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Evolution of the buildings layout of the Lviv Main Railway Station

Abstract. The architecture of railway stations is determined by social, economic, technical, military, historical, cultural, and other factors. Their actions occur constantly, but after certain periods, more radical changes take place through the reconstruction and development of the building substance of the stations. Understanding the value of historical structures must be consistent with the inevitable social and transport changes that occur everywhere and are reflected in the architecture of railway stations, in particular, through the planning structure. The purpose of the study was to identify the development of planning properties – based on horizontal projections of structures – of two historical buildings of the Lviv Main Railway Station in its further use. For this purpose, general scientific research methods were used in accordance with architectural studies. Based on archival materials, literature sources and field observations, it became possible to conduct the research and draw conclusions. Different levels of two buildings of the Lviv Railway Station were analysed and compared. Planning schemes, communication, and sequence of premises of these buildings, and their connections with the platform (tracks and landing platforms) and with the station forecourt were described. It was noted that already in the first building of the station, the features of functionalism were manifested as a concept of the primacy of processes in determining the layout and the whole construction shell of the structure; the second building continued this concept. Options for using an underground pedestrian connection between the platform of the existing second building of the Lviv Main Railway Station and the platform of the Suburban Railway, and their connection with the main street and one of the historical sites of Lviv separated by tracks, were considered. Underground pedestrian connections form a public space that has a large resource, including for temporary protection from air threats. These considerations are based on the evolution of historical railway stations in major European cities. The practical significance of the study was the established ways of further possible development of the architecture of the main railway station of Lviv in the historical concepts and schemes based on the directions and trajectories of pedestrians and transport

Keywords: railway; platform; station; tunnel; passenger

INTRODUCTION

The railway plays a huge role in passenger traffic. Its stations are a place of contact between the carrier and the

public and the means of architecture in an urbanised space. There is a need to respond to user requests, technical and

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technological innovations, social and artistic preferences, economic and political challenges, and the need to protect and care for the historical substance of existing historical railway stations. In Ukraine, the vast majority of railway stations are of historic origin, including the Lviv Main Railway Station. Achievements in architectural thought and construction activities require professional understanding and appropriate actions regarding the building of railway stations in the face of constant changes, which makes this study relevant.

The paper by M. Nazaruk & O. Misiura (2019) examined the spatial structure of railway station in Kovel, where, among other things, the multi-level layout of the building was analysed, which was based on characteristic features: symmetry, massiveness, wall division, etc. The paper by M. Nazaruk (2021) marked the architecture of Holoby and Kovel railway stations by architect O. Verbytskyi. It was noted that they contain similar planning schemes, where a large passenger hall and a waiting room acquire dominant importance in communication with other rooms, and influence on the overall structure layout. Given the two-level station building in Kovel, its planning is more complex, which to some extent brings it closer to the planning of the second building of the Lviv Main Station. These planning properties were typical of the new station buildings of major cities in the 1900s, allowing underground access to the platform.

Y. Rotchniak (2023) examined the layout of railway station buildings in Western Ukraine, noting changes in the design of railway stations from different historical periods of the country. At their core, they are closely related to the planning basics. A number of papers consider to the connection of railway station planning as part of railway station complexes with the urban planning context. In particular, I. Dreval (2019) investigated the actual problem of the existence of railway station complexes in Ukraine as important structural and functional elements of a modern city. Based on the analysis of world experience, significant features of the architectural and urban planning organisation of modern railway station complexes in functional, transport, compositional, economic, and ergonomic aspects are revealed.

V. Timokhin *et al.* (2023) noted that in the construction of underground spaces of transport and transfer hubs, efficient use of land resources is achieved to release the territories of pedestrian squares, delineation of transport and pedestrian flows, organisation of shortest routes to various types of transport and evacuation when used as a shelter, etc. Planning schemes of railway stations were discussed in the study by Y. Rotchniak (2021), where the researcher pointed to the connection and mutual subordination of these levels. Planning schemes, together with inter-level connections, form the general planning characteristics of railway stations, and are the basis of forming processes.

Philosophical and cultural foundations are provided in the monograph by R. Kellermann (2021), which deals with the phenomenon of “waiting” on the railways. The categories of “time”, “waiting” and their feelings and experiences

also unfold in railway station spaces. The historical development of railway station premises reflects the dynamics of these categories in the period 1830-1935. The acceleration of the processes of movement of modern times opens up a field of research, and in particular, this applies to the planning properties of station structures. Professional achievements are presented in publications about the most successful and well-known railway stations. In particular, J. Gympel (2020) demonstrated and commented on the most beautiful railway stations in Germany as a reflection of the architecture of different eras.

