in everyday life and tourism. How can all of the above be useful for Ukraine now? Firstly, we understand that the country is moving on the path of development according to the European model of sustainability. We are already witnessing preliminary results of using budgets locally in communities. Secondly, the inclusion of specialists (architects, conservators, archaeologists, etc.) in the working groups of development strategy will expand and justify local features and directions of development. So cultural heritage monuments will be used not only as markers of the "attractiveness" of the strategy but will be fully integrated into budgeting and design developments in the future. The third argument in an in-depth review of international experience, in particular the Netherlands, is the common direction and transparency of the implementation algorithm. We are already aware of the need to amend the laws of Ukraine and State Building Codes, introduce a more flexible tool – architectural renovation and integral restoration – as an integral part of territorial development strategies, among quantitative economic indicators.

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ПРОГРАМИ ЗБЕРЕЖЕННЯ ТЕРЕНІВ ФОРТИФІКАЦІЇ У НІДЕРЛАНДАХ

Анотація. *Стаття спрямована на ознайомлення читачів та фахівців з програмами збереження фортифікаційних теренів та методами використання історичних ландшафтів у Нідерландах, правовому аспекту збереження залишків фортифікаційних споруд і рельєфу, розглянуто проектний метод інтеграції території у туристично-оглядову мережу. Нідерланди упродовж останніх 30 років розробляють правове поле в міжгалузевому секторі охорони значущого історичного ландшафту, долучаючи до складових елементів охорони наявні або втрачені об'єкти фортифікаційного мистецтва XVIII та XX ст. (The National Project New Dutch Water Line) Прозорі критерії охорони, ґрунтовно сформована стратегія планомірного використання та підпорядкування території запобігає порушенню правового поля пам'ятки, її фізичної цілісності та пришвидшує розроблення архітектурно-проектних пропозицій. Фундаментом для стратегічного розвитку стало впровадження низки законодавчих актів: The Space for Architecture (1991); Architecture of Space (1996); Shaping the Netherlands (architecture policy 2001–2004); The Belvedere policy document (2000–2009), Protecting and Developing the Dutch Archaeological-Historical Landscape (PDL/BBO) etc., які сформували межі та сферу відповідальності кожної галузі, яка залучена у економічному розвитку держави. Виведення культурної спадщини до рівня національної ідеї, формування підходу "збереження через розвиток" дало поштовх до сталого розвитку об'єктів архітектурної та містобудівної спадщини. Проєкти реновації та редевелепменту передбвчають такі методи роботи: залучення громади до формування стратегії розвитку, врахування економічного та туристичного потенціалу, використання наявних архітектуно-інженерних пам'яток (фортець у частості) як ресурс для розвитку тощо. Серед поширених методів проєктування, які впроваджені під час реорганізації та реконсрукції фортифікаційних об'єктів, використано такі: просторового відтворення та візуального відображення. Таким чином вдалось створити простори, пристосовані під сучасні екологічні та економічнівиклики , врахувати потреби громади та ідеї національного успадкування.*

Для України поки є актуальним пошук гнучких та сталих моделей розвитку регіонів, враховуючи виклики економічного розвитку. Попередні моделі туристичного менеджменту та класичної консервації фортифікацій свідчать про велику соціокультурну прогалину, незацікавленість та нерозуміння важливості збереження локальними громадами. Несвоєчасні реставраційні протиаварійні роботи погіршують стан пам'яток фортифікаційного мистецтва, знижується їхня туристична привабливість та втрачається потенційна інвестиційна вартість.

Ключові слова: *пам'ятко-охоронна справа, історичні ландшафти, цінні території, Нідерланди, програми збереження, фортифікації, реновація теренів.*

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TEMPLE AS A MODEL OF STRUCTURAL CONSTRUCTION IN SYMBOLIC-FIGURATIVE AND ARCHITECTURAL-SPATIAL ASPECTS

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Abstract. The article reveals the features of modelling the structure of the temple space, taking into account their symbolic-figurative and architectural-spatial implementation in church buildings of Byzantium and Rus-Ukraine. Sacralization of space and place through the manifested phenomenon of their consecration is created by the image and form of the temple building. The transformation of the planning and spatial solution of churches, from the domical bathylic to the form, shape, symbol, form creation, sacral, dome, bathylic, cross-domical structure, made it possible to combine them both in large metropolitan buildings and smaller churches while maintaining the ability to embody the essence of the "temple as an earthly heaven" closer to a person in this space. This essence is also present in modern temple buildings, which preserve the traditions of shaping their predecessors.

Key words: form, shape, symbol, form creation, sacral, dome, bathylic, cross-domical, structure, hierophany.

Problem statement

The understanding of the temple as a structure is considered in the aspect of its symbolic-figurative expression of the idea-image, which is manifested through the phenomenon of the consecrated place – space as a revealed hierophany, sacralizing the temple object itself. The formation of the church building in architectural and spatial manifestation is revealed through a transformed structure, from the domical bathylic to the cross-domical temple, which most fully expresses the idea of "the temple is the earthly heaven", where a person is full of understanding that he/she was able to master this sacred space as a place of manifestation of the sacrum and the innermost being in God. The cross-domical structure of Ukrainian churches shows the originality of the interpretation of construction techniques, architectural forms and composition of volumes, which make them perfect examples in the temple building of their time and their transformation in future models that express the true image of the Ukrainian temple.

Analysis of research and publications

The study of the subject of the expression of the image, form and symbol as components that form certain foundations of the creation of the temple space, are quite consistently and comprehensively revealed in the works of R. Demchuk (2008), L. Ushkalov (2019), M. Eliade (2016), M.-P. Kripa (1999), S. Krymskyi

(2015), D. Stepovyk (2013), N. Nikitenko (1995), R. Gnidets (2019) and others. Planning, three-dimensional, structural in expressive, compositional and constructive aspects are indicated in the research of such scientists as I. Arauho (1982), O. Vodotyk (2006), R. Osterhout (2005), O. Ioanisyan (2016), S. Manho (1976), N. Lohvyn (1995), R. Gnidets (2011) and others. Although a generalized study on the structural construction of the temple as a model based on the symbolic-figurative and architectural-spatial foundations of the formative process, it is possible to successfully combine the structure of the domical bathylic and the cross-domical type of buildings, as a creative phenomenon in Ukrainian temple construction, developing in space and time.

Objective of the article

The purpose of the study is to determine the features of the formation of a certain structural model in temple construction with the aspects of symbolic-figurative and architectural-spatial manifestation in the creation of the temple as an object, spiritually accentuating the place where sacralization occurs in the space of the temple volume and the area of its location, in the appropriate form and design.

Research and discussion

The Eastern tradition of forming architecture in temple construction is not only a specific socio-cultural phenomenon but also an inexhaustible, boundless symbol, behind which a different being manifests itself. The temple image contains an invaluable experience of understanding ideas, things, concepts and forms. The temple has its way of being. The thousand-year period of its existence contained both prosperity and decline, but the sacred temple topos remained unchanged forever, which penetrated through new devices, a new image, gradually filling the surrounding space with its secret content and remaining either as a memory of the temple-place or as a hope for the revival of the temple. The location of the temple marks a certain space of placement and manifestation of the sacred essence – hierophany as an integral feature and property of this space. After all, it is hierophany, as a revelation or manifestation of the sacred, that sanctifies this place – space, through the figurative and iconic structure of the temple building and its undoubted impact on the environment and Urban Development. The idea of a sacred space implies the idea of repeating the original hierophany, which sanctified this place by transforming and isolating it from the profane, surrounding space. Therefore, hierophany not only sanctifies a certain part of the profane, noticed space, it also ensures the constancy of this sacralization in the future. In this spatiality, hierophany is reproduced again, and the place in a certain way receives an inexhaustible source of power and sacredness (holiness), which allow a person - provided that he can penetrate there – to become part of that power and holiness, joining the conscious sacredness (Demchuk, 2008).

Symbolism realizes the constant kinship and involvement of a person in the sacredness of spatial existence. The symbol identifies, absorbs, and unifies heterogeneous dimensions and seemingly incongruous realities. Sacrum manifests itself in dynamic images – signs that find their place in the liturgy and all its manifestations, being shown in images-forms that, with the help of signs-symbols, fix the perfect ideal in a pronounced expression (manifestation). Natural and artistic images represent, therefore, different levels (stages) of the hierarchy of being. And as the famous philosopher and religious figure, F. Prokopovich said that nature creates real things, and art creates imaginary things, in fact, not things but certain images of things. Therefore, drawing can be called a dream of those who do not sleep. Art is a manifested dream, and artistic images are equal to dream fantasies, with their different nature and characteristics. Anyway, it is quite obvious that the defining feature of the artistic image of our Baroque artists-writers was considered illusionism. Thus, this artistic image is a mimetic illusion, a fiction, a thing that belongs to the sphere of human activity as homo ludens, which, determines its meaning. However, this in no way detracts from its image, role and significance in human life. The image seems to "tear out" the things it depicts from the passage of time and introduces them to eternity. An artistic image can teach, excite and entertain the human soul because it reflects the subtleties of human perception and reflection visual and sensual subtleties of

beauty and harmony. Perhaps the most important is that it serves as a kind of bridge between the "visible" and "invisible" nature of the entities so characteristic of the sacrum in general and the temple in particular.

Such an image leads a person to the absolute, to being on the other side of sensory experience, that is, allowing a person to become involved in the noumenal level of things. This is the idea of the image as something that "elevates the mind to the first image", as a "visible image of the invisible". And the image's presence at the break of two natures reflects its structure. The unity of matter and form in the structure of the image is described using the trinomial opposition, which according to A. Radivilovsky. He asserts that in each image, three things must be reasonable: matter, that is, what we express; like-form as it manifests in outlines; the reflection of what is expressed in the image. We can also use the platonic terminology of "the image of the created" and "the image that is created". To sum up, we can generalize that the image in the Baroque period was considered as a way of existence of the heavenly and earthly hierarchy, as a special mode of being, one of the manifestations of which is art in general, and the art of creating form and space in particular. Understanding the image is also very closely related to the concept of imitation. In the system of those times in baroque literature, "imitation"-"mimesis" played, undoubtedly, a key role. This concept probably appeared in the sense of a key category, even in the XIX–XX centuries, when in all spheres of human life, according to Kh. Ortega y Gasseta, "a new system that is polar in relation to tradition". In the European culture of the "reflex traditionalism" times (S. Averyntsev), in particular the Ukrainian baroque, "imitation" played a much more significant role. At that time, this concept was almost comprehensive, because culture lived then under the traditions, where everything "old" is good, and everything "new" is bad. Extrapolating this figurative model to the entire sphere of being, H. Skovoroda eventually reached the level of platonic universals stating that all three worlds (the macrocosm, microcosm, and the world of symbols) consist of two components called matter and form. These forms Plato called ideas, the essence of vision, types, images. In the big and small world, the material form lets you know about the forms or eternal images hidden in it. Similarly, in the symbolic or biblical world, the collections of creations make up matter. After all, all over the world, there is matter and form, the essence of flesh and spirit, death and life" (Ushkalov, 2019; Eliade, 2016).

The image, by its very nature, is not always an exhaustive reproduction, but it is always complete in its expression. Figurative reflection of wholeness in human consciousness is the most effective form founded by nature of resolving contradictions between the infinite diversity of the world and the limited ability to reproduce it in visual systems. The image of a work is made in the imagination. It is not a mechanical, mirror image, but a consequence (result) of perceptual (sensory) activity that actively reproduces its content. Art turns out to be the only product of human activity in which a person reproduces their structure – neither in technical nor scientific objects do we observe such a fusion of opposites. It is this fusion, which essentially repeats the complexity of the human personality, that is necessary to bring the form of works of architecture to integrity. N. Bor stated that only art opens the way to harmony, which is unattainable for material analysis The image is individual. The general here is revealed through the living concreteness of manifestation; it is expressed as something with its soul. So, a work of architecture embodies a certain image and imagery, containing socially significant content as a necessary part of its function. But the image can also serve as a necessary tool to give architectural work integrity to an organized harmonious form. The artistic image acts in architecture as a means of integration, and as a means of expressing non-traditional problems, predicting what does not exist yet, but must be created to expand and enrich reality. The specificity of architecture as an art, first of all, is not in theimagery of its means of expression; they do not depict any non – architectural phenomena (that is, they do not "reflect life" in the forms of life itself). They express the content of images, first as a sign that carries the meaning accepted by this culture, and second, through associations caused by the nature of the structural organization of the whole and its components (Kripa, 1999; Stepovyk, 2013).

At the same time, it is essential that the historically concrete reflection of reality in the mind of the architect-builder also directs the practical transformation of the human environment and the embodiment of certain figurative content in its forms. Material elements of the form of works of architecture exist as parts of a practically used object, and at the same time as signs that carry information that serves to reflect artistic and figurative content. The sign system of architecture (an architectural form) is subject to the regularities of combining elements-signs

(i.e., it has something similar to the syntax). The form also has semantics that determines the relationship of elements with the semantic meaning. In this, we can see an analogy between the means of expression of architecture and natural language. The question of the formation of the artistic language of architecture is brought to the problem of style, the unity of the artistic system, which receives a specific identification in each sphere of formative activity. The style system is formed at a higher level of organization than the artistic language, combining the "blocks" of its elementary units and some archetypes of content, reflecting the specifics of this culture. The real artistic system exists for builders in the generally accepted, but rather broad criteria for choosing solutions, in the commonality of the artistic ideal, in a single strategy integrating the actions of the image-idea on the formation of specific samples. The means of figurative expression should not be illustrative, but metaphorical, not signs-allegories, but signs-symbols, as we see in temple architecture. The organization of space and its structuring determine the primary basis of architectural composition at any level of environmental systems. An artistic image-an idea embodied in a re-depicted architectural space turns it into an artistic space. And in sacred, temple architecture, sacrum as the embodied image of the temple building creates a sacred space – a place of manifestation of hierophany – a place of sanctification and holiness. The spatial structure lays the way for using all other mediums to bring an architectural work to harmonious integrity. Architectural space is not a material abstraction, because it is formed and receives its specific properties, its organization through a material, manifested components that essentially belong to the sphere of the immaterial. This is most clearly read in the sacred-temple architecture. The ratio of appropriately formed masses and the space that they structure in a certain form-forming process determines the primary system-forming properties of the shape of a temple building. In these relations, there is always a dialectic of the original opposites – openness and isolation. After all, the purpose of shaping is to create special qualities of the environment necessary for the implementation of the inherent functional purpose of temple architecture, and at the same time includes this work in systems of a higher level of worldview. Bright light creates the need for shading; the alternation of open, maximizing natural light, and enclosed parts of space create the equivalent of diversity and cyclicity that is inherent. The ratio of internal and external determines, along with this, the general emotional background of the perception of the form, the main "tonality" of the means of expression. Material structures, therefore, perform a double function – enclosing and protecting the internal space. They also organize the necessary connections with the external space (Arauho, 1982; Hnidets, 2019).

The formation of architectural objects mostly depends on the social and ideological content that their forms should have. Semantic conditionality of architectural forms and associations that are traditionally associated with them belong to very specific and deep traditions of national culture. The primary meaning and content that express these associations have virtually disappeared, and their concreteness has been somewhat forgotten, but at the same time, these associations exist quite steadily, acting primarily on a subconscious level. Paying first of all attention to the role of the object, which implies the plumpness (verticality) of its structure, the upward direction. Therefore, the choice of the type of three-dimensional construction of a building subordinate to development in an underground (horizontal) or vertical direction depends on the figurative content, as well as on other conditions. It is precisely this orientation of the three-dimensional structure of temple buildings in a vertical or extraterrestrial accent that significantly distinguishes the sacred architecture of Ukrainian churches both in internal and external structures, from analogues of Byzantine and Transcaucasian churches, and even more so North-Eastern, Moscow-Russian ones. According to researchers, it is hard to explain why there is a structural transformation of this system into cross-domical given the dominance of the central domical system in the architecture of temples in the entire Eastern Christian world, where Christian formative semantics was embodied. At the heart of the phenomenon, changes in the worldview begin with the iconoclastic crisis of the VII century, where the traditions of architectural art of the provinces receive emphasis, in particular, this process is accompanied by a sharp increase in values, purely symbolic moments that become dominant. The implementation of a cross-domical system is never a reverse step in architectural terms. On the contrary, this system allows for the implementation of large spatial units that guarantee the Prevention of static errors or miscalculations that could lead to disasters, as with the bathhouse of St. Sophia of Constantinople, which twice collapsed and

fell. The transformation of the Temple – Cosmos into the Temple-"Earthly Heaven" takes place with strict adherence to the rectangular shape of the temple plan, which made it possible to preserve the nartex (for meetings of the highest clergy, lithuania, baptism, etc.), choirs (for women and choristers), three-part altar (for small and large events) and increase the number of baths, to three or five (lighting the altar, choirs or side compartments) as conscious not so much functional as figurative-symbolic principles (Mango, 1976, Vodotyka, 2006, Logvyn, 1995, Ioannisyan, 2016) (Fig. 1).

a *b*

Fig. 1. Church of Sts. Sergius and Bacchus VI c. (a);
pantocrator (Almighty) Monastery XI –XII centuries. (b)

a *b*

Fig. 2. St. Sophia Cathedral in Kiev in the XI century (a);
St. Sophia Cathedral in Novgorod XI century (b)

a *b*

Fig. 3. Church of The Laying of the Blessed Virgin Belt in Lviv 1999 (a); Patriarchal Church of the Resurrection of the Cross 2013 (b)

The cross-domical building of "Heaven on earth", even if it is a large five-tiered church as St. Sophia of Kyiv, is characterized by a small division of the inner space by numerous pillars, columns into compartments that allow a person to master this space, and not dissolve in it as happened previously in the Temple-Cosmos of St. Sophia of Constantinople or the Church of St. Sergius and Bacchus in the same city. An ideal three-dimensional correspondence to the complex structure of the celestial hierarchy became leading in the cross-domical system. Thanks to this it began to optimally reflect medieval worldview ideas and what, in the opinion of G. Due to that, it began to optimally reflect medieval worldview ideas and this, in the opinion of G. Wagner, caused its significant spread. The dome revealed the main underground (vertical) axis of the temple building. Although the dome grows out of the intersection of two other spatial coordinates, which turn out to be four cylindrical arches of the end of the spatial cross, thanks to this, the compositional basis of the cross-domical church formed a compact connection between the three main directions of space. In this sighting combination, all parts (from the corner cell to the bathhouse) form a hierarchical connection, none of which can be removed without violating the whole and structural space of the temple. Therefore, such unity should certainly seem natural and harmonious, because it was assimilated by world architectural thought and lasted until the twentieth century. During the IX–XI centuries, there was a period of intensive development of the process of searching for new forms of the Christian church, when it is not uncommon for the features of the domical basilica and the cross-domical church to interact in one architectural and spatial solution. The cross-domical building of the church turns out to be ideally adapted for small churches, while the Basilica made it possible to build quite large buildings. However, over time, the need for large temple spaces disappeared, since there were already enough amount of them. And churches, in the new typological version of the cross-domical structure, of large size are built mainly in the capital cities. The builder needed to adapt the cross-domical type, which was not very suitable for large churches, for the needs of a large church. This is why this type is not found in large-sized temples in Byzantine architecture. So, in the most significant buildings of churches of this period, we are faced with a combination of features of spatial construction inherent in both the cross-domical church and the domical basilica. Just at this time, with the construction of the Desiatynna Church, the period of development of ancient Ukrainian church architecture begins. At the same time, Rus-Ukraine was tasked with creating large churches. Therefore, we are not surprised that already in the first Cathedral Church of Rus – the Desiatynna church – the features inherent in both the domical basilica and the cross-domical structure of the church should have been shown. The monumental construction of the young and strong Kievan state faces ambitious challenges in the Princely era. It was intended to express the idea of statehood, military power and unity by architectural and artistic means. All these requirements, in general, were met by the cross-domical type of church building, which is what Kyiv builders

use. In the final period of the tenth century, the type of three-part, cross-domical structure was worked out (except St. Sophia Cathedral as a five-part church). However, a variant of the structure with underdomical supports is taken as a basis, which is being developed in the architectural practice of temple construction in Armenia and Georgia. It made it possible to increase the size of the cross-domical part both in planning and in a high-rise, spatial development, as well as to surround it, if necessary, with additional volumes-naves, galleries, which decreased with their distance from the central core and formed an expressive pyramidal composition of the masses of the temple, and inside to arrange spacious bright choirs. Characteristic features of the church buildings of the Kyiv school of architecture and construction are the completion of five tops-domes over the nine-part, cross-domical part of the church, as well as open external galleries surrounding it and round staircase towers from the inside, which are located in the nartex sections or attached to it from the outside. So, consisting of the same structural elements and architectural forms, the temple buildings of ancient Kyiv and the whole Ukraine-Rus were distinguished by their originality in the composition of planning and three-dimensional structures that are not found in the cross-domical churches of Byzantium and Transcaucasia (Nikitenko, 1995, Krymsky, 2015, Ousterhaut, 2005) (Fig. 2).

The originality of the interpretation of construction tools, architectural forms and composition of volumes, which is observed in the architecture of temple buildings of the late X century and first quarter of the XII century had a strong foundation, revealed in long-term practice and vast experience. It could be realized only in the presence of local high architectural and construction culture and the norms of folk architectural aesthetics developed over the centuries. And this is what led to such an original and unique interpretation of the cross-ban structure of churches in the architecture of the Princely era of Rus-Ukraine. Subsequent periods of formation and development of church construction indicate trends that in their development, enriched and improved in the formative process of temple architecture, were successfully implemented through the Renaissance, Baroque, Classicism and Art Nouveau eras. Their development can be observed at the turn of the XX–XXI century, discovered through new formative expressions, but preserving the traditional model of structural construction, creating a true image of the Ukrainian Temple, which through symbolic-iconic and architectural-spatial diversity, testifies to the phenomenon of a sacred building that consecrates the place and space of its presence in them (Hnidets, 2011, Yatsiv, Kryvoruchko, 2017). (Fig. 3).

Conclusions

1. The structure of the symbol is revealed in its figurative and geometric-formal expression of the sacred essence in temple construction. It is also revealed through the idea-Image, its functional and semantic content and a certain sign-symbolic manifestation in the space of temple volumes. The characteristic symbol in its practical use encourages the builder to feel a sense of formal perfection, harmony and aesthetics of content and sacred engagement, and it is the sign-symbolic expression that reveals the sacred essence in the construction of shrines of churches.

2. The organization of space, its structuring determine the primary basis of architectural composition at any level in the system and structure of space and environment. Artistic image-idea is embodied in this re-depicted architectural space, turning it into an artistic space. As for the sacred expression of temple buildings, sacrum, as a manifestation of the imagery of the formation of a church object, creates and sacralizes this space through its consecration - hierophany of the place where the temple is located.

3. The formative process in the temple architecture of the structured sacred space, in the architectural and planning solution, is revealed through the transformed structure -from the domical bathylic to the cross-domical type of churches, where a person is full of understanding that he/she has the opportunity to master this sacred space as a place of manifestation of the sacrum and the innermost being in God, as well as a creative phenomenon in Ukrainian temple construction, which has its development in space and time expression of image and form.

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ХРАМ ЯК МОДЕЛЬ СТРУКТУРНОЇ ПОБУДОВИ У СИМВОЛЬНО-ОБРАЗНОМУ ТА АРХІТЕКТУРНО-ПРОСТОРОВОМУ АСПЕКТАХ

Анотація. *Висвітленоособливості моделювання структури храмового простору із урахуванням символьно-образного та архітектурно-просторового їх втілення у церковних будівлях Візантії та України-Руси. Сакралізація простору та місця через проявлений феномен їх освячення твориться образом та формою храмового об'єкта. Розглянуто простір як головний компонент формування храмової структури і як місце проявлення їхньої сакральної сутності. Адже саме образ і форма, функція і форма, конструкція і форма композиційно вирішують формотворчі завдання та креативну сутність сакральності простору в храмобудуванні України. Цілісна форма архітектурного твору, зокрема церковної будівлі виражає особливість його організації та спосіб існування в контексті місця, середовища і культури. Оскільки сама форма є функціональною, тому формотворення, незалежно від напрямної його концепції розгортається як у напрямі від форми до функції, так і навпаки, у гармонійному їх поєднанні. Формотворення в архітектурній творчості здебільшого залежить від того соціального, світоглядного та ідеологічного змісту, яким наповнюється форма їх вираження. Це безумовно заторкує архітектуру храмових будівель, які у своєму формотворенні структурно акумулюють у просторі духовно-соціальне начало та суспільно значущу роль їхнього образу-знаку присутності Сакруму. Трансформація планувально-просторового вирішення церков через баневу базиліку та хрестово-баневу структуру, дала можливість їх поєднання як у великих столичних будівлях, так і менших за розмірами церквах, зберігаючи можливість втілення сутності "храму – земне Небо" як ближчого для людини у його просторі, із розумінням його опанування, як місця проявлення Сакруму і сокровенності буття у Бозі.*

Ключові слова: *образ, форма, символ, формотворення, сакральний, баня, базиліка, хрестово-банева структура, ієрофанія.*

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ESTABLISHMENT AND DEVELOPMENT OF MORPHOLOGY AS A BASIC SCIENCE AND ITS POTENTIAL IN THE THEORY OF URBAN PLANNING

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Astract. The main stages of the formation of morphology as scientific teaching are highlighted and characterized, the fundamental aspects of the concept of "form" are formulated, the features of the formation of morphology as an independent scientific direction are generalized, the categorical analogue of "morphological" in urban planning is traced, and the place of morphology in the teachings of form in urban planning is determined. Outlining the problem of defining the concept of "form" in the theory of urban planning and urbanism, it is accepted that the form of a city is an expressive feature of a city, which is characterized by a certain set of morphological meanings and their formal indicators.

Key words: form, morphology, theory of urban planning.

Problem statement

The development of both urban studies in general and the theory of urban planning, in particular, should be associated with the expansion of the existing theoretical and methodological foundations that form the basis for deepening knowledge about the specifics of functioning, development features and the nature of the formation of the material and spatial environment of the city. At the same time, the established theoretical and applied base is not sufficient for the coordinated development of various areas of scientific activity directly related to the study of the city.

In the process of comparative analysis, it is noted that the research approaches that underlie most scientific works devoted to the specifics of the formation of urban planning objects are not relevant and properly justified. The existing theoretical framework, which is based on a modern understanding of the formal qualities of the substantive level of the city in the global and intersectoral contexts, especially needs to be expanded and clarified.

The problem is caused by the spread of a well-established model for studying urban planning objects, which was based on solving problems related to the development of the functional and planning structure and composition of the city. This situation determines the importance and relevance of studying a number of categories that can serve as a basis for studying morphological features of urban planning objects, which,

in turn, requires clarification and improvement of existing and attracting new interdisciplinary knowledge for the theory of urban planning. It will help to identify new relationships between the concepts of initial disciplines, expand the traditional disciplinary methodology and deepen specialization in urban planning.

Analysis of research and publications

The theoretical basis of the study were works on the formation and development of morphology as a general scientific doctrine in the philosophical worldview (Aristotle, 1976; Kanaev, 1970; Mikulinsky, ed., 1972; Reshetov and Stezhko, 2013; Tararoev, 2009; Shcherba et al., 2004;) and logical-epistemological (Bakhtin, 1987; Biskub, 2014; Dika, 1975; Etymological…, 1982-2012; Mala…, 2004-2013; Dictionary…, 1970–1980; Yudkin-Ripun, 2006; 2011;) contexts. Works on the specifics of the functioning of morphology in biology (Meyer, 1958; Meyen, 2010; Lutz, 2002; McLaughlin, 2002), philology (McElvenny, 2018; Szemerényi, 1996), geology (Biletsky, 2007) and geography have become particularly important (Huggett, 2007; Simonov, 2005). A sample analysis of theoretical and methodological foundations related to the study of morphology at a specific scientific level and identified features of the use of specialized terminology (Timonin, 2001). Particular attention is paid to the study of the concept of "form" and the definition of the nature of its functioning in urban theory (Rappaport, 2000; Remizova, 2016; Besussi etc., 2010; Curdes, 2015; Dempsey etc., 2010; Kropf, 2009; Marr and Nishihara, 1978). In Ukraine, among the array of local scientific reflections, this topic remains virtually unrepresented.

Purpose of the article

The purpose of the study is to identify and characterize the main stages of the formation of morphology as scientific teaching, to formulate the fundamental aspects of the concept *form*, generalization of the features of the formation of morphology as an independent scientific direction, trace the categorical analogue of “morphological” in urban planning and determining the place of morphology in the teachings of form in urban planning.

Results and discussion

A philosophical-ideological and logical-epistemological approaches are the *methodological basis* of the research. Their application is due to the understanding and disclosure of the essence of morphological content in urban planning and the selection of those concepts and categories that correspond to it. The method of theoretical analysis also showed its effectiveness, which provided the choice of the research topic, the definition of the essence of the main morphological concepts and categories, the systematization of the main stages of the formation of morphology as a scientific direction and generalization, based on the comparison of the main facts about morphology in various fields of knowledge and the identification of their common features.

Morphology in the course of its development has confidently outgrown the status of a special section of biology (Etymological…, 1989) and, having passed all the stages of formation characteristic of any branch of science, has become a fundamental section of various branches of knowledge: biology → *botany* → ***plant morphology*** (Meyer, 1958); philology → *grammar* → ***word morphology***; geology → *Mineralogy* → ***mineral morphology*** (Beletsky, 2007); geography → ***geomorphology*** (Huggett, 2007) et al. In addition, morphology as a scientific branch is actively developing in the *cultural studies* (Yudkin-Ripun, 2006*), mathematics*, *sociology*, *physics* and other areas of knowledge.

The process of formation of morphology as a scientific field can be divided into five stages. *The first* is a fundamental stage, related to the emergence of the concept *of form* and *morph* and the development of ideas about form in philosophy. At this stage, the main content of concepts and the necessary scientific background of morphological problems were formed. *The second* one is nominative. When the need for

morphological knowledge was realized, the term *morphology* appeared itself. *The third* stage is explicit, manifested in the formation of morphology as an independent section in botany. At this stage, the necessary prerequisites for identifying morphological problems in the field of knowledge were formed and ideas about the goals, subject and object of the *morphology* were formed. At the *fourth* fundamental stage, morphology has acquired an independent scientific status and spread to various branches of knowledge. *The fifth* stage is associated with the formation of individual sections and the specification of the content boundaries of morphological concepts in accordance with the object and subject of study.

The current state of morphology at the general scientific level can be described as accumulative since it is associated with the generalization of the factual base and a gradual increase in knowledge. If other branches of science are dominated by certain paradigms formed by scientific communities and determine a certain interpretation of the essence, nature and sources of development of reality, then morphology sets the basic level based on which they are formed.

Fundamental aspects of the concept of* "*form*"**. In modern philosophical thought, the object of a certain science is understood as a reality that exists independently of the subject (researcher) and regardless of the form (material or ideal) in which it appears. For most natural sciences, their objects are material entities, and for the humanities, they are ideal. But there are also sciences whose objects appear simultaneously in two forms of the real world – material and ideal. This circumstance is important for defining the concept ***form *in the theory of urban planning* and it is due to its different interpretation. This is because of the fact that a city is an object of interest in various spheres of human activity and scientific disciplines. Accordingly, the content of the concept *form* varies depending on the tasks set and the relationship with other scientific branches: in some studies (environmental, economic, etc.), the form of the city is understood as a material object, and in others (mainly in works of philosophical, sociological and cultural orientation, etc.) – as a spiritual object.

The etymological dictionary of the Ukrainian language indicates that the term *fórma* is borrowed from Latin and it means *shape, appearance*. However, these are just assumptions, since there is no reliable information about its origin. There is also an assumption about the connection of the Latin word *fórma with a* Greek *μορφή (shape, pattern, model)* through an intermediate form *morma* with dissimilation *m-m* in *f-m* (Etymological..., 2012, p.).

The ancient understanding of the category *form* and close to it *morfe*, *eidos* and *idea* are associated with the production of things according to certain normative descriptions, which were interpreted as the form of objects themselves, and philosophically reduced to an "eternal" and non-destructive essence: the idea, form or eidos of the object (Rappaport, 2000). According to Aristotle's philosophical views, the essence of being a thing is its form. The form is not a quality, not a quantity, not a relation, but something that makes up the essence of a thing, without which it does not exist (Aristotle. Metaphysics).

Later category *form* began to be understood not as a form of things, but as a form of thinking itself. The philosophical thought of modern times, exploring the category *form*, was no longer about craft production, but about the formation of scientific knowledge and their systems, changing styles in art, and developing the philosophical concepts themselves (atomistic, epistemology, ontology, semiotics, etc.).

Nowadays there is no single accepted definition of the concept *form*. Its interpretation is very different in all areas of knowledge. An idea of the phenomenon *form* and its definitions are so different in the areas of public consciousness that they often lead to misunderstandings in scientific circles and are the reason for the lack of formulativeness of the concepts associated with it. The dictionary of the Ukrainian language contains 13 definitions of this term, where only the first one received scientific justification in the context of scientific teaching *morphology*, characterized by methodological awareness of the processes of formation and constitution of knowledge about the formal side of objective reality.

Formation of morphology as an independent scientific field. The ideal of *plant morphologies* (and organisms in general) was put forward by J. W. Goethe, who first formulated the concept of morphological type in botany (Meyen, 2010). However, its origins go back to the era of antiquity, when the basics of

classifying parts of speech and grammatical categories were formulated, a system of biological classification was developed, etc. (Encyclopedia ..., 2012).

The terminology of morphological descriptions of plants was developed in the XVII century. At the same time, the first attempts were made to theoretically generalize different types of plants in appearance and structure. However, the formation of plant morphology as independent scientific teaching began in the XIX century (Mikulinsky, Ed., 1972), after J. W. Goethe's work "Experience of Plant Metamorphosis" appeared. (Goethe, 1797).

Term and concept ***morphology*** was introduced into scientific circulation, as is now believed, by J. V. Goethe, probably in the 90s of the XVIII century, when he was intensively engaged in studying the structure of animals, mainly their skeleton (Kanaev, 1970). For the first time, this word occurs in The Diary of J. W. Goethe, in the notes of September 25, 1796, and in a letter to J.-F. Schiller dated November, 12 of the same year (Kanaev, 1970). There is an assumption that his understanding of form was reduced to determining the internal parts that make up the structure by linking the external form of organisms or artistic work with their internal structure, to determine the internal parts that make up this structure. J. W. Goethe also considered the external and internal form as a product of the process of formation and transformation. Comparative morphology in plants and animals is one of the data that led to the theory of evolution (Kropf, 2009).

