

# Voice in the discussion about the original architecture of the Powder Tower and the 16<sup>th</sup> century third defensive line in the Lviv middletown

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**Abstract:** The Powder Tower was an integral part of the third defensive line, which was laid around the Lviv City Centre since 1522. The active phase of construction of the third line begins after 1527 (the Great Fire of Lviv) and continues until the end of 1540. Construction took place during twenty years when the city was exempt from paying taxes to the state royal treasury and could spend money on the modernization of fortifications.

In the article, we prove that the date of its construction should be considered 1522–1535 based on the analysis of the defensive parameters of the Powder Tower, its architectural and typological characteristics. Although in the literature most often we can find that construction of the tower was conducted in 1554–1556. In my opinion, at this time there could only be some kind of modernization of the building – the construction of an additional last tier, covering galleries or installing a roof over the entire building. A defence facility of such cubic capacity could not be built in 2 or 3 years. Therefore, given the Great Fire in the city in 1527, the following dating scheme looks very logical: the beginning of work – in 1522, completion – in 1535 and modernization – in 1554–1556.

The environment around the Powder Tower, in addition to the extraordinary value of architectural space, has preserved archaeological remains of a unique complex of fortifications of the XIV–XVI centuries. Improvement and architectural and landscape transformations of the territory around the Powder Tower should be considered as a complex regeneration of the eastern side of the fortifications of the Lviv city centre, which consisted of three defensive lines: a High wall (from the port Ruthenica, Mulyarska and Rymarska towers), a Low wall with three small bastei, the Third belt of fortifications. Unlike the Low wall, the third defensive line of artillery bastions surrounds the city centre on all four sides.

The third belt of fortifications had constant phases of modernization and reconstruction. After its construction in 1522–1540 and modernization in 1554–1556 and further reconstruction of its individual objects took place. For example, in the eastern part of the third line: the north-eastern rondel eventually became the Royal belleward; the empty Powder Tower at the beginning received the upper tier with machicolations, and later the roof; the Carmelite entrance was gradually transformed due to the standards of the defensive gate; the triangular bastei was rebuilt into a “fifth-form” bastion; the Royal Rondel in the south-eastern corner of the defensive belt received a high upper part.

**Keywords:** defensive architecture, XVI century, Lviv, Powder Tower, third defensive line

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## Introduction

Lviv historian Franciszek Jaworski, in a study of the Powder Tower published in 1905, extremely aptly noted that in no other corner of old Lviv can you feel the specific Lviv charm and ancient atmosphere, as being near the Powder Tower [6, p. 11]. In this unique place, the landscape is dominated by historical buildings that refresh memories of past centuries – the Kornyakta Tower, the Assumption Church, the dome of the Dominican

monastery, the royal and city arsenals, the silhouette of the Church of the Carmelites, The Church of Candlemas, the King's Arsenal and the City Arsenal, the palace of Catholic archbishops, the Church of St. Casimir, High Castle, buildings of Shevchenko Scientific Society, "Dnister" society, first Austrian gymnasium, and governorate. A whole crown of iconic historical buildings in Lviv. This place is a real architectural pearl of Lviv.

In the 1970s, in the Lviv cultural environment (in particular, in the Powder Tower, where was located Architect's House – the place of meetings of architects and artists), a "perception of the architectural environment and its emotional and artistic potential" was a popular topic of theoretical architectural discussions. These discussions were conducted by Igor Seredyuk, dean of the Faculty of architecture, and Viktor Kravtsov, associate professor, who often opposed him [2]. Experiments were conducted among students to "measure" the emotional potential of streets and buildings. We would like to bring these discussions back to the present time – the full commercialization of architectural thinking and find out if there is an awareness of the exceptional value of the Powder Tower along with its surroundings.

Today, the environment around the Powder Tower has completely lost its integrity. Chaotic tree plantings have obscured the view of neighboring monuments. The playgrounds created here have completely leveled the traces of ancient earthen fortifications. Parking for buses and cars is at odds with the historical potential and recreational opportunities of this space. Being here you do not feel at all that the building of the Powder Tower was part of a unique system of fortifications of the 16<sup>th</sup> century.

Therefore, the purpose of our publication is to shed light on the history of this place – the powder tower and the system of fortifications, as well as to justify the need for restoration and rehabilitation measures for the tower and its surroundings.

