

Peculiarities of preservation, protection and restoration of the urban heritage (on the example of small towns in Western Ukraine)

Zoriana Lukomska^{1,*}, Viktoriia Berbets², Diana Akparsheva³

¹ Department of Architecture and Conservation; Institute of Architecture and Design; Lviv Polytechnic National University; 12 Bandery St., 79000 Lviv, Ukraine; soriana.lukomska@gmail.com

² Department of History, Theory of Architecture and Conservation of Monuments; Faculty of Architecture; Gdańsk University of Technology; 11/12 Gabriela Narutowicza St., 80-233 Gdańsk, Poland; vikberbe@pg.edu.pl

³ Department of Architecture and Urban Planning of the Ivano-Frankivsk City Council; 9 Nezalezhnosti St., 76018 Ivano-Frankivsk, Ukraine; akparshevadiana@gmail.com

* Corresponding Author

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Abstract:

The study examines historically valuable urban planning development objects in Western Ukraine that emerged in the period of the 17th–18th centuries. The main peculiarities of these valuable urban development complexes are their unique spatial-planning elements, such as defence systems, sacred, defensive and residential complexes. Currently, the state of preservation of these elements is often unsatisfactory and requires protection and conservation. Most of these objects are ruined or partially destroyed, and some have been lost and require complete restoration. The study offers a solution to the problem of preserving urban heritage sites from the 17th–18th centuries by developing a “Complex of measures aimed at preservation, protection and restoration of the historical environment of valuable urban heritage objects”. The article examines in detail the historical-architectural development of the historic towns of Yezupil, Kalush and Okopy of the Holy Trinity. It explores the distinctive peculiarities of the historical planning layout of these towns, analyses their current condition and assesses the degree of preservation of elements of these valuable historical urban complexes. As a result of the research, concepts for Programmes for the preservation, regeneration and revitalisation of the selected historic towns have been developed.

Keywords:

urban heritage of the 17th–18th centuries; historic towns; historically valuable urban structures; fortifications; Western Ukraine; preservation; regeneration; restoration; symbolic marking

1. Introduction

In this study, a detailed analysis is performed on the historic towns of Yezupil, Kalush, and Okopy of the Holy Trinity, the first two located in the Ivano-Frankivsk region and the last one situated in the Ternopil region of Ukraine. These urban planning objects were developed in the 17th–18th centuries in Western Ukraine, which at that time was an integral part of the Polish-Lithuanian Commonwealth. This aspect influenced the fact that the development of towns took place in compliance with the European urban planning traditions of the mentioned period.

The presented objects were identified as the constituent elements (some of which have been lost) of the spatial-planning structure that shaped the environments of historical cities or urban complexes in the 17th–18th centuries and served as the foundation for their further development [20,21,24,12]. These ensembles comprise city downtown buildings, monasteries, sacred buildings, palaces, as well as castle-palaces, palace-park complexes, and defensive complexes. In the past, they've created a peculiar image, a distinctive environment for these valuable historical complexes. Their decline was caused by a combination of factors, such as armed conflicts, loss of relevance, scientific-technological progress, natural conditions, and new construction. Despite this, today, more than three centuries after the heyday of these urban complexes, the spatial layout of the preserved

buildings and complexes is impressive and captivating in its scale, the perfection of its spatial compositions, and the skilful, highly professional execution of the architectural and construction work.

During the 17th-18th centuries, these objects had significant status and played a crucial role in the historical-urban development of the region. At present, a majority of them have lost their original status, and the value of the existing outstanding volumetric-spatial elements of historical towns is underestimated. Today, there is a problem of determining the place and role of historical urban complexes of the 17th-18th centuries within the modern urban structure, as well as in the reconstruction or restoration and regeneration of the cities and complexes in future.

The study proffers a solution to the problem of preserving the urban heritage objects of the 17th-18th centuries by developing a “Complex of measures aimed at preservation, protection and restoration of the historical environment of valuable urban heritage sites”.

2. Methods of the study

The study is based on a comparative-historical approach, the principles of objectivity and consistency, and an interdisciplinary approach due to the complex nature of the work. The main sources of the research are materials from the archives of the

Central State Historical Archive of Ukraine in Lviv, the archives of the Ukrainian Specialised Scientific-Restoration Institute “Ukrzakhidproektrestavratsiya”, the archives of the Departments of Urban Planning and Architecture of Ivano-Frankivsk and Ternopil regions, and the Manuscripts Department of the Lviv Scientific Library named after V. Stefanyk, National Academy of Sciences of Ukraine. Source materials from Polish digital archives and libraries (Archiwum Główne Akt Dawnych w Warszawie; Narodowe Archiwum Cyfrowe; Fototeka Instytutu Historii Sztuki Uniwersytetu Jagiellońskiego, etc.) were also studied.

The architectural methods of identification and theoretical reconstruction were chosen as a significant component of the research methodology.

In the course of the study of the cities and towns of Western Ukraine in the 17th–18th centuries, the facts are considered in accordance with the specific historical circumstances, which makes it possible to determine the prerequisites for the formation of urban development objects and to identify the main factors

influencing the development of cities and architectural-urban development complexes in Western Ukraine [23,33].

We represent the urban historical objects of value from the 17th–18th centuries, located in Western Ukraine, which correspond to different degrees of preservation.

3. Town of Yezupil

3.1. Historical-urban planning development of the town of Yezupil

The first object of study is the historic town of Yezupil, which arose on the territory of the ancient village of Cheshybisy, the first written mention of which dates back to 1435 (Fig. 1) [16,10]. There are numerous versions concerning the history of the village and the etymology of its name among scholars. A valuable primary source on the historical development of the town is Oleksandr Cholovsky’s monograph on Yezupil [9].



Fig. 1. Historical and modern images of the town of Yezupil: Dominican Catholic Church (mid-17th century); buildings on the market square. Photo of Z. Lukomska

In 1598, the town came under the ownership of the Potocki family, who significantly contributed to its greatest prosperity. During this period, Yakiv Potocki, having acquired Tysmenytsia and the surrounding villages, began to refer to himself as “the lord of Yezupil and Tysmenytsia”. Living with his family in Yezupil, he initiated the construction of a new castle in the north-eastern part of the town. A registration document dated 1600 reveals Potocki’s obligation to build a stone church and monastery at his own expense on the hill, where the ancient Cheshybisy castle once stood [10].

There is information that in 1637, there were ramparts around the town, and water from the Bystrytsia River and adjacent ponds flowed into a moat that surrounded Yezupil on all sides. There were two gates at the eastern and western entrances. Near the eastern entrance, on the right-hand side, a Dominican monastery was located, while on the left, closer to the gate, there was a castle. On the opposite side of the downtown area, to the west, there was a church. The central area of the town was formed by the market square with the town hall, behind which, along the

ramparts, there were streets known as “zatylas”. Outside, beyond the gates, there were suburbs: to the east, Piskohlody, to the west, Halytske and Troshkove. The castle and monastery were surrounded by ramparts and could only be accessed via drawbridges. In addition, the castle and monastery had good fortifications, so they could defend themselves even if the town was captured by enemies. Passing through a deep moat that separated the castle from the town, and upon entering through the gate, one could access a small castle courtyard, with the windows of the rooms opening onto this. Loopholes were visible on the external part of the castle walls. The castle itself was a single-storey building, built of brick and stone, with a roughly square layout. Towers were built on its four sides, offering a magnificent view of the surrounding area. The two city gates were built of stone and had rooms designated for guards. Both the castle and the monastery were separated from the town by small but deep ponds [15,4,35].