There is an assumption that the word *morphology* formed by J. V. Goethe from the basics of words *μορφή-form and λογία-teaching (from Greek)* modelled on words such as *biology* (from German *Biologie*), *theology* (Teologie), etc. (Etymological ..., 1989). In Ukrainian, the word is borrowed from German – *Morphologie* (Kanaev, 1970).

In print, this term first appeared later, in 1800, in one of the works of the naturalist K. Burdakh. Whether K. Burdakh borrowed it by verbally transmitting conversations with J. V. Goethe or invented it himself remains unknown (Kanaev, 1970). K. Burdach also coined the term *biology* in 1800, he proposed using it to refer to the study of living things from a morphological, physiological, and psychological point of view (Laughlin, 2002; Lutz, 2002).

But J. W. Goethe dreamed of using this concept in the study of mountains and the topography of the Earth. Working on a problem of *morphology* and looking for its place among related sciences, J. W. Goethe determined its content-the consideration of the form (*Gestalt*) both in its parts and in general in their correspondences and deviations. He arranged morphology in the appropriate sequence and found a logical place for it (Kanaev, 1970): history of nature → natural philosophy → anatomy → chemistry → zoonomy (*Zoonomia* – the doctrine of the laws of animal life (Encyclopedia) → psychology → ***morphology*** → physiology. At the same time, contemporaries argue that such a sequence is not logical.

Literally, a word *morphology* means the doctrine of the form, usually the body of organisms, and in fact, it is closely related to the concept of "*the organism*". This is how I. Kant philosophically interpreted this concept, since it was his work "Critique of Pure Reason" (Kritik der Urteilskraft, 1790) that had a significant influence on the formation of Goethe's philosophical thought.

Further, morphology in botany developed in different ways, forming different directions: *comparative, ontogenetic, phylogenetic (evolutionary), ecological* etc.

Classical morphology usually used qualitative criteria and verbal, informal descriptions, which inevitably have a subjective character, to assess the features of the structure of organisms. A natural stage in the development of morphology was the need for quantitative assessment of the structure and obtaining multiple reliable objective data (Dyka, 1975).

Role of morphology in modern biological science is not unambiguous. This is due to the fact that if morphology is considered as *an applied discipline* that serves the needs of taxonomy, then it has the status of *a method*. If it is considered as a theoretical discipline, then this determines the presence of its own subject of research, which is not directly related to the solution of axonometric (visually depicted spatial forms) problems (Timonin, 2001).

In the XIX century, the term *morphology* also spread to linguistics as a definition of the branch of language science that studies word forms. In a linguistic sense, it was first introduced in 1859 by the German linguist A. Schleicher, claiming: "for the science of word formation, I choose the term 'morphology'" (Szemerényi, 1996). His goal was to create a synchronous description of forms in languages without taking into account their historical development (McElvenny, 2018). In Ukrainian, the word is borrowed from German – *Morphologie* (Etymological era, 1989).

In the modern system of knowledge with the development of scientific knowledge of the world, *morphology* has been strengthened and has become a branch of scientific disciplines in such areas as architecture – *architectural morphology* (develops in two main directions, such as identification and classification of forms, research of the morphogenesis process); mineralogy – *mineral morphology*; geography – *geomorphology*; mathematics – *mathematical morphology*; cultural studies – *culture morphology*; sociology – *social morphology*; folklore studies – *morphology of folklore*, etc.

The theoretical and methodological foundations of morphology as a scientific branch were not formed immediately. The process of formation is associated with the description of the objects under study. Over time, this approach has changed: based on the description, theories have been formed aimed at identifying characteristic features, explaining properties, and formulating recommendations for their practical application.

Categorical analogue of* "*morphological*" *in philosophy. The connection of research with philosophy is due to: the variability of the evolution of matter (a), the variety of ways of scientific explanation (b) and the multiplicity of methodological approaches to the definition of the concept "*form*"(c). One of these reasons is the use of a priori categories in relation to reality.

Knowledge of the surrounding world is not stable but is in constant motion – the process of development. As a result, there are new scientific directions and systems of concepts that describe them.

To consider objective things related to form, the author relies on Aristotelian logic and a system of categories that reflect objective reality and the general pattern of development of all material, natural and spiritual phenomena. In the historical, philosophical and logical literature, an assumption is put forward by a scientific basis of *Aristotle's logic*, were his observations and studies on the following issues: *morphology and physiology of animals*.

Three Aristotelian categories are often distinguished as the most general: *matter, property (*or *quality) of a thing, the ratio of one thing to another*. That is, morphology can generalize knowledge about things, their properties, and the relationship of one thing to another.

Categorization is also crucial for the study of subjects related to the city since the theory of urban planning performs its search in parallel at two levels – material (the level of the city – object) and ideal (the level of urban planning – process), requiring effective mechanisms for categorical reflection of knowledge.

Ideas about the content-form relationship in urban planning. The phenomenon of categorization in this paper, although one of the most controversial, is not as necessary as the definition of questions related to the form. This is due to the fact that there is an understanding of morphology as the "doctrine of the form" according to etymology.

Form as a philosophical category is inextricably linked with content. At the same time, the same content may have a different form, but the same form may be filled with different content. A kind of concretization of content and form is such categories as essence and phenomenon.

Nowadays, morphology is associated with a number of scientific disciplines in which, first of all, formal structure (rather than quantity) is a central issue. In linguistics, this is the study of word-formation, in biology, it is about the shape and structure of organisms, in geology, the emphasis is placed on the characteristics, configuration and evolution of rocks and forms of the earth, etc.

In connection with the question of the formation of concepts of morphology as a general science of forms, which is gaining the importance of a scientific method, a cultural critic I. Yudkin-Ripun (2011)

suggests making one caveat. The German-language tradition of understanding, in the course of which the ideas of this direction were developed, uses the concept of *gestalt* (from German *Gestalt)*, which translates both as a form and as an image and therefore means *a meaningful form*. In turn, at least two terms are used to define the concept of content – *Gehalt* and *Inhalt*, where the definitions of the meaning of a form and its material, substance intersect.

In cultural studies, according to I. Yudkin-Ripun (2011), *ideas about the content-form ratio that are unsuitable for use in the terminological system of cultural morphology*, are false. Perhaps this position should be taken into account, given that in urban planning, a city is always understood as a meaningful form, "*inseparable both from its meaningful meaning and from the substance that becomes its carrier. Moreover, such a form is always only one of the metamorphoses of the incessant transformation process and appears not as a static fact, but as a program of such transformations. At the same time, it always appears as an object of reflection, through which it is understood and reveals its content, it is an intermediate stage in the endless chain of metamorphoses, where the source of subsequent transformations and the generation of new forms each time is laid"* (Yudkin-Ripun, 2011). However, in this case, the goal of learning about the city will be to find semantic relations of an informal nature and study them within the framework of philosophy.

Because *form* the city is not clear (visually) from the point of view of its appearance or structure, so the concept itself (form) in relation to the city is mainly considered from the point of ***philosophy's*** view (since the *form* is a categorical concept), thus entering an interdisciplinary field of knowledge.

Form as a philosophical category reflects the objective world since all objects, processes and phenomena of nature and society have their own form. At the same time, it cannot be considered as an independent essence of something, but is in organic unity with the "content": *the elements and processes that make up a particular phenomenon are its content only by entering a certain form*.

According to philosophical beliefs formed as a result of life experience, *form* and *content* as integral aspects of things, processes, and phenomena of the objective world, they are inseparably interrelated categories: content is understood as the unity of all interacting elements of a certain material system, and form is the principle of organization, the orderliness of particular content.

The defining aspect of content, in philosophical teachings, is its *variability*, and for the form – its *constancy*. The same content may have a different form, but the same form may have different content. Therefore, the form is more conservative; it corresponds to the content at the initial stage of the object's development and then slows down its development. However, the content destroys the form, but at the same time changes itself, destroying the entire object (Reshetov and Stezhko, 2013).

Despite the fact that this study is based on pluralistic philosophical views, the categories of *form* and *content* there are concretized and presented from the point of view of their material manifestation.

The whole process of forming a city and its components is based on compliance with certain rules and regulations, which, in turn, provide for the segmentation of the city's territory into separate parts. As a result, the territory is divided into many fragments of different shapes and resembles a mosaic – *puzzle*. Each fragment has a certain content (as a philosophical category), which reflects a certain number of elements that interact with each other and are arranged in a certain order. As a result, a material structure is formed – a physical (material) representation of a set of interrelated elements. The content as a way of existence of the form has certainty and has an impact on the formal characteristics of the city as a whole: the degree of density, the nature of the configuration, etc.

If *the form* of the city is considered as a *material object*, consisting of many components, then its *content* is a special *form of object cognition*, which is determined by the most general but essential characteristics (morphological, compositional, functional, stylistic, etc.). Now in the scientific language, the concepts of "content and form" are increasingly being replaced by more specific and defined ones in relation to the city – system, structure, element, function. These characteristics are due to *philosophical worldview* and they are considered through a number of general scientific methodological principles: idealized object, concreteness, comprehensiveness, development. Theoretical analysis is possible only if there is *an idealized object*. In the real world, a city consists of objects, relationships, phenomena, and processes. Therefore,

determining the features of the city's material structure using an idealized model will allow you to view the object in a simpler form with clearly defined morphological features.

Form as a characteristic of the material content of the city. Before studying morphology in the theory of urban planning, we need to understand the concept of *form*. This is because morphology, first of all, is the study of form. In theory, form means both the appearance of an object and a certain state in which a particular element shows itself. So, in geometry, a shape is considered in two meanings: the first – as a characteristic of identical shapes formed by transferring or turning; the second – as an object in which a simple geometric shape manifests itself. Authors of the study of problems of representation and recognition of the spatial organization of three-dimensional shapes (Marr etc., 1978), identify the *form* with the shape and take it as a characteristic denoting the surface of the object. They note that a form is a formal scheme for describing shapes or parts of them.

Finally, in various fields of activity, there are many different ideas about form: external expression of some content – in philosophy; structure and system of organization – in system research; appearance and outline – in the study of objective reality; identification with simple geometric shapes – in geometry; composition, which is a geometric drawing, semantic constructions and reflection of figurative tasks – in decorative and applied arts, etc. All of them are the semantic unity (integrity) of disparate things, the essence of which is reduced to the reflection of material structures on certain substrates. In a narrower sense, it is visible through a figure on a certain material basis (substrate).

At the same time, O. Rappoport (2000) noted that *"as soon as we begin to consider the concept of architectural form from the point of view of the logic of professional thinking, we are faced with the fact that we are dealing with one of the main philosophical categories, but immediately find that the category of form in philosophy is not developed so much that it can be "applied" in architecture*". In his opinion, *"all philosophical interpretations, where form and content are considered in contrast to each other, are vague and do not provide anything for understanding the logic of architectural thinking, and modern western thought has avoided it altogether"*. The shape of the subject belongs not so much to the subject itself, but the cognitive means of a person. It sees in objects only those forms that are mastered by knowledge and thinking in the cultural tradition and language.

The architectural form that occupies a central place in the theory of architecture (history of architecture and architectural composition) has no unambiguous definition. O. Rappaport (2000) explains this by saying that the architectural form performs the function of a category, and on its basis, more specific definitions are created, such as "classical architectural forms", "modern architectural forms", etc. Finally, in his dissertation, O. Rappaport (2000) considered the architectural form as a product in which morphological, symbolic and phenomenological aspects are synthetically intertwined.

A similar position regarding the form in a work of fiction is shared by literary critics: *"form is an expression of the active value attitude of the author, creator and perceiver (co-creator of the form) to the content; all moments of the work in which we can feel ourselves, our value attitude to the content, and which are overcome in their materiality by this activity, should be attributed to the form"* (Bakhtin, 1987). The author, illustrating a work in which "technique" (i.e., a form understood as a set of techniques) is absent, represents only the content (Klochek, 2007).

A. Remizova (2016) places special emphasis on the understanding of form in architecture, in particular in didactic activities, noting that architectural form and space are described by the following concepts: archetype – simple geometric shapes; structure – elements and connections between them and organization – a way of combining parts into a whole.

Representation of the form in urban planning is more based on the works of authors who distinguish it as the primary characteristic of the material expression of the city, which is reduced to determining qualitative and quantitative features and identifying compositional techniques. In the end, Aristotle's interpretation of form as the root cause that determines the certainty of things began to distinguish between physical and spiritual substances. Therefore, in urban planning, the carrier of form can be conditionally

defined as the primary substance, considered by scientists from the receptive side – that is, from the point of view of visual perception of material reality.

It is also important to emphasize that the generalization of knowledge about form in urban planning reflects the way they are positioned in relation to already available information about related conceptual entities. Categorization, which underlies this process, up to a certain limit is the imposition of psychological meta-reality on the objective world, which, in addition to its material nature, also implies certain ideal entities (Biskub, 2014).

The whole process of comparing the form and meaning is based on compliance with certain rules and regulations, which, in turn, provide for the segmentation of the city into separate urban planning objects. Such units can correspond to categories of different types, but they can be further grouped into classes according to common categorical features, for example, object (substance) and form (quality) are different categories, but common categorical features are morphological, compositional, functional, semantic, stylistic, etc. It is worth noting that these features do not appear equally at different hierarchical levels; the leading feature can be one or the other – this especially depends on the level at which the object acts as a category *substance*.

While characterizing a body in statics, in its spatial relationships, the category of *form* is expressed by the concept *structure*, *construction* and so on. The closest to these categories is the concept of "organizing" (a way of linking elements of content in its movement and development) (Shcherba, 2004).

The city in its material expression (way of organization) represents a planar structure. From this perspective, one aspect of urban planning theory is to describe how a city and its characteristics overlap with certain values: *structural organization of the city* can be described by *morphology*, *mutual organization by composition*, and its *development* by *the history of urban planning*.

In the process of studying the city and the features of its organization, along with general philosophical categories, the concepts that determine the form of the city and important common features of its components are also identified. For example, *morphological type* is a special category that largely expresses the morphological nature of the quarter and is one of the defining features of it as a part of the city.

The problem of form interpretation in urbanism remains unresolved. Thus, to denote the physical characteristics of the constituent elements in urbanism, the concept of *"urban form"* is used. In one of the thorough studies "Dimensions of the Sustainable Cities" (2010), the urban form is considered as a spatial configuration of fixed elements of the city: transport structure, density, building types, hierarchical levels, and functional use, each of which has a specific physical dimension (Dempsey et al., 2010). Similar in its content is the interpretation of the concept *form* in the study "The Structure and Form of Urban Settlements" (2010). Studying the structure and shape of urban settlements, the group of authors focuses on the fact that the urban form can be considered in a two-dimensional plane, and its main characteristics are determined by density (high and low) and configuration (ranging from adjacent and compact to unrelated and scattered) (Besussi et al., 2010). Similar in its essential features is the interpretation of the form by G. Curdes (Curdes, 2015), who sees the form as a *formal characteristic of city elements: plots, buildings, and neighbourhoods*, and C. Gandhi (Handy 1996), who defines it as *a set of characteristics related to the method of land use, transport system, and project idea*.

Conclusions

Morphology in the natural sciences and in those humanities that are amenable to quantitative analysis studies the external forms and internal structures and entities, quantitative and qualitative features of a formal nature.

Linking morphology with urban planning, it is necessary to find a place for it among several concepts that are traditionally associated with the knowledge (perception) of the form. These primarily include urban planning composition, which, as in architecture, is traditionally associated with form and structure.

In both morphology and composition, the object of study is form. The difference lies only in its manifestations, the essence of which is laid down in the etymology of each word. In the case of morphology, the form is considered as a single integral object that has the property of divisibility. In a composition, on the contrary, several forms need to be combined into a complete structure, otherwise, it (the form) will not be a compositional form. Thus, morphology divides and describes morphological features, and composition determines the morphological characteristics of elements with their subsequent compilation or arrangement into a complete composition.

In turn, *composition* in urban planning is a link between general theoretical philosophical concepts of urban planning and artistic problems of urban space formation. By its origin, composition theory studies objective patterns of shaping and related means of constructing architectural and urban planning objects. The history of urban planning shows numerous examples of various compositions: the development of regular rectangular planning of ancient cities (the Greeks based the planning of their cities on a rectangular system and improved it) and the formation of ensembles. If a medieval city is compositionally enclosed in ants, then the renaissance city is directed from the centre to the periphery, and the centre of the city was no longer the buildings of the cathedral or town hall, but the free space of the main square, etc. At the same time, the history of urban planning shows that in the absence of compositional patterns, the city environment became unattractive, lost its integrity and expressiveness.

Thus, *urban planning composition* is a way of organizing the elements of the city to achieve a common spatial unity and harmony and ensure the interrelation of the components due to the artistic idea and function of the urban form, while ***morphology*** *in urban planning is the doctrine of form and structure.*

The role of morphology in relation to composition in urban planning is not clear. This is explained by the fact that, on the one hand, morphological characteristics precede the composition (layout of the form), since they describe and determine the features of the general expression of the object, and on the other hand, they can follow it and thereby act as an object of morphological study. There is also a problem in the fact that sometimes the fundamental characteristics of an urban planning composition (texture, limit, limitation, etc.) can be studied by morphological characteristics of the form and be its defining features.

For the future, the author of the study aims to formulate global trends in the development of the city's morphology.

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СТАНОВЛЕННЯ ТА РОЗВИТОК МОРФОЛОГІЇ ЯК ЗАГАЛЬНОНАУКОВОГО ВЧЕННЯ І ЇЇ ПОТЕНЦІАЛ У ТЕОРІЇ МІСТОБУДУВАННЯ

Анотація. *Визначено та охарактеризовано основні етапи становлення морфології як наукового вчення. Аналіз літературних джерел показав, що морфологія упродовж свого розвитку впевнено переросла статус важливого розділу в біології, ставши самостійною і пройшовши всі етапи становлення, характерні для будь-якої наукової галузі. Процес становлення пов'язаний з описом досліджуваних об'єктів та розробленням на його основі теорій, спрямованих на виявлення характерних ознак, пояснення властивостей і практичного їхнього застосування.*

Варіативність еволюції матерії, різноманітних способів наукового пояснення та множинність методологічних підходів до визначення поняття "форма" зумовили порівняльний аналіз категорійного аналогу "морфологічного" у філософії. У філософії розуміння форми зводиться до семантичної єдності (цілісності) розрізнених речей, зміст яких відображений у фігурах на визначеній матеріальній основі (субстраті).

Окреслено проблеми визначення поняття "форма" в теорії містобудування та урбаністиці, зумовлені різним його трактуванням та змістом, який варіюється залежно від поставлених завдань і співвідношення з іншими галузями знань. В одних дослідженнях (екологічних, економічних та ін.) форму розуміють як зовнішній вигляд та обриси визначеної матеріальної дійсності, а в інших (переважно в працях філософського, соціологічного, культурологічного спрямування та ін.) – як зовнішнє вираження певного змісту. Не менш дискусійною залишається проблема визначення поняття "урбаністична форма", що здебільшого застосовується для опису фізичних характеристик елементів міста. Також через можливість пізнання форми в межах композиції та високий рівень її наукової розробленості в теорії містобудування сформувався погляд розглядати форму як суб'єктивну категорію. У цьому дослідженні форму слід трактувати як об'єктивну характеристику зовнішнього виразу матеріально наявного предмета. Тому прийнято, що форма міста – це виражальна риса міста, якій притаманний певний комплекс морфологічних значень та їхніх формальних показників. У містобудуванні в контексті вивчення морфології міста форму слід розглядати як характеристику двовимірної моделі фіксованої частини території міста з усіма наявними будівлями та спорудами.

Ключові слова: *форма, морфологія, теорія містобудування.*

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THEORETICAL FOUNDATIONS OF THE ORGANIZATION OF COMMUNICATIVE SPACES OF CHILDREN'S EDUCATIONAL AND REHABILITATION CENTERS

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Abstract: The article provides an in-depth analysis of the theoretical foundations that precede the process of organizing communicative spaces within the children's educational and rehabilitation centre for social adaptation – an institution whose goal is to create optimal conditions for enhanced socialization of children with special psychological needs and their further integration into society. The definition of signs of children's communicative space is considered and the significance of spatial composition in the process of socialization of children is determined. The article considers key aspects of the problem – medical and architectural and determines possible factors influencing the process of expanding the network of institutions of the corresponding direction on the territory of Ukraine.

Key words: communicative space, social adaptation, communication, child, medicine, socialization.

Problem statement

The relevance of the problem of socialization of children with special needs is confirmed by the disappointing dynamics of the incidence of certain diseases in children – autism, Down syndrome and post-traumatic stress disorder (hereinafter referred to as PTSD). Usually, children with these problems are left out due to the stereotypical thinking of modern society, manifestations of bullying or aggression, but every child, regardless of the characteristics of the body or psychological state, deserves a happy childhood, freedom of professional activity and respect for their personality.

The process of socialization of special children requires not only an optimal social climate but also a favourable architectural space, which significantly affects the effectiveness of social interaction between users of the space. The architectural aspect is an important component in the process of effective social adaptation since the space and architectural tools form the environment for socialization. Failure to take into account the needs of special children in the context of architectural space can slow down or make the process of social adaptation impossible.

Analysis of recent research and publications

Features of the architecture of Rehabilitation Centers for people with special psychological needs are covered in the works of T. Sean Alkvist, M. Mustafa, T. V. Rusevich, L. R. Hnatyuk, Yu. A. Semerun. Analysis of the medical spectrum of certain diseases, search for effective methods of diagnosis, treatment and rehabilitation are described in the works of M. Pinkus, M. Plakhtii (2018), E. V. Poroshyna (2015), N. P. Veselova (2017), S. Esterbrook, A. Nesterova, R. Aisina, T. Suslova, L. Rybchenko (2014), K. Halepa (2013). Architectural practice and theory are in search of effective innovative solutions for creating space, but a stable connection with the medical component of the problem is needed, in particular, taking into account the specifics of the medical nature. In the process of medical treatment and rehabilitation, the architectural factor should be taken into account, since a favourable environment can organize an effective process of treatment, rehabilitation, and provide full-fledged communication.

Objective of the article

The purpose of the article is to confirm the weight of the communicative space as a determining lever in the process of social adaptation of children with special psychological needs and specify the theoretical basis for further determining functional spatial and planning decisions.

Results and discussions

For a more correct understanding of the spatial and architectural needs of special children, it is important to analyze the problem at the level of medical and architectural aspects. The medical aspect reveals the essence of the disease as a concept, the specifics of certain diseases and their manifestations and influence of diseases on life processes.

Autism is a persistent developmental disorder that affects the child's communicative and adaptive abilities and processes. The autistic disorder causes interruptions in speech development, communication deficits, and a number of psychological behavioural features that complicate the socialization process (refusal of nonverbal contact, lack of interest, rejection of changes, etc.) (Plakhtii M., 2018). Down syndrome is characterized as a congenital genetic disorder that can lead to speech delay, decreased intelligence, impaired physical functioning of the body, etc. (Deren, 2015; Poroshyna, 2015). PTSD is a set of certain psychological disorders due to a traumatic situation, which later provoke problems at the physiological (sleep disorders, tremors, stress), social (isolation, absent-mindedness, panic attacks), emotional and behavioural levels (Veselova, 2017; Khalepa, 2013).

An architectural space that correctly takes into account the medical features of diseases has a positive effect on the treatment and rehabilitation process. Since rehabilitation of educational processes in the context of the studied diseases is considered in the context of communication, children's communication space can be considered a tool for ensuring socialization.

M. Plakhtii and Y. Kuralova describe the use of environmental resources (subject and spatial elements) as measures with high correctional and developmental potential (Plakhtii, 2018). Thanks to the application

of the concept of children's communication space, it is possible to create an effective environment for improving the social, adaptive and communication skills of children, taking into account their capabilities and characteristics of the body.

In the course of the research, the key features of children's communication space are identified, which significantly affect the process of social adaptation (graphically illustrated in Fig. 1):

- communication – ensuring healthy, high-quality and useful communication of the child with other subjects (children, parents, specialists, nature, society)
- recreation – space promotes wellness and connection with nature;
- accessibility – freedom of movement, inclusion and no barriers;
- openness – the ability to freely perceive and learn about the world around you.

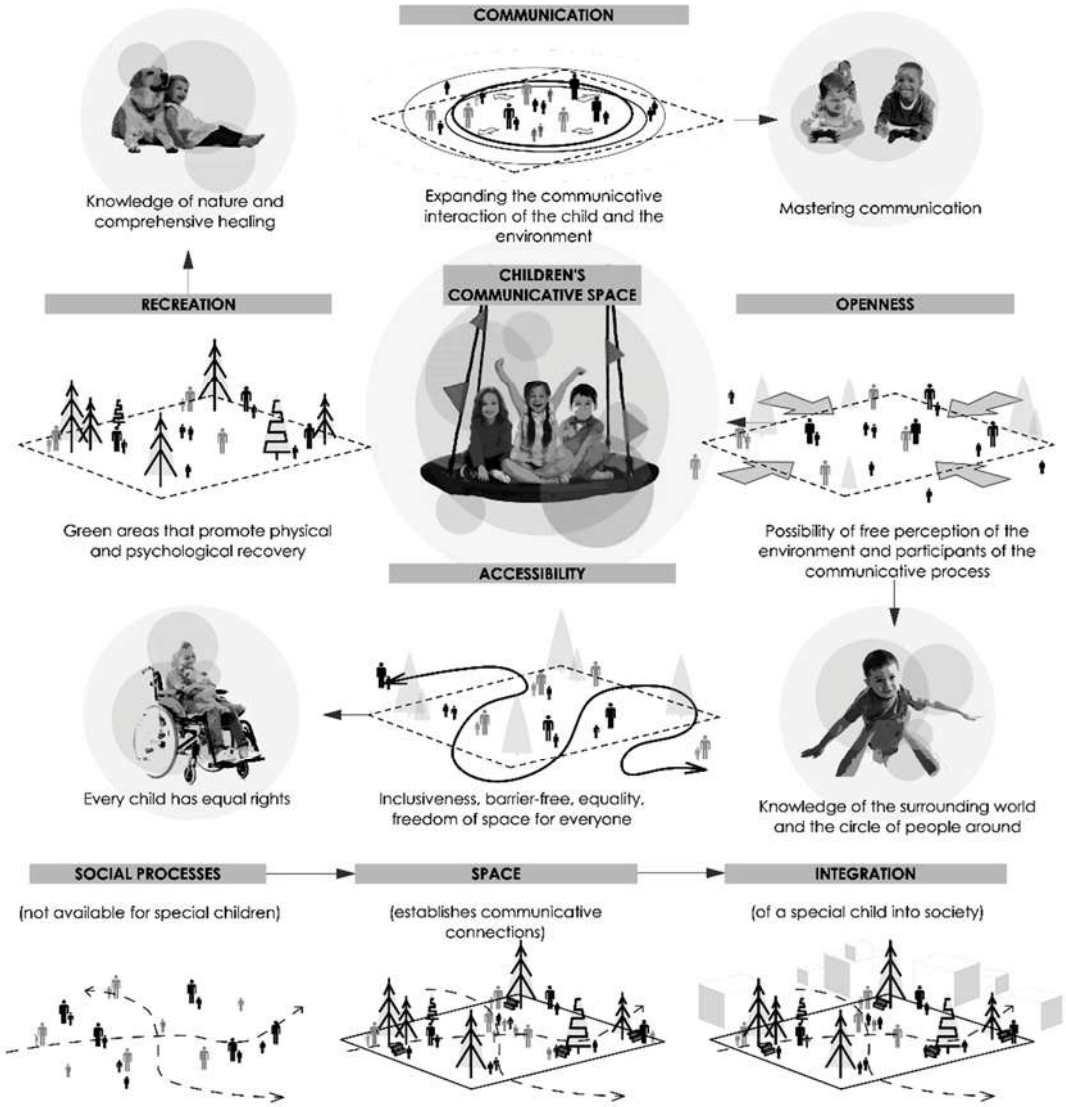

Fig. 1. Definition of features of the communicative space and their impact on social adaptation

M. Plakhtii and Y. Kuralova describe the use of environmental resources (subject and spatial elements) as measures with high correctional and developmental potential (Plakhtii, 2018). Fig. 2 graphically reflects the connection of space with the process of social integration – space and its elements help to create communicative connections, establish social processes and provide a favourable basis for full-fledged social integration of special children.

So, the communicative space is an important component of the socialization process. Taking into account medical signs by the space helps to optimize the functional spatial structure and enhance the positive effect of socialization.

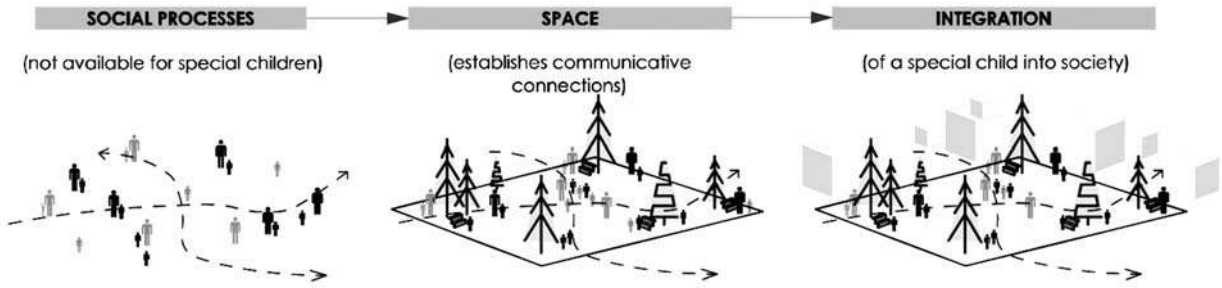

Fig. 2. Graphical representation of the importance of space for social integration

Since Ukraine adopts the cultural, social and educational experience of European countries, the issue of socialization and integration of children with special psychological needs is quite important. There is a need to develop a network of appropriate rehabilitation and educational institutions, provide them with innovative technologies, methods, and material equipment (Rybchenko, 2014; Moiseienko, 2014).

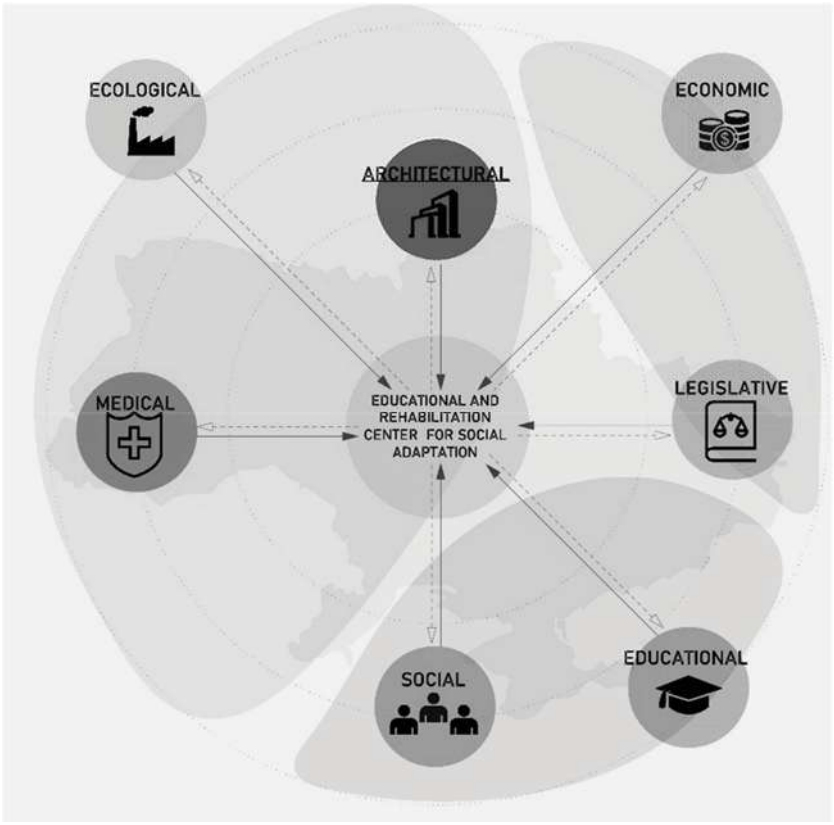

Fig. 3. Factors influencing the process of expanding the network of social adaptation institutions in Ukraine

As part of the study factors influencing the process of expanding the network of social adaptation institutions in Ukraine were derived:

- **architectural** – introduction of models of communication spaces in social adaptation centres will help to influence the adaptability of modern public spaces and increase socialization;

- **medical** – negative statistical indicators indicate the need to expand the network of social adaptation centres;
- **economic** – low socialization reduces the chances of a special child to find employment, and professional training measures in social adaptation centres increase them;
- **legislative** – implementation of equality concepts and support for social adaptation centres will help make them more accessible;
- **educational program** – inclusive education will help ensure proper educational training of children;
- **social** – the centre for social adaptation involves all representatives of society in communicative interaction in order to humanize it;
- **ecological** – health and recreational measures are needed in times of unfavourable environmental situations.

The analysis of the medical aspect, in particular the study of the characteristic manifestations of these diseases in a psychological context, proves that it is the psychological component that affects the desire or unwillingness of society representatives to join communication with special children. The use of communication space as a unifying link will help to deepen communication between special children and other children, thereby contributing to a healthy, fair, barrier-free society.

The social aspect of the study confirms the fact that special children have a high creative potential, a tendency to have interesting ideas and show a desire to develop their personalities. A perfect communicative space for social adaptation will help special children realize themselves as full-fledged people and join social processes, taking into account the concept of equality that is being implemented all over the world today.

Thus, the architectural aspect is tangential to the medical and social aspects and is designed to create an effective supportive environment for ensuring effective communication, socialization and integration of special children.

Conclusions

Based on a systematic analysis of literature sources, the main aspects of the study are outlined: medical and architectural. The medical aspect includes the study of the specifics of diseases, analysis of their physiological and physical manifestations, methods of diagnosis, treatment and rehabilitation. The architectural aspect analyzes the spatial needs of a special child that should be taken into account in medical processes. The interconnection of these aspects guarantees positive dynamics since a perfect space contributes to the high-quality execution of processes. The definition of signs of children's communicative space (communication, openness, recreation, accessibility) which are decisive for the process of socialization and social adaptation of special children is considered; the relationship between space and social processes as mutually conditioned components is given. The article also studies factors influencing the process of expanding the network of social adaptation institutions in Ukraine.