## Research and discussions

The Powder Tower was part of the third defensive belt of the eastern part of the fortifications of the Lviv city centre (middletown). We emphasize on the correctness of the term "tower", although, by the rules of fortification architecture, this type of building is intermediate between the bastion and the tower. Nevertheless, the term "tower", which has recently been used for the name of the object, is not correct from the point of view of military architecture. The original shape of our object had typical features of the bastion, and later, when its internal space began to be blocked, it became known as the tower.



**Fig. 1.** The Powder Tower in Lviv. Photo: [12] [uk.wikipedia.org/wiki/porochova\\_vezha](https://uk.wikipedia.org/wiki/porochova_vezha).



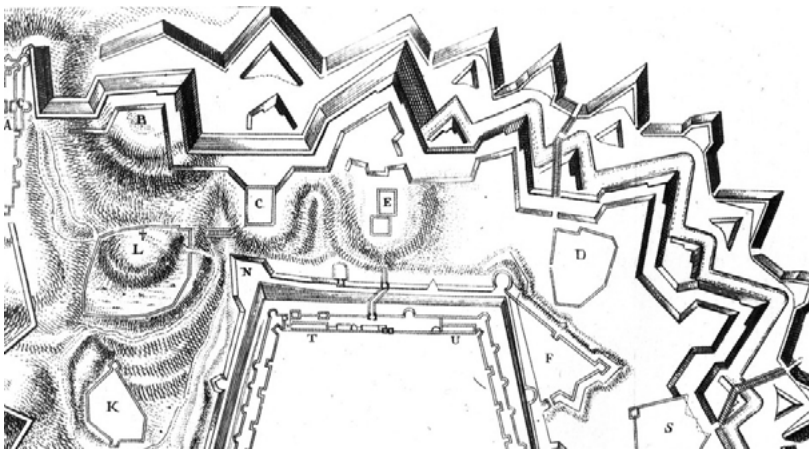
**Fig. 2.** The model reconstruction of the Powder Tower for the period of the XVII century by J. Witwicki [18]

The eastern part of the fortifications of the city centre was the most compound defensive complex, due to the peculiarities of the topography of the area and the greatest potential danger of enemy attacks from this direction. Trying to reconstruct the stages of development and architecture of this complex, you immediately

realize that it is a unique example of fortification art not only in Lviv but also in the cities of Eastern Europe. The complex of structures in this part was developed during XIV-XVIII centuries according to the traditional scheme: at each new stage existing fortifications were modernized and a new external belt was added. As a result, a specific complex of fortifications appeared and developed on the eastern side of the city centre, which consisted of five defensive lines.

The Powder Tower was an integral part of the third defensive line, which was laid since 1522. The active phase of construction of the third line begins after 1527 (the Great Fire of Lviv) and continues until the end of 1540. This is the period when the city receives a tax exemption. The date of construction of the Powder Tower is not fully clarified. Researchers W. Tomkewicz and J. Witwicki, who most deeply studied the history of the construction of Lviv fortifications, date the construction of the tower to 1522–1535 [15; 18]. The researcher of Lviv V. Vuytsyk also agrees with the date of 1522 as the beginning of construction [19]. But other historians often give the date 1554–1556 – T.Trehubova, R.Mykh [16], I. Krypiakevytch [7], O.Czerner [3]. This date is also presented in the four-volume book on monuments of urban planning and architecture of the Ukrainian SSR, the only illustrated catalogue-reference book about the architectural heritage of Ukraine [8].

Given the defensive features of the tower, its architectural and typological characteristics, I cannot agree with the dating of its construction in the 1550s. At this later time, in my opinion, there could only be some kind of modernization of the building – the construction or modification of an additional last tier, covering galleries or an entire building with a roof, or some other work. Here are several arguments in support of the earlier date of construction of the building.



**Fig. 3.** Fortification lines of the eastern part of the fortifications of the Lviv city centre in the project drawing of Y. Behrens in 1678. The project provided for the construction of a fourth bastion defensive line around the city centre. In addition to the detailed opening of the belt from the new bastions, the project has the designation of old defensive fortifications, in particular, the Powder and Strumilova bastions. The project also provides for the reconstruction of the so-called Royal semicircular bastion in the third line into a pentagonal bastion (Behrens designated it with the letter „N”).