At the turn of the 16th and 17th centuries, the Dominican monastery was gradually rebuilt from a wooden structure to one

constructed of stone. Its construction was completed in 1648. By that time, the monastery's residential building and the Catholic Church of the Assumption of the Blessed Virgin Mary, a three-nave basilica with stylistic special features of the early Baroque period, had been constructed. The pediment of the building is connected to the tower. There were three crypts in the basement of the church. Historical descriptions indicate that the Yezupil Catholic Church served as a mausoleum for the Potocki family. The church had five lavishly decorated altars. Adjacent to the church, there was a rich library. Part of the free territory adjacent to the pond served as a cemetery. The entire monastery courtyard was surrounded by a substantial fence wall.

In 1648, the town, along with other Halych fortresses, was captured by the Cossacks, which naturally resulted in significant damage to the town's buildings. In 1651, the town's proprietor, Hetman Mykola Potocki, passed away, and his son became the new proprietor. His name is associated with the period of the town's significant economic and urban development; this period was characterised by the exemption of the townspeople from taxes and duties, the granting of rights to craftsmen to unite in guilds, and the right to hold weekly fairs. During this period, Yezupil attempted to compete with the fortress in Stanislaviv, but the Tatar invasion of 1676 brought further devastation to Yezupil. And according to historians, the town never again achieved such economic prosperity as it had previously experienced before the arrival of the foreigners [10].

3.2. The current state of the historical core of the former town of Yezupil

Unfortunately, at present, only minor elements of the 17th-century layout structure, elements of the defence system in the form of significant elevations in the relief, and the buildings of the former Dominican monastery with the Catholic Church of the Assumption of the Blessed Virgin Mary have been preserved on the territory of the former historical centre of the town of Yezupil.

In the process of research and identification of the original components of the former town, a prominent place belongs to the preserved elements of the former defensive system, which

continue to dominate the settlement's layout today. Specifically, the remnants of the 17th-century ramparts and moats that surrounded the historic town centre are clearly visible in the area and make it possible to confidently determine the original location of the town centre of Yezupil. The presence of stone masonry at the site of the western gate can also be traced.

A key preserved spatial-planning element from the 17th century is the Dominican monastery, which includes the Catholic Church of the Assumption of the Blessed Virgin Mary. Throughout its existence, the complex has undergone numerous changes related to the functional zoning of buildings and territory, as well as minor changes in the spatial planning structure of the church building. The monastery complex was originally comprised of a church, a residential building with cells adjacent to the church at a right angle, bell towers, a cemetery, and a number of auxiliary production premises. The entire complex was surrounded by a brick fence. At present, the spatial-planning structure of the church and its interior decoration have suffered some losses, but its technical condition is satisfactory. The former monastery building now houses a medical facility, which is also in quite satisfactory condition, and the percentage of alterations to its spatial-planning structure is insignificant. Unfortunately, the monastery bell tower, cemetery and fence have been completely destroyed.

The location of the 17th-century brick castle, the residence of the city's owners, can be determined using historical cartographic materials and descriptions (Fig. 2, Fig. 3). The site of the former quadrangular defensive tower castle is now occupied by the Didushytsky family palace, dating back to the 19th century, but the area of the park adjacent to the castle can be identified in the local area.

The partially preserved boundaries of the historic market-based quarters and the former historic trade route known as the "Volosky Shliakh" – presently S. Bandera Street and other historic streets – play a significant role in identifying elements of the original spatial-planning structure of the town of Yezupil. This conclusion has been reached through a comparative analysis of historical cartographic materials, the main one being the cadastral map of 1847 (Fig. 3), with the modern topographic-geodetic subbase of the city.



Fig. 2. Yezupil. Historical map from the period of the Habsburg Empire (1763–1787). Fragment [34]

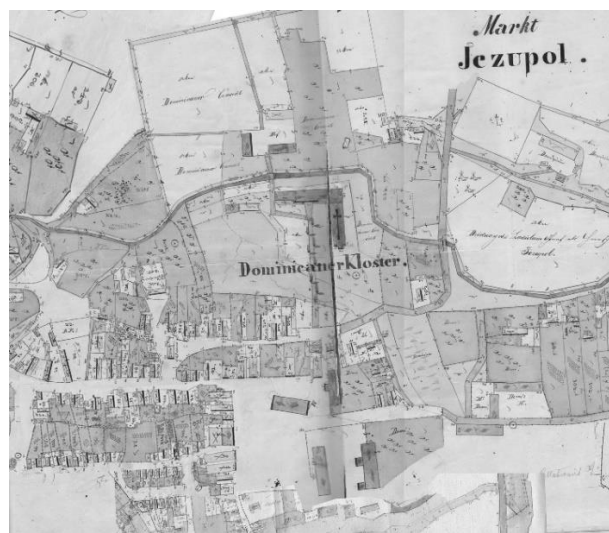


Fig. 3. Cadastral map of Yezupil, 1847. Fragment

3.3. Reconstruction of the historical planning structure of the town of Yezupil

In this study, a scheme for reconstructing the historical urban planning structure in the 17th century is presented, indicating the preserved and destroyed spatial-planning elements, compiled from historical cartographic, iconographic, and descriptive materials.

The basic elements used in the identification work are the existing valuable elements of the historic town: the Dominican monastery (1597–1651), fragments of the quarter market buildings, elements of the planning structure in the form of streets and roads, fragments of the relief: the remnants of ramparts and moats that originally surrounded the entire town and separated the city centre, the castle, the monastery complex and the suburbs, as well as the reservoirs. Obviously, the former earthen fortifications complemented the natural relief, and it was this particular factor that was decisive in the location of the downtown in the 17th century, following the complete destruction of the previous urban settlement by the Tatars. The core of the downtown's planning composition was a quadrangular,

approximately square market area measuring 115 x 115 m with buildings arranged in a quarter-style configuration; the area was traversed by the so-called "Volosky" trade route, which connected Lviv and Voloshchyna. Adjacent to the market square, there was a fortified territory of the city owners' residence, which also resembled a square. The town centre was entirely encircled by a powerful defence system with two entrance gates. There is very little information about the construction of the defence system, so we assume that it consisted of wooden-earthen fortifications, surmounted by stone entrance gates.

The Dominican monastery complex functioned as an independent spatial-planning element due to the fortifications that separated it from the city centre; however, at the same time, there was a stable compositional-spatial connection between the two, which remains clearly evident today. Downtown areas developed around the city ramparts.

Based on the planning analysis and field surveys, a reconstruction plan of the historical planning structure of the town of Yezupil in the 17th century was drawn up (Fig. 4).

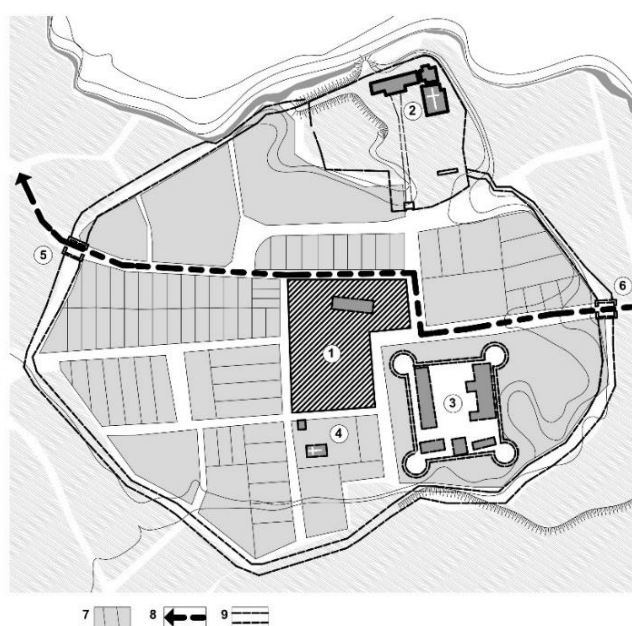


Fig. 4. Scheme of reconstruction of the historical layout of Yezupil during the 17th century. Explication: 1. Market square area; 2. Buildings of the Dominican Catholic Church and monastery; 3. Castle; 4. Territory of the Ukrainian church; 5. Western entrance gate; 6. Eastern entrance gate; 7. Residential quarters; 8. Main trade route; 9. Boundaries of the town's defence system. Authors: Z. Lukomska, V. Berbets, D. Akparsheva

4. Town of Kalush

4.1. Historical-architectural development of the town of Kalush

Kalush is one of the oldest towns in Western Ukraine, located in the north-western part of the Ivano-Frankivsk region. During the 16th - 17th centuries, the town developed as a fortified centre with a distinctive defensive and planning structure, which was typical of fortress cities of that period (Fig. 5). The granting of Magdeburg rights contributed to the development of Kalush as an important trade centre in the region, and it also determined the systemic arrangement of the city's spatial structure and the delineation of its urban spatial hierarchy [3].