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ТЕОРЕТИЧНІ ОСНОВИ ОРГАНІЗАЦІЇ КОМУНІКАТИВНИХ ПРОСТОРІВ ДИТЯЧИХ ОСВІТНЬО-РЕАБІЛІТАЦІЙНИХ ЦЕНТРІВ

Анотація. *Проведено глибинний аналіз теоретичних засад, що передують процесу організації комунікативних просторів у межах дитячого освітньо-реабілітаційного центру соціальної адаптації – закладу, метою діяльності якого є створення оптимальних умов для посиленої соціалізації дітей з особливими психологічними потребами (зокрема дітей, що страждають аутизмом, синдромом Дауна та посттравматичним стресовим розладом) і їх подальшої інтеграції в суспільство. У дослідженні проведено дефініцію ознак дитячого комунікативного простору та визначено значущість просторової композиції в процесі соціалізації дітей. Розглянуто ключові аспекти проблеми – медичний та архітектурний, виведено ймовірні фактори впливу на процес розширення мережі закладів відповідного спрямування на території України.*

Комунікативний простір розглядають як спосіб нестандартного процесу реабілітації, соціалізації та психологічного розвантаження, оскільки здорова і якісна комунікація дитини (з однолітками, батьками, лікарем, педагогом, природою тощо) становить основу для адаптації дитини до навколишнього світу.

Проведене в межах статті дослідження підтверджує важливість аналізу архітектурного аспекту в контексті медицини, психології та соціології, що допоможе поглянути на потреби особливих дітей крізь призму архітектури і просторових рішень. Створення просторового середовища для дітей із урахуванням медичної специфіки їхніх захворювань, психологічних та соціальних особливостей розвитку допоможе забезпечити ефективний процес соціалізації та сприяти подальшій інтеграції особливих дітей у суспільний ритм.

Ключові слова: *комунікативний простір, соціальна адаптація, дитячий, комунікація, дитина, медицина, соціалізація.*

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FEATURES OF THE BERNARDINES DEFENSIVE MONASTERIES OF WESTERN UKRAINE IN THE XVII–XVIII CENTURIES

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Astract. The article analyzes the landscape and urban planning location of monasteries of Bernardins based on desk and field studies. Previously unknown facts about the existence and functioning of individual monastic fortification elements were revealed, and the features of the order's defensive structures were determined.

Key words: defensive structures, monastery, Bernardins, Western Ukraine.

Problem statement

Reliable defensive structures in the XVII–XVIII on territories of Western Ukraine were the key to the stable functioning of a castle, city or monastery. Monastic complexes actively dominated the space of settlements or landscapes. Homes for Bernardines were among the most numerous centres among the Western Rite orders in the study area and, due to various factors, played an active defensive role in the system of protecting cities and surrounding territories. Defensive structures, in addition to protection, defined the territory of the object. As a result of the deprivation of the original sacred function in the Soviet period, monasteries, as well as the remains of defensive structures, were actively repurposed (as prisons, warehouses) and, as a result, destroyed. Nowadays, when developing general, historical and architectural reference plans, restoration projects, the question of determining the historical boundaries of objects and the original architectural and compositional integrity of monastery complexes is relevant.

Analysis of recent research and publications

Monasteries of Bernardines were studied by Ukrainian and Polish scientists. Among the Ukrainian ones, it is worth noting the works of Volodymyr Vuytsik, in his significant historical and architectural study of the monastery in Lviv. The monasteries also were explored by O. Boiko and I. Siomochkin (Boyko O., Semenyuk A., 2012). Monasteries of the Western rite are the area of interest of Polish scientists M. Kurzei

(Kurzej M., 2006), E. Kvetsinskaya (Kwiecińska E., 2016). Scientific research focuses mainly on the sacred elements of complexes with descriptions of historical and architectural aspects of monuments. Defensive structures are partially inspected or not mentioned at all.

Purpose of the article

The article aims to collect, systematize and identify new facts of the functioning and history of the formation of defensive structures of monasteries of Bernardines on the territory of Western Ukraine. The purpose is also to determine the location, dimensions, architectural and planning features of monastery defences.

Results and discussion

Monasticism in Western Ukraine has been known since the time of Kievan Rus with the adoption of Christianity. The vast majority of monasteries were occupied by the Eastern rite, as mentioned in the annals of that time. The active policy of expansion of Rus lands by the Polish Kingdom and the Grand Duchy of Lithuania radically changed the ecclesiastical and political situation on the territory of Ukrainian lands in the second half of the XIV century. The weakening of the material and political position of the church in the Ukrainian lands, caused by the ecclesiastical and political crisis in the Byzantine Empire, contributed to the spread of Latin monasteries. In the studied period, about 50 defensive complexes of the Western rite of various orders can be distinguished (Fig. 1), with a location in or outside the city centre. Monasteries of the Bernardine order are among the most common – 9 objects – in Berezhany, Husyatyn, Dubno, Zbarazh, Izyaslav, Lviv, Leshniv, Sokal and Khrystynopil (Fig. 2). The Bernardine order is an offshoot of the Franciscan Order, which was formed in the XII century. On the territory of the Polish-Lithuanian Commonwealth and the territories of Western Ukraine, the Bernardine order appeared in the middle of the XV century.

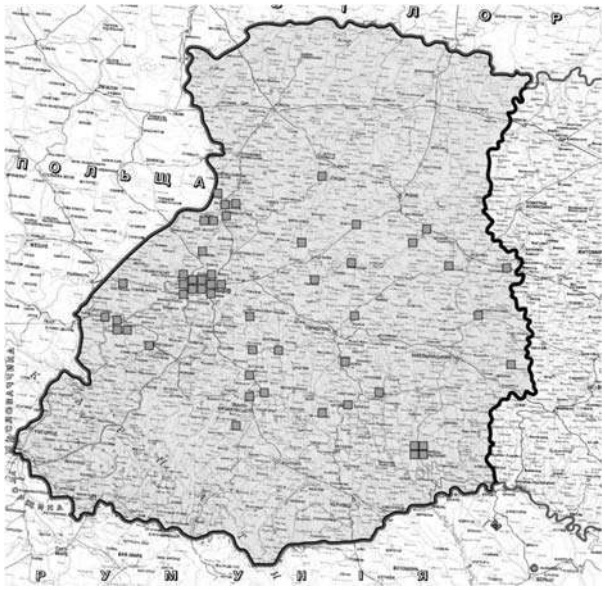

Fig. 1. Layout of defensive monasteries of the Western rite on the territory of Western Ukraine (51 Vol.)

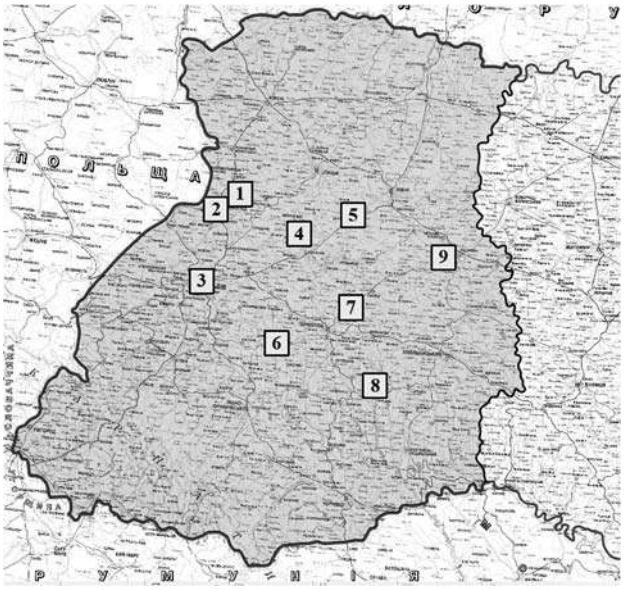

Fig. 2. Layout of defensive monasteries of the Bernardines on the territory of Western Ukraine: 1) Sokal, 2) Khrystynopil; 3) Lviv; 4) Leshniv; 5) Dubno; 6) Berezhany; 7) Zbarazh; 8) Husyatyn; 9) Izyaslav

The factor of urban planning influence was one of the most significant in the formation of the defence of Monastery complexes. Among the selected research objects in the centre were 7 monasteries: Husyatyn,

Khrystynopil, Lviv, Zbarazh, Berezhany, Dubno, Leshniv. The Bernardine monasteries in Sokal and Izyaslav were located outside the city centre and were defended only by their defensive structures.

The Bernardine monastery in Gusyatin was formed at the beginning of the XVII century. The territory of the complex had a regular layout and occupied a place on the terrace of the slope, adjacent to the south-western corner of the city centre near the barbican. The monastery was surrounded by defensive walls and connected to the wall of the city centre. The territory of the monastery is in the form of an irregular parallelogram; no corner elements were found. The length of the western flank of the wall around the monastery is 275 m, the northern flank is 175 m, the eastern flank is 220 m, and the southern flank is 145 m. The additional natural defence was provided by the river Zbruch. In the middle of the XVII century it was destroyed and during 1690–1723 rebuilt at the expense of Adam Jerome Senyavsky (Kwiecińska, 2016). The cadastral map of 1827 shows the stone fence of the complex, the temple and the scattered buildings of the monastery (Gesher Galicia, 2015).

The Bernardine monastery in Khrystynopil began to develop at the end of the XVI century. In 1692, Felix Kazimir Potocki began to develop a city named Khrystynopil after his wife Khristina Lubomирska on the territory of the new courtyard. Potocki could not fully implement the planned spatial image of the city, because, on May 15, 1702, he died and was buried in the church of the Bernardines, the founder of which he was in 1695 (at first it was a wooden structure with a stone crypt). In 1702 Josef, the son of Felix Casimir Potocki, began to rule Khrystynopil (Czernecki, 1939). He continued and completed the construction of the stone church in 1703 and eventually the monastery building. He died in 1723 and is also buried in the crypts of the church. Near the monastery of the Bernardines on the northern side of the city centre was a gate with a bridge. The monastery was built on a hill near the corner of the city centre.

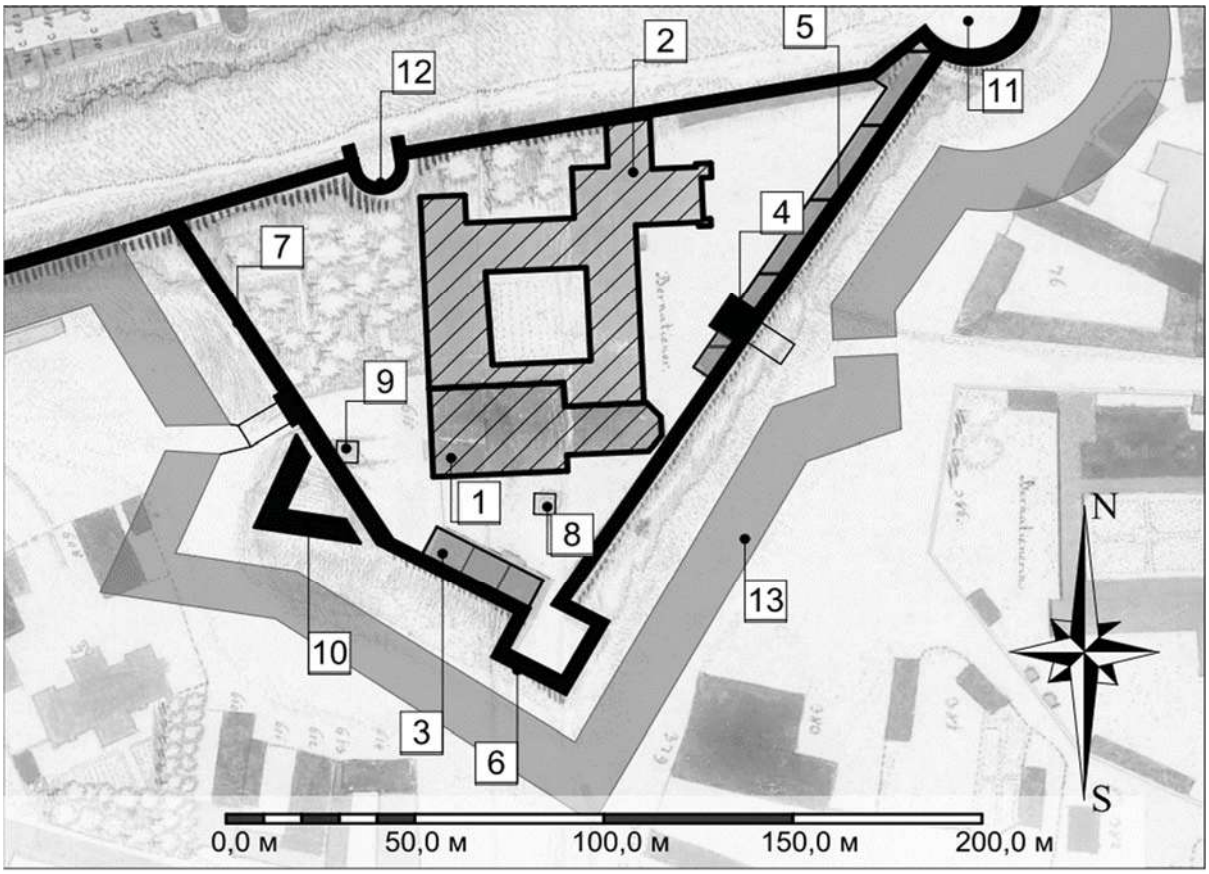

Fig. 3. Reconstruction of the defensive structures of the monastery of Bernardines in Lviv on the map of Huber of 1777: 1. Church; 2. Cells; 3. Bell tower; 4. Hlynska Gate; 5. reserved curtain of the south-eastern flank of the monastery's defensive wall; 6. Bernardine bastey; 7. Lost south-western flank of the monastery's defensive wall; 8. Well; 9. Column; 10. Ravelin; 11. Royal Bastey; 12. Strumilova Bastey; 13. Hypothetical sketch of an earthen rampart

The monastery of Bernardines in Lviv (Fig. 3) is one of the most striking monuments of Renaissance architecture in the city. According to typological features, the complex is located in lowland, near the main road and is blocked to the corner of the walls of the city centre. It has a complex configuration of defence lines – Urban fortifications and developed its defensive structures. The site for the construction of the monastery was chosen on the Galician suburb, between the Galician gate and the Royal Tower. The stone monastery was built on the site of the half-timbered Bernardine monastery. On September 16, 1600, the cornerstone for the new shrine was laid and consecrated (Vuytsyk, 2012). The defensive fortifications consisted of two flanks. South-East (approx. 200 m long) flank originated from the Royal Tower and headed southwest to the Bernardine Bastey. The Hlynsky gate was built in the middle of the flank. To the curtain of the flank, from the courtyard between the Royal Bastey and the gate, the utility rooms adjoined. Field surveys revealed that the curtain consists of two conditional parts: the lower one is made of stone and the upper one is made of brick. Loopholes are arranged only in the upper tier of the defensive wall. The increased arch of the loopholes made it possible to remove gases after firing muskets or shooters. It seems like the southwest flank (approx. 165 m long) was not implemented as a straight line, as indicated on the plan of the monastery in 1622. On the project of Jan Behrens in 1674, a broken curtain and gate with a small Ravelin were recorded, closer to the line of fortifications of the city. According to the proposals of Jan Behrens, the entire complex was surrounded by wet moat and earthen trenches that repeated the geometry of the monastery's defensive walls. The cornerstone of the south-eastern and south-western flanks was the Bernardine Bastey, the configuration of the plan of which is recorded on many cartographic materials. Its illustration, made by Jean Weining in 1795, has also been preserved. It is rectangular in plan, made of stone and brick without a roof covering. The flanks of Bastey reached 10–11 m, and the facades were about 20 m. According to the plan of 1622, two cannon loopholes were arranged in the flanks of the first tier to shoot through the monastery curtains. In general, the structure consisted of three tiers. On the second level, according to the lithograph of Jean Weining, three loopholes are arranged in the facades. Presumably, they were intended for cannon protection of the pre-field. The walls of the second and third tiers were separated by a parapet. On the third level, there are five loopholes for muskets and riflemen in each face. Nowadays, the remains of the Bastey at the ground level have not been preserved.

Bernardine monastery in Leshniv (Fig. 4) is located in the northern part of the city centre, on a flat territory, in a corner near the gate. It was built during 1629–1697. (*Leszniow*, 1884). The monastery was founded by the Belz castellan, owner of Leshniv, Maciej Lesznewski. Initially, the church was made of stone, and the cells were made of wood. The founder ordered his descendants to build a defensive monastery and fill it with the necessary weapons due to the frequent raids of the Tatars. In 1648, as a result of the national liberation struggle, the monastery was looted and burned (Kurzej M., 2006). Restoration of already built structures continued until 1697 (Chadam, 1985). A full-scale survey revealed loopholes in the upper tier of the monastery church from the north, which made it possible to additionally defend the northern gate of the city centre (Hohon, 2018). The length of the western flank of the wall around the monastery is 110 m, the northern flank is 185 m, the eastern flank is 102 m, and the southern flank is 207 m.

The Bernardine monastery in Zbarazh is located in the southern part of the city centre near the gate. It was built during the XVII – mid-XVIII centuries. The Mig's map shows a stone fence around the complex. There are no fortifications of the monastery on the cadastral map of 1830. The church and monastery building were connected. In the middle of the monastery, there is a closed courtyard. From the south and west, the monastery was provided with a pond area. The length of the western flank of the wall around the monastery is 106 m, the northern flank is 200 m, the eastern flank is 117 m, and the southern flank is 198 m.

The Bernardine monastery in Berezhany was built during the XVII century. It is located on a hill in the north-western part of the city centre. The monastery was defended only with the help of city defences – stone walls with loopholes, ditches and a bastion that protected the city (Rybchynskyi and Khokhon, 2017a).

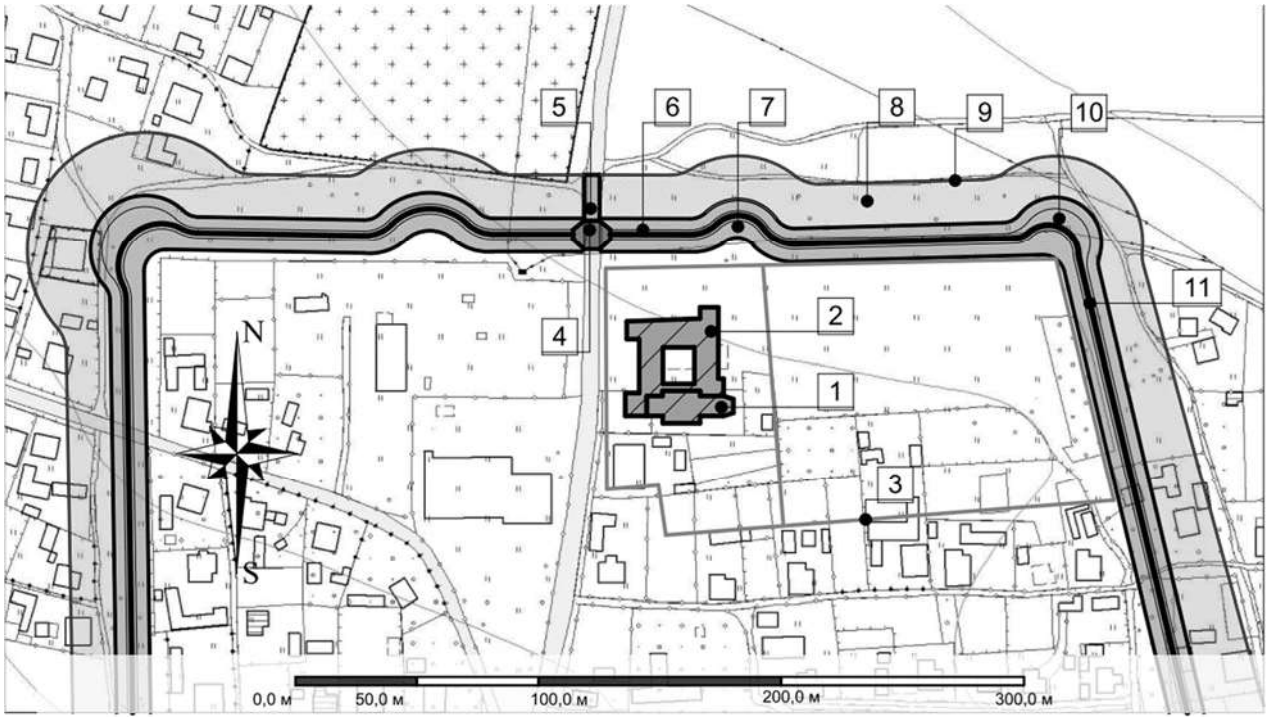

Fig. 4. Reconstruction of the defensive structures of the monastery of Bernardines in Leshniv on a topographic survey in 2016: 1. Church; 2. Cells; 3. Clause; 4. City entrance gate; 5. Bridge; 6. Shaft; 7. Rondel; 8. Fosa; 9. Glassis line; 10. Cornerstone rondel; 11. Palisade

The Bernardine monastery in Dubno is located next to the Lutsk gate in the western part of the city centre on the sloping terrace. It had a simple defence system – the defence was conducted only by the defensive structures of the city walls, ramparts and ditches. It was built during the first half of the XVII century. On the map of the early XIX century, the temple and monastery are combined. The territory of the complex is surrounded by a stone wall. From the north, an additional defence was a low-lying swampy area (Rybchynskyi and Khokhon, 2017b). The territory of the monastery, as a result of fitting into the corner of the city centre, acquired a trapezoidal shape, was extended from West to East with dimensions of approximately 150×110 m.

The Bernardine monastery in Izyaslav was built during 1606–1610 by architect Yakub Madline (Tokarzewski, 1913). The monastery is located to the east of the city centre on a high hill on the left bank of the Horyn River. The monastery consisted of a church, cells, economic premisses, walls, four towers, western and northern gates and a bell tower. The wall reached a height of six meters with loopholes for cannons and a second row for muskets. The buildings of the monastery were destroyed during the national liberation struggle under the leadership of B. Khmelnytsky. From the analysis of cartographic materials, it was revealed that the monastery consisted of two parts: the original core with a church, cells surrounded by defensive structures, and a later one, probably added as a result of restoration work on the territory in 1727 from the east and north (Zharikov, 1986). The length of the western flank of the defensive wall of the original core is 165 m, the northern flank is 170 m, the eastern flank is 145 m, and the southern flank is 172 m.

Bernardine monastery in Sokal (Fig. 5) was founded in 1599 on the left bank, even though the new city itself was located in 1524 on the right, the highest bank after the Tatar attack. Thanks to the confirmation of the foundation by King Sigmund III, construction of the monastery began in 1604. The project was developed by an unknown architect of the sandomierz voivode Yuriy Mnishka and father Bernard Avelidis, who also supervised the construction of the Bernardine monastery in Lviv (Бойко і Семенюк, 2012). Since the place for construction was chosen swampy, to strengthen the foundation, alder piles had to be driven into deep ditches, filled with slag and quicklime and filled with oil. Construction lasted 15 years.

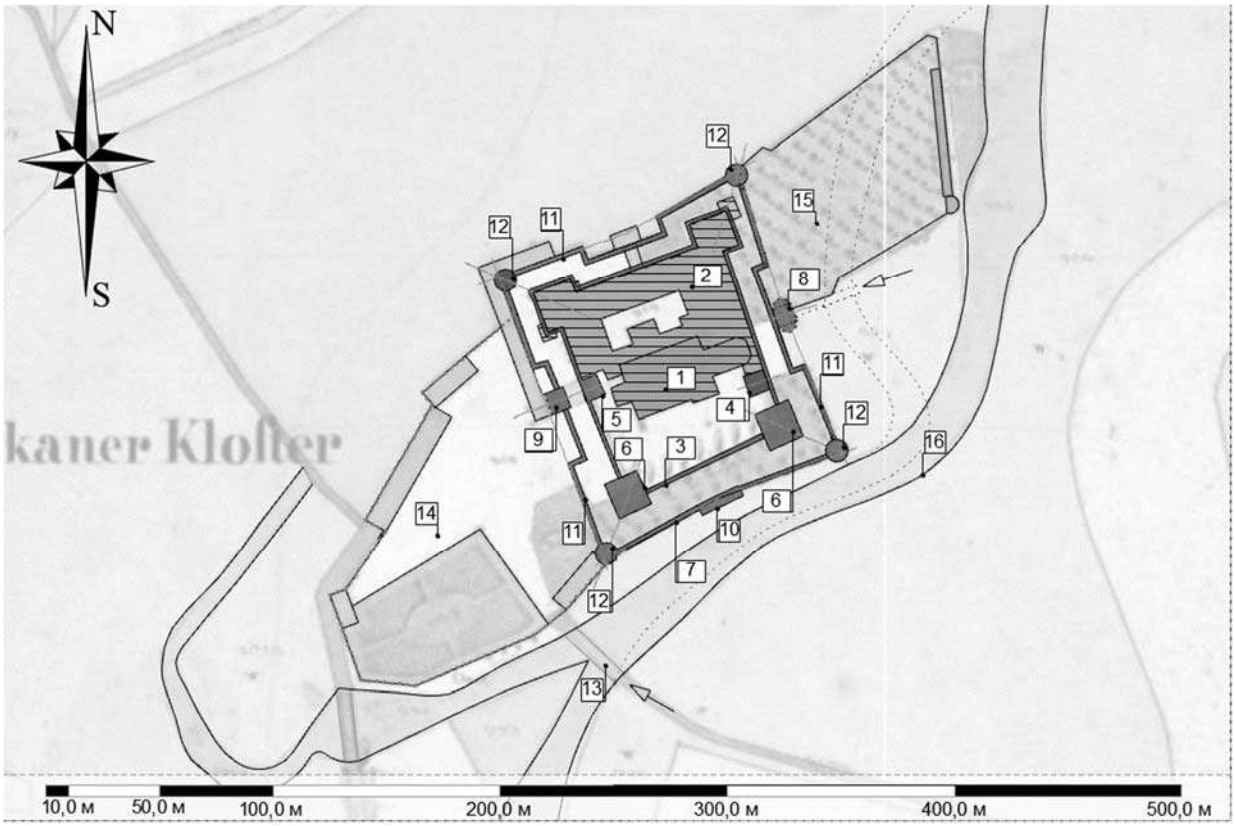

Fig. 5. Bernardine monastery in Sokal on the cadastral map of 1851:
1. Church; 2. Cells; 3. Curtain of the first defensive line; 4. Eastern gate of the first defensive line; 5. West gate of the first defensive line; 6. Southern towers of the first defensive line; 7. Curtain of the second defensive line; 8. Eastern gate of the second defensive line; 9. West Gate of the second defensive line; 10. Bell tower; 11. Bastions of the second defensive line; 12. Corner towers of bastions; 13. Bridge; 14. Western suburbs; 15. Eastern suburbs; 16. Flow

In the monastery, there was a well-known Sokal Miraculous Icon, the coronation of which took place on September 8, 1724, and in 1732 the monastery walls were strengthened, in particular, their height was raised. Most likely, the second line of defence of the complex was built at that time.

According to the typological system, the monastery is located outside the city walls, near a local road and is a low-lying monastery (Rybchynskyi and Khokhon, 2016). Defensive fortifications, as well as the monastery itself, are little studied since at the moment the monastery has preserved high-security prison No. 47 (there are no prisoners in it). In addition, throughout its history, the monastery has suffered great destruction from fires and wars, which led to a change in the characteristic original appearance.

According to Friedrich von Mig's 1772 map, the monastery was surrounded by two streams and a swampy area that served as the main natural protection. The monastery consisted of a church and cells adjacent to the temple from the north, outbuildings and two lines of defence. The first line had a regular outline of the wall with towers at the corners and Gates to the east and west. The church was located in the centre of dytynets. Monastic cells adjoined the church from the north and the defensive wall from the south, forming an atrium. The maximum dimensions of the first line were 104×93 m. The second defence line surrounded the monastery with a high defensive wall with loopholes and merlons. It had regular planning. The maximum dimensions of the second line were 140×120 m. The corners are formed with a bastion outline, the corners of which were completed by two-tiered, round in plan towers with a dome cover. The eastern flank was equipped with additional cavaliers, since it had an entrance gate from the Buh river in the centre. The gate consisted of a main structure, rectangular in plan, and two additional towers attached symmetrically to the north and south. The second defensive line was complemented by a

moat filled with water. The entrance was made along a wooden bridge. Information about the western gates of the first and second lines has not been found, probably they were built like the eastern ones. In addition, approximately at the end of the XVII century, the territory was added to the monastery from the west and it was surrounded by a wall. In the wall, near the south-western tower of the second defensive line, a tower-type Southern gate was constructed.

Conclusions

As a result of the study of nine monasteries of the Bernardine order, and the systematization of the facts of the history of monasteries, it was revealed that the defensive architecture of the order can be traced in the construction of its defensive structures. The location relative to the urban planning factor, configuration and dimensions of defensive lines of objects are determined. The Bernardines owned some of the most powerful defensive monasteries in western Ukraine: in Sokal, Izyaslav, Lviv. Monasteries of this order tended to be located in the city centres. Three of them, namely in Berezhany, Dubno, Leshniv, were located in the corners of the city centre near the gate. A separate type should be considered monasteries in Lviv, Husyatyn and Khrystynopil, which were blocked to the corner of the walls of the city centre from the outside. In Zbarazh, the monastery was located in the middle of the defence line near the gate and had its walls. At this stage, the study revealed one defensive monastery church – in Leshnev. The monasteries of Dubno and Berezhany were defended by powerful fortifications of the city. The defensive structures of monasteries in Lviv and Sokal are different. In Lviv, due to the status of the city and responsibility, the monastery was obliged to actively defend itself which explains the presence of a three-tiered bastey, a powerful wall with a loophole and a ravelin at the entrance. In Sokal, the monastery was an outpost of the territory and a powerful centre of pilgrimage, and therefore economically secure. It is revealed that the Bernardines' complexes used mostly newer forms of defence: basteys, bastions, and ramparts.

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ОСОБЛИВОСТІ ОБОРОННИХ МОНАСТИРІВ ОРДЕНУ БЕРНАРДИНІВ ЗАХІДНОЇ УКРАЇНИ У XVII–XVIII СТОЛІТТЯХ

Анотація. *Надійні оборонні споруди у XVII–XVIII на теренах Західної України були запорукою стабільного функціонування замку, міста чи монастиря. Монастирські комплекси активно домінували у просторі населених пунктів чи ландшафту. Обителі оо. бернардинів були одними з найчисленніших осередків серед орденів західного обряду на території дослідження та в силу різних чинників відігравали активну оборонну роль у системі захисту міст та навколишніх теренів. Оборонні споруди, окрім захисту, визначали територію об’єкта. Унаслідок позбавлення первісної сакральної функції у совітський період, монастирі, як і залишки оборонних споруд, зазнали активного непритаманного перепрофілювання (в’язниці, склади) та, як наслідок, руйнування. Сьогодні під час розроблення генеральних, історико-архітектурних опорних планів, проектів реставрації актуальним виникає питання визначення історичних меж об’єктів та первісної архітектурно-композиційної цілісності монастирських комплексів.*

У дослідженому періоді можна виділити близько 50 оборонних комплексів Західного обряду різних орденів (рис. 1), з розташуванням у чи за межами середмістя. Монастирі ордену отців бернардинів є одними з найпоширеніших – 9 об’єктів – у Бережанах, Гусятині, Дубно, Збаражі, Ізяславі, Львові, Лешневі, Сокалі та Христинополі (рис. 2). Орден бернардинів є відгалуженням від францисканського чину, яке сформувалося ще у XII столітті. На території Речі Посполитої та теренах Західної України орден бернардинів з’явився у середині XV століття.

У результаті опрацювання дев’ятьох монастирів ордену бернардинів та систематизації фактів історії обителей виявлено, що оборонна архітектура ордену яскраво простежується у спорудженні власних оборонних споруд. Визначено розташування щодо містобудівельного чинника, конфігурацію та габарити оборонних ліній об’єктів. Бернардинам належали одні з найпотужніших оборонних обителей на території Західної України: у Сокалі, Ізяславі, Львові. Монастирі цього ордену тяжіли до розташування у середмістях. Три з них, а саме у Бережанах, Дубно, Лешневі розташовувались у кутах середмістя біля брам. Окремим типом варто вважати монастирі у Львові, Гусятині та Христинополі, що блокувалися до рогу мурів середмістя ззовні. У Збаражі монастир розташовувався посередині лінії оборони біля брамки та мав власні мури. На цьому етапі дослідженням виявлено один оборонний монастирський костел – у Лешневі. Монастирі ж Дубно і Бережан оборонялися потужними фортифікаціями міста. Варто окремо виділити оборонні споруди монастирів у Львові та Сокалі. У Львові через статусність міста і відповідальність монастир зобов’язувався до активної оборони, що і пояснює наявність трьохярусної бастеї, потужного муру з бійничним рядом та равеліну на в’їзді. У Сокалі монастир був форпостом території та потужним центром паломництва, а відповідно, економічно забезпеченим. Виявлено, що комплекси оо. бернардинів використовували переважно новіші форми захисту – бастеї, бастіони та вали.

Ключові слова: *оборонні споруди, монастир, отці бернардини, Західна Україна.*

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STUDY OF CONDITIONALITY AND IMMANENCE OF PROPER NAMES OF NEWLY BUILT HOUSING ESTATES IN THE LVIV URBAN ENVIRONMENT AT THE BEGINNING OF THE XXI CENTURY (based on the semiotic triangle method)

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Astract. The study classifies proper names of housing estates (HE) in Lviv according to certain phenomena, images, symbols. The iconic, indexical, conventional relations of the architecture of HE are revealed as a sign-vehicle to its referent which is declared in its own name through the pyramidal structure of the semiotic triangle. The problem of conditionality and immanence of one's proper name concerning the architectural image of the HE is highlighted.

Key words: poetics, proper name of the housing estate; semiosis; iconic, indexical, conventional connections; semiotic triangle.

Problem statement

Oversaturated with visual current information a large number of new buildings in Ukraine (including Lviv) on the housing market necessitated the need to call housing estates (HE), neighbourhoods, ensembles by their proper names (HE "Champion", "Amulet", "Ameryca" etc.). This facilitates spatial orientation in the city, depriving residential neighbourhoods of anonymity and at the same time creates advertising for the developer. But in this trend of assigning own names to new buildings, there is often a problem of inconsistency between the meaning of the artistic image of the HE given by the architect in the process of designing and the meaning of the own name of the HE given by a marketer. In our opinion, this poses a danger of detachment from being, a fiction that is formed between a particular architectural object and its proper name. The proper name of an architectural object is mostly conditional, devoid of visual metaphor, symbolism, and has only a communicative function and is imposed on the consumer. The immanent dimension of the poetics of the artistic image of the architecture of the HE is not visible, and in its place, there is a conditionality of the own name of the HE.