A defence facility of such cubic capacity could not be built in 2 or 3 years. Therefore, given the Great Fire in the city in 1527, the following scheme of dating the construction of the Powder bastion looks very logical: the beginning of work – 1522; 1527–1528 – a break due to the fire of the city; 1529 – resumption of work and its completion in 1535; modernization of the tower – in 1554–1556. The main argument for such dating, in addition to the information given by W. Tomkewicz, we consider the urban-fortification factor. It is known that in 1522 the city began to build simultaneously along the entire length an additional third line of defence on the southern and eastern sides of the city centre. This line consisted of a rampart scarped outwards, a wide ditch and large bastions made of stone in several tiers, which were placed at intervals of 100–200 m. This line of defence was more advanced than the small bastions and towers of the Low wall and was focused on the use of artillery and hand firearms, plenty of which there were in Lviv at that time [15: 104]. The main role in this line was played by powerful bastions equipped with cannons. These bastions were round or horseshoe-shaped and were large stone two – or three-tiered objects. Sometimes, if they had a round plan shape and protruded somewhat beyond the front of the wall, they were called rondels. The rondel type includes the Royal corner bastion of the third defensive belt of Lviv. The beginning of the use of this type of fortifications should be associated in Lviv with the construction of barbicans at the Krakow and Galician gates at the beginning of the XVI century. In general, the construction of such a high type of bastions appears in the second half of the XV century in Italy, and the theoretical justification is found a little later in the work of Albrecht Durer [5].



In Lviv, eastern and southern horseshoe-shaped bastions were being built simultaneously. Imitating Durer's concept, they are placed in the middle of the parts. Southern bastion is known as Strumylva or Strumylka (Strumylka). The eastern one will later be called the Powder Tower. The Strumylka is identical in plan configuration and size to the Powder one. The width of the first is 19.5 m, the second has 19.5 m as well. The shape in the plan of both objects is also identical. Both objects originally had an "empty" interior, open towards the centre (Fig. 3, 4).



**Fig. 4.** Hypothetical reconstruction of the planning structure of the three lines of the eastern part of the Lviv fortifications as of the beginning of the XVI century (1522–1540), performed on a modern background (M. Bezv, 2020)



**Fig. 5.** Hypothetical reconstruction of the planning structure of the four lines of the eastern part of the Lviv fortifications as of the end of the XVIII century performed on a modern background (M. Bezv, I. Okonchenko, 2007) [1]

The city had the greatest expenses on the construction of fortifications in 1529–1532. The list of works that were carried out at that time includes the restoration of the gate and work on the Powder Tower, Shevska and Kramarska towers [15: 108]. Italian influences in the construction of Lviv fortifications in the 1520s were noticed by Tomkiewicz [15: 106], noting that the proposed flanking bastions were known from the works of Leonardo Da Vinci and Michelangelo and were already implemented in the early XVI century in the cities of Padua and Ferrari. Padua was a part of the Republic of Venice, and Lviv's ties with Venice were actively developing at this time.



**Fig. 6.** Plan of the central part of the Lviv city since 1780 by Fr. d’Ertel [10] (photocopy, M. Bevz). The Powder Tower by mistake is drawn faceted at the plan, covered with a roof, in contrast to the “empty” Royal bastion at the southern end of the third defensive line. To the left of the tower, the A-B line indicates the intersection along the defensive rampart and ditch. This cross-section is presented at the following illustration.



**Fig. 7.** Drawing of the intersection along the rampart and ditch next to the Powder Tower, which is presented on the plan of the central part of the city of Lviv since 1780 by Fr. d’Ertel [10]; (photocopy, M. Bevz). You can see that the plan was implemented to modernize the fortifications of the third line. The width and profile of the rampart are planned to be reduced; the projected rampart body is painted over. From the cross-section (A-B) designations, we can see that the height of the scarped wall of the defensive rampart reached 4 m, and the ditch was quite deep and had a stone counterscarp about 2 m high.

At the ends of the southern part of the fortifications of the third line, bastions are being built – the Royal Rondel (the corner with the eastern part, now its archaeological remains are located under the roadway of the street near the building of the city Department for the Protection of the Historic Environment) and the so-called Vuzheva (south-western corner).