The history of the Kalush settlement is thought to date back to the princely times. The earliest written mention of Kalush dates back to 1400, as evidenced by a letter from Prince Svydryhaylo Olherdovych. The next mention is found in the twelve-volume Halych city books of 1437 and concerns lawsuits involving the nobleman Mitka Drahush from Kalush [1,7,8]. The earliest recorded settlement in the territory of the modern historical core was a courtyard. An important spatial element of this courtyard was a triangular square, or "marketplace", which can be identified both on the map of F. von Mieg dated 1763–1787, and on the modern planning structure of the town [25].

The granting of Magdeburg rights to Kalush in 1553 represented a significant stage in its urban development. The town began to form as a fortified centre with a regular plan, a market square, and a system of defensive fortifications. It was during this period that the concept of Kalush as a city-fortress was established, in accordance with the general European tendency towards the development of city centres in Western Ukraine [14].

The development of the Kalush fortress can be divided into several distinct phases. The first stage is associated with the formation of a market and the initial development of the settlement. The second stage is characterised by the emergence

of fortifications and the gradual formation of a defensive circle. The third stage, which falls in the 17th century, is marked by the construction of wooden-earthen fortifications, the Starostyn Castle, the formation of the Market Square with a wooden town hall, and the development of the city-fortress.

As stated in the "Inventory of the Kalush Estate for 1693", the city was surrounded by a rampart with a "wooden wall", corner towers (presumably pentagonal bastions or protobastions), and wooden decorated entrance gates-towers, which were located in the rampart. In front of the ramparts, a double picket fence was positioned [2]. The defence system also encompassed the Starostyn Castle, which fulfilled not only military but also administrative-treasury functions, particularly with regard to the control of salt trade. The inventory description of the Kalush local council dated 22 September 1771 provides a more detailed description of the castle complex. On the eastern side, the castle was surrounded by a defensive rampart, on which wooden fences were installed. The entrance gate from the town side, leading from the Market Square, was brick and covered with a gont roof. The entrance gate had double gates made of fir logs and shackled in iron bars. To the left of the entrance there was a brick building intended for the castle garrison, while to the right – there was a brick treasury, which was accessed through a door from the citadel, the main part of the castle. Further on, in the dug-out rampart, a new stone gate was erected on the side of the farmstead, equipped with double doors. The Starostyn administration's residence was situated above the gate, while a brick cellar was located below. On the territory of the citadel, a residential building with a gont roof stood on the foundations. On the other side of the gate, at the entrance to the farmstead, there was a house with a porch, built of square stones, with two large chimneys on the roof. Nearby, there was a service building covered with a gont roof (shingles), with three brick cellars, which were accessed from the fortified settlement. In the immediate vicinity, there was a separate outbuilding that was designated for the economist and secretary [27].



Fig. 5. Kalush. Map by F. von Mieg, 1779–1782 [18]

In accordance with the tradition of locating sacred sites at corners, St. Valentine's Catholic Church and the Catholic Church of the Nativity of Christ (which, unfortunately, has not survived to the present day) were located at two corners of the rectangular town centre, not far from Market Square. According to the

findings of the Polish researcher Yu. Motylevych, the tradition of locating sacred buildings near city gates was defensive in nature and could be included in the city's fortification system. The original structure of St. Valentine's Catholic Church was wooden. During the Tatar attacks, the church was burned down

several times, suffering significant damage in 1565. The 1771 illustration records: “The Parish church adjacent to the castle in the city, newly built of spruce wood and covered with gont roof (shingles)” [19]. In the 1840s, the Catholic shrine was rebuilt in the Neo-Gothic style according to a design by Tadeusz Obmiński.

The fourth stage of the city’s development began in the mid-18th century with the advent of Austrian rule. During this period, the majority of the town’s defensive fortifications were demolished, and the gates and ramparts were removed, leading to the loss of the town centre’s defensive character. The fifth stage involved the expansion of the town and the acquisition of new features, including the replacement of wooden houses with brick ones, the construction of a new market quarter in the town centre, the relocation of the town hall to a new location, and the development of a new district known as the German colony of Novy Kalush.

4.2. The current state of the historic core of the former town of Kalush

In contemporary Kalush, the historical-urban heritage of the 16th–17th centuries is partially reflected in the modern development of the city’s buildings. The historical quarter structure has been significantly altered; however, the former division and plot sizes can still be partially traced. The northern sector of the historic core has been the best preserved, while the western and southern sides of the downtown area have been built up mainly with disharmonious multi-storey buildings.

Among the preserved landmarks of the historic city centre that help to identify the location of the city-fortress, St. Valentine’s Catholic Church is of particular significance. It remains one of the town’s most prominent spatial landmarks, located on the site of the original wooden church. The Ukrainian Church of the Holy Transfiguration (now St. Mykhayil’s Church) has also been preserved and is situated behind the gate in the Lviv suburb.

Important elements that allow us to identify the former defensive system are the peculiarities of the relief. In particular, on the northern side, along the modern Kovzhun Street, there is a clearly visible elevation of the ground surface of approximately 1.5 m, which corresponds to the line of the former earthen ramparts. On the eastern side, along the modern I. Franko Street, there is a minor disparity in relief, measuring approximately 0.5 m. A fragment of the defensive ramparts remains intact on the southern side, situated along the contemporary M. Hrushevsky Street.

On the cartographic representation “Appenzeller Map. 1787”, a rectangular area between the church and the cathedral stands out, which has a perimeter fence on three sides and a wall facing Market Square. On one side, the territory is connected to the city’s curtain wall from the east. It is a large courtyard with several significant buildings. Having performed the field research, it became evident that this area is the highest terraced area in the city centre. Given its advantageous location, size, and separate fence, it can be assumed that this was the site of the Kalush Starostyn (meaning the union of some small villages near the town, to represent their interests) Castle.



Fig. 6. “Plan of the landscape division of the German colony of Novy Kalush together with the lands divided between the Kalush chamber authorities, dated late 1787” or “Appenzeller’s map” (named after the author of the plan, an Austrian cartographer; the map is signed: Appenzeller). North is on the right [32]

The preserved elements of the defensive system also include the historical axis – a road running from north to south, connecting the Lviv and Halych gates and passing through the Market Square. Several streets have retained their toponymic names, which makes it easier to identify the historical core. A prime example of this phenomenon is Pidvalna Street. One of the oldest streets in the town, it has already been depicted on Appenzeller's map in 1787 and on F. von Mieg's map between 1763 and 1787 [26]. It was named after its location under the ramparts of the city fortifications (a parallel street 30 m to the north, which has not existed since 1960, was previously known as Valova Street). It is noteworthy that the former appellation of Sichynskoho Street was Zamkova Street. It is located in the central part of Kalush. It connects T. Shevchenko and I. Franko Streets. It is one of the oldest streets in the town, forming an important compositional axis: the castle – Market Square.