Analysis of recent research and publications

While analyzing the latest domestic publications, we have noted the following areas of the object of the study: identifying the peculiarities of the formation of the exteriors of new residential buildings (Pavliv, 2015); analysis of the stylistics of modern housing (Linda, 2007)); research of a wide typological diversity of housing abroad, psychological comfort, ideas of humanism, ecology in housing, urban aspects in the formation of the living environment are revealed in the monograph (Gnes, 2013). Marketing Media Review presents a study by DC Evolution on the analysis of the frequency of topics/words of HE names through charts and tag clouds in Kyiv, indicating that the most popular methods in choosing the HE's proper name are bindings to the locality of the city (often to foreign countries) or bindings to the address (Marketing Media Review, 2019).

Instead, the proper name of the new buildings of HE as an element of the poetics of the urban environment was not considered and the study of the conformity of the proper name of the HE to the architecture of the HE by the semiotic triangle method was not conducted.

Objective of the article

The study aims to reveal the relationship of HE architecture as a sign-vehicle to its referent stated in its proper name through the proposed by the author pyramidal structure of the semiotic triangle, which reflects the process of semiosis. To reveal the problem of conditionality and immanence of one's proper name in relation to the architectural image. Objectives of the article:

1. To analyze the thematic (specific) meaning in a proper name of a new housing estate and the correspondence/recognizability of the referent in the architectural image as a sign.

2. To consider the proper name of the HE as a part of the interpretant and identify the iconic, indexical conventional relationship between the sign-vehicle and the referent in the system of the architectural sign.

3. To trace modern tendencies of activation of certain phenomena, things, concepts in our daily life through the proper name of an architectural complex in a certain city chronotope, in the city environment.

4. To prove the importance of the proper name of the HE as a function that creates an image in visual communication in the urban environment. To show that proper names of housing estates are an indicator of dominant political and social values, myths.

Results and discussions

1. Proper names of housing estates (HE) as components of the poetics of architecture. Proper names of housing estates (HE) and logotypes are created to be recognized in advertising among many others and are aimed at forming an idea of the uniqueness, individuality of housing buildings. These criteria of uniqueness, individuality, and exoticism are effective mechanisms in choosing a name and constitute one of the five concepts of marketing, namely the intensification of sales efforts (sales priority), as well as the concept of socio-ethical marketing (priority to the public interest). Modern proper names (as given the meaning of the image) created before or after the appearance of housing estates in the urban chronotope are the poetics of HE. Later, the life of an architectural object in the chronotope accumulates additional meanings – the poetics of the HE as a reflection of inhabitants and perceivers of the image. In the XXI century, the concept of poetics as a subject area of architectural studies was borrowed from literary studies and developed as one of the methods of studying objects of architecture, which uses the potential of the human imagination and its fixation in the poetic word. According to S. Averintzev (Averintzev, 1977), in literary studies poetics is divided into 1) poetics immanent as a system of working principles of some author, school of the whole epoch (means and methods of artistic expression), 2) theoretical poetics – scientific theory of creativity or system of methodical rules developed for it. The most thorough study of the science of poetics was carried out by the Ukrainian contemporary Puchkov A. A in the book “Poetics of Ancient Architecture”. The author

reveals the concept of poetics as a science of art in any expressive form (material, ideal, active, etc.), and the category of poetics of architecture as a science that studies architecture as a social and artistic phenomenon that can be explored by architects, art methods and is represented by the expressiveness of the word (Puchkov, 2008). To the sources of research of poetics in architecture Puchkov A. A includes poetic architectural ekphrasis (texts about architecture that reflect the human experience of architecture), architectural fantasies, objects of artistic architecture and the architectural concepts themselves, which enshrined the metaphorical semantics of the ancient understanding of this subject of reality. I. Dobritsyna (Dobrytsyna, 2004) addresses the concept of poetics in architecture and notes the three-part structure of poetics in literature according to D.S Likhachev and translates it into the field of architectural studies: 1) boundaries of an art subject (architecture plot), grammars, languages of architecture) and reflection of the spirit of the era, type of consciousness 3) artistic specificity of means of expression (stylistic devices, archetypes, compositional structures).

Under the poetics of architecture, modern architectural studies understand: 1) all that art and poetic, which contains itself an expressive form of a real object, in this case, a new building in an urban environment, which is fixed through a description (verbal, logical) (A. Puchkov) or through drawing (figuratively), 2) poetics – the accumulation of meanings (so-called sensgenesis) 3) normative-theoretical poetics (S. Averintsev, I. Dobritsyna). The author of the article gives the following definition of poetics (Kramarchuk, 2005) poetics – 1) interpretation of the image: emotional-mood and information-formative potential of the image, which generates emotional and intellectual human experiences (poetics as an empiric of perception and interpretation of the image); 2) poetics as a theory formation of the image: a) the theoretical foundations of the formation of a poetic image in architecture; b) methodical rules of semiotic analysis of architectural works based on the semiotic triangle as a model of semiosis, the process of code formation, interpretation. The proper name, which forms the poetics of the image of the HE, is considered in this study as a component of the interpretant in the model of the semiotic triangle.

2. The propername of the HE as a component of interpretant (sign/object relationship). According to U. Eco (Eco, 1998), the semiological universe of architecture is architectural objects as significant forms. Meaning is a complex system of relations between the form of expression of a sign and the content as its potential semantic component. Semantics in architecture is integrated on 4 levels (model of the language of architecture) 1) figurative-plastic (facade), 2) volumetric-spatial, 3) environmental level (surrounding context) and 4) artistic level (as a symbolic, figurative, symbolic perception object) This model was developed by Ignatieva V.O (Ignatieva, 2021) based on the author's theory of three levels of perception of architectural and artistic form A. A Barabanov (Barabanov, 1995,) as a manifestation of psychophysical patterns of human perception. The own name can reflect the artistic language of the HE as at the figure-plastic level (facade) (the HE “Semytsvit”) (colour) Fig. 7, the HE “Sunrise” (colour), the HE “Chocolate” (plastic and colour), the HE “Bortnyansky” (sign on the facade, which indicates the composer D. Bortnyansky) Fig. 9; 2) volumetric-spatial (the HE “Panorama”, the HE “Parus”, the HE “Chocolate”); 3) environmental level (context of the urban text the HE “Galicia”, the HE “Old Town”, the HE “Sofiyivka”, the HE “Park Towers”). The own name appears as the “author's” interpretant (part of the meaning) of the HE, who acts as a representamen (sign-vehicle by Ch. Morris) in semiosis.

J.P. Bonta in the article “Notes for a theory of Meaning in Design” in the book “Signs, Symbols and Architecture” identifies three components of value in the form of architectural design: 1) indicators (as directly perceiving facts); 2) signals (a special class of indicators that are consciously used and consciously perceived by the interpreter in the act of communication); 3) intentional indicators (which are used to carry out the act of communication, but are not perceived as such) (Rossynskaia, 1991). Own names of residential complexes can be attributed to signal indicators.

3. Own properin the structure of the model of the architectural sign (semiotic triangle). Figure 1 presents synonymous concepts which are used in this article in the triadic structure of the sign in the form of a triangle. “A sign, or representation, is something which stands to somebody for something in some respect or capacity. This thing is called the object of the sign; the idea in the mind

that the sign excites, which is a mental sign of the same object, is called an interpretant of the sign" (Peirce, 1895). Indirectly refers us to the denotation (referent), and directly to the signification (according to Charles Morris of the designation). A referent is an object that exists in reality or in what is meant by that word, while a significant is "what the sign refers to".

The semiotics of architecture understand different things under the referent. According to J. K. Koenig the referents of the architectural sign-vehicle are existentials (these are quanta of human existence, "the referent of a dwelling house will be family members living in it, and the signification – the fact that people unite in a family") for living under one roof (but this is only the semantics of the physical functions of an architectural object), the so-called direct meaning of the object (denotation). For U. Eco referent in an architectural sign is the architectural object itself as a sign (signifier), marked (signified) which is its functional purpose (Eco, 1998). S. Linda (Linda, 2012) researching works of historicism, considers the referent in a semiotic triangle an architectural prototype. Such a connection between a representation (architectural object) and an architectural prototype. In our opinion, it has the associative character of recognizing one in another and can be applied not only to the architecture of historicism.

As you can see in Fig. 1, the component of the interpretant includes "Proper name", then in this regard 1) the value/interpretant (the concept about the referent, to which the sign relates) – this is the proper name of the complex, for example, "Great Britain"; 2) referent (what the sign refers to, in this case, the sign sends to the United Kingdom); 3) sign-vehicle – real housing estates called by this name and the bearer of features of the referent.

Architecture is a system – signs-vehicle intermediaries who participate in the communication process and set a certain behaviour (climb stairs, move down the corridor). But on the other hand, there is the artistic side of architecture, the complex process of understanding architecture, its interpretation, and the context of the place and time in which it exists. The planar structure of an architectural sign does not take into account the context, providing only a direct correlation of the architectural sign with the denotation. The proper name of the HE often actualizes urban chronotopes, the so-called urban contexts. According to Eco (Eco, 1998), one of the tasks of semiotics is to reveal ideology because every communicative act is oversaturated with socially and historically conditioned codes, which are hidden behind rhetorical visual techniques. Semiotics – studies everything that can be used to communicate the truth, that is, studies the difference between delusion and truth.

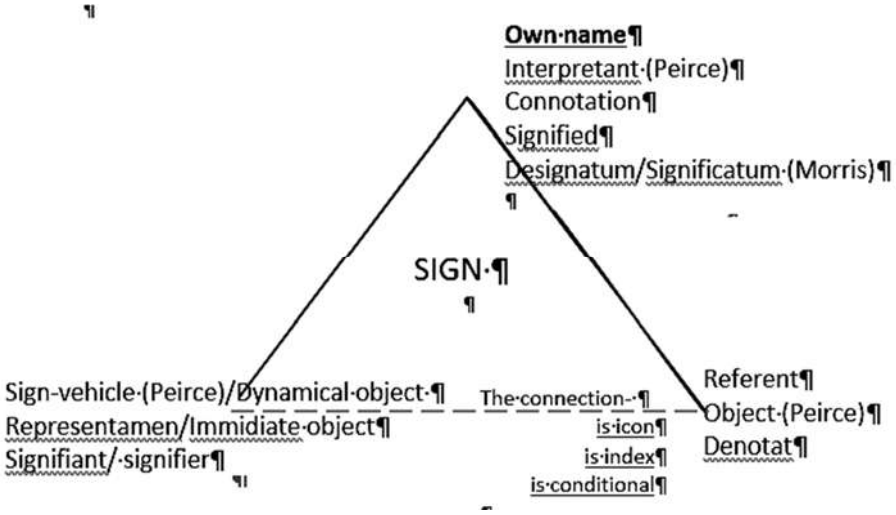

Fig. 1. Semiotic triangle

In the case of the proper name of the HE as the reference, which sends us to the denotat, with the qualities of which the architecture of the HE or the context of the environment in which the HE is located

begins to be associated. Thus, in architecture, according to semiotic theory, the referent is 1) denotats are people who functionally use architectural space; 2) denotat=architectural object that is a sign; 3) denotation as an architectural prototype; 4) and other denotats generated by interpretants. The interpretant is also another way of representing the same referent. Thus, an architectural object is a physical sign or a representation that denotes various referents and creates in the mind of the perceiver an equivalent sign (laid down by the designer) or a more developed sign. The architecture of the HE with certain signs indicates the object, the phenomenon activated by its proper name: it is a country, city, territory, famous person, artistic images, artistic personalities, etc. The immanence of one's proper name related to the image/architecture of the HE, which it names and indexes, stays in the question. What meaning (idea) does the image/architecture of the HE actualize and how are the values actualized by the own name contained in the image of the HE?

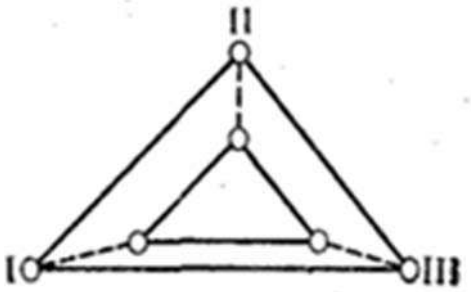

Fig. 2. Semiotic triangle according to Yu. Stepanov. The bigger triangle is the imagination, the smaller triangle is the physical world

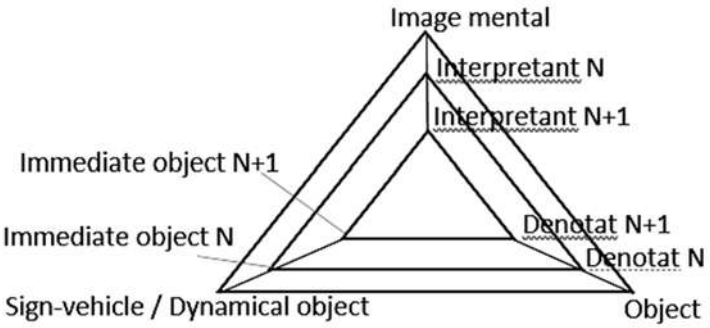

Fig. 3. Semiotic triangle in the form of a truncated pyramid

Sign as a result of the process of semiosis is generated at the intersection of three components: the sign-vehicle (representamen), interpretant, denotat. Thus, the sign forms the imaginary top of the pyramid. (Fig. 1). Yuriy Stepanov (Stepanov, 1971) proposes not a planar semiotic triangle, but a truncated pyramid (Fig. 2), the upper triangle is a representation in consciousness and the lower triangle is the physical world. According to Stepanov Yu. I – denotat, the object of the real world and the vertex of the upper triangle marks its reflection in consciousness; II – sign-vehicle; III – notion, concept produced by the material system of the brain. In our opinion, the representation in the mind will consist of many triangular planes (cultural codes of the interpreter) and one of them is the language code (this includes the proper name of the HE, which will specify a different denotat/referent than the function of an architectural object or human needs). It is in the plane of those sections that the sign is born and its interpretation takes place. Ch. Pierce distinguished two objects in the sign 1) the internal object (Immediate Object) in (Fig. 1, 3) external object – the nature of things (Dynamical Object). "It is necessary to distinguish the Immediate Object, or the Object as the Sign represents it, from the Dynamical Object, or efficient one but not immediately present Object". "The Immediate object or object as the sign represents it, (and without this one, a sign would not be a sign); the other [the] Real object, or object as it is independent of any particular idea representing it" (Pierce, 1907). The Dynamical Object of a Sign is its progenitor, its father. In (Fig. 3), the dynamic object is at the base of the pyramid (material object – the bearer of the sign), and the inner object (representamen) will occupy a position on the triangle of representation in consciousness, what was activated and represented in the sign.

Thus, it turns out that the connections in the structure of the sign, which reflect the process of semiosis, can be represented in the form of a truncated pyramid and with many planar triangular sections, as representations in consciousness that form the connotations of the sign (Fig. 3).

4. Classification of proper names of HE according to their referents (denotats). The relation of the own name as a designator to the HE (as a sign-vehicle) in the urban environment, in the context of the urban text (iconic, indexical, conventional (conditional)).

"By naming the streets one way or another, pubs, we write the text of the city" (Vozniak, 2009). The definition "urban text" is a heterogeneous text in which the language of streets, squares, gardens, houses, monuments, people, stories, ideas creates some general meaning and based on them a certain system of signs can be reconstructed, which is realized in the text. (Toporov, 1995). According to T. Wozniak, the urban text consists of a visual and cultural context and is a secondary, illusory one about the city itself (Vozniak, 2009).

The proper name of the HE can indicate the immanent properties of an architectural object or environment and contains the immanent poetics of the LCD. According to Pierce's trichotomy of signs (icon, index, symbol) (Peirce, 2000), the HE architecture as a sign has an iconic, indexical connection with the referent, or conditional connection based on a convention or rule, what Pierce calls symbolic connection[1]. The iconic connection arises when the sign – has common properties with something, but not with the object, but with the structure of its perception, it is built and known in the course of the same mental operations that we perform forming the image independently from the material in which these relationships are fixed (Eco, 1998). An iconic sign can have the following qualities of an object 1) optical (visible); 2) ontological (predictable), 3) conventional (image of a ray of the sun in the form of dashes or an obelisk as a ray of the sun).

The index relationship is based on the actual adjacency of the sign and the denoted object. Sign – index – "is a sign in a dynamic (including spatial) relationship with the object, on the one hand, and with the meaning or memory of the interpreter, on the other hand" (Peirce, 1901). Thus, the own name as one of the interpretants connects both the referent (what the own name indicates) and the representamen (the HE which it calls). Let's try to trace how the image of architecture of the HE as a sign – vehicle in the urban text and its referent or denotat (preset by the proper name) – correlates.

4.1. The proper names of HE are tied to a specific historical chronotope in the urban environment. Proper names, that activate the historical toponym, indicate the location of the building, have an ontological reference, include the cultural code, the context of the environment. Named housing estates act as index signs in the urban space, actualizing the chronotope, a certain cut of the urban text.

4.1.1. Proper names that are associated with the historical toponymy of the city, region, natural landscape (give it a second life). These are complexes:

- "Kaiser" Residential Complex (8a Doroha Kryvchytska Str.). Points to the referent "Kaiserwald" from German translates as "Kaiser's (imperial) forest", which was located in this area during the Austrian Empire (the territory of the modern park of Ascension, Shevchenko grove);
- the housing estate "Sofiyivka" at Uhorska St. The quarter is being built in the historical district of Lviv, known in the 16–19th centuries as Sofiyivka (the name comes from the church of St. Sophia built by the local founder Sophia Hanel);
- the HE "Galicia" (from the Austrian name of Galicia) at 307 Shevchenka Str.;
- in the area of Stary Sykhiv the HE "Stary Sykhiv" and at 273 Zelena Str. the HE "Forest Hill";
- the HE "Pasichny" at Pasichna St and the area called Pasiky from the XVI century;
- the HE "Old Town" at 12 Maera Balabana Str., near the Old Market Square, a district of a modern city inhabited since the 12th century;
- the HE "Golden Walnut" is located near the toponym "Walnut Grove". In addition, the image of the "golden nut" is a metaphor for the moon, sun, space, which was constructed and activated by the Lviv poet B.-I. Antonych.
- "Park Towers" Residential Complex – 25 Torfyana Str., Lviv.

[1] In this article, the symbolic connection between the own name of the HE and the object itself means the immanent qualities that the symbol-sign evokes in the interpreter of the architectural object. The symbolic connection is immanent, not conditional.

4.1.2. Proper names are connected with the names of streets: The housing estate "Khmelnytskyy Park" (230a Bohdana Khmelnytskoho Str., MS Imperial), "Knyazhyy" residential complex, (5 Kniaz Svyatoslav Sq); HE "Bortnyanskyy" and "Bortnyanskyy's Sonata" (28 and 23 D. Bortnyanskyy Str.) (Fig. 9). The housing estate "Kokorudza" (Kokorudza Str.), the housing estate "Villa Varshavska". Proper names are associated with the names of streets, which in turn indicate the peculiarities of the natural environment: the HE "Strumok" (by the location) at 7 Strumok Str. and the HE "Lypova Alleya" at 7 Masaryka Str. (by Lypova Alleya Str.).

4.1.3. By the names of industrial objects in this chronotope, or example, the housing estate "Yuvelirnyy" (Jewelry) (3 Akademika Pidstryhacha Str.) is located next to the Lviv State Jewelry Factory.

This method of naming objects embodies an ancient European tradition: the name indicates a chronotope or an important object in this chronotope[2]. For example, the names of objects in Lviv: "Under the Black Shafts", "At Pelchynsky pond", "On Zbizhzheva Square".

4.1.4. Proper names of the housing estates, which are connected with the location of the housing estates (centre-thresholds-periphery of the city): the housing estate "Lvivska Brama".

4.2. Names related to foreign chronotopes:

4.2.1. Names that reflect mythonyms (mythotoponyms) abroad, for example, Avalon – a paradise island in Celtic mythology (in the myths of King Arthur) in the names: the HE "Avalon", the HE "Avalon Lux", the HE "Avalon Futura".

4.2.2. Proper names are associated with the names of foreign countries, cities, famous streets as the HE "Monaco" (36 Kulisha Str.), a series of complexes "Great Britain": "Great Britain 1", "Great Britain 2", "Great Britain 3", "Great Britain 4", a series of complexes "America": "America", "America 2" (10 Volodymyra Velykoho Str.); the HE "5th Avenue" (36 Lypynskoho Str.); polysemantic name the HE "Orange" is a city in France or the orange. The housing estate "Greenville House" (100b Knyahyni Olhy Str.). The proper name "Greenville" of housing estate refers us to the name of several cities in America or the name of the developer Greenville, the HE "In the Rhythm of Sacramento" (14 Rylskoho Str.) (in the rhythm of the river or the Sacramento city). Such objects use the principle of quotation, an allusion to the architecture of these localities. The visual rhetoric of this architecture of HE is inherent in the direction of historicism. The proper name of such objects (as designated in the referent) has a partly iconic connection with the architecture of the HE.

4.3. Proper names are associated with the visual metaphor of the architecture of a residential building, a housing estate. Such buildings have a partial iconic connection with the referent (denotat).

The following own names, which are connected with the visual metaphor of the architecture of the building, the complex are organic:

– similarity associations by the shape: the HE "Parus Park" (1 Robitnycha Str.) (Fig. 4); the HE "Parus" (26 Lypynskoho Str.); the HE "Parus Life" (7 Gorodnytska Str.). The metaphor of the building as a ship is very old and in mythology, the ship is associated with temple buildings.

– similarity associations by the monochrome, polychrome solution of facades of the HE "Semytsvit" (seven-colours) (60 Shevchenko St) Fig. 7, the HE "Sunrise" (67 Chornovola Ave), the HE "Veselka" (rainbow) (7 Zaliznychna Str.), the HE "City" (69 Chornovola Ave),

– associations by architectural elements and details: the HE "Shuttle", the HE "Chocolate" (Shevchenko and Yatskova Str.) (Fig. 5) Completion of different height sections with brown flat plates, which act as cornices, remotely resemble horizontal bars of chocolate.

The HE "Bumblebee" (project) (12/18 Pancha Str.) (Fig. 6) we have polysemanticity in the name: "bumblebee" (there is an iconic connection of the denotat with the colour of the facade in the project) and the figurative meaning "egoist".

[2] A well-known example of the own name of the gate in the aqueduct of Claudius in Rome: Porta Praenestina. 1) The proper name of the gate pointed to the street through which it passed. In the Middle Ages, the gate was also called Maior, which pointed to the pilgrims to the nearby church of Santa Maria Maggiore.

4.4. Proper names related to the physical quality of housing (comfort, luxury, perfection) contain a conventional (conditional) connection with architecture.

Proper names that embody the imagination of buyers about housing: the HE "Lvivska Mriya" (Rubchaka Str.), the HE "Deluxe" – luxury, the HE "Perfect Loft 47" (47 Kulisha Str.), the HE "Diamant Hall".

4.5. Proper names that reflect the planning and functional features of the HE; with the panoramic view function the HE "Panorama" (19–25 Lisynetska Str.) (Fig. 10). Names that reflect the compositional structure of the housing estate: the HE "Zeleny Dvir" (green yard) (70 Velychkovskoho Str.,) (П – similar structure (developer Zeleny Dvir)), the HE "Zelena Terrasa" (green terrace) (8 Kubanska Str.).

4.6. Proper names are associated with the traditional semantics of housing. The HE "Oberig" (amulet), the HE "Karpatsky Oberig", the HE "Dobra Oselya" (good accommodation) (1/5 Knihyni Olhy Str.), the HE "Shchaslyvy" (happy).

4.7. Proper names are associated with the symbols of the city. The names associated with the symbolic signs of the city have a conditional connection with the architecture of the HE. It is the HE "Levy Mista" (45A Stryjska Str.), the HE "Halytskyy Lev" (40 Ivana Pulyuya Str.).

Fig. 4.[3] The HE "Parus Park"

Fig. 5. The HE "Chocolate"

Fig. 6. The HE "Bumblebee"

Fig. 7. The HE "Semytsvit"

Fig. 8. The HE "Monet"

Fig. 9. The HE "Bortnyansky"

Fig. 10. The HE "Panorama"

Fig. 11. The HE "Baker Street. Sherlock Holmes"

Fig. 12. The HE "Baker Street. Dr. Watson"

[3] Used photos of electronic resources: *http://novobudovy.com/novobudovy/novobudovy-lvova;* https://lun.ua/uk

4.8. Proper names that personify residential complexes

The personification of residential complexes by literary prototypes that embody certain sociotypes. The HE "Baker street. Sherlock Holmes" (30 Pekarska Str., developer Riel) (Fig. 11), the HE "Baker Street. Dr. Watson" (57 Pekarska Str.) (Fig. 12). Sociotypes: Sherlock Holmes is a logic-meaningful extrovert and ethical-intuitive introvert Dr. Watson. In the decision of a facade associations on clothes of heroes are felt.

Personification by the names of famous artists: the housing estate "Monet" (Fig. 8.), "Monet 2", "Monet 3" (233 Zamarstynivska Str.), the HE "Renoir" (122a Kniahyni Olhy Str.), the HE "Rafael (11 Ilmova Str.), the HE "Van Gogh", the HE "Salvador Dali".

4.9. Housing estate names are often associated with the names of the developer (developer's brand): the HE "Forum Apartments" near 26 Pid Dubom Str. (developer Forum Park-West); the HE "Parus", the HE "Parus Life" (developer Parus Development); the HE "Auroom City" (7 Pymonenko Str., developer AUROOM) and has a conditional connection with the architecture of the HE. The name of the developer is based on verbal contiguity: pun – "AU room" (translated as "gold – room"). The mode of verbal pun puts polysemanticity in its proper name and these are postmodernist techniques of intertextuality. Developer AVALON with the names of the mythological chronotope of paradise: the HE "Avalon Lux", the HE "Avalon Yard", the HE "Avalon Up".

At the same time, the proper name as a part of the meaning introduces an architectural building or complex into the level of the sign (the architectural sign manifests, testifies to what is named in it) and very often this link is fictitious, it is impossible to recognize the referent. Proper names such as Monet do not evoke any figurative or semantic connection between architecture, the image of the HE as a sign with the referent. The own name of the HE adjusts of the recipient to a certain set of qualities, features that should contain the image of the HE and the recipient adjusts to a certain: iconic, indexical or symbolic/conventional relationship formed by architecture and its denotat (for example from the HE Raphael, we expect recognizable signs of the semantic field, content and volume the concept of "Raphael")

It is clear that by giving our proper name we reduce the informative capacity of the artistic image and establish a specific meaning.

Conclusions

The proper name of the new building is a marketing tool and it distinguishes a position the new building takes in the housing market. On the other hand, the proper name is part of the interpretive poetics of the HE, which adjusts a person in a certain semantic direction in perception. It is proved that the proper name is an element in the semiotic triangle and acts as one of the interpretants. The proper name is pointed by the referent (denotate) when perceiving the architecture of the HE.

There is often a problem of conditionality of the proper name relatively to the architectural image: there is a tendency to move away from understanding the semantic value of the proper name, but the name is the essence of the thing it denotes. The building (representamen) and the context of the environment as symbolic constructions often do not carry any information about what is activated through a proper name which is forcibly combined with the architectural image of the HE.

The article presents the process of semiosis through a semiotic triangle as a truncated pyramid. The triangular cuts of the pyramid (and there may be many because they are determined by the code of perception) show semiosis – a process of interpretation in which the sign can refer to many referents (denotats). In one of those triangular, one vertex is its proper name, which specifies the code of perception of the HE.

Signs of decorating the facade, three-dimensional solution, taking into account the external urban context in its proper name is an attempt to deprive its proper name of conventionality and give it an immanent character. The proper name as indicated in the denotat (referent) not only conditionally indexes the

architectural environment for orientation in the city (urban text) or the housing market, but has an iconic connection (recognizable in the image) or a symbolic dimension (actualizes "genius loci").

For the most part, the proper names of new residential buildings reflect the code of the urban text (index links with the context of the urban environment, activation of city symbols) and social code: indexing the idea of the comfort of living abroad, social status, popularity of artistic and mythological types as we see in the example of Lviv, most often foreign character. Quotes, allusions to the architecture and terrain of foreign countries, show us the utopian "transfer" into own name the dream of a higher standard of living in Ukraine, and on the other hand, relate to the globalization of cultures. There is a spread of Americanisms or Angloisms in the urban text through the proper names of HE.

Improving the structure of interaction of elements of semiosis can be further researched.

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ДОСЛІДЖЕННЯ УМОВНОСТІ ТА ІМАНЕНТНОСТІ ВЛАСНИХ НАЗВ ЖИТЛОВИХ НОВОБУДОВ У МІСЬКОМУ СЕРЕДОВИЩІ ЛЬВОВА ПОЧ. XXI ст. (на прикладі методу семіотичного трикутника)

Анотація. *Подано процес семіозису через семіотичний трикутник у вигляді зрізаної піраміди. Трикутні зрізи піраміди (а їх може бути багато, тому що вони зумовлені кодом сприйняття), показують процес інтерпретації, в якому знак може відсилати до багатьох референтів (денотатів). В одному із тих трикутних зрізів однією вершиною є Власна назва, яка задає код сприйняття ЖК.*

Здебільшого власні назви ЖК новобудов відображають код міського тексту (індексальні зв'язки з контекстом міського середовища, активізація символіки міста) та соціальний код: індексують уявлення про комфорт життя за кордоном, суспільне положення, популярність художніх і міфологічних типів, мистців, але, на жаль, як бачимо на прикладі Львова, найчастіше іноземних. Цитати, алюзії на архітектуру та місцевості зарубіжних держав, показують нам утопічність "перенесення" у власну назву мрій про зарубіжжя, а з іншого боку – зумовлені глобалізацією культур.

Власна назва як позначене у денотаті (референті) не просто умовно індексує архітектурне середовище для орієнтації в місті (міському тексті) чи на ринку житла, а має іконічний зв'язок (упізнається в образі) або й символічний вимір (актуалізує "genius loci").

Ключові слова: *поетика, власна назва житлового комплексу; семіозис; іконічний, індексальний, конвенційний зв'язок; семіотичний трикутник.*

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THE PHENOMENON OF THE "GREEK RENAISSANCE" IN THE ARCHITECTURE OF IMPERIAL ROME

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Abstract. The article analyzes the phenomenon of borrowing forms of Greek architecture in the architecture of Ancient Rome of Emperor Hadrian's era (II century AD). This phenomenon is interpreted as the first representation of historicism in architecture – the use of elements of the former culture in actual project creativity to convey certain ideas and meanings. The article shows that the "Greek Renaissance" in the architecture of imperial Rome was an organic component of the general process of hellenophilism, characteristic of the general cultural development of that time.

Key words: "the Greek Renaissance", Emperor Hadrian, Ancient Rome, historicism.

Introduction

The situation of borrowing forms from other cultures and the possibility of free and decorative interpretation of these forms led to the development in the first and second centuries of a special phenomenon in the architecture of Ancient Rome – the "Greek Renaissance". The "Greek Renaissance" in Roman architecture meant bringing to it the traditions of Greek architecture, which, intertwined and created a wide range of aesthetic and artistic orientations.

The purpose of the article is to demonstrate the phenomenon of using forms of Greek architecture in the architecture of Ancient Rome as one of the first (known) representations of the phenomenon of historicism in architecture. Historicism in this article is not interpreted as a separate period of architecture development, which falls on the second half of the XIX century, and as a trend that goes through many stages in the history of architecture. And its characteristic feature is the involvement of past forms in the current project process.

Analysis of recent research and publications

The phenomenon of the "Greek Renaissance" in architecture has become an object of scientists' research a long time ago. In particular, the works of L. Menshykova (Menshykova, 1977), N. Brytova, M. Losev, N. Sydorova (Brytova, 1975), O. Yamshchykova (Yamshhykova, 1994), and S. Güven, C. Gonzalez-Longo and D. Theodossopoulos were devoted to this topic. In these works, the problems of the influence of Greek architecture on the development of the architecture of imperial Rome

were considered, individual objects and the principles of their formation were analyzed. However, borrowing from Greek architecture to the architecture of Ancient Rome has not yet been interpreted as the first manifestation of historicism in architecture.

Objective of the article

The appeal to the past of Greece in the era of imperial Rome was found in various spheres of cultural life: the literature of that time was called the "second sophistry", the painting was going through the Philistine phase, neoatticism reigned in sculpture, Greek names became fashionable, the former names of cities were restored, Greek measurement systems were used (Menshykova, 1977).

The phenomenon of the "Greek Renaissance" in architecture is associated with the active construction activity of Emperor Hadrian (117–138) – a person extremely ambiguous for his status and his time (Fig. 1). Hadrian is described as a skilled and peaceful politician who put an end to the aggressive policy of the Roman Empire and focused on strengthening and flourishing not only the mother country but also the provinces (Grant, 1998). He travelled a lot (Hadrian spent half of his twenty-one-year reign outside Rome), but in his travels, he pursued not only political goals but also satisfied his curiosity. "He was passionately fond of travelling; along with everything he read about in relation to various places in all lands, he wanted to get acquainted, to see with his own eyes", wrote Eli Spartian in the biography of Hadrian. He visited all the Roman provinces from Britain to Greece and Egypt. His worldview was not distinguished by integrity: rationalism was combined with magic, and his artistic preferences were intertwined with admiration for the cultures of conquered peoples. However, Greece came first. The Roman Emperor Hadrian was an ardent philellinist (Brytova, 1975). Hadrian sought to concentrate all the most educated people of his time near the throne, developing their interest in Greek culture. The fascination with Greece even led to the imitation of the appearance of Greek philosophers: Hadrian was the first among the Roman emperors to have a beard. It was the hellenophilic policy of the emperor that led to the consolidation of a new direction in Roman art, which was called the "Greek Renaissance" (Brytova, 1975).