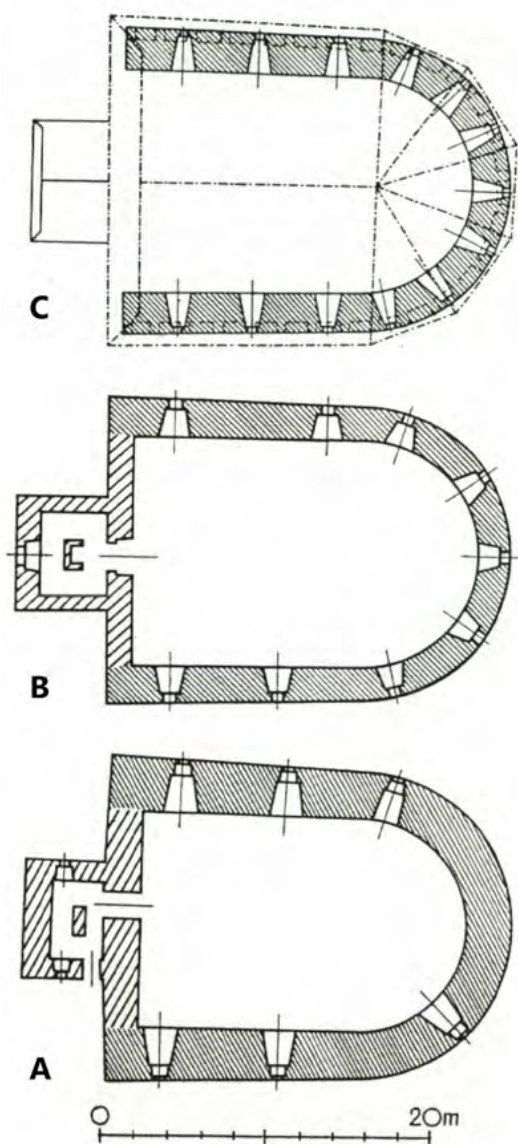
At the northern end of the eastern part of the third line, a circular bastion is first built, similar to an architecture of the Royal one. In 1672, in the project of building new fortifications of J. Behrens, it was planned to modernize it into a bastion form. It was carried out in 1685, when, on the instructions of Y. Sobieski, this bastion was radically rebuilt into a bastion-beluard, which receives the name “Royal” (Fig. 3, 4, 5, 6). There is a point to assume that in the middle of the eastern part, which was under a greater threat of attack, at the same time as the construction of the Strumylova bastion in the middle of the southern part, a large bastion similar to it is being built. The defensive schemes of these two parts were similar: in the middle, there was placed a high stone bastion with three tiers of defensive galleries, on the wings, there were placed lower round bastions with 1 or 2 defensive tiers.

According to architectural and typological features, the form of the Powder bastion is more suitable for the architectural forms that prevailed at the beginning of the XVI century [11], not in the second half of it. In Latin, this type of new fortification was called “Propugnaculum” and it meant a bastion or barbican [15: 105]. With this fact we want to connect another key argument in favour of the date of early construction of our bastion: in the chronicle of J. Zimorowicz in 1535 the existence of a “Propugnaculum praegrande” in the city is mentioned, in which gunpowder was stored [19: 105]. According to W. Tomkewicz, this mention concerns the Powder Tower, since only it could be described as a fortification (Propugnaculum) with the addition of “praegrande” (great)

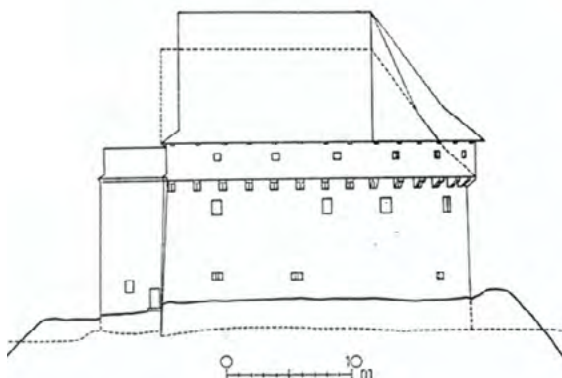


[15: 105]. I think, we should agree with the identification of Tomkiewicz, although sometimes historians associate this mention with the City Arsenal [15: 105]. The Arsenal building in Lviv was not a fortification, so it is debatable to call it propugnaculum.

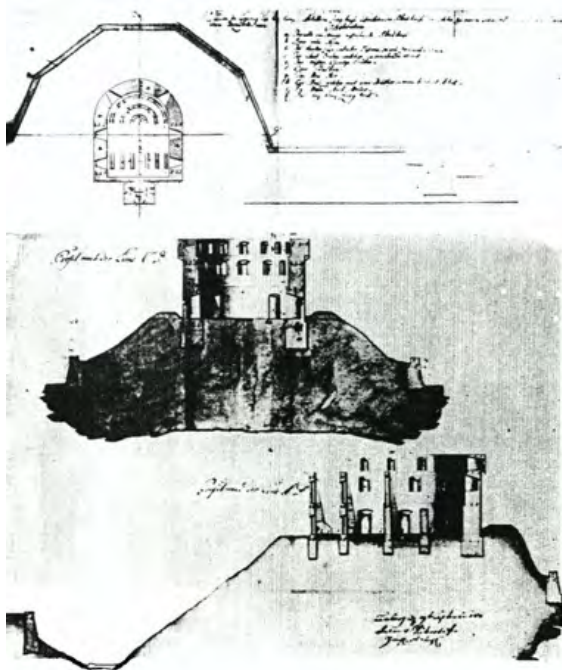
From the historical plans of the city, it is known that the Strumylova tower was always empty, it never had an overlap of the internal space or roof. The name "Propugnaculum praegrande" could only be applied to one of these two objects – either Strumylova or Powder Tower. Therefore, we should agree with the binding of this name to our object, since it was impossible to store gunpowder in the open space of Strumylova bastei. It was from this time that part of the inner space of our bastei was blocked for storing gunpowder, and it was from this time that the name "Powder Tower" was assigned to it.