4.3. Reconstruction of the historical planning structure of the town of Kalush

By comparing historical sources and maps with modern topographical data, it is possible to reconstruct the approximate

dimensions and configuration of the Kalush Fortress. The approximate dimensions of the fortress fortifications were estimated to be around 400×370 m. According to the map by F. von Mieg dated 1779–1782, the city fortifications of Kalush, consisting of four protobastions, are clearly visible in the corners. The description of Kalush Castle in 1693 mentions that “at the corner of the church, there is a slightly ruined embankment resembling a bastion (basztellionu)”. Relics of defensive structures such as earthen ramparts, escarpments, and counterscarps can be found on the map “Map of Appenzeller. 1787” and the cadastral map of Kalush, 1847. It is evident that the streets were formed around the earthen rampart or the outer edge of the moat.

The preserved earthen ramparts, landscape structure, and historic facades of buildings, whose foundations are located on the site of the original downtown neighbourhoods, form the identity of the Kalush urban environment.



Fig. 7. Cadastral map of Kalush, 1847. Fragment

The reconstruction method is based on a combination of cartographic analysis and retrospective comparison of planning elements from different time periods. The primary source material for the recreation of the configuration of the fortifications was historical maps from the second half of the 18th century to the mid-19th century, in particular the map by F. von Mieg (1779–1782), the “Appenzeller Map” (1787), and the cadastral plan of Kalush dated 1847. These maps show relics of the defensive system in the form of earthen ramparts, moats, and characteristic breaks in the street network (Fig. 6, Fig. 7). This

data was compared with the modern topographic base, which facilitated the localisation of the boundaries of the fortified part of the town and the tracing of the continuity of the planning structure.

The reconstruction presented here is a scientifically based hypothesis that reflects the most likely appearance of the Kalush fortress system during its existence. The absence of detailed engineering plans of the fortifications leads to a certain generalisation in the interpretation of the forms and sizes of the defensive elements (Fig. 8).

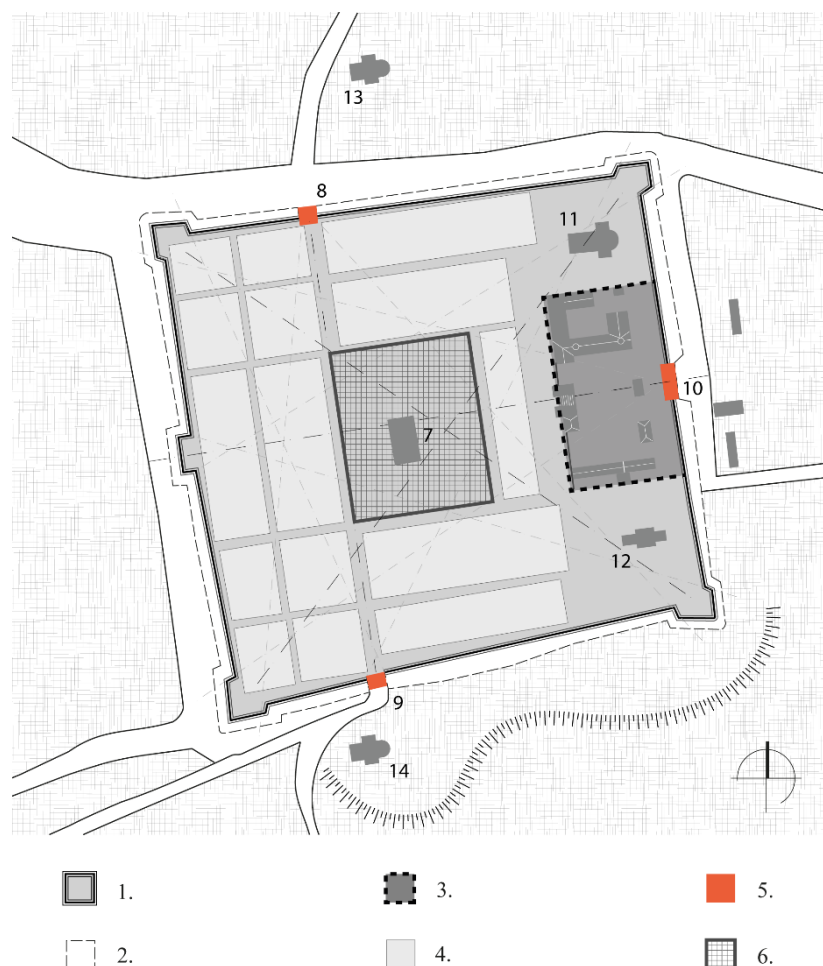


Fig. 8. Scheme of the reconstruction of the historical urban planning structure of Kalush in the 16th-17th centuries. Explication: 1. Boundaries of the lost defensive system of the city-fortress of Kalush in the 16th-17th centuries; 2. Boundaries of defensive earthen ramparts; 3. Territory of the Starostyn Castle in the 16th-17th centuries; 4. Residential quarters; 5. Entrance gates. 6. Boundaries of the historic Market Square; 7. Original wooden town hall of the 16th century; 8. Lviv Gate 9. Halych Gate 10. Gate to the farmstead (gateway) 11. St. Valentine's Catholic Church 12. Church of the Nativity of Christ 13. Church of the Transfiguration of the Lord (Church of St. Mykhayil the Archangel) 14. Church of the Nativity of the Blessed Virgin Mary. Authors: Z. Lukomska, V. Berbets, D. Akparsheva

5. Okopy

5.1. Historical-architectural development of Okopy

The bastion city-fortress of Okopy of the Holy Trinity was founded in 1692 on the initiative of Polish King Jan III Sobieski, Crown Hetman of the Polish-Lithuanian Commonwealth Stanislaw Jan Jablonowski, and Kyiv Voivode Martyn Kontsky. This was due to the necessity of blocking roads to the Kamyanets Castle, which had been occupied by the Turks as a result of the signing of the Treaty of Buchach in 1672 [6,22,36,30].

The landscape conditions of the area were the main incentive and advantage for the construction of a defensive structure. The rocky peninsula between the Dniester and Zbruch rivers served as a good vantage point, facilitating the construction of robust defensive fortifications. The location enabled the observation of three other prominent defensive structures of that time: Kamyanets Fortress, Khotyn Fortress, and Zhvanets Castle (Fig. 9, Fig. 10) [11,28,29].

The Dutch engineer Tilman Gamersky is considered to be the project's architect. The fortress was designed in an impressively short period of time – six weeks – according to Renaissance-Baroque urban planning principles with features of the old Netherlands military-engineering school [5]. The complex consisted of an eastern line of fortifications – the Kamyanets Gate, a bastion, two demi-bastions, and a ravelin; a western line – the Lviv Gate, two demi-bastions, and a ravelin; the southern and northern lines – fence walls, watchtowers; as well as the Church of the Holy Trinity and its bell tower, built in 1693 [22,36].

In 1700, a town was established on the basis of the fortification due to the loss of its defensive function and the granting of Magdeburg rights and privileges (for weekly markets and annual fairs) to the Okopy of the Holy Trinity on June 5, 1700, by King Augustus II [17].