Fig. 1. Sculptural figure of the Emperor Hadrian of Perge, 2nd century. Anatolian Archaeological Museum, Anatolia, Turkey Photo by S. Linda, 2021

Emperor Hadrian is known for building the Pantheon in Rome – the temple of all the gods (approximately year 125), one of the best monuments of Roman heritage (Fig. 2). In the architecture of the Pantheon, for the first time, the task was set and implemented – the creation of a monumental temple building, in the figurative structure of which the main role was to be played by the internal space. The pantheon is a huge rotunda topped by a grandiose cupola (the inner diameter of the cupola is 43.2 m). Externally, the temple is marked by emphasized simplicity, inside the gigantic size of the building combined with harmonious proportions and noble beauty create the effect of exceptional emotional impact (Kolpynskyj, 1982).

Fig. 2. Pantheon. The most famous building o f Emperor Hadrian, 125 AD, Rome, Italy. Photo by S. Linda, 2016

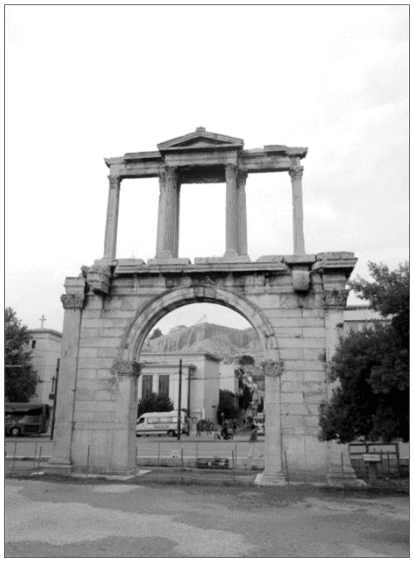
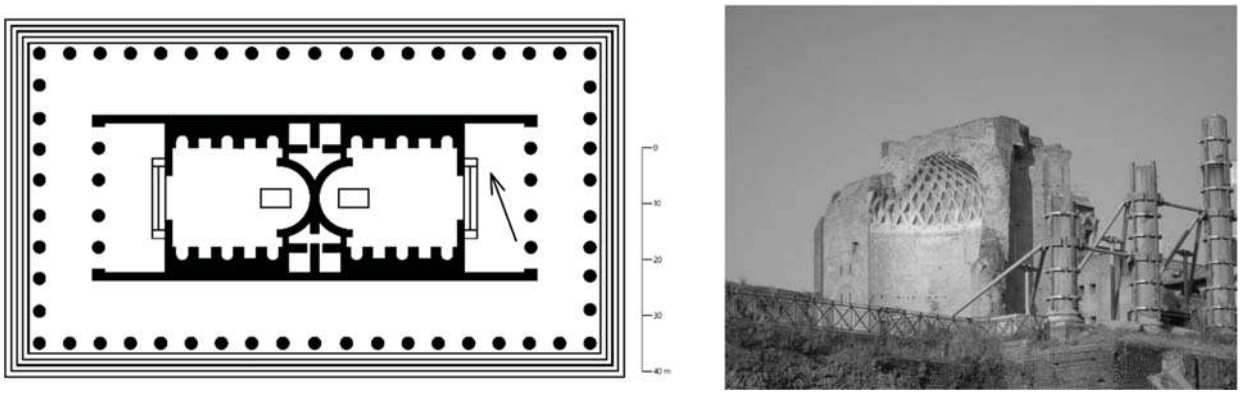


Fig. 3. Hadrian's Arch in Athens. An example of combining Roman (lower part) and Greek (upper part) architecture motifs in one building, 120 AD, Athens, Greece. Photo by S. Linda, 2019

All the other buildings of Hadrian were significantly different from the Pantheon – they had the first signs of the architecture of choice, the first manifestos of historicism in architecture, which consisted in combining current (Roman) architecture with the architecture of the past – with the heritage of other cultures. An example of this is one of the first buildings – Hadrian's Arch in Athens (120 p.). This is a two-tiered structure that combines a massive semicircular Roman arch with light through a Greek portico placed above it instead of an attic. Semantic ambiguity is already noticeable in the function of the arch itself: it was both a memorial arch and a gate that formed the entrance to Olympeion (Fig. 3). The arch divided Athens into two parts – the ancient city and the city of Roman times – and, at the same time, united it: on the side of the arch facing the Acropolis, there was an inscription "This is the city of Theseus", and on the other side was written "This is the city of Hadrian". The same duality is characteristic of the architectural solution of the Arch, where the lower, massive part is Roman combined with the upper one is Greek, light, which seems to "hang" over the base. The architecture of the arch reflects two polar ideas about time and space. In temporal terms, the arch seemed to connect two planes of existence – eternal and transitory. In spatial terms, it combined an ideal, unshakable space as a symbol of eternity (the lower part) and real, variable space (the upper part) (Yamshhykova, 1994).

The temple of Venus and Roma at the Roman Forum (136–137) was built according to the project of Emperor Hadrian himself and was supposed to symbolize the inviolability of imperial power (Fig. 4). This temple was not only one of the largest in Rome, but also one of the largest in the ancient world: its dimensions were 113×56 m, and its height reached 30 m (the dimensions of the platform were 145×120 m). Previously, this site was the huge lobby of the Golden House of Nero, which he built after the Great Fire of Rome in 64 AD. The place where the temple was built was especially important in terms of urban planning and symbolic aspects. The temple seemed to connect the old and new parts of the city, providing a visual symbolic connection between Capitol Hill and the Acropolis of Athens. Extremely interesting was the architectural design of the temple, which intertwined the traditions of Greek temple construction with Roman ones. The composition of the temple looked like a Greek peripter, which was placed in the centre of a stylish courtyard, genetically connected with the planning techniques of the Hellenistic era. Inside, the Temple consisted of two equivalent parts – semicircular cel-apsids, one of which was dedicated to the goddess Venus, and the second to Roma. A constructive solution was compiled: the temple was covered with a double-square roof, while the cells were covered with arches (Gonzalez-Longo C., 2011). These contradictions in the work of Hadrian's era have long been the subject of discussion among scientists. This was also due to the complexity of Hadrian's nature, the dichotomy of his policy as emperor and architect: "...on the one hand, he tried to express himself as an emperor from Rome, but on the other hand, he vigorously introduced innovations aimed at incorporating other countries into imperial possessions, which alienated him from Rome" (Güven, 1990).



a *b*

Fig. 4. The Temple of Venus and Roma at the Roman Forum.
One of the largest temples in the ancient world, 136 –137 AD, Rome, Italy.
a – plan, drawn by S. Linda; b – remains of a temple in the Roman Forum, photo by S. Linda, 2019

Hadrian's aesthetic views and aspirations were most fully embodied in the luxurious residence he built for himself in Tibur (today Tivoli) in the suburbs of Rome (118–134). It was a complex of interconnected and detached buildings that impressed Hadrian during his many travels. At the initiative of the emperor, experimenter architects built interesting structures, artistically using the roughness of the terrain, proving the technical perfection of brick-faced concrete structures (Grant, 1998). Ch. Jenks described the residence as "an early eclectic complex from all parts of the Roman Empire" because the grand complex was intertwined with motifs of Egyptian, Greek and Roman architecture (Dzhenks, 1985). It seems that the famous words of Emperor Hadrian: "I feel responsible for the beauty of the world" – were embodied in these architectural forms (Kolpynskyj, 1982).

On a huge space (120 hectares) there were picturesquely scattered buildings that reproduced the architectural monuments of Greece and Egypt. The residence is interesting primarily for its flowing spaces,

continuous changes in viewpoints. According to O. Yamshchikova's observation: "It is incomprehensible to have a constant sense of time, time duration as a form of manifestation of spatial extension, as the presence of an invisible, sensitive satellite. Indeed, space and time became the characters of the elegant theatrical performance which was the Hadrian's Villa. It is the performance because it is impossible to say it is static about that unusual game of space, and not the one that appears before the eye, but also the one that is meant, pulled together by the will of Hadrian in a single multi-coloured knot, each thread in which is the Academy, Poikile, Pritaney, Canope, Dikei – as a motif of a distant melody heard by Hadrian in his travels, as a sign-mark in the margins of his travel notes" (Yamshhy'kova, 1994).

One of the most famous buildings of the Hadrian's Villa, which at the same time became a symbol of innovation in design, is the Teatro Marittino (Marine Theater). The theatre was one of the first buildings built and became the "heart" of the complex, resembling a miniature residence, a "villa within a villa" surrounded by water and an ionic colonnade. Full of nobility and sadness was the building of the Antoneum, a kind of memorial dedicated to Hadrian's favourite – the young man Antinous, who tragically died in the Nile. The basis for the architectural imagination was Egyptian motifs. A semicircular portico, behind which the tomb of Antinous was located, decorated the solemn square. On the central axis was an obelisk (only one, although according to Egyptian custom there should have been two), flanked by two statues of Antinous in the form of the Egyptian god Osiris. Two Roman tetrastyle temples surrounded by canals (which symbolized the Nile) articulated the main entrance.

One of the most romantic complexes was Canope (Fig. 5). Canope was designed to resemble the ancient Egyptian settlement of Canopus near Alexandria (hence its name, now the area is called Abukir), where Antinous died. The centre of the complex, located on a narrow artificial site, was a reservoir measuring 119×18 m, surrounded by statues of Caryatids (copies of the statues of Jerechtheion) and silenes. The pool was completed with a richly decorated pavilion in the shape of an exedra, which was called the Serapeum (after the name of the Temple of Serapis, which was located in ancient Canopus).

Fig. 5. Canopus. A memoir of the ancient Egyptian settlement of Canopus near Alexandria in Egypt, Hadrian's Villa in Tivoli near Rome, Italy. Photo by S. Linda, 2016

Structurally, the most complex object was the Piazza d'Or (Golden Square) – a large peristyle with a domed hall adjacent to it. The hall was covered by a hemispherical dome resting on a square base (Fig. 6). Between the main pillars on the sides of the square alternated curves of the "snake-like" colonnade, thanks to which the dome spaces of the hall were interpenetrated into each other. Subsequently, this technique was widely used by Italian Baroque masters – F. Borromini and G. Guarini (Kolpynskyj, 1982).

Fig. 6. Remains of the Golden Square at Hadrian's Villa in Tivoli near Rome, Italy. Photo by S. Linda, 2016

Results and discussions

These examples demonstrate that the use of forms from another culture was normal practice for Roman architecture. Moreover, there are other examples in history, since the culture of Ancient Rome was not isolated and closed from the outside world. One of the signs of openness is the incorporation of achievements of other cultures, primarily conquered peoples, into its construction tradition. Such an example is the "egyptization" of the architecture of Ancient Rome. Since about the third century BC (during the Ptolemaic dynasty in Egypt), close economic and cultural relations between ancient Rome and Egypt have been established. In the year 31 BC, the Roman general Octavian (later Emperor Augustus), after winning the naval battle of Mark Antony and Cleopatra VII, "joined Egypt to the Roman people", as officially stated in his "Res Gestae" (Broadbent, 2012). Egypt became a province of the Roman Empire and was rediscovered by the Romans, who became interested in exotic art, mystical cults and mysterious rituals, and the period of "egyptomania" and "egyptization" of Roman culture began (Fig. 7). During the Imperial Period, active construction activities were carried out on the outskirts of the grandiose Roman Empire, so in the architecture and art of the provinces, you can find many examples of mixing different traditions and cultures (Fig. 8).

Fig. 7. Temple dedicated to the Egyptian goddess Isis, in Pompeii, I century AD, Italy. Photo by S. Linda, 2016

Fig. 8. Figure of Nika, a Roman goddess made in the "hittite" manner, the Comagenic Kingdom, I century BC. Archaeological Museum in Sanliurf, Turkey. Photo by S. Linda, 2021

However, there is a significant difference between the "egyptization" of Roman architecture and other examples of the "mixing" of various cultural traditions in the second century and the "Greek Renaissance". In the first case, the emergence of eclectic forms was a consequence of the natural mixing of "living" cultures that developed simultaneously, intertwined and formed new, interesting forms that reflected the features of all cultural environments. The "Greek Renaissance" was the introduction of forms of "dead "culture into the design practice, because about 600 years passed from the peak of ancient Greek architecture to the time of Hadrian. This is also associated with another problem that is not typical for "live mixing" – the choice of a prototype for actual creativity. The choice of a prototype was not a mechanical act but was filled with certain new meanings, such as Antoneum or Canopus in Hadrian's Villa.

Roman authors referred to their time as the time when their empire experienced a "brilliant old age". The keyword here is the word "old age", since old age is due to the impermanence, temporality of the phenomenon, and this already indicated the active inclusion of the temporal category in the static picture of the ancient mythologized understanding of history, which came into conflict with the central element of official ideology during the Empire – the idea of the greatness and eternity of Rome (again ambiguity). O. Yamshchikova considers that in relation to the Roman architecture of the second century, we can say that this is the embodiment of the charm of autumn extinction. The ageing world "remembers" the lost sincerity and freshness of perception, the desire to fill with energy and power the lifeless casts from past images, imbued with a childlike direct admiration for the beauty of the earthly world and reverence for its power (Brytova, 1975).

Conclusion

The phenomenon of the "Greek Renaissance" in the architecture of imperial Rome testified to a new practice for architecture – the situation of *conscious introducing motifs of a different cultural tradition into Roman architecture to* "*solve actual problems of architecture through the historical past*" (according to A. Ikonnikov), that is, the first representation of the phenomenon of historicism in architecture. Unlike other examples of the involvement of different cultures, which were also common in the architecture of imperial Rome, the "Greek Renaissance" was distinguished by the fact that the "former", "dead" culture was included in the process of incorporation. This created a completely new situation for architectural creativity– the situation of choosing an architectural prototype to repeat and mix different forms in one object. The process of choosing a prototype became a separate methodological task, where the prototype had to be justified and understood. From this aspect, the "Greek Renaissance" in the architecture of imperial Rome can be interpreted as a unique phenomenon that marked the beginning of the formation of the trend of historicism in architecture.

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ФЕНОМЕН "ГРЕЦЬКОГО ВІДРОДЖЕННЯ" В АРХІТЕКТУРІ ІМПЕРАТРСЬКОГО РИМУ

Анотація. *Проаналізовано явище запозичення форм грецької архітектури у зодчестві Давнього Риму епохи імператора Адріана (II ст. н.е.). На прикладі таких об'єктів, як Арка Адріана в Афінах, храм Венери і Роми у Римі та вілли Адріана у Тіволі показано яким чином форми архітектури Давньої Греції впливали на формування специфічного еклектичного образу у будівництві епохи Адріана. Показано, що запозичення форм "зниклої" культури (на момент будівництва проаналізованих об'єктів минуло вже понад 600 років) були символічними. На підставі цього сформульований висновок про те, що феномен "грецького відродження" можна трактувати як одну з перших репрезентацій історизму в архітектурі: використання елементів колишньої культури в актуальній проектній творчості для передачі певних ідей та змістів. Наголошено на тому, що запозичення форм грецької культури у зодчестві Давнього Риму методологічно суттєво відрізняється від популярної у імператорські часи практики "єгиптоманії": змішання форм римської та єгипетської архітектури і мистецтва. Показано, що "грецьке відродження" в архітектури імператорського Риму було органічною складовою загального процесу еллінофільства, властивого для культурного розвитку того часу.*

Ключові слова: *"грецьке відродження", імператор Адріан, Давній Рим, історизм.*

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METHODOLOGICAL ASPECTS OF THE SCIENTIFIC AND DESIGN PROCESS OF PRESERVING THE HISTORICAL CITY

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Astract. The article highlights the methodological aspects of the architect's work in the historical environment, reveals current trends and processes of transformation of the architectural and urban planning structure of historical cities. The main approaches to their reproduction and transformation are considered and analyzed. The concept of the central part of the historical city and the method of localization of its borders are revealed. The main requirements for the reproduction and development of buildings in the central part of historical cities are highlighted. The article describes the architectural and urban planning principles of reproduction and development of block development, which are based on the continuous development of the central part of the city, and allow the use of modern architectural and construction innovations in the structural, engineering and architectural solution of development. The article describes the ways of developing the planning structure of a historically formed centre, approaches to its transformation, and substantiates the advantages of developing a comprehensive project for the regeneration of the central part of the historical city, which should be based on the results of research conducted during the development of a historical and architectural reference plan. The program approach to the reconstruction of certain sectors of historical development is revealed.

Key words: historical city, central part of the historical city, city centre, regeneration, reconstruction, reproduction, development of the city.

Problem statement

The current state of the historical cities of Ukraine is characterized by the presence of problems related to the preservation of historical and cultural heritage, one of which is the need to preserve and reproduce the composition of historical parts of cities and ensure the uniqueness and authenticity of the historically formed

environment. This is due to the current state of theory and practice of domestic architecture, where the study and generalization of experience took place somewhat fragmentally, the architectural and aesthetic aspects of reconstruction were not fully taken into account, which often led to the loss of a valuable historical environment.

At the current stage of development, cities are being transformed without preserving their hereditary structure and losing the traditions of their original development. Cities are adapting to rapid investment construction. The processes taking place in the urban environment have not only increased their speed and scale but also largely changed their nature. The formation of a city with a clearly defined relationship between its elements went beyond urban planning analysis with a meaningful organization of the city. Mass construction of multifunctional complexes is a sign of urban planning and economic policy in recent years. These complexes are linked to the main highways of the city and significantly load them. Therefore, the architectural and urban planning problem lies in the fact that in the conditions of modern urban development and market economy, there is a significant contradiction between architectural objects that are discretely built and transport communications, the integrity of the urban environment is lost and the functional processes of the city become more complicated.

Analysis of recent research and publications

Basic scientific research on this subject belongs to Bevz M. (2004), Vechersky L. (2003). Also there are grate amount of practical results in a reconstraction and regeneration of hystorycal cityes of the Poland (Jamiołkowska & Kurzątkowski, 1986; Kalinowski, 1986; Krzyżanowski, 1986; Kornecki, 1986; Krupiński, 1986; Latour & Orlińska, 1986; Przyłęcki, 1986; Zarębska, 1986; Żurawski, 1986.) where summarized basic work on rrban revitalization of Polish cities. This works consider the basic issue of regeneration of the downtown historical town-planning structures, but some aspects and methods of identifying and delineating the most valuable part of the city need further coverage.

Purpose of the study

Analyze the processes of transformation in historical cities and reveal the methodological aspects and foundations of the scientific and design process of preserving the historical city in the course of its transformation and adaptation to modern conditions.

Results and discussion

According to the legislation of Ukraine, a historical locality is a city, settlement or village that has preserved in whole or in part its historical area with cultural heritage objects and related planning and form of development, typical for certain cultures or periods of development and is included in the list of historical localities of Ukraine. Nowadays, 403 localities have been included in the list of historical localities in Ukraine. According to the "procedure for recognizing a locality as historical", approved by Resolution No. 909 of the Cabinet of Ministers of Ukraine on July 3, 2006, a city, settlement and village can be recognized as historical and included in the list if it meets at least two of the following criteria:

1) the presence of historical, architectural, landscape and garden-park objects of cultural heritage that have a city-forming significance;

2) planning in accordance with past historical epochs (before the beginning of the twentieth century);

3) preservation of the main compositional centres and compositional axes of populated areas;

4) the presence of ordinary historical buildings.

By modern definition, historical cities are related to the protection of historical and cultural heritage, because they embody the values inherent in traditional urban areas of communities and have preserved over the centuries a unique face, traditional planning structure, appropriate cultural, historical and architectural environment.

The threat to the identity of historical cities has always been the interference of new buildings in the historical environment. Nowadays, there is a danger that the growing versatility of construction methods and architectural forms can lead to the creation of a monotonous architectural environment. The preservation of the traditional historical environment and its diversity, in this case, is a significant contribution to the protection of cultural and social values of the country and will contribute to the enrichment of the world cultural heritage in the field of architectural and urban planning.

The art of reconstruction of monuments of urban planning and architecture, first of all, should be the art of harmonious development of an ensemble, complex, or city, based on objective patterns of interaction of the art of architecture with space and time – the main spheres of life.

According to M. G. Barkhin: "An ensemble is not just a group of buildings... A mandatory participant in an architectural ensemble is the space organized by these buildings, organized according to a certain idea, in accordance with a certain idea".

Examples of reconstruction of historical cities show that for the true preservation of their architectural identity, urban planning conservation is necessary for its parts, primarily spatial relations. In some cases, urban planning restoration or revitalization is necessary (Warsaw (Biegański, Kalinowski., 1986), Gdansk (Krzyżanowski, 1986), Sandomierz (Kalinowski, 1986), Olesnica (Przyłęcki, 1986), Tarnow (Krupiński, 1986) in Poland). Also one of the most successful examples of the most accurate definition of borders for "clearing" the Old City with the simultaneous disclosure of true historical and artistic values from later layers is a reconstruction of the medieval core of Tbilisi.

Another aspect of this problem is that in the expanses of the city, all the architectural and artistic connections of buildings are realized when comparing their scale, proportional construction, silhouette, plastic, and colour. In the historical and architectural heritage, these relationships are no less valuable than the expanses and architectural monuments of the city themselves. Meanwhile, the destruction of historical buildings is not necessary to break these ties. These relationships can be deformed by the unjustified intervention of new volumes that are alien to the expanses of the historical city with their hypertrophied size, different scale, lack of plastic and colour. An example is the building of a book depository Kharkiv Scientific Library named after Korolenko, the primitive bulky silhouette of which distorted the refined historical ensemble of the city centre and the UniCredit Bank building on Mickiewicz Square in Lviv, which, despite its acceptable height, destroyed the environment of the square due to its three-dimensional composition that is not typical for historical buildings.

The analysis of architectural and urban planning practices of recent decades shows that the invasion of the historically formed environment of the Centers of historical cities often generates conflict situations. Numerous reconstructive measures lead to radical changes in the traditional appearance of the urban environment, which has developed over the centuries. Modern trends that occur in cities identified in the course of the study processes of transformation of the architectural and urban planning structure of historical cities, taking place in recent years, by the nature of transformations can be divided into 5 main groups: 1) adaptation of the lower floors of existing residential buildings for various functions; 2) an increase in the number of unauthorized reconstructions of historical houses; 3) spontaneous adaptation of street spaces and free territories of blocks for parking cars; 4) free from development territories of blocks, gradually built up, adapt to parking or recreational areas; 5) new construction is implemented mainly without observing the historical parcel and old boundaries of the quarter buildings of its height and dimensions. All these processes occur to some extent in each of the cities studied and are necessary for the development of the city to a certain extent. As a result, these processes lead to a negative change in the silhouette of the city, historical dominants are lost, such as town halls or sacred structures, the planning structure of neighbourhoods changes, new disharmonious buildings appear within the historical centre (multi-storey or dimensional) and the contour of the centre is lost (Goncharenko, 2005). Therefore, it can be argued that the main trends in the transformation of the architectural and urban planning structure and modern use of the territory of historical centres of historical cities, according to the identified transformation processes, are: 1) increasing the

functional content of blocks and their development, 2) compaction of buildings, 3) improving the living conditions of permanent residents of these blocks.

At the same time, it should be noted that it is impossible to completely prevent the transformation of the historical urban planning environment. After all, an actively developing city has never been a complete system, permanently stopped in its movement. There are several spatial systems in it, it undergoes constant changes and is always faced with a dilemma: old or new; what is born or what goes away, leave or destroy.

Radical changes in the traditional historical environment of cities were caused by the reconstruction of European capitals carried out in the XVII–XIX centuries, and the implementation of redevelopment projects for cities of the Russian Empire in the XVIII century. Therefore, the goal of the reconstruction of the historical urban environment should be to maximize the preservation of the most valuable elements and ensembles and their visual, compositional, and functional interaction.

The total stylization of new buildings under the historical models that make up the characteristic development of the historical urban environment does not solve this problem either. After all, in this case, the imagination about the preserved environment is distorted, and the real artistic heritage left to us by past generations is replaced with modern "dummies".

According to the Vienna memorandum signed by UNESCO, ICOMOS and ICCROM dated May 20, 2005, the following requirement applies to historical cities: "based on the basic definition, urban planning, modern architecture and the preservation of the historical urban landscape should avoid any form of pseudo-historical design, since it denies both history and modernity. One historical view should not exclude others, because history should remain readable, and the continuity of cultural development is a key goal of qualitative interventions".

Among the examples of regeneration and revalorization of the centres of historical cities, several main approaches are used to recreate the development and historical environment: 1) conservation and museumification of the central part of the city with restoration reproduction of its development and its adaptation to modern requirements (examples can be – Warsaw (Biegański, Kalinowski, 1986), Lyantskorona (Kornecki, 1986), Kazimierz-Dolny (Żurawski, 1986); 2) restoration and adaptation of preserved development in combination with the construction of completely new houses on the site of lost ones, taking into account the specifics of the historical environment (Lublin (Jamiołkowska, Kurzątkowski, 1986), Kalisz (Zarębska., 1986), Sandomir (Kalinowski., 1986), 3) construction of new buildings instead of restoring historical buildings, often does not take into account the architectural and high-rise features of the historical environment, but only urban planning and planning characteristics (Szczecin (Latour, Orlińska., 1986). Accordingly, these approaches are applied to city territories of different values.

The historical space of the city, within which the most valuable architectural ensembles and complexes are localized, is its most important architectural and artistic value. Preserving its integrity is one of the first tasks in the regeneration of the city. At this stage, it is important to clearly understand the boundaries of development and which part of the city needs a particular approach for its development. In particular, if a historical city has certain boundaries of a nature reserve or protected area, then such territories are the most important and priority for preserving their inherited structure. There are very few such cities, so you should give preference to using the first approach to recreating the development and historical environment of the territory of nature reserves. Also, a certain clarity is provided by an understanding of the boundaries of the historical area of the city and defined zones of development regulation with their written out regimes and construction rules. The most justified approach to recreating the development and historical environment for the centres of historical cities of Ukraine is the second one. Often, historical cities do not have developed relevant documentation. Therefore, it is important to popularize the understanding of what the central part of a historic city is and how to define it.

Delineation of the territorial boundaries of the central parts of historical cities is carried out using the method of graphoanalytic comparison of cartographic materials and the analytical method. It is the central part of the historical city that can be characterized as follows – it is the architectural and urban planning part of the city outlined by scientifically based methods, formed from the historical street network, blocks with preserved traditional buildings and territories provided for the reproduction of the historically inherited nature of the environment, which covers blocks that were fully or partially part of the territory of the historical centre and is not less than it (Yasinskyi, 2018).

The most important point in determining the boundaries of the central part of the city is to outline the territory of its centre, that is, the part of the city that was surrounded by urban fortifications and was characterized by a higher density of development. Historically, the city was considered the territory of the city centre, so its configuration is the first criterion to define the boundaries of the central part of the historical city. To do this, you should use the results of comparing maps of the second military survey of the Austrian Empire (1861–1864), cadastral maps, modern topographic bases and the results of a field survey. Maps of the second military survey provide a better understanding of the approximate configuration of the city centre. Cadastral maps, due to their high accuracy, and full-scale surveys of the city should be used to clarify the boundaries of the city centre. You should pay attention to the various defensive fortifications recorded on the maps (earthen, stone, or other), which make it possible to determine the configuration of the city centre. If it is impossible to determine how defensive fortifications took place due to the lack of them on cartographic materials, then it is necessary to take into account the density of buildings, the size of parcels, as well as the configuration of the street network, which is more or less recorded on available cartographic sources. The territory with a higher building density is limited by the corresponding street network and can be considered the territory of the city centre. In cities where there is more than one market square (as it is in Buchach and Berezhany), the central part should include the territory that unites the borders of the centre formed around these two squares. However, in cases where there are no recorded defensive fortifications, you should rely on their hypothetical reconstruction and stages of development of the city (Bevz, 2004).

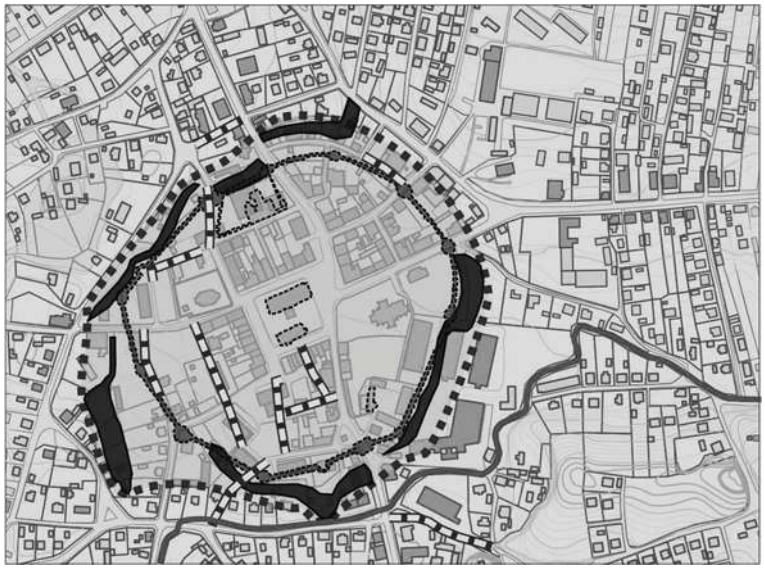

Fig. 1.
The boundaries of the historic midtown on a modern topographic survey of the area.
(Yasinskyi, 2018)

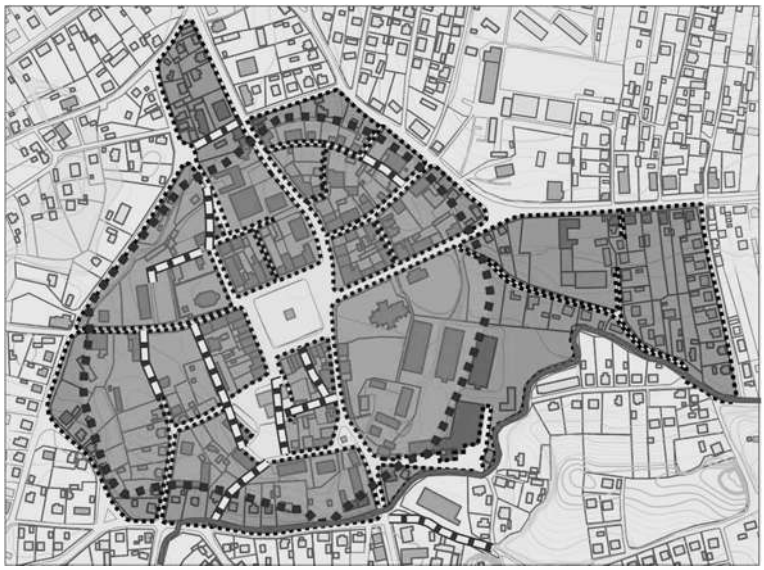

Fig. 2.
Housing blocks that were completely or partially within the boundaries of the historic midtown.
(Yasinskyi , 2018)

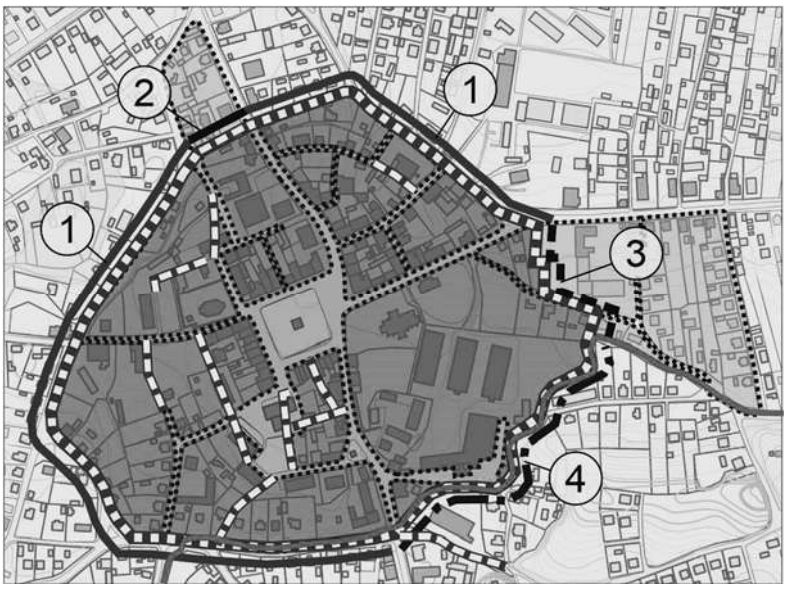

Fig. 3.
Determined boundaries of the central part of the historic city:
1 – on existing streets;
2 – on historic streets;
3 – on the boundaries of parcels;
4 – on the boundaries caused by the peculiarities of the relief.
(Yasinskyi ., 2018)

Legend (common for Fig. 1–3)

– Rivers and streams;

– Preserved earthen ramparts;

– Lost streets;

– Hypothetical reconstruction of the city's defensive walls (author's hypothesis);

– Conditional borders of the city centre together with fortifications of the first line of defense

– Neighborhoods that were fully or partially part of the city centre

– Proposed boundaries of the central part of the city

The city centre is considered as the territory of the city, which was bounded by defensive fortifications, together with the territory on which these fortifications were located, that is, it is the outer border of the first line of fortification of the city. When a certain territory of the city centre is superimposed on a modern topographic survey its border often runs in the middle of existing neighbourhoods (Fig 1). They combined the development of blocks that were located within the city centre under the walls and some territories outside it. Therefore, to preserve their integrity, these blocks should be fully included in the boundaries of the central part (Fig. 2). From here we output the second criterion to determine the territory of the central part of a historical city – quarters that are fully or partially part of the territory of the historical centre or the centre group that replaced each other during the development of the city. The border of the central part of a historic city should run along existing streets or natural restrictions behind such blocks. If there are no such streets, follow historical streets that are currently lost, provided that the urban planning situation allows them to be restored. The feasibility of restoring such streets should be determined in the city regeneration project. In other cases, when the configuration of the block is elongated and its length does not allow it to be fully included in the boundaries of the central part, then its border should run along the boundaries of the sections following those that were part of the historical centre. In this case, we additionally pay attention to the size of the parcels, the method and density of their development, as well as the specifics of the natural terrain - shafts or streams (Fig. 3).

Summing up, the border of the central part of the historical city should pass: along the existing streets for blocks that were completely or partially included in the city centre; along historical streets that are currently lost but passed through blocks that were completely or partially included in the city centre (provided that the urban planning situation allows them to be restored); along the borders of parts following those that were part of the

historical centre (if the configuration of the block is elongated and goes far beyond the boundaries of the city centre); along the borders caused by terrain features (ramparts, ditches, reservoirs, streams, and rivers)

A modern approach to the transformation of historical cities is to consider architectural monuments in the city as an integral system, which comes into active interaction with its modern structural structure. Dominant and emotionally expressive historical elements cannot only serve as museum exhibits. They should be active urban planning components that shape the environment, and sometimes compositionally subordinate to modern architectural forms.