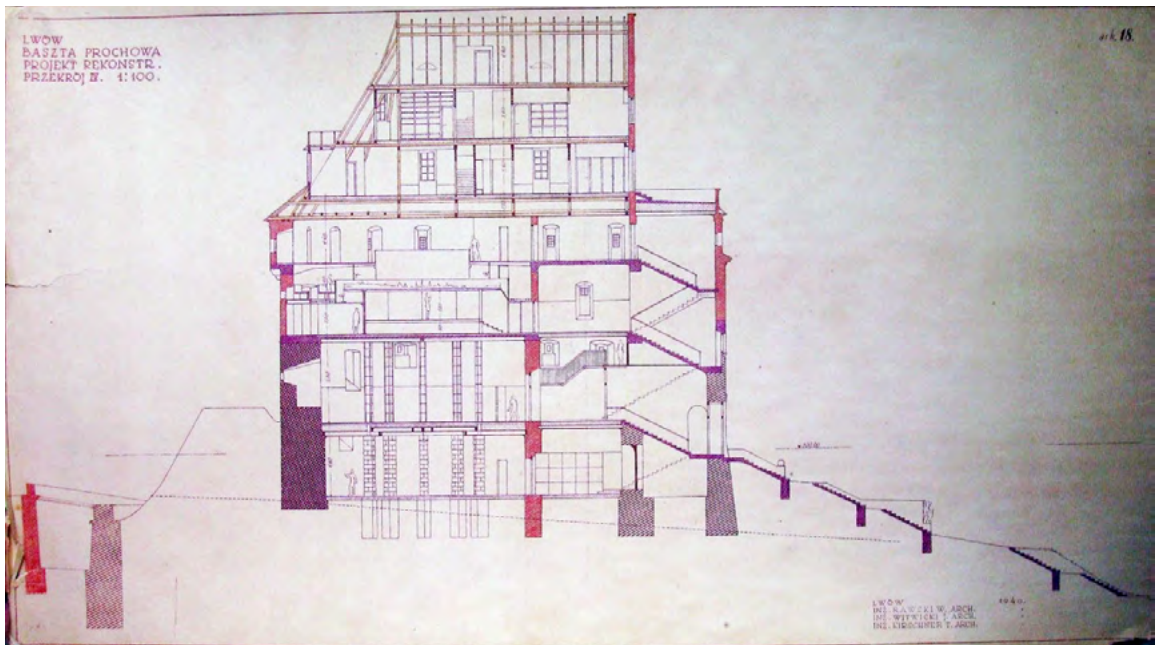
**Fig. 8.** Reconstruction plans of three historical tiers of the Powder Tower by J. Witwicki, A – the plan of the first tier with 6 loopholes; B – the plan of the second tier with 9 loopholes; C – the plan of the third tier with 13 loopholes [18: 164]



**Fig. 9.** Reconstruction drawing of the southern facade of the Powder Tower by J. Witwicki [18: 165]



**Fig. 10.** Drawings of the plan and transverse and longitudinal sections of the Powder Tower building since 1784 (the Lviv city archive [18: 165])



**Fig. 11.** Project of restoration of the Powder Tower and its adaptation for the exposition of the model of mediaval Lviv; 1940, architects W. Rawski, J. Witwicki [13]

Another argument in favour of completing the construction of the Powder Tower in the 1530s is the history of the construction of the south-western bastion Vuzheva. From the documents it is known for sure that it was finished in 1540 and its construction was carried out to restore the city's fortifications after the fire of 1527 [15: 108]. But it already has a more modern faceted five-pointed protobastion shape – the so-called *puntone* (Fig. 4, 5). It was built after the fire in Lviv, between 1527–1540. That is, the bastions, which were laid after 1529, already had slightly different architectural, planning and fortification parameters than those that were laid in 1522. A similar phenomenon can be observed near the Powder Tower, when here, after the construction of Carmelite Church and the construction in the 1630s in the third defensive line of the gate, a little to the south of it, the bastion “*pyatta-forma*” was erected (Fig. 3). Initially, there was a small triangular bastion, which is indicated on the plan of J. Behrens (Fig. 3, 4).