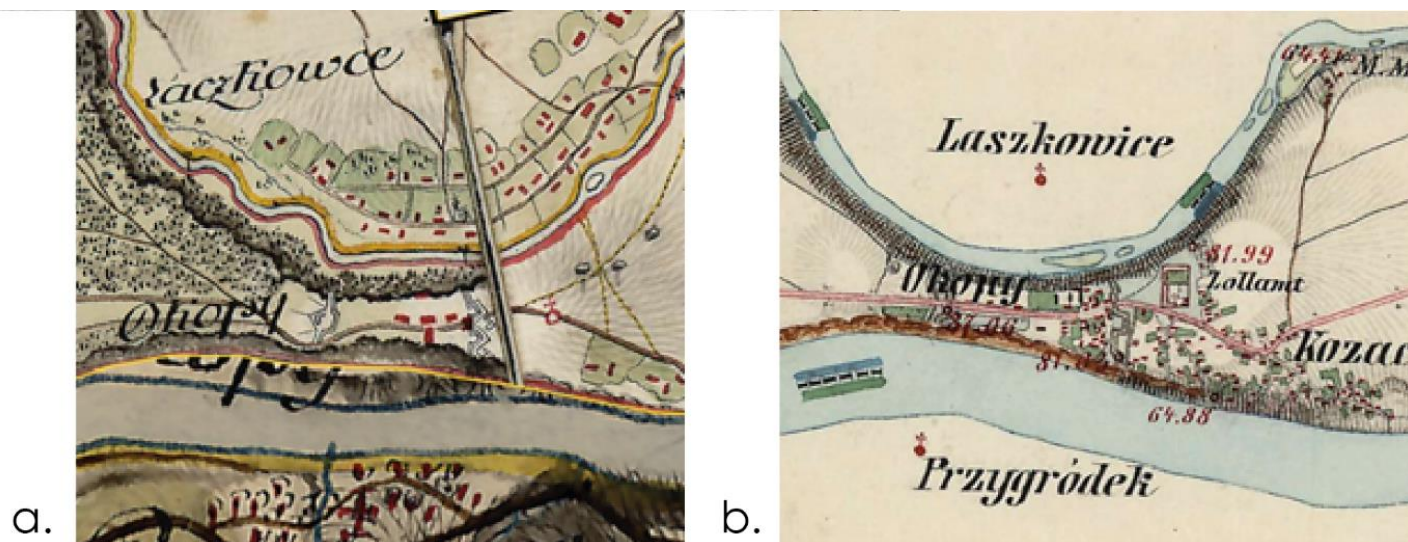


Fig. 9. a. Okopy. Map by F. von Mieg, 1779-1782. Fragment [37]; b. Okopy. Map of the Austrian Empire, 1861-1864. Fragment [38]

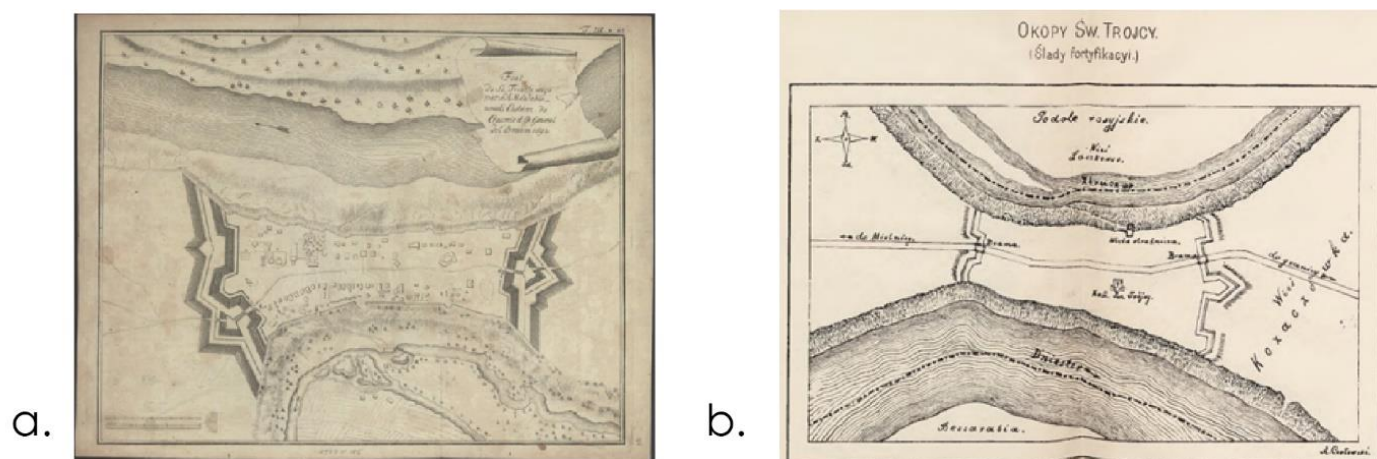


Fig. 10. a. Plan of the fortress Okopy of the Holy Trinity 1714 [31]; b. Plan of the fortress Okopy of the Holy Trinity, 1889 [6,13]

5.2. The current condition of the village of Okopy

Field surveys were performed to determine the degree of preservation of the fortress town and its individual elements. In its current state, the original layout structure can be traced with the main road running along the entire settlement from west to east. A survey of the area revealed the presence of buildings on both sides of the road, including the preserved Catholic Church of the Holy Trinity, dated 1693. The sacred building is in satisfactory technical condition, with the first and part of the second tiers preserved. The roof had been completely destroyed, but in 2014, reconstruction work was carried out, which made it possible to fully appreciate the architectural-spatial composition of the church. Adjacent to the church is a bell tower.

Fragments of the earthen ramparts along the western and eastern lines of defence have been preserved. On the northern side, substantial remnants of fortifications are visible, while on the southern side, the dismantled ramparts near the Lviv Gate are barely noticeable, and the line of fortifications near the Kamyanets Gate has been completely lost.

The locations of two entrance gates have been preserved: the Kamyanets gate, where the walls and pediments are still visible, and the Lviv gate, where only the walls remain. The roofs of the gates have been completely destroyed.

Fragments of the “Pulasky Tower,” located on the southern side near the Kamyanets gate, have also been preserved. The presence of residual stones on the slope descent from the tower to the riverbank indicates the loss of the southern and northern defensive lines and routes.

The fragments of city fortifications, entrance gates, and the church preserved in the landscape make it possible to trace the historically established planning structure of the site. Currently, the row buildings have undergone significant alterations, and other dominant structures have been lost, except for the Catholic Church. The location of the main road has been slightly shifted in relation to the entrance gates due to the loss of their function as a checkpoint into the settlement, which now runs alongside the gates rather than through them. The landscape between the rivers plays an important role in the perception of the structure of the site, which has remained unchanged and preserved the unique, distinctive characteristics of the fortress city (Fig. 11).



Fig. 11. Modern and historical images of gates and the defence system of the city-fortress of Okopy. Photo of D. Akparsheva

5.3. Reconstruction of the historical planning structure of the town of Okopy

The present study has employed cartographic sources, field surveys, and comparisons with contemporary satellite imagery to perform a theoretical reconstruction of the planning structure of the historic city-fortress of Okopy (Fig. 12).

The fortress is located on a hill between two rivers, has an elongated, slightly curved shape corresponding to the relief, and resembles an irregular rectangle in plan, ending with two lines of

ramparts of the bastion fortification system. The territory is circumscribed by defensive barriers and watchtowers on the northern and southern flanks. In the western sector of the fortification, situated between two half-bastions, there is the Lviv Gate and a ravelin. On the eastern side, also between two half-bastions, there is the Kamyanets Gate, a bastion, and a ravelin. The gates are two-tiered and connected by the main road. Other buildings are located along the road, among which the Catholic Church of the Holy Trinity dominates the composition, and the Market Square is located in the centre of the town.