It is from this point of view that the main methodological aspects of pre-project research should have the following steps:

– study of the composition of the historical city with analysis and evaluation of its "historical layers";

– study and classification of the planning structure of the city and its elements in time with recording the most significant stages of its historical transformation;

– analysis of landscape nodes that affect the historical formation of the urban structure, elements of the city's silhouette, and disclosure of the main architectural ensembles.

The historical and cultural direction of the theory of architecture is becoming more and more relevant, as it concerns both the philosophical facets of the theory and the scientifically based reconstruction of historical cities. When working in the centres of historical cities, the problem of organic combination of historical and new architecture in their structure and integration of new modern functions that are necessary for the modernization of the city is brought to the fore. Taking into account the above aspects of the protection of the historical environment, as well as the experience of regeneration of historical cities in Europe and the results of research on modern architectural and urban planning processes and factors of transformation of historical cities, the following main requirements for the reproduction and development of the central part of historical cities are determined, compliance with which will make it possible to strategically approach the development of the city and its development, and minimize the number of new disharmonious objects in the historical environment:

1. the presence of scientifically based monument protection restrictions and the need for comprehensive regeneration of buildings (restoration of the historical planning and urban planning structure, street network, size and configuration of blocks and its hereditary addition);

2. the need for reproduction or museumification of lost valuable architectural objects (their reconstruction or recognition);

3. the need to preserve the historical typological characteristics of buildings, types of blocks and their parcel, methods of development, height and nature of buildings and their regional types;

4. implementation of restoration works of preserved valuable buildings;

5. improving the living conditions of permanent residents;

6. the need to take into account the cultural potential of the historical environment and plan the development of tourism;

7. urban planning conditions of the city centre that dictate the development of buildings of various functions – retail, service, office, residential, sacred, etc.;

8. creating a competitive investment climate that takes into account regional development programs;

9. creating a comfortable transport and pedestrian environment in the city centre;

10. taking into account the recreational potential of the historical environment

For the preservation of the historical environment of cities, the most effective method is protection zoning and revalorization or regeneration of the urban environment, which provide for an integrated approach to the reproduction of the historical environment of the city (Yasinsky M. R., 2014, Yasinsky M. R., 2016). Based on the requirements discussed above for the preservation of the historical environment, we propose to use the following architectural and urban planning principles for the reproduction and development of Block Development, which are based on the continuous development of the central part of the city:

1) The principle of preserving and restoring the traditional planning and urban planning framework, which provides for the restoration of the boundaries of blocks and historical parcel of development (based

on the reconstruction of the planimetric historical structure by periods), by regenerating the street network, arranging pedestrian zones, restoring the configuration and marking the line of fortifications, etc.;

2) The principle of imitation of the historical three-dimensional panorama of the city center, which provides for the preservation of dominants (sacred structures, fortifications) and compliance with the number of storeys of buildings consists in observing the height of the development of the quarter while complementing the part with its main components (transferring there if necessary economic functions from the existing disharmonious development of the part that should be dismantled).

3) the principle of imitation of historical typological characteristics of buildings, which dictates compliance with the methods of placing buildings on the parcels of the quarter and rehabilitation or elimination of disharmonious buildings and temporary structures, determines the main requirements for the three-dimensional composition of new buildings, regardless of the materials from which it is built.

4) the principle of harmonious functional use of the development and territory of the quarter, which provides for the adaptation of the territory of the quarter to the necessary functions, in particular recreational, as well as functional filling of the first floors and non-owned premises of the development of the quarter (attics and pubs, or other existing such premises).

5) the principle of harmonization or visual adaptation of existing historical and large-sized buildings that require restoration or reconstruction of such houses or renovation of their facades, in order to visually reproduce the parcel of the quarter and its architectural environment (Lesyk O., 2013)

6) the principle of taking into account in new construction regional features and specific historical forming characteristics of the development of the quarter, its parcel, the method of construction of buildings and their architectural and spatial composition.

All principles allow the use of modern architectural and construction innovations in the structural, engineering and architectural solution of buildings.

As we have already noted, within the central part of the historical city, as a rule, its ancient core with the most valuable architectural monuments is preserved. If there is a large concentration of monuments, they should be evaluated not as individual buildings or local ensembles, but as a complex of buildings of the street network and other elements of cultural heritage, since the centres of historical cities have preserved large urban planning elements: squares, streets and entire districts, which include, along with unique architectural monuments, ordinary buildings, historical environment. In accordance with the current legislation, the development of projects for the reconstruction of individual urban planning elements of historical cities located within historical areas is preceded by a mandatory historical and urban planning justification, which should include:

- identification and comprehensive assessment of architectural, historical and cultural monuments and related territories and all elements of historical and cultural heritage and determination of their architectural, artistic and urban planning value.
- research of losses of historical development and transformation of the urban planning structure and determination of the configuration of the central part of the historical city;
- identification of existing and localization of lost compositional and high-rise dominants of the city, which formed its vertical composition in order to further reproduce them and reveal the historical panorama of the city;
- identification of regional features of urban development, three-dimensional features of historical development and the specifics of architectural solutions (the line of the facade wall of the house, ways to complete it, the organization of the roof, as well as three-dimensional elements of facades);
- determination of the forms of urban planning protection of historical heritage, optimal modes of reconstruction and modern use of monuments and development of a comprehensive project for the regeneration of the central part of the historical city based on approaches to the regeneration of this territory, based on the principles outlined above.
- identification of parcels with characteristic combinations of elements of historical and cultural heritage, determination of the city-forming potential of the city centre and the possible impact of historical and cultural heritage on modern urban development activities.

Depending on the value of the historical heritage, its city-forming role, the method of development of the planning structure of the historically formed centre to its transformations is chosen. We can distinguish the following main methods:

1. Reconstruction within the historically formed city centre with the adaptation of its structure to modern requirements.

2. Territorial location of the historical centre with the construction of new public complexes on the adjacent parcels.

3. Creation of a new centre at a distance from the historical centre, which retains only a part of the citywide functions.

A prerequisite for the most reasonable reconstruction of local urban planning elements of the city is a methodological approach that assumes the presence of a common strategic line of reconstruction. Such a document can be a Comprehensive central city regeneration project. It should be based on the results of research conducted during the development of a historical and architectural reference plan. The project should provide for the possible reproduction of the lost street network, and therefore the size of blocks, the method of building blocks, objects of historical development (in particular, high-rise dominants), places and methods of placing new buildings, identify existing buildings that need reconstruction and provide for the harmonization of large-sized disharmonious buildings. The project should also describe the general requirements for new development within each block of the central part of the city according to its typology. In particular, you should specify the main three-dimensional characteristics of the new development – height, ways to place the building on the site or a combination of them, the direction of the roof ridge and acceptable ways to organize it. It is also advisable to reveal the essence of the traditional development of the city as a whole and by blocks (villa with porches, in the depth of the parcels near the street, etc.). The presence of such a comprehensive regeneration project will make it possible to develop a program for the regeneration of block development focused on recreating the characteristic environment, improving living conditions and attracting the necessary investments, since it will contain a complete picture of possible transformations of the entire central part of the historical city.

Based on the principle of including parts in the whole, small territorial units in larger ones, programs for the reconstruction of individual sectors of historical development are developed (for example, comprehensive transformation programs aimed at appropriate areas, for example, “Heritage”, “Housing Stock”, “Public Development”, “Transport”, “Engineering Infrastructure”, etc.).

The purpose of such programs is to compare the measures provided for by the integrated regeneration project with the available resources, identify the main directions and means that provide a solution to the problem.

For example, a program for the preservation and use of valuable historical and cultural heritage as part of a project regeneration the centre of the historical city should include: an assessment of the state of the heritage for a certain period of time and the problems caused by this, a list of research and design works for the preservation and use of the property, the scope of necessary reconstructive measures, etc. I will need resources for the implementation of measures, as well as the development of program implementation management structures.

According to project experience, the cycles of adjustment of historical, architectural and master plans, as well as detailed planning projects, are ten to fifteen years. Therefore, to ensure the continuity of the transformation process of the city centre, programs for the transformation of individual sectors of historical development should be provided for such a period. It is also advisable to develop strategic queues for the implementation of a particular program for transforming the historical environment of the city.

Conclusions

Given the current state of historic cities and the direction of their development and transformation, which leads to the loss of authentic historical environment and unification of new architectural forms, there is a need to improve the strategic approach to working with historic cities - where most valuable reserves remain. This approach, in addition to developing historical and architectural reference plan and protection

zones with regimes regulating their development, may be the allocation of the city center, ie its historic center as a separate zone, and its further protection and development based on scientifically sound approaches and principles. Therefore, the boundary of the central part of the historic city should include architectural and urban planning part delineated by scientifically sound methods, formed from the historical street network, neighborhoods with preserved traditional buildings and areas designed to reproduce the historically inherited nature of the environment. to the territory of the historic center and is not less than it. In this case, it will be possible to distinguish the historic city center as a complex with a special status. Restoration and adaptation of preserved buildings in combination with the construction of brand new houses on the site of lost ones, which take into account the specifics of the historical environment and meet the current processes of city transformation – 1) increase the functional content of neighborhoods and their construction, These neighborhoods should be the main approach to work within the historic part of the city. That is, for the central part of the historic city it is important to develop a comprehensive project for the regeneration of the historic environment. To develop a comprehensive regeneration project, the principles of work in the monumental environment of the city are important, namely: 1) The principle of preservation and restoration of traditional urban planning framework; 2) The principle of following the historical spatial panorama of the city center; 3) The principle of imitation of historical typological characteristics of buildings; 4) The principle of harmonious functional use of buildings and neighborhoods; 5) The principle of harmonization or visual adaptation of existing historic and large buildings; 6) The principle of taking into account new features of regional construction and specific its parcelling, the method of construction of buildings and their architectural and spatial composition. Depending on the value of historical heritage, its city of formative role is chosen way to develop the planning structure of the historically formed center, the approach to its transformation and programs to preserve and use valuable historical and cultural heritage.

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МЕТОДОЛОГІЧНІ АСПЕКТИ НАУКОВО-ПРОЕКТНОГО ПРОЦЕСУ ЗБЕРЕЖЕННЯ ІСТОРИЧНОГО МІСТА

Анотація. *Висвітлено методологічні аспекти роботи архітектора в історичному середовищі, розкрито сучасні тенденції та процеси трансформації архітектурно-містобудівної структури історичних міст. Розглянуто та проаналізовано три основні підходи до їх відтворення та трансформації, що їх використовувано на теритирії Східної Європи в другій половині XX століття. Розкрито поняття центральної частини історичного міста як структурної одиниці міста та описано методику локалізації його межі. Також аргументовано важливість розуміння межі центральної частини історичного міста для збереження історичної архітектурно-містобудівної спадщини та які переваги можемо отримати за комплексного підходу до його регенерації. Висвітлено основні вимоги до відтворення та розвитку забудови центральних частини історичних міст дотримання яких дасть можливість стратегічно підійти до розвитку міста та його забудови, та мінімізувати кількість нових дисгармонійних об'єктів в історичному середовищі. Охарактеризовано архітектурно-містобудівні принципи відтворення та розвитку забудови кварталів центральних частин історичних міст, які ґрунтуються на спадкоємному розвитку, та допускають застосування сучасних архітектурно-будівельних новацій у конструктивному, інженерному та архітектурному вирішенні забудови. Охарактеризовано способи розвитку планувальної структури історично сформованого центру, підходи до його трансформації та обґрунтовано переваги розроблення комплексного проекту регенерації центральної частини історичного міста, який повинен ґрунтуватись на результатах проведених досліджень під час розроблення історико-архітектурного опорного плану, передбачати можливе відтворення втраченої вуличної мережі, а відтак і розмірів кварталів, способу забудови кварталів, об'єктів історичної забудови (зокрема висотних домінант), місця та способи розміщення нової забудови, визначати наявні будівлі, які потребують реконструкції та передбачати гармонізацію великогабаритної дисгармонійної забудови. Розкрито програмний підхід до реконструкції окремих секторів історичної забудови.*

Ключові слова: *історичне місто, центральна частина історичного міста, середмістя, регенерація, реконструкція, відтворення, забудова міста.*

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METHODS FOR ASSESSING THE TRANSPORT AND PEDESTRIAN ACCESSIBILITY OF MULTI-STOREY RESIDENTIAL BUILDINGS AND COMPLEXES, AS WELL AS THEIR IMPACT ON THE CITY INFRASTRUCTURE

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Astract. The paper focuses on the author's method of assessing pedestrian and transport mobility of residents of modern multi-storey buildings and complexes. The study of transport routes in cities is the subject matter of entire scientific and design institutes, therefore, the method has been designed to make architects, researchers, developers and urban planners aware of a housing unit in terms of its accessibility, as well as to assess its impact on the city.

Key words: multi-storey buildings, transport mobility, urban planning, residential complexes, new housing units.

Problem statement

Currently, in Lviv, there is a rapid development of housing construction. During 2020–2021, 185 residential complexes were commissioned in the Lviv region, 104 of which – within Lviv, and another 39 – in the thirty-kilometre zone around the city (LUN, 2021). Despite the development of post-industrial areas in the middle lane of the city, as it is specified in the Concept of Spatial Development of Lviv (Institute of the City, 2019a), most new housing units are situated on the outskirts of the city. Given the number of high-rise buildings, as for Lviv (about 10 floors on average), in these areas, there are dense formations that require infrastructure for their service. First of all, it concerns transport infrastructure, given the monocentricity of the city and the radial structure of the planning city structure (Mazur, Korol, 2018).

It is required for urban research to respond quickly to changes, so that modern assessment methods need to be dynamic and adaptive. At present, no method would assess the accessibility of the object and its interaction with the transport infrastructure of the city without specialized studies. The paper is focused on creating such a method based on open, adaptive data with the ability to include new variables within the system.

Analysis of recent research and publications

Urban housing covers architectural, urban, economic, social and transport aspects. The number of cars in the cities of Ukraine is growing (Autoconsulting, 2019), and the current urban environment does not allow to increase the capacity of roads for motorists. Habrel M. (Habrel, 2020, 2004), Cherkes B. (Cherkes, Farenchuk, 2020) studied the issue of the approach to housing construction in large cities of Ukraine. Krystofchuk M. (Krystopchuk, 2021) Gits I. (Gits, Zhuk, Pivtorak, 2020), Wall E. (Wall, Waterman, 2009), Hunt, J. D., (Hunt, Kriger, Miller, 2005) tackled the city mobility issues.

Objective of the article

The objective of the article is to outline the method for assessing the quality of mobility for high-rise residential buildings in Lviv, built during 2020–2021, as parts that interact with the existing transport infrastructure of the city. The technique may further be used in studies of similar relationships in other cities. The set of data considered in the study can be used both by the city authorities to develop a strategy for housing development, and by specialists for a more detailed analysis of a particular complex in terms of its place within the urban mobility structure. The author's method of assessing the interaction of high-rise residential complexes with the transport structure in the example of Lviv is demonstrated for the first time in the paper.

Results and discussions

While conducting the study, data on 30 multi-storey residential complexes (average height of more than 7 floors) were analyzed (Fig. 1). As the average number of storeys in Lviv is only 3 storeys, 7-storey buildings can already be considered high-rise in the context of urbanization. The selection criteria, in addition to the number of storeys, were the number of inhabitants (>100 people), location within the city and new construction (rather than reconstruction of current buildings). The following were selected for the analysis: 1 residential complex in Lychakivskyi district; 2 – in Halytskyi district; 3 – in Zaliznychnyi district; 8 – in Shevchenkivskyi district; 9 – in Frankivskyi district; 7 – in Sykhivskyi district. Compared to other districts, in Halytskyi and Lychakivskyi districts, there is the largest part of historic housing and a smaller potential area of a plot for construction. That is why only a few complexes fell under such categories. Instead, multi-storey residential buildings from Shevchenkivskyi, Sykhivskyi and Frankivskyi districts formed the basis of the study at the expense of the territories of the former country and garage cooperatives (“Malogoloskivski Pahorby”, Pid Holoskom Street, 8, Varshavska Street, 201a, Residential Complex “Continent”, Residential Complex “Pasichnyi”, etc.), another part – at the expense of post-industrial areas (Residential Complex “Parus City”, Heroiv UPA Street, 73, Uhorska Street, 14, etc.).

Only 3 high-rise buildings from Zaliznychnyi district were included in the sample due to the predominant manor buildings and the significant influence of the railways. According to the data (LUN, 2021), in Halytskyi district only 3 residential complexes were commissioned during 2020–2021: in Lychakivskyi district – 18, in Zaliznychnyi district – 14, in Sykhivskyi district – 27, in Frankivskyi district – 12, in Shevchenkivskyi district – 30. Only 3 out of 57 high-rise buildings of the city are located in Lychakivskyi district, 2 – in Halytskyi district, 5 – in Zaliznychnyi district, 20 – in Sykhivskyi district, 6 – in Frankivskyi district and 21 – in Shevchenkivskyi district. Frankivskyi district of the city gained a significant place within the sample due to the high concentration of new housing construction during 2015–2019. The sample of the study, according to its data set, reflects the market trends typical for Lviv over the last five years.

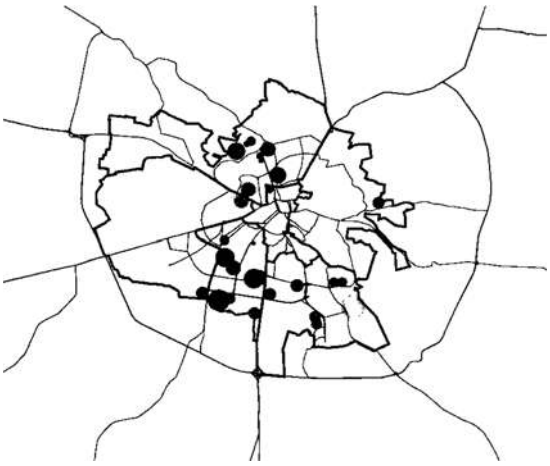

Fig. 1. Map of the studied multi-storey residential buildings or complexes

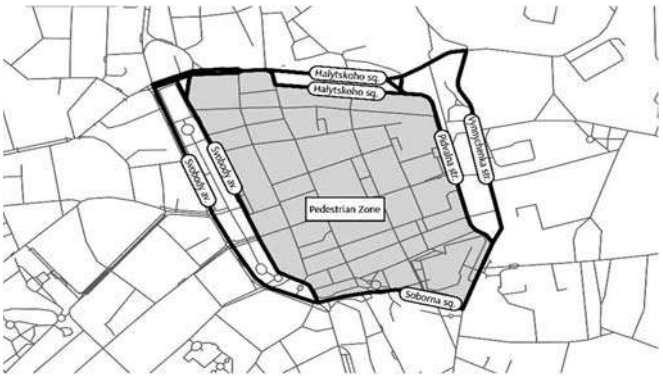

Fig. 2. Map of the nearest roads to the center of Lviv

According to a study by the Institute of the City (Institute of the City, 2019b), 18 % of the Lviv population prefer walking on foot, 52 % – by public transport, 6 % – by bicycle, and another 23 % – by own car. In agreement with the plan of sustainable urban mobility of Lviv (Mobility of Lviv, 2019), the priority of traffic within the city is given by the following principle: pedestrians – public transport – cycling – logistics and delivery – cars.

That is why the first criterion for assessing accessibility was the time of walking on foot. This is not the most important part of the population, but this criterion, first of all, characterizes the distance of a complex from the average destination and also includes an estimate of the path for cyclists (6 %) and those using other means of transport (e.g, scooters – 1 %). The low provision of the city with bicycle infrastructure does not allow to consider routes taking into account cycle lanes as a separate unit of research. However, for the studies of other cities with developed cycling, the assessment of cyclists' movement in the city can be introduced as an additional parameter.

Proximity to the geographical centre of the city, tourist flows, location of office buildings, as well as the concentration of public functions creates a usage disparity of urban space towards the historic core, namely, the area included in the UNESCO list. Therefore, within the assessment of pedestrian accessibility as a starting point, the city hall was chosen as the average value of the endpoint of movement from all surrounding areas of Lviv.

As the central part of the city is accessible only to pedestrians, the distance to the nearest street, square or avenue to the pedestrian zone is chosen for transport accessibility (within the ring of Pidvalna Street – Danylo Halytskyi Square – Ivan Honta Street – Yaroslav Osmomysl Square – Svoboda Avenue – Mickiewicz Square – Halytska Square – Soborna Square – Mytna Square) (Fig. 2). Data on congestion on the way to the centre are obtained from the open data of Google Maps and QGIS of normal loading at the rush hour – on Mondays and Fridays, 8 to 10 am and 5 to 7 pm.

The next step of the study is to calculate the median value of the path load for each of the hours, and then – the average between all the studied hours. In the morning, the path from the dwelling to the centre was chosen for the study, and in the evening, on the contrary, from the ring-forming streets around the centre to the corresponding building. The result is distributed in points from 0 to 8, where 0 is the absolute absence of congestion, and 8 is the continuous congestion of roads. All studied apartment blocks were in the range from 4 to 5.5 points of the average value of congestion in the corresponding hours, which shows a relatively high level of congestion in the city as a whole (Fig. 3 and Fig. 4).

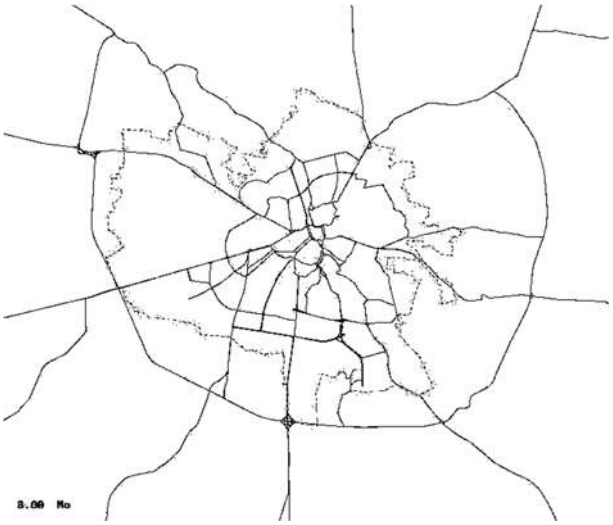

Fig. 3. Traffic jam map of Lviv (Usual congestion as for Monday, 8 am)

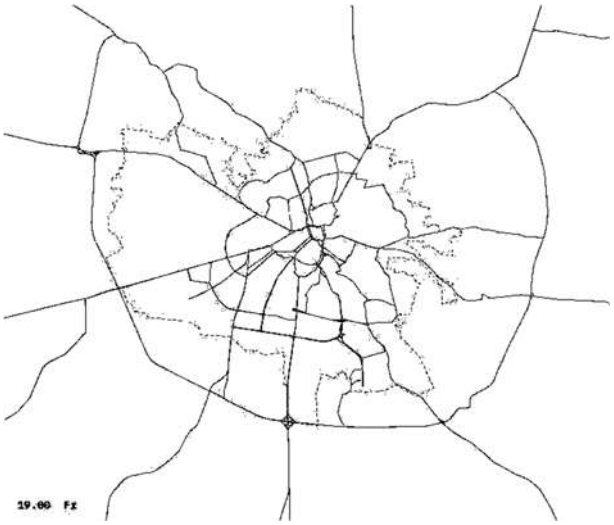

Fig. 4. Traffic jam map of Lviv (Usual congestion as for Friday, 7 pm)

In the study, the following means of transport are taken into account: trams, trolleybuses and buses (small and large). To assess transport accessibility, 2 parameters were chosen: the duration of the pedestrian path from the median point of the residential complex to the nearest stop (Fig. 5) and the frequency of departure of all means of transport from the corresponding stop. For the convenience of information processing and its display, these parameters were systematized into an overall score according to an 8-point scale, where 3 points – for walking time to stop, and another 5 – the interval of traffic, which is determined using OpenStreetMap and EasyWay. The time to stop is divided as follows: up to 5 minutes (0–1 b), 5– 10 minutes (1–2 b), 10–15 minutes (2–3b). The interval of public transport from each stop is distributed as follows: up to 2 minutes – 1 point, from 2 to 4 minutes – 2 points, 4–7 minutes – 3 points, 7–15 minutes – 4 points, more than 15 minutes – 5 points. When exploring other cities, those that do not have public transport in Lviv, as well as the subway, city train, water means of transport, etc., can be included.

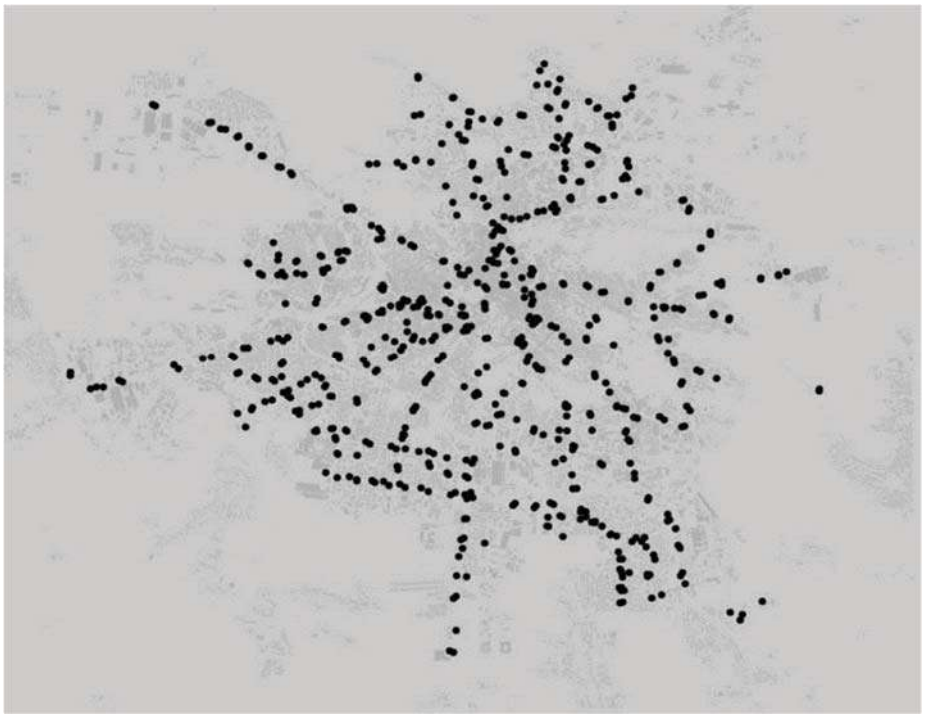

Fig. 5. Map of the public transportation stops in Lviv

An important criterion in the method is the estimated number of inhabitants, calculated for each complex in accordance with the total area of apartments in the complex or house and the average number of living space per person in Lviv. It is this criterion that determines the level of interaction of a particular housing with the infrastructure of the city.

The result was a comprehensive two-way assessment, which allows observing both the interaction of the city with a building and buildings with the city in terms of accessibility and load on infrastructure (Fig. 6).

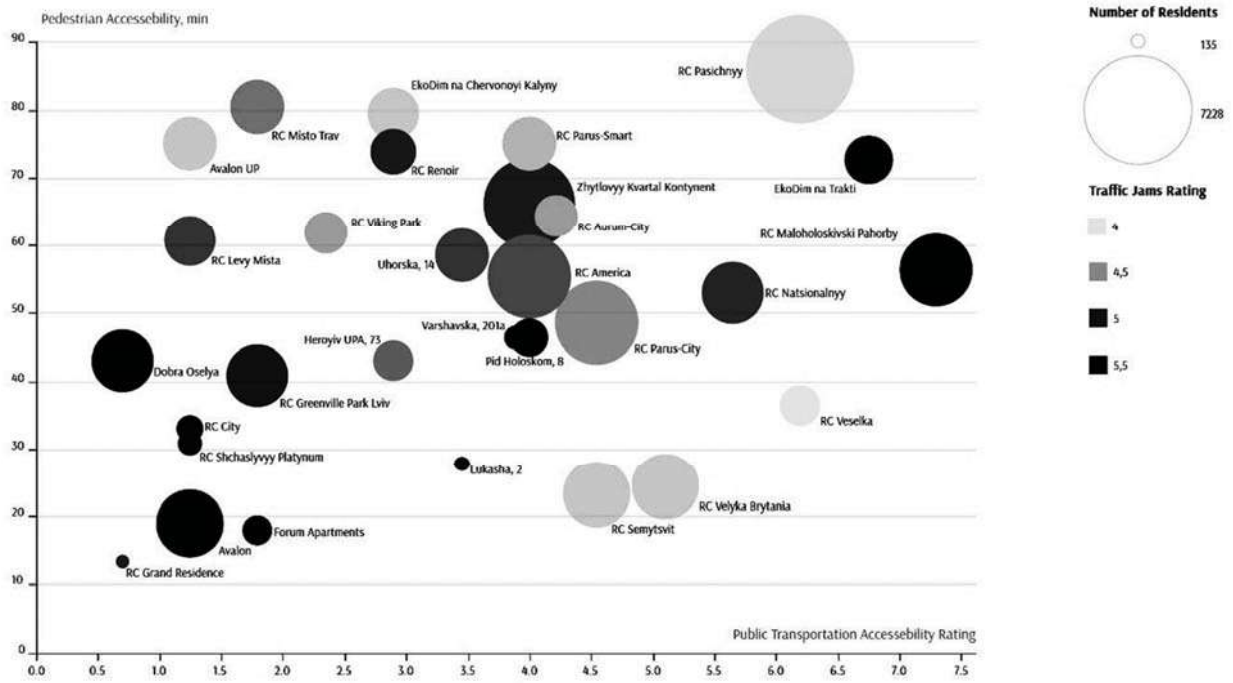

Fig. 6. Overall urban mobility graph for multi-storey housing in Lviv

The closer the building is to the coordinates on the graph, the better its accessibility of public transport and pedestrian mobility. The colour of the circle is responsible for the average congestion on the car path, and its size indicates the number of inhabitants of each complex. Buildings and complexes with more residents have a more significant impact on the city's infrastructure. The impact rate also is supplemented with the congestion survey results. This helps to make an overall rate of the building or complex, as with the rising number of residents in it, more capability of the routes is needed to meet the new transportation reality of the block, street, or district. Thus, the ideal option for multi-storey housing would be a light circle of small diameter close to the coordinates, as it has a short distance to the centre, good access to public transport and low congestion during rush hours with a small number of residents.

Residents have more options to reach any point within the city closer building is to the historic core. On the other hand, complexes that appear on the territory of the former country and garage cooperatives not far from the outskirts of the city (distance to the centre – about 6–7 km (65–80 minutes walk)) are poorly provided with the current public transport infrastructure. That is why their residents are made to rely on cars, which significantly increases the load on the current road network of the city. Thus, areas with congestion remain not only at the entrance to the city centre but also the exit to the main district roads (Malogoloskivska Street, Pancha Street, Volodymyr Velykyi Street, Antonovycha Street, Sykhivska Street, Stryiska Street, etc.). The average level of congestion on the way to the centre is not so high compared to the residential complexes occurring on the site of the former industrial ring of the city. Although, it should also be noted that all these complexes are not yet fully populated and the situation may change significantly shortly. More details on the data of the selected high-rise residential buildings can be found in Table 1.

Table 1

Statistics on the residential complexes of Lviv

RC name	Number of residents	Pedestrian accessibility, min	Public transportation accessibility	Traffic jam rating
Avalon	2744	22	1,5	5,33
Dobra Oselya	2365	44	1	5,4
RC Semytsvit	2751	26	4,5	4,4
RC Velyka Brytania	2893	27	5	4,4
RC Veselka	1065	38	6	4
RC Parus City	4453	49	4,5	4,5
RC Natsionalnyi	2354	53	5,5	4,75
Uhorska Street, 14	1818	58	3,5	4,67
Avalon UP	1722	73	1,5	4,4
Pid Holoskom Street, 8	828	47	4	5,5
EkoDim, Chervona Kalyna	1700	77	3	4,4
RC Shchaslyvyi Platynum	369	33	1,5	5,25
Forum Apartments	505	21	2	5,33
RC City	450	35	1,5	5,25
RC Maloholoskivski Pahorby	3250	56	7	5,5
RC America	4224	55	4	4,65
RC Viking Park	1187	61	2,5	4,48
EkoDim, Trakt Hlynianskyi	1430	71	6,5	5,3
Varshavska Street, 201a	344	47	4	5,5
RC Greenville Park Lviv	2329	42	2	5
Heroyiv UPA Street, 73	1068	44	3	4,58
RC Misto Trav	1894	78	2	4,50
RC Levy Mista	1641	60	1,5	4,67
RC Parus Smart	1880	73	4	4,42
RC Pasichnyy	7228	83	6	4,33
RC Kontynent	5322	65	4	4,92
RC Renoir	1283	72	3	4,92
Lukasha Street, 2	172	30	3,5	5,17
RC Grand Residence	135	17	1	4,92
RC Auroom City	1112	64	4	4,48

Conclusions

The study of multi-storey or dense residential complexes can not be conducted without taking into account the peculiarities of their interaction with the already formed urban environment. One of the issues

of the historic cities of the post-socialist countries was the problem of transport and mobility due to the rapid increase in motorization and the elimination from the industrial vector of urbanization, under which the public transport system was sharpened.

The method outlined in the paper is an opportunity to adapt the system of calculating the transport structure of the city for conducting urban studies without specific data used by specialists in transport systems.

Gradual implementation of the method involves the following:

1. Determining the time of pedestrian accessibility to the city centre;
2. Defining the level of congestion on the way to the centre from the residential complex in the morning and the return trip in the evening;
3. Measuring the distances to the nearest public transport stops (tram, trolleybus, bus, etc.);
4. Specifying the interval of public transport;
5. Subtracting the total area of the complex. Defining the number of inhabitants.

The application of the method on the example of Lviv allowed us to assess the mobility of residents of multi-storey residential complexes and buildings. Due to the obtained data, it is possible to predict the dynamics of mobility and congestion of streets in some parts of the city, as well as to identify problems of existing high-rise residential buildings and complexes, or to create a rationale for the prospects of design and construction.

Establishing trends in housing development, in particular multi-storey residential buildings, and comparing the results with similar indicators in other cities are the objectives of further research.