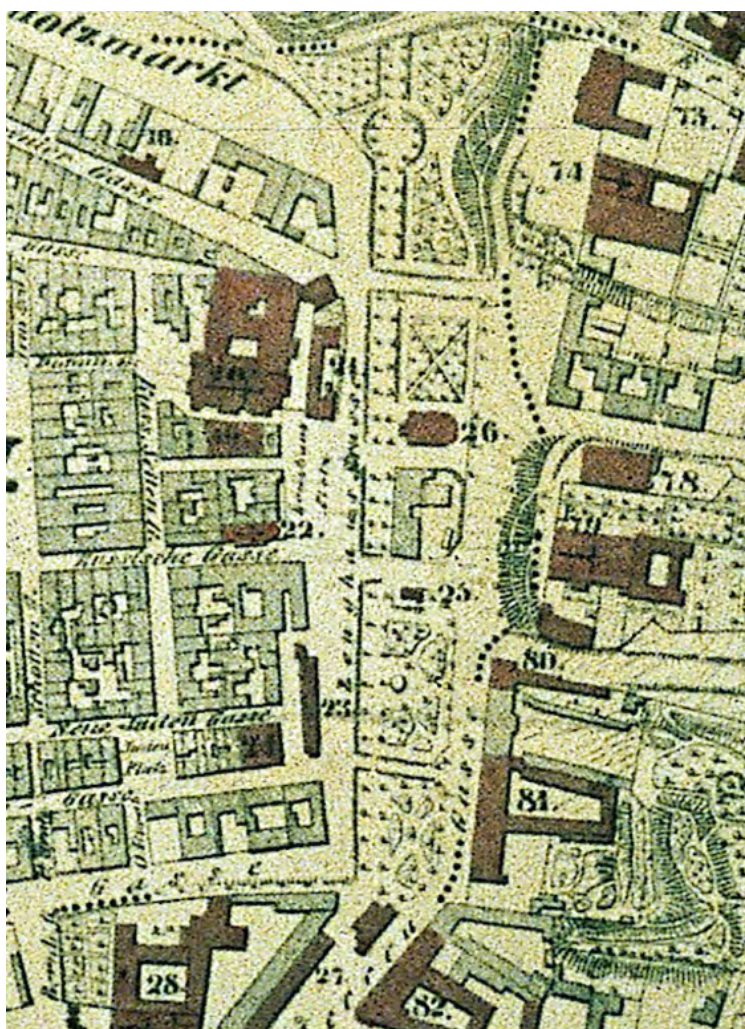
Therefore, we should support W. Tomkewicz's version of the earlier date of construction of the Powder bastion in 1522–1535. Together with Strumylka, they defended the most defensively dangerous eastern and southern parts of the city's fortifications. It is important to note another defensive feature of these two objects as the most powerful in terms of defensive parameters, they are placed in the middle, not on the corners. This is an important feature, which is a confirmation of the early laying of objects, at the beginning of the XVI century. Later, the most powerful objects begin to be built in corners and cornerstones in places where defensive lines turn and break. Bastion has a horseshoe-shaped plan and had originally an open interior space with two tiers of wooden defensive galleries. The walls are made of hewn and broken limestone on a strong lime filling. Loopholes are partially preserved in the walls. The loopholes were originally located in three tiers: 6 loopholes in the first tier, 9 in the second and 13 in the third [6]. Dimensions of the building: length – 24 m, width – 19.5 m, thickness of the walls 3 m in the lower and 1.9 m in the upper part [9: 88]. The upper fourth tier of the tower has not been preserved (Fig. 11). It protruded in the form of machicolations on crockstins along the entire perimeter of the structure approximately 0.7 m beyond the outer plane of the wall (Witwicki [18]). Machicolations in the Italian style were stone, as indicated above, on profiled white stone brackets located at intervals of approximately 0.9–1 m. In 1954, the interior of the building was reconstructed, and in 1959 it was adapted to serve as a residence of the Union of Architects. This project has a character of the reconstruction of the object, not its restoration. The previous project of adaptation of the Powder Tower for the function of museum was much more perfect from the restoration point. Designed at 1940 by W. Rawski and J. Witwicki (Fig. 11).