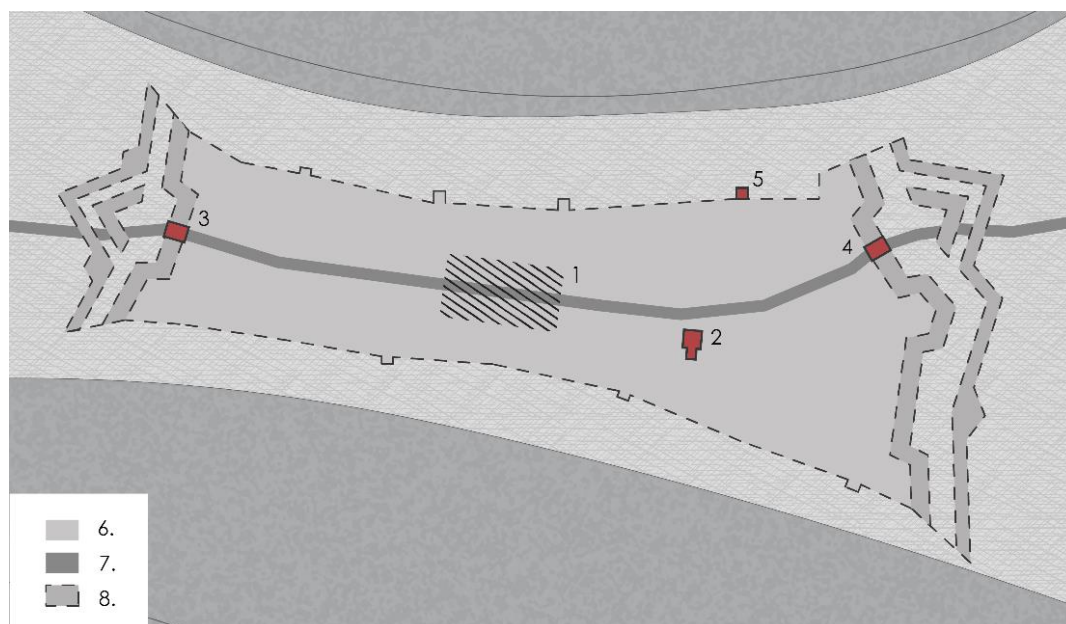


Fig. 12. Scheme of reconstruction of the historical layout of Okopy during the 17th century. Explication: 1. Market square area; 2. The Church of the Holy Trinity; 3. The Lviv Gate; 4. The Kamyanets Gate; 5. "Pulasky Tower"; 6. Residential and administrative buildings; 7. Main road; 8. Boundaries of the town's defence system. Authors: Z. Lukomska, V. Berbets, D. Akparsheva

An analysis of three historical settlements – Kalush, Yezupil and Okopy of the Holy Trinity – demonstrates that early modern urban fortifications have been preserved in fragments in the

majority of cases. The defensive system in the towns under consideration has been preserved and is partially represented. Given the loss of most of the material defensive elements,

morphological indices that allow the identification of lost fortifications in the modern spatial structure of the town become very significant. Such indices include relief differences, characteristic bends in the street network, fragmentary preservation of former ramparts or moats, as well as the configuration of neighbourhood boundaries.

In Kalush, these features manifest themselves in the form of elongated elevations in the relief, steep slopes, and earthen embankments that correspond to the lines of fortifications and are clearly visible both in the modern landscape and on cartographic sources from the 18th–19th centuries. In Yezupil, the former fortification structure has been preserved in a significantly worse condition and is primarily documented through landscape and planning features. In the Okopy of the Holy Trinity, the presence of the relief remains of bastions and curtain walls, combined with isolated masonry fragments, enables the localisation of the fortress's contours.

Thus, the results of the study demonstrate that in the processes of restoration of historic city centres, not only the degree of physical preservation of fortification objects is of decisive importance, but also the nature of their integration into the modern spatial structure of the city. The examples of Kalush, Yezupil, and Okopy of the Holy Trinity demonstrate that the loss of most of the material elements of urban fortifications does not result in the disappearance of their spatial influence: former fortification lines continue to be fixed in the contemporary planning structure through the relief, the configuration of the street network, and the boundaries of historic quarters. The identification and consideration of such morphological and landscape relics allows them to be regarded as full-fledged elements of the historical urban space that should be integrated into contemporary regeneration strategies.

6. A complex of measures aimed at the regeneration of urban development objects

In this study, we present our “Complex of measures aimed at preservation, revitalisation, regeneration and restoration of the historical environment”. The purpose of this set of measures is as follows: first, to restore the elements of the historical urban structure that have been lost; second, to protect them; and third, to create conditions for the coexistence of historical heritage and modern urban development. The aforementioned measures are intended to augment the role of heritage complexes and valuable historical buildings in society.

The main objectives of the complex of measures aimed at the preservation, restoration and regeneration of the immovable cultural heritage objects are as follows:

- Performance of the scientific-research and surveying work, preparing the necessary scientific-design documentation;
- Implementation of top-priority emergency response measures to preserve and conserve valuable architectural objects;
- Scheduled repairative-restorative work on architectural monuments and valuable historical buildings;
- Establishment of heritage protection zones (building regulation zones, protected landscape areas, archaeological cultural layer protection zones) in areas with the highest concentration of monuments;
- Development of proposals for the restoration and revitalisation of planning-spatial elements of the urban space.

Measures aimed at the preservation, restoration and revitalisation of immovable cultural heritage objects that have been lost or partially lost are to be offered for application to all historical components of cities and urban complexes: the historical downtown area, the defence system, elements of palaces and castles, monasteries, and garden-park complexes.

The main measures include:

- conservation, restoration, and repair of the valuable historical objects;
 - uncovering the preserved, authentic substance of the underground level of valuable elements of the urban structure and their subsequent exhibition;
 - exhibition of the preserved elements of the historical environment;
 - marking lost elements of the historic city centre, elements of the defence system, and valuable historical objects with symbolic signs;
 - marking lost historical buildings with new construction;
 - museumification of the existing (newly discovered) elements of the historical layout structure;
 - recreation of lost elements of the historical spatial planning structure;
 - tracing the historical outlines of the lost elements of the spatial-planning structure;
 - adapting valuable historical urban planning objects to the contemporary functions;
 - restoration of the historical function of valuable historical urban planning objects;
 - recreation of the historical parcelling of the quarter's buildings;
 - reconstruction of disharmonious new buildings in the historical core of the city;
 - regulation of the number of storeys of modern disharmonious buildings in the historical core of the city;
 - recreation of historical garden-park compositions;
- Group of additional measures:
- comprehensive modernisation, improvement, and beautification of the historical environment;
 - restoration of lost elements of the historical spatial-planning structure;
 - creation of excursion-educational routes in the historical areas of cities;
 - inclusion of historical urban complexes in cultural tourism programs;
 - virtual restoration of urban objects, creation of virtual museums;
 - development of 3-D reconstructions;
 - development of augmented reality programs.

The present study uses the example of urban development objects to offer Programmes for the development, preservation and restoration of historic cities that have suffered significant losses of historical substance.

The study developed a “Concept for a program of measures aimed at preservation, regeneration and restoration of the spatial-planning structure of the historic centre of Yezupil”. Measures to restore the historical environment are offered to be applied to all the historical components of the city, namely the former downtown, the castle complex (16th century), and the monastery complex (16th–17th centuries).

It is proposed to carry out measures to restore the historic Dominican monastery and the Catholic Church of the Assumption of the Virgin Mary (16th–17th centuries) and the

Palace of V. Didushytsky (19th – early 20th centuries) (Fig. 13 – a). The possibility for the medical institution to be relocated from the former monastery building and adapted for hotel-recreational activity is under investigation, with the aim of contributing to the development of tourism in the former historical city. With regard to the lost historical defensive system of the monastery and the defensive system of the city centre, it is proposed to perform the excavations with the possibility of further exposure of the historical substance (Fig. 13 – b). The elements of the former defensive structures can be identified using preserved cartography and existing historical artefacts that have been identified in the area. There is an offer to mark the lost historical entrance gates and the lost historical monastery bell tower by installation of the individually designed signs-symbols (Fig. 13 – d).

One of the most significant elements of the historical urban structure is the Market Square, along with the town hall, which

today is almost invisible in the planning structure of the settlement. At present, only cartographic and descriptive information about these components is known, but we can also identify them on the site. Therefore, there is an offer to trace the perimeter of the lost historical Market Square of the 17th century and the town hall building (Fig. 13 – h). The tracing is proposed to be performed by paving the entire territory of the historical square with one characteristic type of paving stones, which will allow visitors to see the location and actual size of the historical Market Square with the town hall.