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МЕТОДИКА ОЦІНЮВАННЯ ТРАНСПОРТНОЇ ТА ПІШОХІДНОЇ ДОСТУПНОСТІ БАГАТОПОВЕРХОВИХ ЖИТЛОВИХ БУДІВЕЛЬ І КОМПЛЕКСІВ, А ТАКОЖ ЇХНЬОГО ВПЛИВУ НА НАЯВНУ ІНФРАСТРУКТУРУ МІСТА

Анотація. *Дослідження висотних та щільних житлових комплексів не може відбуватися без врахування особливостей їхньої взаємодії із сформованим міським середовищем. Через різке зростання автомобілізації населення та відхід від індустріального вектору розвитку міст, під який узгоджено систему громадського транспорту, однією з найнагальніших проблем історичних міст постсоціалістичних країн стала проблема мобільності.*

Представлено авторську методику оцінювання пішохідної та транспортної мобільності мешканців сучасних багатоповерхових будівель та комплексів. Дослідження міського середовища мають швидко реагувати на зміни, тож сучасні підходи до оцінки середовища повинні бути динамічними та адаптивними. Методику, якуу окресленоу статті, створено для того, щоб її розглядали архітектори, дослідники та містобудівники житлового утворення з погляду його доступності, а також оцінюванння впливу цього утворення на місто.

Застосування методики дало змогу на прикладі Львова отримати дані про транспортну та пішохідну доступність для мешканців 30 багатоповерхових житлових будинків та комплексів, побудованих протягом 2015–2021 років. Завдяки аналізу цих даних можна спрогнозувати динаміку пішохідної мобільності та завантаженості вулиць транспортом на окремих ділянках міста, а також виявляти проблеми наявних щільних і висотних житлових утворень, чи створити обґрунтування для проектування нових.

Окреслення тенденцій розвитку висотного житлового будівництва з погляду мобільності та порівняння отриманих результатів із аналогічними показниками інших міст є завданнями подальших досліджень.

Ключові слова: *багатоповерхове житло, транспортна мобільність, містобудування, житлові комплекси, нові житлові утворення.*

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MONKS' CEMETERIES OF THE HOLY DORMITION UNIV LAVRA. THEIR CURRENT CONDITION AND RESTORATION ISSUES

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Astract. The article considers the historical monks' cemeteries of the Holy Dormition Univ Lavra. The analysis of the preserved tombstones of cemeteries is carried out, their typology and character of plasticity are described. Particular attention is paid to under the slab burials as the most archaic of the preserved tombstones. The damage and loss of the ensemble of the cemetery as a whole and individual monuments are described, the state of preservation of the physical substance of the tombstones is studied. Tasks and challenges related to the restoration of the cemetery as a whole and individual monuments are analyzed.

Key words: historical cemetery, memorial sculpture, stone, preservation, conservation, architecture

Problem statement

A few kilometres from Przemyśl is the village of Univ, which preserves the architectural complex of one of the largest Christian shrines in Galicia – the Holy Dormition Univ Lavra. This monastery is one of the oldest in Ukraine. The origin of the Univ monastery is shrouded in legend. Unfortunately, the oldest documents of the monastery perished during the Tatar attacks of the 15–16th centuries. However, in the second half of the 13th century, at the northwestern foot of Monks Mountain, a new Univ men's monastery arose. After ruin and tragedy, Monks Mountain fell into disrepair for almost two centuries. Part of the territory of the former monastery was occupied by a monks' cemetery. This cemetery is partially preserved today. Above the mountain in the last century, a new monks' cemetery was laid, which still functions today. These objects are a valuable source of historical information, as well as a unique, very original gallery of works of art. Unfortunately, historic cemeteries are very vulnerable to destruction – physical, chemical and biological factors, as well as the human factor, such as ordinary vandalism or incompetence in carrying out repair or finishing work. To successfully create and implement a program for the preservation of historic cemeteries, it is necessary to carefully research, document, inventory, and carefully study the material from which these monuments are made.

Analysis of recent research and publications

The historical cemeteries of Ukraine in general and Galicia, in particular, are poorly studied. The issue of memorial sculpture, both professional and folk, in their works to some extent raised by researchers such as M. Mozdyr, I. Mohytych, I. Krypyakevych, A. Dorosh, R. Odrekhivsky, K. Prysyazhny, Y. Biryulyov and others. M. Dolynska, A. Chemerchynsky, P. Grankin, H. Kharchuk, A. Partridge, and others study the issues of Galician historical cemeteries. As for Univ, the complex of the Lavra itself has been studied and described – such as the church, monastic and economic buildings, landscaping, etc. As for the Monks Mountain, there is a lot of archaeological research concerning the Univ settlement, its defensive ramparts, the oldest residential and religious buildings of the monastery. The history and archaeology of Univ were raised by such scientists as I. Mytsko, R. Berest, J. Isayevych, V. Smoliy, and others.

Objective of the article

The research aims to study the current state of the historical cemeteries of the Holy Dormition Univ Lavra, the typology and nature of the tombstones, especially slabs; investigate the material of tombstones and crosses of the cemetery, in particular stone material, analyze the causes of its destruction and damage; show challenges and tasks related to the restoration and preservation of this object.

Results and discussions

On the northern outskirts of the village of Univ, Peremyshlyany district, Lviv region, there is an ensemble of buildings of the Basilian monastery – a fortress of the Holy Dormition Univ Lavra. There was a legend about the ancient times of Univ among its inhabitants, as if on Monks Mountain "there was a big city named Volodymyr centuries ago. And it was ruined by King Bunyak" The oldest documents of the monastery died during the Tatar attacks of the late fifteenth – sixteenth centuries. As evidenced by the latest research in the ninth century. people lived near the spring (where the monastery arose). In the tenth century, a large settlement surrounded by an embankment was built on the southern slope of the neighbouring Monks Mountain. It was probably destroyed in 911. Probably the Univ Holy Dormition Monastery was founded by rulers or church circles of the Galicia-Volyn state. At least in the late thirteenth century, the monastery already existed. This is evidenced by the preserved mention in the monastery synod of the family of Prince Lev Danilovich (Butsmanyuk, 1905).

During the difficult times of the Berest Union (1596), church fraternities appeared, which were concerned with raising the level of faith and the church, defending the guard and caring for the monastic good. The stabilization of the situation in the monastery is connected with the Sheptytsky family. In 1762 the monks founded a church fraternity. It included residents from the surrounding villages subordinate to the monastery. The rhetoric and beginnings of the Greek language began to be taught in Univ. And already in 1790, the Univ Monastery was closed (Isaevich, Yasinovsky, 2013). The first to attempt to restore ancient monasticism in the Ukrainian Greek Catholic Church was Andriy Sheptytsky. In particular, it was he who spread the Brotherhood of St. Basil. These organizations were called to involve the laity in religious cooperation with the Ukrainian monastic order in Galicia. (Berest, 2009, p. 37). It was in Univ that the principles of self-sufficiency were most consistently embodied. The main source of existence of the monastic community was farming and vegetable growing. There was a vineyard and a lot of honey was given by the apiary itself. Tablecloths, towels, cloth, dyed fabrics, and sheep's wool were made here (Butsmanyuk, 1905).

During the German occupation, the lives of monks were under constant threat. Both through ties to Ukrainian guerrillas and the hiding of Jewish children. In July – October 1944 soviet troops came to Western Ukraine. The destruction of the monastery began in 1950. Monastic valuables were confiscated, the remains of the library were burned. On September 7, 1950, a house for the disabled began to operate in the monastery, and later a boarding school for women psychochroniclers (Mytsko, 1998).

The restoration of the Univ monastery took place together with the restoration of Ukrainian statehood. The first Divine Liturgy took place on February 15, 1990 (Vechersky, 2008).

Today the Chernecha Mountain in Univ is the quiet place with the cemeteries where the monks rest. The silence and beauty of this place, which inspires prayer, is enchanting. Actually, on the Chernecha Mountain, there are two cemeteries, the older one on the slope of the mountain and the newer one on its top. Chernecha Mountain is located east of the Lavra buildings. The mountain is quite steep and covered with forest. It is on the slope covered with forest where the old monks' cemetery is located. In fact, it remains. Today this cemetery is formed by 5 crosses and 28 slabs.

This is an example of a cemetery with sub-slab burials (Fig. 1), which is not common in our lands. The first reports of sub-slab burials in Galicia are known from the middle of the mid-nineteenth century. We find these reports in the works of archaeologists. Participants of the expeditions, who investigated the mounds on the Halych-Volyn border, in addition to the descriptions of the excavated mounds, noted the presence of large displaced slabs in the area. There were no inscriptions on their surfaces. Gradually, such sub-slab burials were discovered and studied more, and archaeologists are inclined to believe that there is a widespread practice in Galicia of sub-slab burials within various necropolises of the medieval city (Lutsyk, 2019). The cemetery is not fenced and it is difficult to understand where it begins and where it ends. This cemetery is dissolved in the surrounding landscape. Judging by the number of tombstones we can see in the cemetery today, it is very likely that some of the crosses and slabs are hidden underground. To finally determine the parameters of the cemetery, the number of burials and preserved tombstones, it is necessary to conduct detailed archaeological research.

Fig. 1. The old monks' cemetery with sub-slab burials in Univ

The surviving sub-slab burials are arranged in rows from north to south, and the burials themselves are oriented east-west. This can be judged from the inscriptions and images that are stored on separate plates. All plates are approximately the same size. That is, the difference in width and length between the plates varies within 10 cm. Of the 28 slabs in the cemetery, 18 slabs are empty. That is, without inscriptions or drawings. Some of these plates are not quite the right rectangular shape. In some, the surface of the stone is very destroyed – damaged by biology, weathered. And here it is difficult to say whether these images never existed, or whether they simply have not survived to our time. It is also worth mentioning

the story that the inscriptions on the crosses and probably on the plates were not always engraved, sometimes simply written in paint. For example, coal or soot or any other mineral paint. It is very clear why such inscriptions have not survived to our time.

A very distinctly cut frame is preserved on 7 slabs from the ancient monastic cemetery. These frames are different: different widths and depths, sometimes double. In three of these plates, the rest of the surface is so uneven that it raises the suspicion of the existence of text or an image that has not survived. Although today these picturesque inequalities are completely unreadable.

One of the plates is covered with inscriptions. Frame with rounded corners is carved around the plate. The plane of the plate is carved with rulers, as in a school notebook. The text is written in Cyrillic. Ten lines of text. All letters are the same size – that is, no uppercase or lowercase letters. In general, we can say that the text is quite illegible.

The two slabs in the cemetery are decorated with images (Fig. 2). These are linearly executed images by erasing a line. On one of the slabs is a large cross with three-leafed ends of the arms. The cross stands on a pyramid similar to the image of the mountain of the so-called “Golgotha”. The image of the mountain is with rounded corners. The image of Adam's skull is placed on the mountain. Probably below, there was still an inscription, but it is very poorly preserved. You can guess about it rather than read it. The second plate also depicts a cross. It is a Latin cross with simple rectangular arms. This cross also stands on a mountain in the form of a stepped pyramid. The lower part of the plate is very destroyed and it is not clear whether there were any drawings or text. At the top right and left of the cross you can see the traditional letters - the abbreviation of the name of Jesus Christ. Traditional, such as is usually painted on icons.

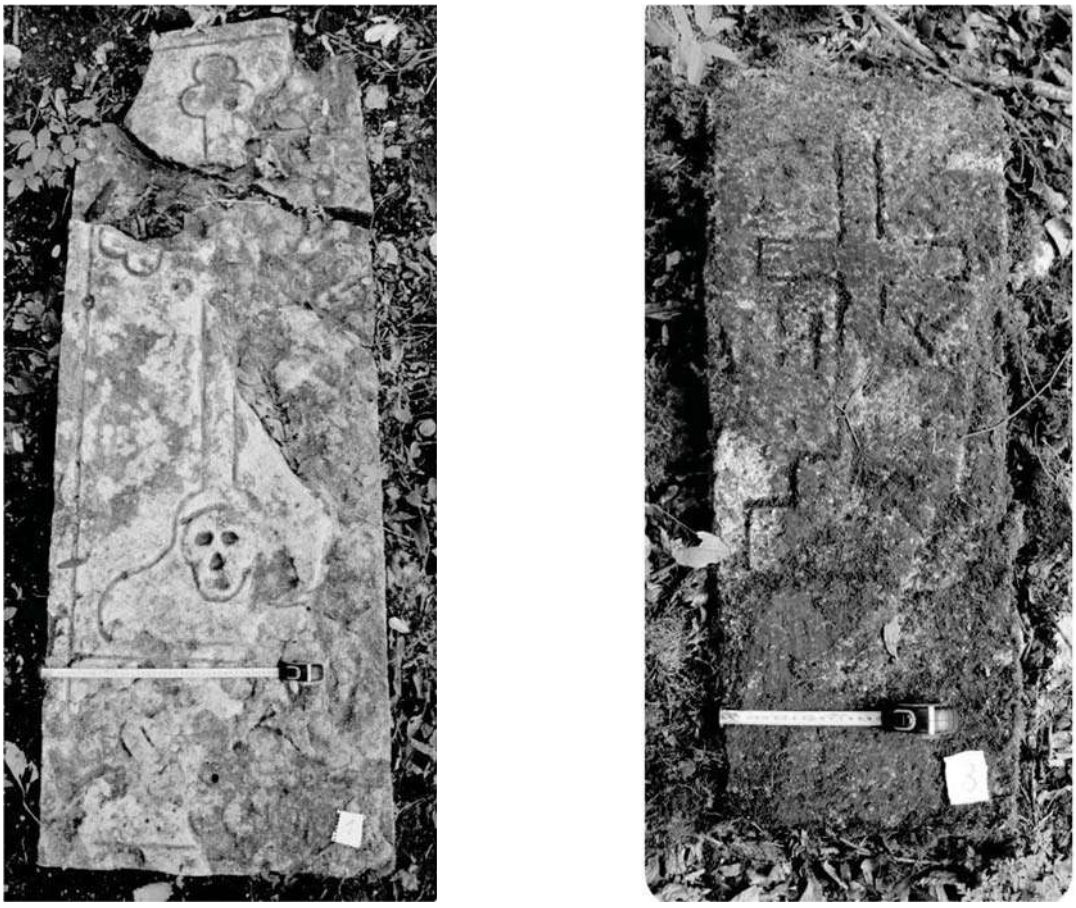

Fig. 2. Slabs decorated with images

6 slabs were moved from the old cemetery to the monastery and mounted on the wall at the entrance to the main gate of the monastery. These are probably the most interesting of the surviving plates. Each of

them is covered with inscriptions, and some are also decorated with drawings. The inscriptions are made in Cyrillic. They are quite readable. At one of the plates, the inscription is placed on the perimeter. You can also clearly read the dates on these plates. This is a very valuable factor. For example, at one of the plates, we read "died and laid down in the monastery of Univ in April 1646…".

In the ancient cemetery, we can see 5 crosses. In the Ukrainian ethnic lands for centuries until the nineteenth century. crosses were the main form of tombstone in the town cemeteries. Traditionally, these are four-armed crosses in which the vertical crossbar is longer than the horizontal one (Mozdyr, 2009). The most archaic crosses are irregularly shaped. Traditionally, the arms of the cross should be the same length and thickness, but this is not always the case. Traditionally, the crossbars should intersect at right angles and be flat, but this is not always the case.

Sometimes the right and left shoulders are different, sometimes the arms of the cross extend at the ends. Such crosses with extended arms at the ends are often called Kozak or Maltese. Such archaic Kozak crosses are found in the ancient monks' cemetery in Univ. They all stand without any clear order, oriented in different ways, all are small, about half a meter in size. The shape of all the preserved crosses is incorrect, or we can say strange. All of them most resemble the so-called Kozak or Maltese crosses. There are no inscriptions or images on all crosses.

All the objects in the ancient monastic cemetery are made of limestone. The stones are mostly the same colour, but with different types of granularity and sometimes with shells. The condition of the tombstones is unsatisfactory. Since the cemetery is located in the forest, the stone is under the constant influence of all natural factors. Biology is especially destructive here. Both crosses and slabs are quickly overgrown with moss, fungi, and so on. 9 of the 28 plates are divided, mainly into two parts. In several reflected and lost corners. In particular, one of the two plates decorated with carvings is broken. She also lost her upper left corner.

In 2018, as part of a diploma project, a student of the Department of Architecture and Restoration, Hrin Taras, cleaned and tidied up the ancient monks' cemetery. Slabs and crosses were washed of dirt, dust, clay, etc. and cleaned of moss and other biology. The stone was also treated with biosecurity.

The second, newer and currently operating monks' cemetery is also located on the Chernecha Mountain in Univ (Fig. 3). Chernecha Mountain is a special holy place east of the Univ Lavra. It is on the top of this mountain that the current monastic cemetery is located, which is a place of pilgrimage for pilgrims arriving at the Univ Lavra. It should be noted that this cemetery is in good condition. The cemetery consists of identical tombstones. The graves themselves are earthenware overgrown with periwinkle.

Fig. 3. Newer and currently operating monks cemetery located on the top of Chernecha Mountain

At the head of each of the graves is a stone monument. A monument in the shape of a truncated pyramid stylized as “Golgotha”. The pyramid is crowned with a cross of the Kozak (or Maltese) type. On the pyramid, i.e. on the mountain, there is a cartouche for the inscription. The inscriptions are engraved. The monuments are arranged in straight rows from west to east. In the middle of the cemetery is a wooden cross with a round metal plate. Along the perimeter of the plate is a wreath of leaves, and in the centre of a short philosophical text about the value and meaning of life. The cemetery is fenced with a delicate metal fence. It is tidy and well-groomed. The stone tombstones are in very good condition. The stone is light with a warm shade of the so-called “ivory”. There are no traces of dirt, moisture or biology. Even though this cemetery is a place of pilgrimage and is visited by a large number of people, it is clear that the pilgrims follow cleanliness and order. The fact that the cemetery is often visited is indicated only by the presence of candles or lamps on the monuments.

Examining the current state of the cemeteries, it became clear that the two monks cemeteries are in a completely different state. The existing, newer cemetery on the top of the hill is well-groomed and tidy. The ancient monks' cemetery on the hillside is forgotten and abandoned (Fig. 4). This cemetery, as well as individual monuments of this cemetery, need to be restored. The territory of this cemetery is neglected. The grass is not mown, the trees grow randomly, that is, they are not pruned, do not watch how they grow, obviously many of the trees are self-seeding. There are no paved paths in the cemetery – only paths trodden in the grass. In the new cemetery on the top of the mountain, the grass is always mown, and there are no trees in this cemetery at all.

The first challenge is to tidy up the territory of the ancient cemetery. Perhaps we should take as an example the existing newer cemetery, which is perfectly arranged. The next challenge is the restoration of individual monuments. This applies again to the ancient cemetery. Restoration should be done by specialists.As for the stone crosses, they should first of all be stabilized statically – raised, levelled, strengthened accordingly, that is, do everything necessary to make the monument stand flat and strong. Next, you need to clear the crosses and slabs, respectively, if necessary, strengthen the stone material, glueing and bonding the broken parts of the tombstones. Accordingly, if necessary, the addition of lost parts. In both cemeteries there is a need for constant care, cleaning, clearing (such as snow removal in winter, fallen leaves in autumn, mowing in summer), continuous monitoring of the condition of monuments, and immediate removal or repair of minor damage. These seemingly simple steps can significantly extend the life of cemetery monuments, and hence the cemetery as a whole.

Fig. 4. The result of inaction at the old monk’s cemetery in Univ

Conclusions

The Holy Dormition Univ Lavra is one of the four monasteries in Ukraine and the only one in the UGCC that has the status of a lavra. This monastery is one of the largest pilgrimage centres in Western Ukraine and a significant tourist attraction in the Lviv region. Not far from the Univ Lavra there is a special holy place – the Chernecha Mountain, where the monks' cemeteries are located. Ancient monk's cemeteries are of great religious and spiritual value, historical and architectural monuments, and individual tombstones and crosses are also monuments of art.

As for the material of the tombstones, it is one in the old cemetery and the other in the existing cemetery. In both cases it is limestone. As for the destruction and damage, the situation is not easy. All natural factors of the destruction of geological and biological, chemical character work and do not disappear anywhere. Another human factor is added – non-professional repair or arrangement of monuments. Inaction can be no less harmful. This is seen in the example of the old monks' cemetery. Here, inaction threatens the loss of an entire cemetery. Last but not least, each monument and the cemetery as a whole require constant care to be in good condition. One-time promotions do not solve the problem.

Historical monks' cemeteries of the Holy Dormition Univ Lavra require the definition and approval of their legal status and the adoption of a concept for further operation and use. Challenges to the method of preservation must be addressed by professionals, taking into account the special status of the monument.

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ЧЕРНЕЧІ ЦВИНТАРІ СВЯТОУСПЕНСЬКОЇ УНІВСЬКОЇ ЛАВРИ. ЇХНІЙ СУЧАСНИЙ СТАН ТА ПИТАННЯ РЕСТАВРАЦІЇ

Анотація. *За кілька кілометрів від Перемишлян розташовується село Унів, у якому зберігся архітектурний комплекс однієї з найбільших християнських святинь Галичини – Святоуспенської унівської лаври. Цей монастир є одним з найстаріших в Україні. Виникнення унівського монастиря овіяно легендами. На жаль, найдавніші документи монастиря загинули під час татарських нападів XV –XVI ст. Проте відомо, що саме у другій половині XIII ст. в північно-західному підніжі Чернечої Гори виникає новий Унівський чоловічий монастир. Після розорення та трагедії Чернеча Гора майже на два століття потрапила у запустіння. Частину території колишнього монастиря зайняло чернече кладовище. Це кладовище частково збережене і зараз. Вище на горі в минулому столітті було закладено новий чернечий цвинтар, який функціонує і сьогодні. Ці об'єкти є цінним джерелом історичної інформації, а також унікальною, дуже своєрідною*

галереєю творів мистецтва. На жаль, історичні цвинтарі є дуже вразливими до руйнувань – це фізичні, хімічні і біологічні чинники, а також людський фактор, як то звичайний вандалізм або звичайна некомпетентність під час виконанняремонтних чи опоряджувальних робіт. Для того, щоб успішно створити і втілити програму збереження історичних кладовищ необхідно ретельно їх дослідити задокументувати, інвентаризувати, а також ретельно вивчити матеріал, з якого виконані ці пам'ятки.

Дослідивши існуючий стан цвинтарів стало зрозуміло, що два чернечі цвинтарі є в абсолютно різному стані. Теперішній, новіший цвинтар на вершечку пагорба доглянений і впорядкований. Давній чернечий цвинтар на схилі гори є забутий і занедбаний. Цей цвинтар загаом, як і окремі пам'ятники цього цвинтаря, потребують реставрації. Саме територія цього цвинтаря є недоглянутою.

Першим викликом пов'язаним із реставрацією і збереженням історичних чернечих цвинтарів Унева є впорядкування території давнього цвинтаря. Можливо варто взяти за приклад теперішній новіший цвинтар, який є бездоганно впорядкований. Наступним викликом є відповідно реставрація окремих пам'яток. Це стосується знову ж таки давнього цвинтаря. Реставрацією повинні займатися фахівці. Що стосується кам'яних хрестів, то їх належить насамперед стабілізувати статично – відповідно підняти, вирівняти, укріпити, тобто зробити все належне, щоб пам'ятник рівно і міцно стояв. Далі належить зайнятися розчищенням і хрестів, і плит, відповідно за потреби, укріпленням самого кам'яного матеріалу, склеювання і скріплювання поламаних частин пам'ятників.

Історичні чернечі цвинтарі Святоуспенської унівської лаври потребують визначення і затвердження свого правового статусу і прийняття концепції щодо їх подальшого функціонування і використання. Виклики щодо способу і методики збереження мусять вирішувати фахівці з урахуванням особливого пам'яткового статусу.

Ключові слова: *історичний цвинтар, меморіальна пластика, камінь, збереження, реставрація архітектура.*

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NATURE AND RESIDENTIAL ENVIRONMENT IN THE FIRST GARDEN CITIES IN GALICIA: "SALWATOR" IN KRAKOW AND "NOVYI SVIT" IN LVIV

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Abstract. The article discloses the peculiarities of the nature and residential environment in the first garden cities in Galicia: "Salwator" in Krakow and "Novyi Svit" in Lviv. The topicality of the issue is pre-determined by the need for supplementing and developing available scientific researches related to the study of the garden city concept as well as for analyzing profoundly and comparing the architectural and town-planning structures of the garden cities in Galicia at the early stages of their development. Both general scientific methods (historical, comparative, structural analysis), and special field observations have been used. This comprehensive approach has enabled us to point out the special features (planning, functional) of the garden cities as exemplified by Lviv and Krakow. It has been proven that the development of the architecture and town planning of the above cities in the early XXth century corresponds to the general European trends, while the concept of garden cities was implemented in a fragmented way, that is in the form of gardens-on-the-outskirts.

Key words: "garden city", nature, residential environment, Galicia, "Salwator", "Novyi Svit".

Introduction

At the end of the XIXth century, urbanization became a mass phenomenon and was characterized by the increase in the number of urban residents (primarily in large cities), urban settlements, establishment and development of agglomerations. By the way, while in 1800 some 50 mln people lived in cities, in 1900 the figure amounted to already 220 mln people. At the same time, certain unification of the standards of living could be traced among rural and urban residents, while rural residents were going over to the urban way of living (Kvurt, Sytnyk, 2020).

According to the architecture researchers A. Gutnov and V. Glazychev, in the above period most cities already had the so-called "industrial belts" developed, that is integral ring areas of chaotic, unregulated industrial development, full of railway tracks, that alternated with urban slums. Taking the old and prestigious city centres into their "iron clutches", those industrial outskirts pre-determined the appearances of a modern industrial city (Gutnov, Glazychev, 1990).

Along with the expansion of cities, the number of various problems also increased, which was mainly caused by sci-tech progress. Thus, the environmental situation in cities was deteriorating due to industrial development and the launching of new transport modes. For example, horse tram, and later – electric tram, did not fit well into the narrow streets of the old city centre. At first, horse carriages coexisted with the then-exotic cars, but as soon as their speed increased, it became clear that horse-drawn transport could not compete with it any longer. Cars presupposed new requirements to traffic organization, and, certainly, a lot of inconveniences and dangers for pedestrians. Exhaust car gases, harmful emissions of factories and plants located in the city made the conditions of life in cities in overcrowded residential quarters even more complicated. Deprived of the sun, greening, clean air, cities were intensively moving towards becoming the centres of grave chronic diseases (Gutnov, Glazychev, 1990).

The then-architects and urban planners suggested a whole range of city planning concepts, trying to solve new problems the residents of cities were faced with. Such concepts were produced throughout the XIXth and XXth centuries, in particular, "garden city", "industrial city", "city of health", etc.

Among the first was the idea by the Englishman Ebenezer Howard (1850–1928) about the garden city, published at the turn of the XIX–XXth c. In the opinion of the English journalist and social scientist, the garden city is a small inhabited settlement with an agricultural belt around it. Under E. Howard's project described in the book "Garden Cities of Tomorrow" (Howard, 1902), the population of the new city was to be 32 thousand residents. Cities were to form a large group, but with one centre. The overall population of such a "constellation" could amount to some 250 thousand residents.

An ideal city, according to E. Howard, was a structure made of round concentric areas. A park was located in the centre of such a city, surrounded by a residential area that consisted of low-storeyed buildings with small holdings. The radius of the residential area was to be about one kilometre. Instead, industrial and agricultural lands were to be located in the periphery.

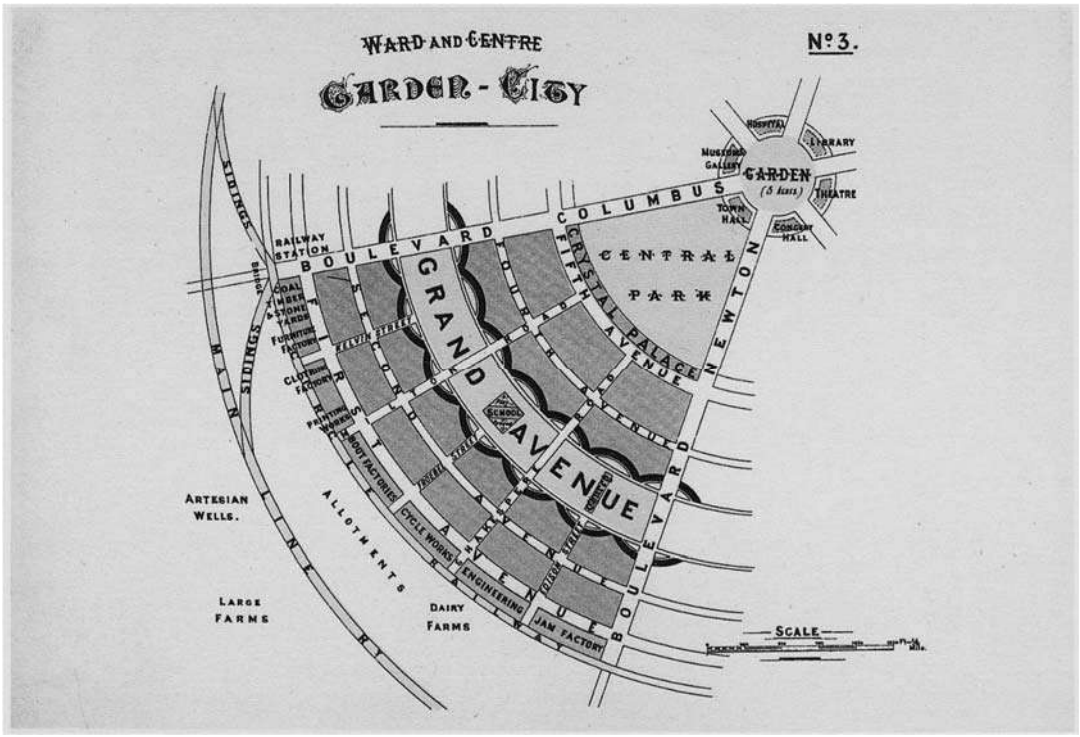

Fig. 1. Garden city plan according to E. Howard,
source: https://medium.com/precis/три-главных-идеи-город-сад-57c9ff8f52f2 (access 1.05.2021)

The British researcher of architecture P. Hall indicates that E. Howard's garden city back then was, in fact, a progressive way of reconstructing the then capitalist society via cooperative movement development (Hall, 2002). It is undoubted that E. Howard's garden city concept was reproduced in different

corners of the world and constituted the basis for many architectural and city planning projects of the XXth c., including the ones in the European continent.

In this context S. Ward considered that the then planning ideas were borrowed and transformed from country to country, viz: Britain borrowed from Germany the approaches to zoning arrangement, organic city design and city construction extensions; Germans got fascinated with British housing and everything connected to the garden cities; Frenchmen implemented both the German approach to zoning and the British approach to garden cities. Similarly, the Spanish architect Arturo Sorio y Mata was guided by the principle "each building will stay in a garden" while developing his design of the Linear City in 1892 (Navascues, 1969). Tony Garnier, an architect from Lion, in 1917 suggested his vision of E. Howard's ideas in his Industrial City design which was treated as utopian and was left without any practical implementation (Garnier, 1988). There should also be pointed out the work by the Frenchman G. Benoît-Lévy who tried to differentiate between the notions of "garden city" and "garden-on-the-outskirts" in his paper entitled "Garden City" in 1910 (Guelton, 2009).

Back then the idea of a garden city in Germany became the basis for designing and constructing housing for the workforce of the Krupp family plan in Margarethenhöhe in Essen in 1912. Such garden cities as Rumerstadt, Siemensstadt, Falkenberg, Hufeisen, Zehlendorf should also be mentioned. The concept was developed by a whole pleiad of German architects like H. Mezendorf, E. Mei, M. Wagner, B. Taut, W. Gropius, and others (Hall, 2002). Also, in his book "The City of Tomorrow" T. Fritsch set out his ideas on further city planning development, which echoed Howard's ideas in many aspects (Fritsch, 2018). H. Saarinen (1873–1950), a famous Finnish architect, offered more compact solutions in the form of semi-autonomous city districts called "functional concentrations" by the author, separated from one another with narrow green areas (up to 1 km) (Kvurt, Sytnyk, 2020). These districts were to host housing, shops, schools, various labour activity centres, including industrial centres. Such powerful general European trend towards garden city creation could not pass by Lviv and Krakow that was among the largest cities of Eastern Europe at the turn of the XIX–XXth centuries.

Analysis of recent research and publications

Thegarden city concept, its development and practical implementation have been mostly researched by foreign scientists. It is necessary to highlight the works of such architectural theoreticians as Mervyn Miller (2011), Standish Meacham (1999), Peter Hall (2014), Colin Ward (2014). In these studies, special attention is paid to substantiating the importance of garden cities in overcoming the negative effects of urbanization and the creation of this new type of settlement. Among Ukrainian researchers, we can single out works of I. Berezovetska (2008), Yu. Bohdanova (2004), N. Zakharchyn (2017) and others, who in the context of their research partially consider certain elements of the garden city concept. At the same time, there is no basic research dedicated to the formation and development of the first "garden cities" in Galicia. The purpose of this article is to supplement and develop available scientific researches related to the study of the garden city concept as well as for analyzing profoundly and comparing the architectural and town-planning structures of the garden cities in Galicia at the early stages of their development (on the example of "Salwator" in Krakow and "Novyi Svit" in Lviv).

Results and discussions

In the opinion of researcher I. Berezovetska, the study of the development of the city planning structure of Lviv in the first third of the XXth century gives grounds to claim that back then E. Howard's garden city concept was only partially implemented in the city. However, within the specific city planning situation, it acquired specific features that are manifested in the fact that the centres of compact garden residential developments were established within the city territory and were connected through radial communications with the central part of the city (Berezovetska, 2008).

A famous urban planner I. Drexler in his book "Wielki Lwów" ("Big Lviv") does not only disclose his vision of the development of Lviv, which was considerably pre-determined by the implementation of the ideas of garden cities but also outlines the spatial boundaries and the city development strategy. In his opinion, the city lives and develops like a living organism. Substance replacement and cell restoration can be traced in it, periods of health and disease, growth and decay take turns there. In the 20ies of the XXth century, the area of Lviv was 32.23 km², while the number of residents was about 230 thousand people. 21.13 km² of adjacent territories were to be added to the city, and this would result in the total area increase up to 53.36 km². Thus, the so-called "sub-Lviv gminas" were to be added to the structure of the Big Lviv: Klepariv, Zamarstyniv, Znesinnia, Syhnivka, Kulparkiv, part of Bilohorshcha, Kozelnyky, and Kryvchytsi. I. Drexler also suggested re-planning of available pedestrian ways to connect the city green areas. The master plan of the Big Lviv presupposed the creation of new parks and reconstruction and transformation of already available green areas (Drexler, 1920). Similarly, Polish architect T. Tołwiński in his paper "O szkicowym projekcie rozbudowy miasta Lwowa" describes his own understanding of the garden city concept in Lviv. Green areas were located in T. Tołwiński's plan more or less uniformly across the city territory, while the industry was mainly located close to railways (Tołwiński, 1924).