It is not only the architecture of the historic railway station buildings themselves that is important, but also their connection to the station squares and platforms. With the increase in the number and length of pedestrian connections of the station, it is moving to the level of urban planning studios. The aim of the study was to establish the features and patterns of changes in the planning of historical buildings of the Main Railway Station of Lviv and outline the directions of future development of its planning on functional, social and other grounds.

MATERIALS AND METHODS

The materials for the study were published scientific sources on the problems of research (articles, monographs), drawings and texts from the Central State Historical Archive in Lviv (Foundation No. 248); photo recording of the object of research, its analogues (own photos of the authors, postcards) and direct observations of real objects. The use of these sources has created a fairly broad basis for further study on this topic. The paper uses some of the general scientific research methods – empirical (observation, description) and theoretical (analysis, abstraction, generalisation, explanation), which were carried out in the field and desk conditions.

The analysis of historical data and observations was used to determine temporary changes in railway station buildings based on finding out the economic, political, military, and other background. The description of the elements and their connections allowed organising the system and concluded an understanding of the object under study. Comparison of drawings of building level plans and the territory of the railway station allowed tracing the emergence and development of functional and social concepts of the structure of station space. Communication with the urban planning environment has influenced and continues to affect the patterns of pedestrian and other transport movements (carriage, tram, car, bus, suburban lines) around railway station buildings. The comparison method made it possible to contrast drawings of railway station buildings and their urban planning and transport bases.

The use of a systematic approach identified the existence of functional connections of elements of the station building through a set of connections, abutments and penetration of architectural spaces (premises). At the same time, the model of social separation in relation to employees of the station (station), classes of passengers, and



customers was considered. This helped to establish schematic diagrams of combinations and delineation of these elements. They formed a stable structure, which was implemented by means of architecture and construction.

Direct observations of the latest objects, which are analogues (time, historical, geographical, typological) to those under study, confirm the assumption of the need to use extrapolation of pedestrian connections of the historical Lviv Main Railway Station with other public facilities in the urban planning background. The development of the station building and adjacent territories was considered in comparison with the analogues of planning railway stations in European cities.

Modelling of possible future pedestrian connections between the building and the platform of the Lviv Main Railway Station is performed graphically based on the latest photography of the area of the railway station in a fragment of the Western part of the city of Lviv. However, the established principal lines of ground and underground connections will require proofreading if other factors are involved and after additional research. It should be noted that railway stations are strategic objects, which implies certain restrictions in access to information about them. All data presented is based solely on available public sources and surveys based on the movement areas and places of permitted stay of citizens.

RESULTS AND DISCUSSION

Initially, the railway connection of Lviv was concluded in general directions to the West (Lviv-Przemysl-Kraków-Vienna, 1861), to the South-East (Lviv-Stanyslaviv-Chernivtsi-Suceava, 1866/1869) and to the East (Lviv-Krasne-Brody, 1869; Krasne-Ternopil-Pidvolochyska 1870/1871). In total, by 1910, the railway junction of Lviv was formed with nine directions of tracks along with branches. The railway station is located in the West of the city centre of Lviv, and in the Eastern part of the station there is a passage to Suburban railway (Hrankin *et al.*, 1996; Basarab, 2008).



Figure 1. The first building of the Lviv Railway Station of the Carl-Ludwig Bahn

Source: J. Purchla (1997)

The first building of the Lviv Railway Station of the Carl-Ludwig Bahn was constructed in 1860-1861 with the participation of the architect and railway manager Ludwik Wierzbicki (1834-1912), based on the motifs of a medieval castle and in the style of the then common round-arch architecture (Rundbogenstil) (Kotlobulatova, 2007). In 1860-1870, the same architectural design of typical buildings of different sizes created a single artistic image of the stations of a separate railway company from Lviv through Khodoriv, Halych, Stanyslaviv, Kolomyia, Chernivtsi to Suceava and to the cities of Roman and Botoşani in modern Romania (Hrankin *et al.*, 1996).

The layout of the first two- or four-storey building of the Lviv Railway Station is based on a longitudinal symmetrical ridge-shaped shape, 162.16 m long, which is based on a rectangular through corridor scheme with two service entrances at the ends. Communication with the landing platform for passengers existed through weakly defined transverse passages (entrance – on the left, exit – on the right), which simultaneously formed separate expressive symmetrical four-story blocks in the overall layout. The scheme of the main axes of movement along the corridors in the building body approached a complicated U-shape with a strong elongation of the horizontal link. In the layout of the departure lobby (entrance left, Southern wing), there is an attempt to add grandeur to the design of the main staircase along the entrance axis, and symmetrical double cash windows around the lobby. At the same time, the exit to the landing platform shifted from this axis, dividing into the movement of passengers themselves, and separately their luggage. There were also exits to the platform from other rooms. The arrival lobby (right, Northern wing) had a simple view of the passageway. With two entrances and exits to the station building, two symmetrical covered entrances for horse-drawn carriages were arranged in front of the risalits. The entrances had large terraces on the second floor, which generally gave the impression of a parade of this structure. On the upper floors of the station building there were office premises (Fig. 1-3).