The restoration of the partially preserved terraced garden in the vicinity of the lost historic 16th-century castle will also allow visitors to experience the atmosphere of the historic town with its castle.

The next step in preserving and presenting the architectural-urban heritage of the historic town of Yezupil is the creation of a tour route of the iconic objects of the urban complex.

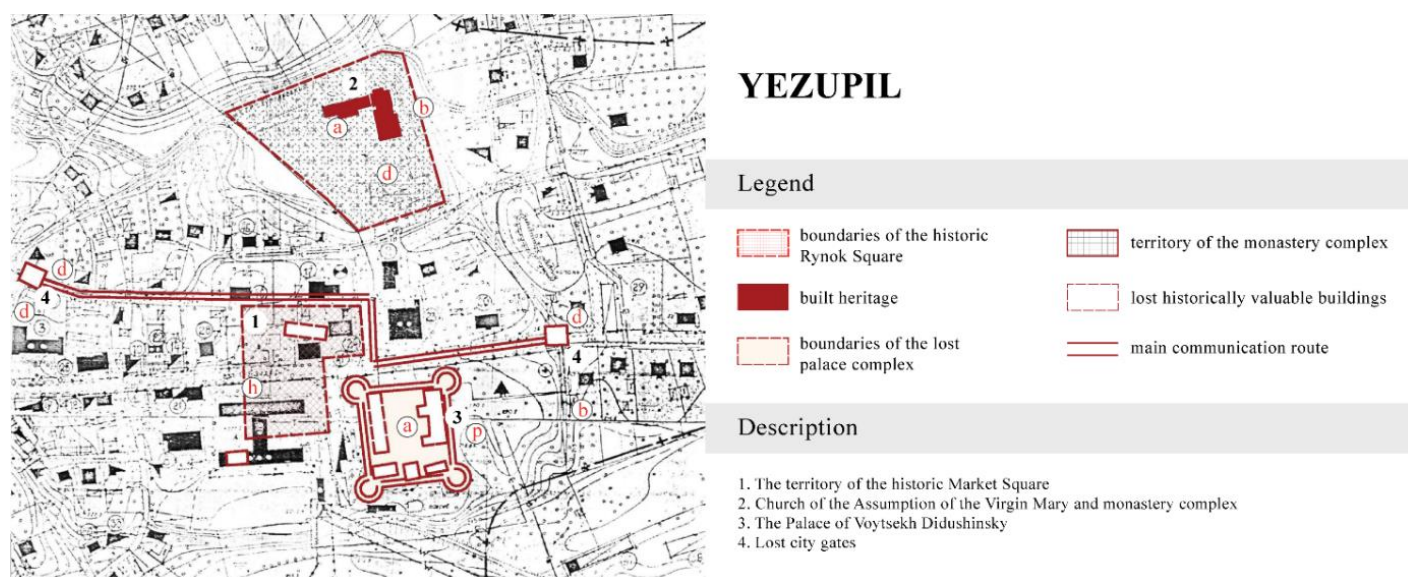


Fig. 13. Scheme of a set of measures aimed at the preservation, regeneration and restoration of the spatial planning structure of the historical center of Yezupil: a) conservation, restoration, and repair of valuable historical objects; b) uncovering the preserved authentic substance of the underground level of preserved valuable elements of the urban structure and their further exposure ; d) marking with symbols of lost elements of the historic city center, elements of the defense system, valuable historical objects; h) tracing historical outlines of lost elements of the volumetric and planning structure; p) recreation of historical garden and park compositions. Authors: Z. Lukomska, V. Berbets, D. Akparsheva

The present study developed a “Concept for the Fragmentary Restoration of the Historic Town of Kalush” based on the results of a historical-urban planning analysis, research of archival sources, and field surveys of the former city center (Fig. 14). Its aim is to preserve, promote, and actualize the historical-cultural heritage of the city through the gradual restoration of lost elements of the urban structure and fortification system, as well as the integration of these elements into the modern urban environment.

Stage I

This stage involves a series of measures designed to identify, record and initially define the lost elements of the city’s historical environment. Thus, this stage includes:

- performance of the archaeological and architectural-historical research in the former city centre of Kalush, in particular within the Heroes Square, Kovzhun Street, S. Bandera, Sichynskyy, Hrushevskyy, and Pidvalna streets;

- research of the remains of 16th–17th century fortifications, in particular the ramparts on Hrushevsky, Kovzhun, and I. Franko Streets;
- identification and record of the boundaries of the Starostyn Castle;
- initial marking with paving, lighting elements, and information stands (entrances to the Lviv and Halych gates, the gate to the farmstead, the location of the Church of the Nativity of Christ, the territory of the Starostyn Castle, Market Square, the location of the original wooden town hall, and the locations of the protobastions);
- creation of a basic excursion map of the historic downtown with the addition of lost objects;
- regulation of building height and elimination of disharmonious elements of city centre development;

Stage II

The second stage involves the partial spatial reconstruction of the historical elements using modern means of architectural interpretation. The following measures are planned within this stage:

- tracing of the lost quarters and defensive lines through the contrasting paving, landscaping, and light marking;
- recreation of the contours of Starostyn Castle, including labelling the castle well, inner courtyards, and the perimeter of the buildings;
- creation of an exhibition-museum space on the territory of the castle complex;
- marking of the lost town hall, market square, and quarter buildings of the historic downtown;
- uncover and exhibition of the archaeological level of the fortress city's defence system;
- creation of a system of themed routes using AR technologies and information stands;
- formation of the recreational-exhibition spaces on the site of the lost quarters (prefabricated metal-frame structures of a collapsible type)

Stage III

This stage involves the integration of the restored elements into the modern structure of the city and the formation of a holistic cultural-tourist environment. The measures of the third stage include:

- creation of museum-exhibition spaces based on the preserved and adapted historical buildings;
- introduction of interactive and digital solutions (AR, multimedia installations, information panels);
- creation of a holistic system of navigation and interpretation of the historical environment
- performance of work on the improvement of the existing park area, T. Shevchenko Square – creation of an observation area here that marks the lost protobastion.

KALUSH

Legend

	boundaries of the historic Rynok Square		valuable architecture
	built heritage		lost historically valuable buildings
	boundaries of the lost Starostinsky Castle		boundaries of the lost defense system of the fortress city

Description

1. The territory of the historic Market Square
2. St. Valentine's Church (built around the 15th century)
3. The lost Church of the Birth of Christ (16th-19th centuries)
4. Lost city gates