In 1973, some restoration works were carried out: the external walls were cleared of plaster, loopholes were opened and restored, inauthentic windows were partially bricked up, and later windows were cut through [9].

The author of the third line of fortifications of the Lviv city centre, a part of which the Powder Tower is, unfortunately, has not been identified, although there is no doubt that it was professionally designed as a single fire complex for hand firearms and heavy and gross artillery. It can be assumed that the author was one of the Italian builders who dominated in the construction affairs of the city in the XVI century. It would be possible to try to identify the author by very meticulous analysis of authentic white-stone details of the tower: loopholes, consoles, corner blocks of openings, etc.

The third defensive line has been upgraded several times. Analysis of the active period of its functioning shows that it was an external element, but an integral part of three defensive belts that interacted in creating an impregnable barrier to the city centre. The last attempts to modernize it date back to the Austrian era at the end of the XVIII century (Fig. 7). A detailed reconstruction of the development stages of the eastern part of the city fortifications with the „porta Ruthenika” gate is still waiting for its researcher, despite most of the work already done by his predecessors (W. Tomkewicz, J. Witwicki, V. Vuytsyk, O. Czerner, J. Loboeki, M. Bevz, I. Okonchenko, Y. Dubyk, U. Pikhurko, etc.) [1, 4, 15, 18, 19]. No less interesting is the history of the site of the eastern part of fortifications after their dismantling at the beginning of the XIX century. In 1821, a well-maintained system of squares with a promenade was created here (a project commissioned by the official Raitsenheim), and the first Austrian gymnasium was built (Fig. 12). With the construction of the governorate building, the squares were modernized into a park and it is called the Governor’s ramparts [4].