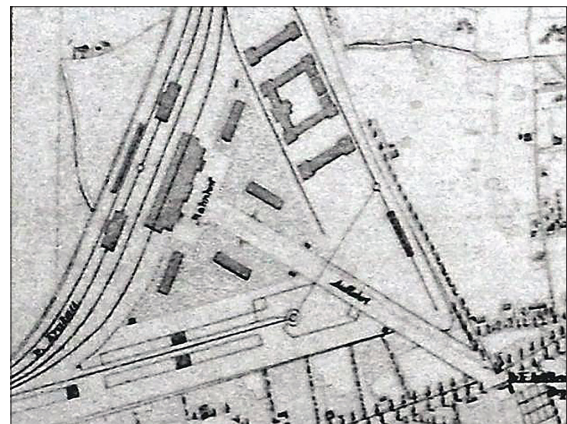


Figure 2. The first station of the Carl-Ludwig Bahn on the map of Lviv

Source: J. Purchla (1997)

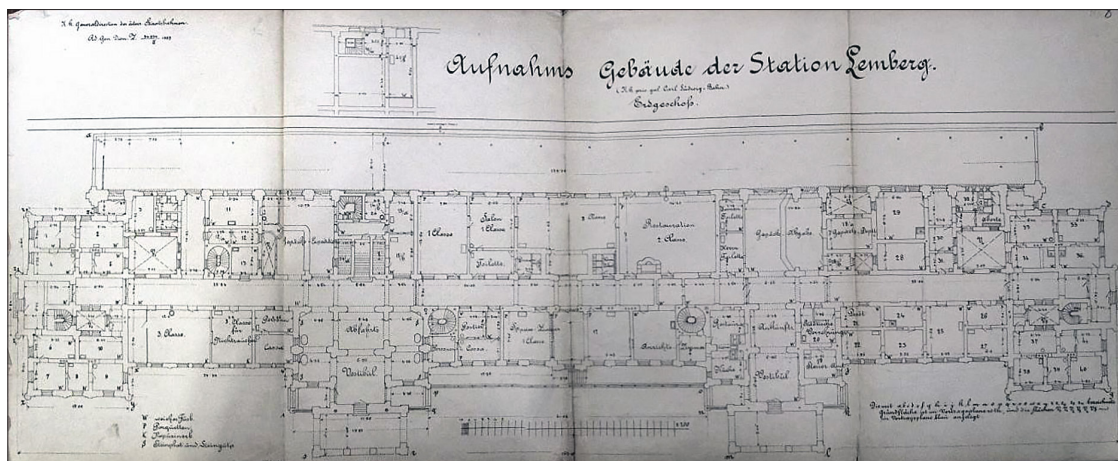


Figure 3. Plan of the entrance level of the first building of the Lviv Railway Station of the Carl-Ludwig Bahn
Source: Central State Historical Archive of Ukraine in Lviv (n.d.)

There was a regulation in the movement to and inside the station building, which was based on functional zoning of space and on the social division of passengers. In the project of the building, there was a list and interaction of the following components: 1) directions of movement to the platform and opposite to the station square (corridors); 2) distribution of movement of persons and their luggage separately (corridors); 3) division into passenger rooms and service rooms (halls, rooms); 4) division of passengers into 1st, 2nd, 3rd classes (ticket offices, waiting rooms, restaurants); 5) division into women's and men's rooms (toilets); 6) division into smokers and non-smokers (waiting rooms). The named users, processes, and spaces were ordered in a rectangular cell layout of the building and had logic in positioning, combination, and sequence. In its essence and in the layout of the first building of the Lviv Railway Station, the ideas of functionalism are manifested. These components fit into the regular layout scheme and into the forms of the usual round-arched manner of window and door openings with decorative elements of plastic facades of the era of historicism. The facade hides the processes and rooms enclosed inside.

The station building was connected to the first track through an adjacent (frontal) passenger platform with a length of 139.36 m. In fact, the platform was limited to three tracks and this landing platform with a sloping roof covering within the building. Such contact with trains, the layout of the station building met the needs in 1860-1890. The second building of the Lviv Railway Station (later – the Lviv Main Railway Station) was built in 1901-1904 in a palace character according to the project of Władysław Sadłowski (1869-1940) and other architects, artists and entrepreneurs (Biriulov *et al.*, 2008; Kubinski, 2009).