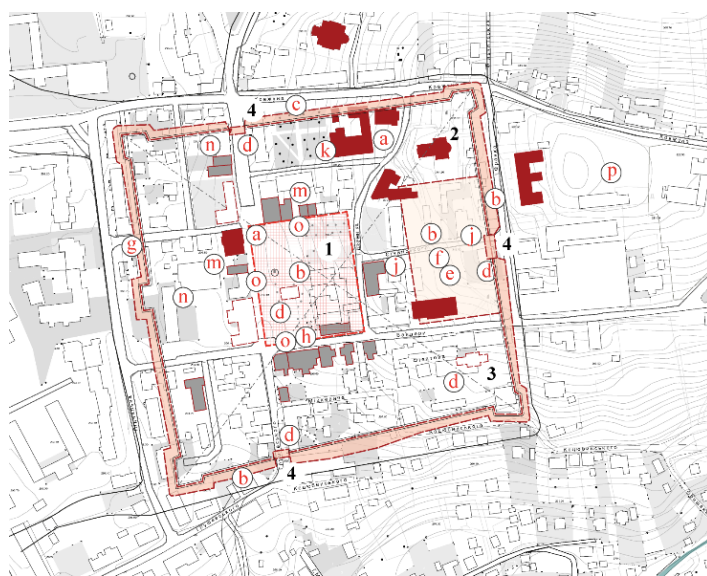


Fig. 14. Scheme of a complex of measures for the fragmentary restoration of the historical city of Kalush: a) conservation, restoration, and repair of valuable historical objects; b) uncovering the preserved authentic substance of the underground level of preserved valuable elements of the urban structure and their further exposure ; c) exposure of preserved elements of the historical environment; d) marking with symbols of lost elements of the historic city center, elements of the defense system, valuable historical objects; e) marking lost historical buildings with new structures; f) museumification of existing (newly discovered) elements of the historical layout structure; g) recreation of lost elements of the historical spatial layout; h) tracing historical outlines of lost elements of the volumetric and planning structure; j) adaptation to the modern function of valuable historical objects; k) restoration of historical function in valuable historical objects; m) recreation of the historical parceling of the quarter's buildings; n) reconstruction of inharmonious newly built structures in the historic city center; o) regulating the height of modern, inharmonious buildings in the historic city center. Authors: Z. Lukomska, V. Berbet, D. Akparsheva

The present study has also developed a “Concept for the revitalization of the historic fortress town of Okopy of the Holy Trinity (today the village of Okopy, Ternopil region)”, the aim of which is to preserve, restore, and revitalize the components of this valuable architectural-urban complex and draw attention to the current state of the fortifications (Fig. 15). The offered measures are based on a thorough study of cartographic and iconographic sources, field surveys of the object, and analysis of techniques used for similar sites and purposes. In order to preserve the site, a comprehensive application of heritage preservation methods and techniques is proposed.

Stage 1.

- Performance of archaeological research to confirm the existence, location, and parameters of the lost city fortifications within the boundaries of the historic fortress-city;

- Marking the lost parts of the western and eastern defensive lines with natural stone paving;
- Marking the historic boundaries of the city-fortress with a light installation;
- Restoration of the original spatial condition or marking the space with metal frames of the preserved fragments of the southwestern and southeastern ramparts;
- Construction of terraces with observation points on the site of the lost towers on the southern and northern borders of the city fortifications;
- Conservation of the preserved parts of the Kamyanets and Lviv entrance gates.

Stage 2.

- Reconstruction of the lost parts of the Kamyanets and Lviv entrance gates, preserving their original architectural-spatial form using modern materials;

- Arrangement of the necessary tourist infrastructure inside the Kamyanets and Lviv entrance gates;
- Arrangement of a recreational-entertainment open space in the vicinity of the Lviv entrance gate.

Stage 3.

- Inclusion of the object into the existing popular tourist route;
- Creation of a tourist route;

- Creation of an augmented reality application for viewing the theoretical reconstruction and studying the history of the city-fortress along the tourist route;
- Creation and development of social networks for the landmark;
- Creation of a brand for the landmark;
- Organisation of thematic events on the territory of the object.

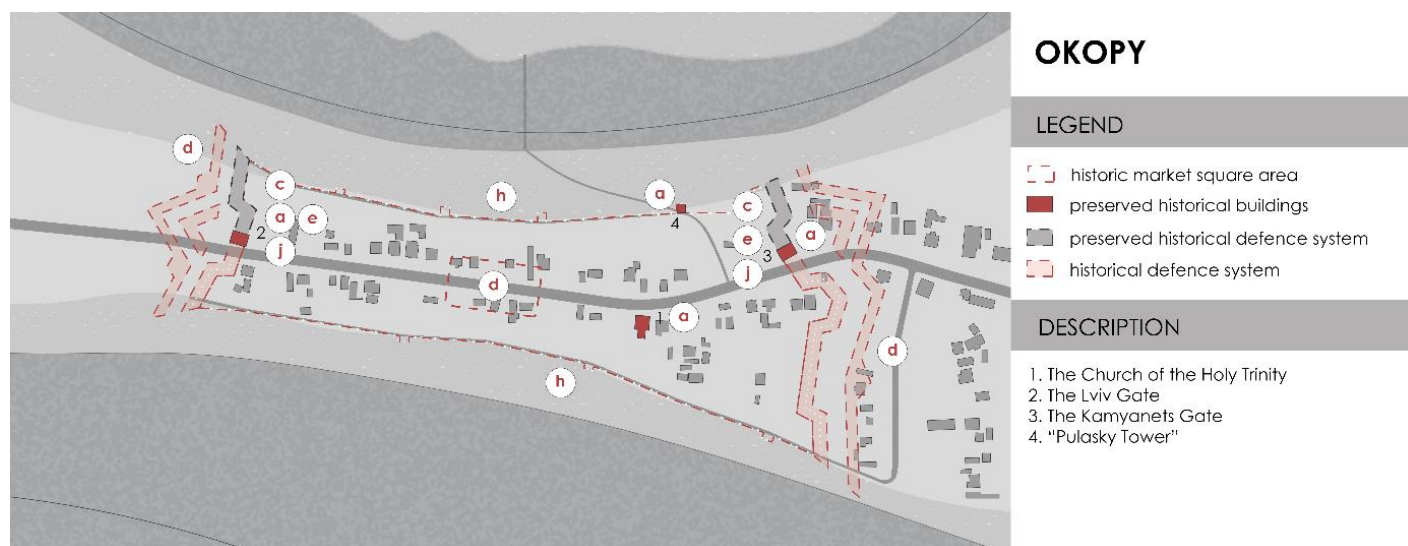


Fig. 15. Scheme of measures for the revitalization of the historical fortress city of Holy Trinity Trenches: a) conservation, restoration, and repair of valuable historical objects; c) exposure of preserved elements of the historical environment; d) marking with symbols of lost elements of the historic city center, elements of the defense system, valuable historical objects; e) marking lost historical buildings with new structures; h) tracing historical outlines of lost elements of the volumetric and planning structure; j) adaptation to the modern function of valuable historical objects.

Authors: Z. Lukomska, V. Berbets, D. Akparsheva

7. Conclusions

The article highlights the historical stages of development and peculiarities of the formation and decline of urban planning objects in Western Ukraine during the 17th–18th centuries, a period in which the region was part of the Polish-Lithuanian Commonwealth. For the first time, theoretical reconstructions of the planning structures of urban development objects for the period of the 17th–18th centuries have been developed and compared with the current state. Based on the abovementioned, general provisions for the regeneration of the proposed concept for the Programmes for the Protection, Preservation, and Restoration of valuable historical former towns (Yezupil, Kalush, and Okopy of the Holy Trinity) have been developed. These are the objects of varying degrees of preservation, which in the past had different functional purposes and individual paths of development. The key result of the study is a proposed comprehensive approach that involves the application of measures for the preservation, protection, and regeneration of the historical environment to all historical components of the cities. The study proposes the regeneration and restoration of the following: the former city centre, the defence system, palace-castle complexes, monasteries, and garden-park ensembles. It also offers the use of innovative approaches to enhance the status of monument-cultural significance of architectural-urban heritage through the use of methods of marking, museumification, and exhibition of the lost valuable historical objects from the 17th–18th centuries in the modern environment.

The implementation of the offered heritage protection measures will make it possible to do the following: an

investigation into the existing technical condition of historical urban planning objects; the elimination of negative factors causing the destruction of cultural heritage objects; an increase in the value of preserved historical buildings by actively involving them into public life; the preservation of the unique historical-urban environment and its adaptation to the modern needs of society; the performance of restoration; the partial restoration and marking of unique elements of valuable architectural-urban heritage that have been lost; the communication of the historical aspects of the region's development to residents and visitors of historic cities and the initiation of the process of fostering a culture of respect for architectural and historical monuments; the stimulation of the development of tourism as one of the main factors in promoting Ukraine's urban heritage.

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