Modern Lviv architect I. Yakubovskyi in his scientific research "Rozvytok Arkhitektury Sadybnoho Zhytla Lvova Kintsia XVIII – Pochatku XXI Stolit" ("Development of the Architecture of Garden Housing of Lviv in the Late XVIIIth – Early XXIth Centuries") also pays great attention to such districts of Lviv with garden development as Kastelivka, Rollerivka, Sofiyivka, Frantsivka; the first workers colony "Na Błonie", professors' colony "Vlasna Strikha", officers' colony close to Chereshneva street and Svyatoslav square, worker villages in Syhnivka and Bohdanivka (Yakubovskyi, 2015).

A bright embodiment of the garden city in Lviv is the Novyi Svit area, limited nowadays by Bandera street to the north, Antonovych street to the west, a railway in Kulparkiv to the south, and Kniahynia Olha and Sakharov streets to the east. Starting with the 1860ies the Novyi Svit area started being intensively integrated into Lviv's urban structure. The impetus for this was provided by the construction of the railroad palaces: that of Karl Ludwig (1861) and the Chernivtsi one (1866), as well as by the construction of the main building of the Technical Academy (currently – National University "Lvivska Politekhnika") in 1877 in the then Novyi Svit street. Then 2–3-storeyed brick houses on the terms of peasant land tenure with rent, in the eclectic style, with typical façade décor according to Vienna catalogues, started being built around this street (Melnyk, 2009).

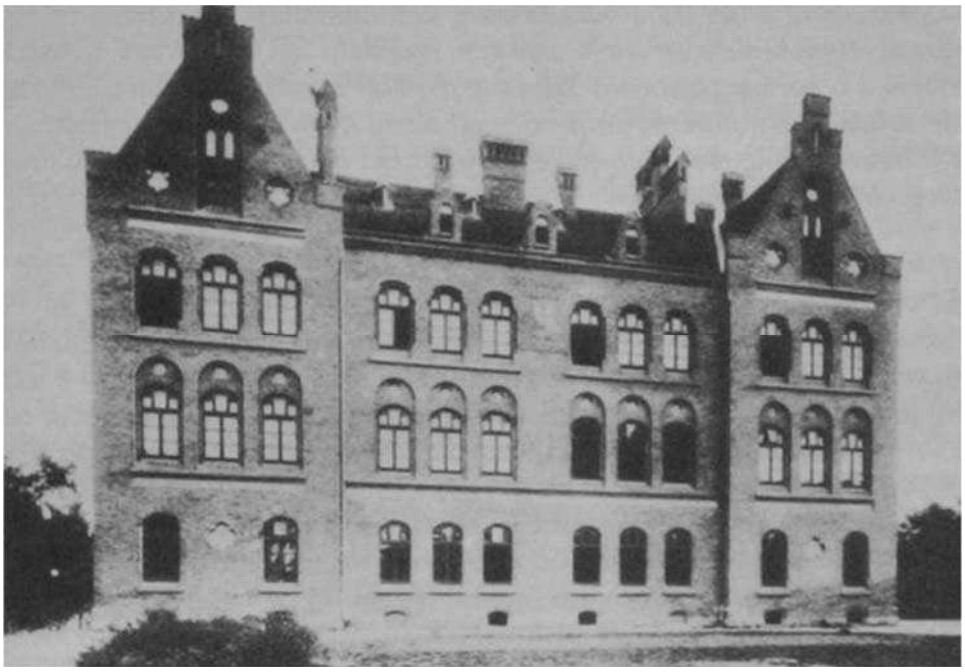

Fig. 2. Maria Magdalena school,
source: https://photo-lviv.in.ua/mahdusya-odna-z-najdavnishyh-shkil-u-lvovi/ (access 1.05.2021)

The area of Kastelivka villas became the peculiarity of Novyi Svit. It was named in honour of the Italian Castelli family which started residing in Lviv in the XVIIth century. In the 1880ies the leading Lviv architects Yu. Zakharevych and I. Levynskyi decided to buy a land plot in Kastelivka and to build a colony of one-family houses there following the popular urban garden city concept. Kastelivka development was started from the eastern side of Bayky. The starting point was the so-called "Mahdusia" – Maria Magdalena school built in 1883 at the crossroads of the current S. Bandera and General Chuprynka streets. The main axis for Kastelivka was "Na Villakh" street (currently – I. Kotlyrevskyi street) (Prokopiv, 2016). According to Kastelivka construction and development design, the authors planned 64 villas and some more additional constructions that would benefit the autonomous functioning of the Lviv garden city. Yu. Zakharevych and I. Levynskyi tried to combine the architectural type of neo-romantic villa with the adjacent garden plot, which would correspond to Howard's ideas. Kastelivka was to become a component of the complex of parks to surround the historical city centre[1]. The Sobko Lake marked in the plan as two separate water reservoirs were to perform the recreational function and was considered to be the plot decoration. According to the reminiscences of contemporaries, at the end of the XIXth century real estate in Kastelivka was the most expensive in Lviv.

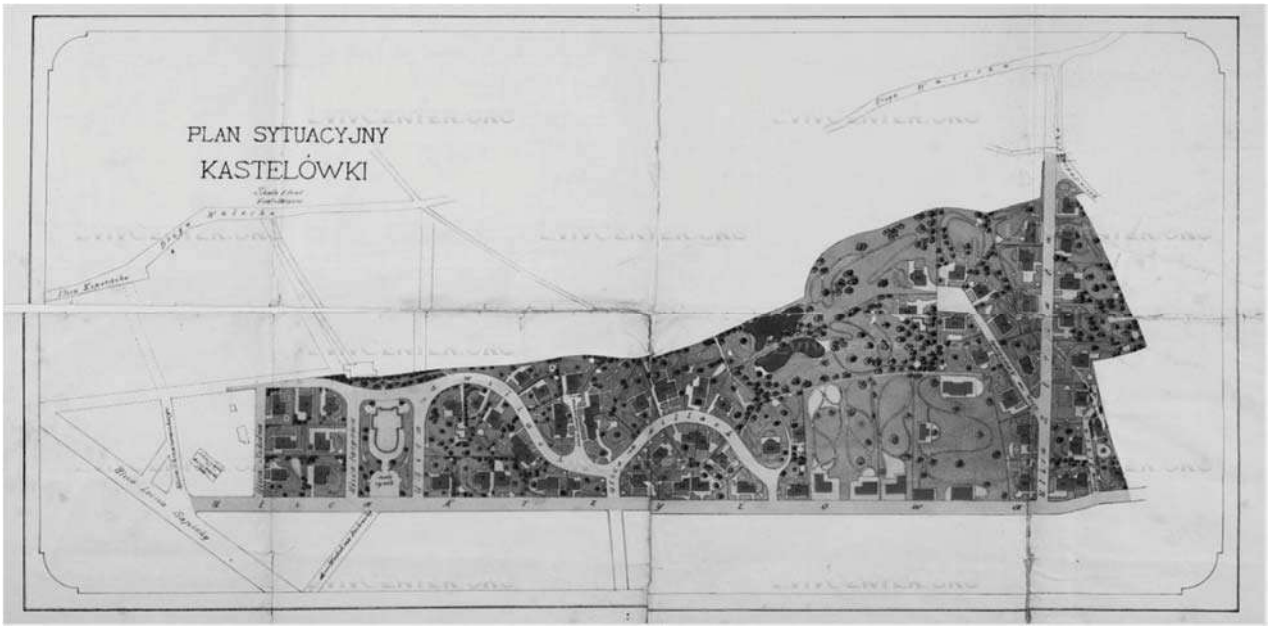

Fig. 3. Draft Kastelivka construction plan, source: https://photo-lviv.in.ua/misto-sad-kastelivka-abo-de-zamozhni-mischany-trymaly-svojih-kohanok/ (access 1.05.2021)

Unlike Kastelivka, the planning scheme of which was distinguished for its picturesque nature, garden development quarters of the first third of the XXth c. were characterized by clear geometrical nature (designing of only parallel or perpendicular streets), rational and economic planning solutions. The quarters of the comprehensive garden development in Lviv were distinguished for their capacity and had from 14 to over 70 buildings (Berezovetska, 2008).

A bright example here is the design suggested by F. Kassler and A. Osten in 1910, which presupposed the construction of a whole area of villas in Novyi Svit. They designed the garden city as a rectangle with a large round area-sun in the centre giving birth to six streets-rays.

In the 1920s and 1930s, the Novyi Svit district expanded into a new private villa area (Frantsivka) – from Ye. Konovalets street along S. Rudnytskyi street. A famous artist I. Trust was one of the first to erect a building with a workshop there. The buildings are performed in the style of functionalism, with accurately measured proportions and following right geometrical forms, with rectangular windows with no architectural decor. The Novyi Svit district located in the then outskirts of

Lviv, “merged” with the already existing buildings, filling in the gaps in-between, “sank” in greenery, and could therefore be rightfully considered to be the Lviv garden city.

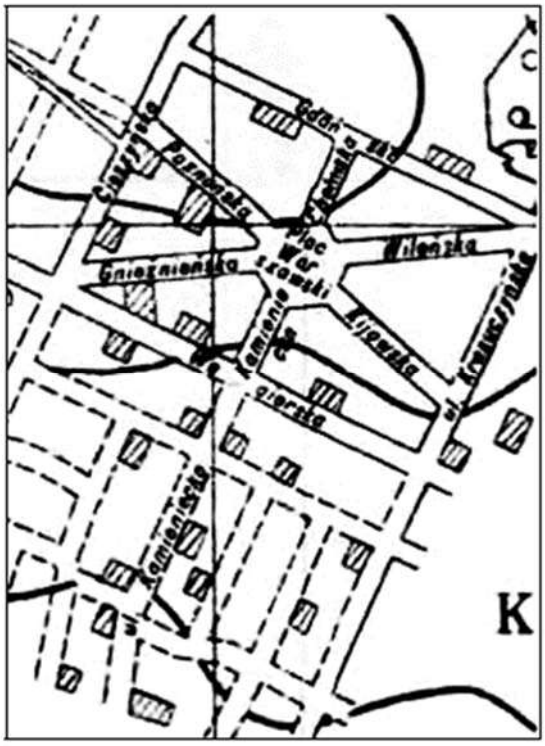

Fig. 4. Area development design by F. Kassler and A. Osten, source: http://nbuv.gov.ua/UJRN/VNULPARX_2014_793_48 (access 1.05.2021)

Fig. 5. The house of I. Trysh in Novyi Svit, source: https://photo-lviv.in.ua/u-lvovi-vidkryly-onovlenyj-dim-muzej-khudozhnyka-ivana-trusha-z-sotneiu-joho-oryhinaliv-video/ (access 1.05.2021)

In the opinion of Ukrainian researcher Yu. Bohdanova, Lviv, though being the capital of the "Kingdom of Galicia and Lodomeria", was still lagging behind Krakow in terms of construction and planning. The city above Vistula had already hosted a project competition "Big Krakow" (1908), while in Lviv the need for developing the master plan for city development and the prospects of a suburban community joining were only under discussion. The key idea of the Krakow competition in which well-known "artists and technicians" were involved was to expand the city due to the neighbouring community joining, with the application of the latest achievements in the field of city planning, sanitation and hygiene, city economy, etc. Based on the results of the competition the construction statute of Krakow dated July 17, 1883, was to be revised (Bohdanova, 2004).

Thanks to the "Big Krakow" competition many suburban gminas joined the city and got a new boost for development. For example, Salwator microdistrict – the former village of Zwierzynets. Since 1909 small housing estates started being built in Salwator. Just by 1912, some 30 villas were built. They were designed by Krakow architects R. Bandurski and A. Kramarski[3].

Fig. 6. The building of A. Kramarski at 11 Bl. Bronislaw street, source: https://pl.wikipedia.org/wiki/Salwator_(Kraków)#/media/Plik:Alfred_Kramarski_house,_11_Bl_Bronislawy_street,_Salwator,_Krakow,_Poland.jpg (access 1.05.2021)

Salwator development was initiated by the Society of Residential Construction for Officials, which announced a competition for the development of the south-eastern part of Bl. Bronisław slope along Władysław Anczyc and Gontyna streets. Artificial embankments that used to be a part of the Austrian fortifications caused an unconventional villa arrangement in the semi-round form – the residential area ideally fitted the landscape. Salwator creators filled the new microdistrict with an integral natural framework that consisted of quite a several small holdings, front gardens and different greenery. Even though most estates were built in the style of picturesque historicism, almost each of them was characterized by the spirit of individualism. In 1913 tram connection of Salwator with other parts of Krakow was established. That contributed to the growing popularity of the Krakow garden city among citizens, particularly, among the elite. No wonder that professors of Jagiellonian University, well-known representatives of the world of art and culture, politicians and lawyers lived there[2]. In the interwar period, the garden residential construction of Salwator was performed under the designs by F. Liebling, H. Jasenski and L. Voytychko.

Fig. 7. Schematic depiction of the coverage of the territory of Lviv and Krakow by the Novyi Svit and Salwator districts

It has been clarified that the area of the Novyi Svit district located in Lviv makes some 1.7 km². The construction corresponding to the city planning concept of the garden city is located mainly in Kastelivka (between modern General Chuprynka, O. Colberg, Academician A. Sakharov, I. Nechuy-Levytskyi, I. Horbachevskyi streets) and Frantsivka (delineated by Ye. Konovalets, Hipsova, Hordynskykh,

Academician Rudnytskyi, M. Zalizniak, Khudoznia, I. Trush, E. Orzeszko streets). This city planning concept is mainly implemented in the form of adjoining buildings. That means that besides the residential house (individual or in blocks) some small holdings and a utility building for household needs were also available there. In other parts of Novyi Svit, in particular, at the beginning of Ye. Konovalets, Yefremov, Antonovych streets, there prevails combined and perimetral type of territory development. The percentage of construction development in Novyi Svit makes about 33 %. A high level of greening in the area should be pointed out (trees, bushes, flower beds, lawns): it makes some 50–60 % (depending on the type of construction development).

The area of the Salwator district located in Krakow is less than 0.1 km. The Krakow garden city was located in-between Bl. Bronisław, Władysław Anczyc and Gontyna streets. The basis of the residential construction in Salwator was made by two- and three-storeyed individual estates and estates arranged in blocks. In the latter, besides traditional small holdings, front gardens were supposed to be located between the estates and the roads to perform a buffer function. The dominating type of Salwator territory construction is free construction. The percentage of development in this area does not exceed 30 %. Thanks to a well-developed green framework an adequate level of greening was achieved, it was 65 %.

Conclusions

Despite the fact the first garden cities did not meet the expectations for the city planning situation improvement, the garden city concept became the basis for city planning and produced a great impact on the views of urban planners as well as led to numerous attempts of bringing this idea into life. Development of architecture and city planning in Lviv and Krakow at the turn of the XIX–XXth c. corresponded to the general European trends. The garden city concept was implemented in a fragmented way and the form of gardens-on-the-suburbs.

The designs of today are aligned with much older competition plans of "Big Lviv" and "Big Krakow". The garden cities as a form of unique residential and natural environment constitute a new direction of research both in architecture, city planning, and landscape architecture and restoration.

The "Novyi Svit" district in Lviv and "Salwator" district in Krakow, as the first embodiments of the garden city concept in Galicia, require a well-grounded strategy for their regulation and preservation. While "Salwator", due to its peripheral arrangement within the city structure and careful treatment by the community, is in the status close to the authentic one, "Novyi Svit" has undergone substantial interferences running counter to architectural and city planning intentions of the district architects.

The garden city is one of the options for solving the problem of developing and ensuring the balance between the nature of the environment and the high urbanistic load characteristic of the present day. The modern garden city concept aims to combine original principles and approaches suggested by E. Howard with modern technological methods of designing. The main goal is to ensure an adequate and harmonious residential environment for each person.

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Endnotes

1. Detailed plan of the territory limited by Kyivska – Yefremov – Melnyk – Gen. Chuprynka Streets in the City of Lviv, 2012. Available at: https://city-adm.lviv.ua/lmr/detalni-plani-teritorij-old/2281-detalnyi-plan-terytorii-obmezhenoi-vul-kyivska-yefremova-melnyka-hen-chuprynky-u-m-lvovi (accessed 1.05.2021).
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СУТНІСТЬ І ЖИТЛОВЕ СЕРЕДОВИЩЕ ПЕРШИХ МІСТ-САДІВ У ГАЛИЧИНІ: "САЛЬВАТОР" У КРАКОВІ ТА "НОВИЙ СВІТ" У ЛЬВОВІ

Анотація. *Розкрито особливості сутності та житлового середовища перших міст-садів у Галичині на прикладі "Сальватора" у Кракові та "Нового Світу" у Львові. Актуальність теми визначається потребою доповнити та розвинути наявні наукові розвідки, пов'язані з вивченням концепції міста-саду, а також проаналізувати та зіставити архітектурно-містобудівні структури міст-садів у Галичині на ранніх етапах їхнього розвитку. Під час написання роботи використано загальнонаукові методи (історичний, порівняльний, структурний аналіз) і спеціальні натурні дослідження. Застосований комплексний підхід дав можливість виокремити особливості (планувальні, функціональні) міст-садів на прикладі Львова та Кракова. Доведено, що розвиток архітектури та містобудування згаданих міст на початку XX ст. загалом відповідав загальноєвропейським тенденціям, натомість концепція міст-садів була втілена фрагментовано, тобто у формі передмість-садів.*

Ключові слова: *"місто-сад", сутність, житлове середовище, Галичина, "Сальватор", "Новий Світ".*

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PECULIARITIES OF LIGHT FUNCTIONING IN MODERN GREEK CATHOLIC CHURCHES OF UKRAINE

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Abstract. In each historical period, light played an important mystical role in the creation of the sacred space of the temple, and was and is an integral part of religious ritual. Light is an architectural phenomenon, the formative and communicative element of the spatial structure of the temple, the most important factor in the perception of space and layout of the temple. The subject of the analysis contained in the article is the light environment in the space of modern churches of Ukraine. An analysis of the functions of light in churches is made on the example of recently built iconic Greek Catholic temples. The peculiarities of the distribution of natural and artificial light in the space of modern churches, the similarities and differences in the organization of the light environment, as compared to the historical temples, have been revealed. The influence of the light on the architectonics of temples and the visual perception of their object environment, on the formation of the corresponding mystical mood and sacred atmosphere is defined. The values and functions of electric lighting in the structure of the light environment of the temple, the directions of development of electric lighting systems due to the expansion of their utilitarian and decorative functions are determined.

Key words: light, sacred space, modern church architecture, sacrum, tradition

Introduction, problem analysis

Light is a symbol of the presence of God in the space of the temple, an attribute of the liturgy, part of a religious ritual. It is an integral part of the architectural image of the temple, in which it is actively involved. Light is a part of the codification and interpretation of the tradition of the Eastern Church, through it manifest in the architecture of a temple with the use of symbols, archetypes and canons. Light is an architectural phenomenon, a form-shaping and communicating element of the spatial structure of a temple, the most important factor in the perception of the space and layout of the temple. The space of the religious core of a temple is created by inseparable integrity – the "coherence" of form, light, colours, and the exterior form of the temple organically created through

the logic of the development of the interior space. The architecture of the Eastern Church is the architecture of the light (Yatsiv, 2017).

Analysis of recent research and publication

The problem of shaping the light environment of modern churches in Ukraine has not yet become the subject of fundamental research. Some aspects of the role of light in the formation of church architecture and the perception of the interior space of the temple are highlighted in separate studies by domestic authors (Proskuriakov, 2005; Dyda, 2017) and several Polish researchers (Siwek, 2005; Malinowska-Petelenz, 2017; Węcławowicz-Gyurkovich, 2017; Janisio-Pawłowska, 2017; Górczewska, 2016).

Basic theory part

This article is a synthesis of the author's theoretical and experimental research into the functioning of natural and artificial (electric) light in the sacred space of new Greek Catholic temples in Ukraine.

Through the entire period of the development of traditional sacral architecture in Ukraine, the architectural and spiritual organization of the lighting environment of temples has been subject to the following requirements and principles: the priority of religious and liturgical function over aesthetic and utilitarian ones in the model of the shaping of the lighting environment of the church; the dominance of upper natural light; the hierarchic order of natural and artificial light, following the symbolic hierarchy of the space of a temple; the equivalence of direct and reflected light; the minimum sufficient of light within the space of a temple and the semantic correlation of the religious, lighting environment and its spatial form-shaping elements.

The principles of architectural and spiritual organization of the lighting environment of the Christian church of the Eastern rite remained unchanged in the history of architecture of the Orthodox and Greek Catholic churches in Ukraine. These principles should remain an integral part of both the architect's overall creative concepts and the temple design process. The principles and methods of organizing the lighting environment of a Christian Eastern Rite temple, the genesis and evolution of religious symbolism, as well as architectural forms – are genetically linked with light – especially natural light. The lighting environment, together with different categories of symbols and archetypes, needs to be participated as a method of transmitting traditions within the Ukrainian church, as a criterion of the values of its architectural and spatial organization. The significance of light in the space of traditional Orthodox and Greek Catholic temples is the same. The slight differences in the decoration of the temple, the liturgy and the rites do not significantly affect the organization of light in the temples.

The architectural and spiritual organization of the lighting environment of a Ukrainian temple should not go far away from historical and cultural tradition, which is treated as a methodological and theological postulate.

Natural light in the space of modern temples. Let us consider the peculiarities of the functioning of light and the formation of light environment of modern church buildings in Ukraine, on the example of some temples of Kyiv and Lviv.

a *b*

Fig. 1. Facade (a) and interior (b) of the Church of St. Basil the Great in Kyiv [I]

Church of St. Basil the Great in Kyiv, 2003. In the architectural image of the temple, the search for a new temple synthesis felt like a combination of an artistic concept connected with the creative development of the past and the breakthrough to new technologies, modern building materials the latest expressiveness of the architectural form. Sufficiently successful is the unconventional geometry of the building and the development of dramatic interior space diagonally from the entrance to the altar. Outside, the temple is endowed with laconic, slightly simplified forms. However, the spatial shape of the towers loses its function of domination in the interior space of the temple, acquiring only sign and decorative content, so that the sacral vector shifted from the vertical axis, which is characteristic of Ukrainian churches, to the horizontal. Such tectonics of the temple and the desire to create an interior space without columns demanded a rigid spatial structural solution, which led to the appearance in his space of "rough" bearing reinforced concrete structures of the coating.

The natural light system generates a multi-vector of light that enters the interior space through all the light openings. This creates some visual discomfort due to the high brightness of the surfaces perceived by the peripheral vision. The temple has a lot of sunlight and reflected light from light surfaces (Fig. 1). The abundance of light in the church emphasizes festivity however, has the opposite effect: high contrast of light from windows and bright surfaces can cause visual fatigue, partial blinding when exposed to direct sunlight. Spots of sunlight on the walls impair the perception of iconography. Excessive illumination does not contribute to the formation of the sacred space of the temple. In the article about the differences of the Christian temple of the Eastern rite, Ivan Muzychka states: "...it has an atmosphere of sacred, spiritual, secret... Eastern worship will be manifest in an atmosphere of sacrament incomprehensible and unknown" (Muzychka, 1999). Excessive illumination of spaces and surfaces leads to a number of undesirable phenomena: high brightness in the field of view, partial blinding, visual discomfort and the like.

Some "inaccuracies" in the visual picture of the temple draw attention. Through the upper windows of the temple we see the adjacent buildings, and through the window in the altar – a pillar. The sense of sacredness, seclusion, isolation from reality, mystical mood, which has always been the most characteristic feature of the inner space of churches in Ukraine, is lost.

Church of the Nativity of the Blessed Virgin Mary in Lviv. Among the new temples of Lviv, which have been built during the years of Ukraine's independence, stands out for its architecture the Church of the Nativity Virgin Mary of the UGCC (1997–2001). With its expressive pyramidal silhouette, the harmony of regular rectangular prisms, general restraint and asceticism in spatial means, the church is the best achievement of the modern church architecture of Lviv (Cherkes, 2009).

a *b*

Fig. 2. Facade (a) and an interior (b) of the Church of the Nativity of the Blessed Virgin Mary in Lviv [II]

The daylight of the temple was ensured through narrow rectangular windows in the rectangular prisms and the walls of the temple. The illumination in the horizontal plane (at eye level), which is created by light fluxes that penetrate through all windows, gradually increases from the entrance to the altar, where it reaches its maximum. A slight increase in the illumination in the horizontal plane was also observed in the space under the domes, where the light coming from the windows under the domes added to the light from the windows in the walls. The intense increase in the illumination of the wall surfaces from the bottom up can be seen only on the vertical surfaces of the walls on which the domes rest. In the space of the temple, the principle of domination of the upper light is obtained in the absence of visual communication with the external environment. The architect also used the traditional method of "visual detachment" of the icon of the Savior Almighty from overlapping in the central dome due to the use of a light ring under the dome. The perception of the upper tier of the temple is exacerbated by the change in illumination on the flat ceilings adjacent to the bright wall surfaces of the prisms and the light stripes in the places where the side walls adjoin the flat ceiling (Fig. 2). On sunny days, visitors to the temple, whose eyes are directed toward the altar, may experience visual discomfort from the bright windows of the lower tier in the eastern wall of the temple.

The Patriarchal Cathedral of the Resurrection in Kyiv. The decoration of the exterior, interior surfaces and structural elements of the cathedral, as well as the throne, altar, bishop's throne, made only in white, symbolizing the unearthly light of the most important evangelical event to which the temple is dedicated, the light of the Resurrection of Christ. This character of surface decoration significantly affects the overall illumination of the temple, increasing the proportion of reflected light in its space. The same brightness of the surfaces in all directions contributes to the visual expansion of the central part of the temple. The huge interior space of the temple was created thanks to a bold design of the dome, built without supporting structures. It seems that it is supported by an invisible celestial power, and the dome becomes a symbol of Heaven on earth. Light streams are concentrated in the centre of the temple, due to the windows at the base of the dome and the large lantern at its top. Such distribution of illumination of space and brightness of surfaces visually and mentally displaces the sacral centre of the temple towards its geometrical centre, a place of "domination" of the vertical axis. The altar space, compared to modern Catholic temples, is dimly lit, mainly by streams of reflected light, as well as by the lateral windows around the perimeter of the church. The windows in the walls of the altar space, raised high above the floor, give little light except for the larger central window (Fig. 3).

a *b*

Fig. 3. Facade (a) and interior (b) of the Patriarchal Cathedral of the Resurrection in Kyiv [III]

The given examples of modern church architecture in Ukraine, testify to the gradual transition from retro-styles, which have spontaneously developed in the last quarter of a century in the work of Ukrainian architects, to the search for modern sacral architecture and rethinking the whole arsenal of professional means. There is an active search for the new architectonics of the temple and new principles and methods of its interior illumination with natural light.

The unconventional solutions of modern shrines sometimes significantly change the nature of the spread of light in their space. According to the results of the study, we can point out some differences in the organization of the light environment of modern temples in Ukraine, in comparison with traditional churches:

1. The lack of understanding by modern architects of the importance of light in the formation of the sacred space of the temple has led to the over-saturation of its interior space with natural light, too high levels of illumination of surfaces and bright contrasts in view. The excess of light and its unmanageable dynamics do not approach, but rather distract the faithful from prayer and liturgy.

2. The window in the traditional temple of the Eastern ritual was identical to light. In the modern Ukrainian church, the window is mostly a composite element of the church architecture. The large glass surfaces of church buildings in emotional and formal aspects bring them closer to secular buildings.

3. The high intensity of lateral illumination in the lower tier of the temple leads to the devaluation of the sacred symbolism of the upper light, destroys the hierarchy (traditional unevenness) of light distribution in the temple space, diminishes the symbolic value of the dome. The light in some of the new temples carries more functionally realistic than emotional and mystical load.

4. The high intensity of direct daylight reduces the symbolic significance of reflected light from the interior surfaces and the light of traditional artificial sources (lamps, candles), and the high brightness of the windows impairs the visual perception of the elements of the interior space and decoration.

Artificial light in the modern Church. Candles and oil lamps were and remain the sources of artificial light in historical churches of Ukraine. They have deep symbolic meaning but are not effective for the general lighting of the temple. The low brightness of the candle flame allows you to painlessly observe them and place them in front of cult images. The constant flickering of the candle flame and the glare of light on the frescoes, the gilded surfaces of the mosaics create the feeling of the "living presence of God" in the space of the temple.

In churches, candles in traditional lamps are replaced with electric lamps. Luminous fluxes from a large number of lamps significantly increase the overall lighting of the interior, changing the hierarchy of light distribution, the contrast of lighting. The widespread introduction of electric lighting into the sacred space of the church creates some problems in the organization of artificial lighting. Problems associated with objective circumstances – a change in the assessment of internal architecture and iconography, due to a significant increase in general lighting, and purely subjective – the need to avoid high levels of lighting to maintain the mystical nature of the interior of the temple.

In the Greek Catholic churches that we analyzed earlier, electric lighting is no longer traditional, but its role is limited by the utilitarian function. Lamps (sconces), evenly distributed around the perimeter of the inner walls, and large chandeliers scatter light in all directions, creating uniform illumination on the surfaces and in the space of the temple. Such a lighting system does not meet the lighting requirements of modern temples. In European churches, electric light sources are used not only for utilitarian lighting. They actively influence the creation of a new light image of a temple. Modern lighting systems make it possible to obtain lighting effects, not by chance, but thanks to the needs and functions of the church. Lighting design must be a balance between the nature of the church as a place of worship and as works of architecture and sacred art. A good lighting solution is to use a large number of lamps with the appropriate technical and photometric parameters, which can give a unique character to special church ceremonies[8].

We can very likely predict that the electric lighting systems in the sacred places of the temples of the future will be improved with the development of lighting technologies and with the search for design solutions in the organization of temple lighting. Most likely, the dominant method of electric lighting will be not stable, but dynamic lighting, which will be subordinate to the type of worship and help to focus the attention of temple visitors on important points of worship.

Lighting technologies soon will allow creating almost unlimited possibilities of saturation of interior space of any temple by light phenomena, surface and spatial images, in particular by creating light projections of religious subjects on wall surfaces using projection technologies. The use of modern methods of electric lighting 3D video “mapping” technologies, light installations, holographic images, etc. This may seem incredible, especially in the tradition of the Eastern Church. However, it is worth reflecting on the words of the famous Russian sacred art researcher A. Lidov: “...the closest tradition of church art seems to be exhausted; it ceases to meet the needs of modern man. I am convinced that the future of sacred art and temple architecture is to create an iconic image through modern multimedia installations” (Lidov, 2007). The visitor of the temple should feel in the space not earthly and not heavenly, in the space of the mediator. The temple exists for this, and to recreate such a space, it is necessary to use all means: rite and architecture, and images, and light dramaturgy (Lidov, 2008). Light of electrical sources will play a significant role in this process.

Conclusions

At all times, light in the space of the church has been and will remain not only a visual factor but also an effective creator of its sacred space and architectonics. In the interior of modern temples, the light remains perhaps the least understood medium of its mystical and theological content. The organization of natural lighting of contemporary Greek Catholic temples in Ukraine generally preserves the nature of the lighting of traditional churches. The space of temples is dominated by the direct and reflected upper light coming from domes and windows raised high above the floor. Despite the significant increase in general illumination, the hierarchy of brightness distribution remains in the interior of the temples: the increase of illumination from the walls to the centre of the temple, and accordingly from the floor to the vaults and domes. Well-designed electric lighting for the modern sacred buildings must match the requirements of the liturgy, the comfort of vision and the need appropriately to reflect the symbolic and aesthetic values of the

sacral interiors. Modern lighting solutions make it possible to achieve this goal. Properly selected and appropriately positioned light sources can achieve a new light image of the temple.

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Source of illustrations:

[I] http://pilgrimage.in.ua/hram-i-monastyr-svyatoho-vasyliya-velykoho-ottsiv-vasyliyan-u-kyjevi/

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ОСОБЛИВОСТІ ФУНКЦІОНУВАННЯ СВІТЛА У СУЧАСНИХ ГРЕКО-КАТОЛИЦЬКИХ ХРАМАХ В УКРАЇНІ

Анотація. *У кожен історичний період світло, як природне, так і штучне, відігравало важливу роль у створенні священного простору храму, атмосфери містики і зосередженості, було і залишається невід'ємною частиною релігійного ритуалу. Водночас світло як явище архітектонічне – формотворний елемент просторової структури християнського храму, найважливіший чинник сприйняття його простору та іконографії.*

Предметом аналізу, що міститься у статті, є світлове середовище у просторі сучасних греко-католицьких церков. Аналіз функцій світла в церквах зроблено на прикладі нещодавно побудованих знакових храмів в Україні, що належать УГКЦ. Виявлено особливості розподілу природного та штучного світла у просторі сучасних церков, подібності та відмінності в організації світлового середовища порівняно з історичними храмами. Визначено істотний вплив світла, насамперед природного, на образ та архітектоніку храмів, візуальне сприйняття їхнього середовища, на формування відповідного містичного настрою та сакральної атмосфери у його головному просторі. Встановлено, що незважаючи на значне збільшення загального освітлення, ієрархія розподілу яскравості зберігається у внутрішній частині храмів: збільшується загальна освітленість від стін до центру храму, і відповідно, від підлоги до склепінь та піднебінь куполів.

Встановлено значення та функції електричного освітлення в структурі світлового середовища сучасного храму, напрямки розвитку систем електричного освітлення завдяки розширення їх утилітарних та декоративних функцій. Визначено, що продумане електричне освітлення для сучасних сакральних будівель повинно відповідати вимогам літургії, комфорту зору та необхідності належно відображати символічні й естетичні цінності сакральних інтер'єрів. Сучасні освітлювальні рішення дають змогу досягти цієї важливої мети. Правильно дібрані та належно розташовані джерела світла можуть створити абсолютно новий світловий образ храму.

Ключові слова: *світло, сакральний простір, сучасна церковна архітектура, традиція, УГКЦ.*

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