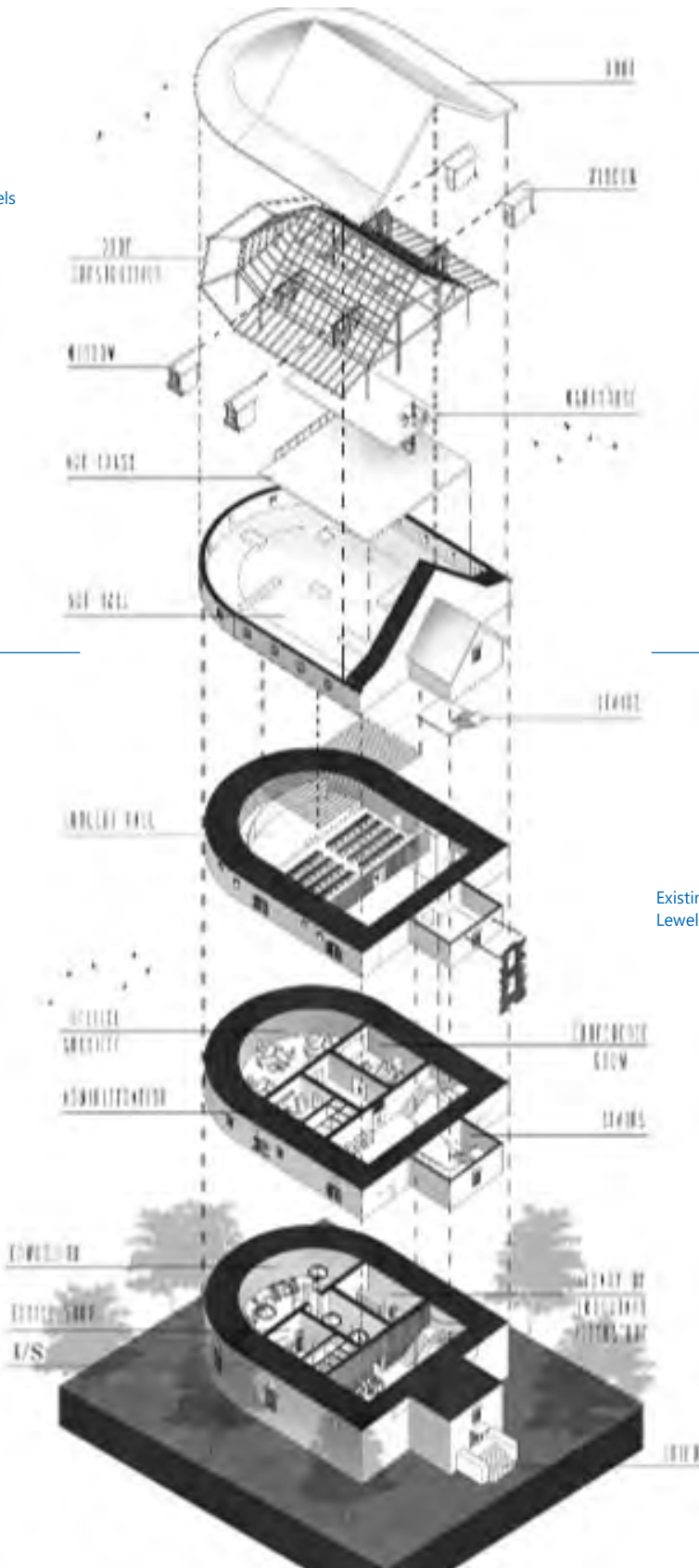


**Fig. 12.** Powder Tower in the planning structure of the park and promenade authored by Raitsenheim in 1844 (the plan of the city of Lviv in 1844, Military Archive of Austria [8], photocopy by M. Bevz). The round park square is marked in the northern wing of the «Governor’s ramparts» promenade. This round square appeared in our opinion because the dismantling of the remains of the royal bastion revealed the 16<sup>th</sup> century foundations of the round bastion-tower.



New Levels

Existing Levels



**Fig. 13.** The restoration concept of the Powder Tower with the reproduction of the lost fourth tier (2019; diploma project, Lublin Polytechnic; Dmytro Plesnytskyi; supervisors: prof. B. Szymgin, prof. M. Bevz)

In 1890, the magistrate proposed a Powder Tower, which stood in ruins, with the surrounding area as a place for the construction of a Ukrainian theatre. This proposal was not accepted [9], but since that year a summer theatre has been built on the site of the grand beluard. Subsequently, it was planned to rebuild the Powder Tower into a city archive and a museum with a lapidary (projects of architects M. Lużecki and K. Mokłowski, 1896) [14]. It was also planned to erect a monument of T. Shevchenko, at the end of the XIX century. At different times, projects were born to dismantle the tower and build other buildings here. In the 1880s, the tower was saved from disassembly only thanks to the protests and perseverance of the conservative W. Łoziński.

In Soviet times, a highway with an entrance to the tunnel was supposed to be here to allow traffic flows under the High Castle. Fortunately, these projects were not implemented. Recent projects include the idea of building a cable car lift station to the High Castle in the northern part of the ramparts (on the site of the former Royal bastion). If this proposal was combined with the restoration of fragments of the third defensive line and the Royal bastion and did not have a traction node, it could be considered. The function of the Powder Tower building as the centre of the National Union of Architects of Ukraine is very suitable for the object. The tower building, which was specially reconstructed and adapted to this function, already has its own "union" history [14]. There is no doubt that this feature should have remained in this unique monument. Still, the object needs restoration. It would be necessary to better adapt the building to modern needs and perform a restoration reconstruction of the lost fourth tier with a machicolation belt (Fig. 8, 9, 10, 13).

## Conclusions

As a conclusion we want to express the following:

The Powder Tower is unique in architecture life-size fortification object of medieval Lviv that has been preserved. It is a representative of the defensive architecture of the XVI century, an element of the third (out of five) belts of fortifications of the Lviv city centre. The architectural value of the object is not limited to Lviv. There are very few preserved relics of urban fortifications in Ukraine. Their presence is extremely rare. The Powder Tower represents a specific type of military architecture, analogues of which can be found in Ukraine only in Kamianets-Podilskyi. The Powder Tower, as a unique memorial defensive structure, should become the object of professional restoration work.

If we agree with the date of the beginning of the construction of the Powder Tower in 1522, then soon the architects will celebrate the 500<sup>th</sup> anniversary of the construction of the only preserved monument of fortification architecture in Lviv. A worthy celebration of this date would be a professional restoration of the monument with the reproduction of the lost machicolation tier.

The environment around the Powder Tower, in addition to the extraordinary value of architectural space, has preserved archaeological remains of a unique complex of fortifications of the XIV-XVI centuries. Improvement and architectural and landscape transformations of the territory around the Powder Tower should be considered in the complex of regeneration of the eastern part of the fortifications of the city centre of Lviv, as an architectural and archaeological complex of three defensive lines. The task of improving the territory of the former Governor's ramparts cannot be realized without museumification of unique defensive structures and the development of underground space full of archaeological sites. An important element of activity for professional transformation and revitalization of the environment is to conduct extensive archaeological and architectural research throughout the former ramparts.

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