On the site of the dismantled previous building, a new one was built (159 m×29.75 m), with central and two side symmetrical risalit blocks with domed finishes in artistic techniques of historicism and early art nouveau. The platform with a length of 218.45 m on 8 tracks with 4 passenger and 4 luggage platforms is raised to the level of the second

floor of the building and covered with two arched floors with cylindrical metal-glass coverings of the platform (landing stage) with a width of 2×33.5 m (Fig. 4, 5). Since the end of the 19th century, the station area received two tram terminals along its edges on both sides of Chernivetska Street, the axis of which rests almost perpendicularly to the plane of the main facade at the entrance of the central risalit of the station building.



Figure 4. The second building of the Lviv Main Railway Station
Source: J. Purchla (1997)

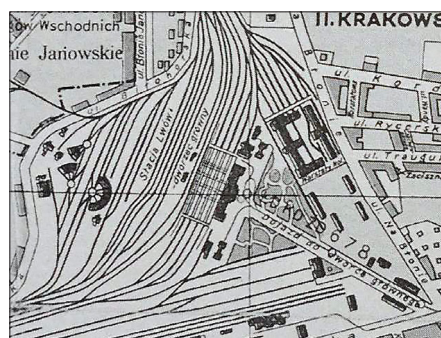


Figure 5. Main Railway Station on the map of Lviv, 1925
Source: J. Purchla (1997)



In the layout of the station building, the longitudinal shape of the initially one- or three-storey building along the tracks is based on a rectangular scheme with three front entrances on the main facade and additional service entrances at the ends of the building (Fig. 6, 7). The left (Southern) front entrance, as well as a whole two-story risalit block with an internal grand staircase, was intended for receiving and staying “for the Highest” (“für die Allerhöchsten”). Outside, not far from the building, an elevator was designed from the level of the square to the level of the first passenger platform. The main entrance is exactly along the axis of symmetry of the entire building through the lobby and a spacious cash register and continued with a direct tunnel for sending luggage (as of 2024, it is not

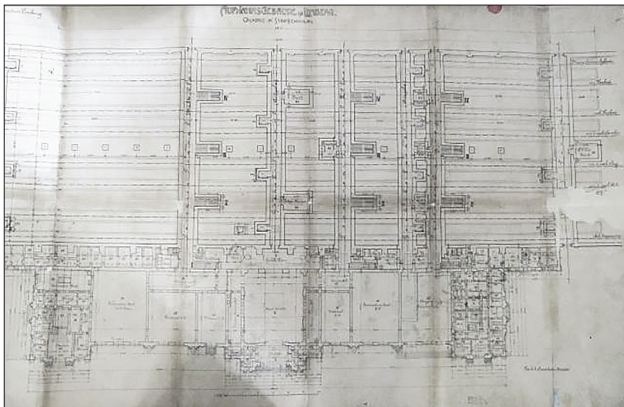


Figure 6. Fragment of the plan of the first (entrance) level of the main hall of the Lviv Railway Station

Source: Central State Historical Archive of Ukraine in Lviv (n.d.)

Thus, five tunnels from the level of the suburban area were connected through the building with a high platform, and two more tunnels outside the building had a direct connection between the square and the platform: the postal tunnel on the right and the Eilgut-Tunnel on the left. All of them were through, connecting from the East the station forecourt, the station building with the rest of the railway station in the West direction. It is noteworthy that all passenger landing platforms were connected to tunnels by stairs, and all baggage platforms were connected by elevators to baggage (service) platforms located through one of the passenger platforms. Consequently, there were no intersections of passenger and baggage lanes on the platform.

Regulation of processes and movements in the building and on the platform according to the project was coordinated with the movement of trains in their directions. The first track was intended for departure to Chernivtsi, the second – for the arrival of trains from Chernivtsi, the third – departure/arrival to/from Bełżec (Rava-Ruska direction), the fourth – departure/arrival to/from Stryi, the fifth – departure/arrival to/from Sambir, the sixth – to Kraków, the seventh – from Kraków, the eighth was a shunting track. It should be assumed that the composition

valid). Passengers of 1st and 2nd classes moved through another tunnel despite 5 ticket windows on the left in the hall, and passengers of 3rd class – through a tunnel despite 5 ticket windows on the right. The right (North) front entrance to the building was located to the left of the extreme risalit block and continued through the lobby with two more tunnels: a tunnel for receiving incoming luggage (as of 2024, not valid) and a separate passenger tunnel. The right risalit block, unlike the other two risalit blocks, did not have a direct frontal entrance to itself. In this block, the premises of the railway, postal, medical, police and tax services were located on two floors in the corridor-enfilade planning scheme. The third level of two side risalit blocks contained service housing.

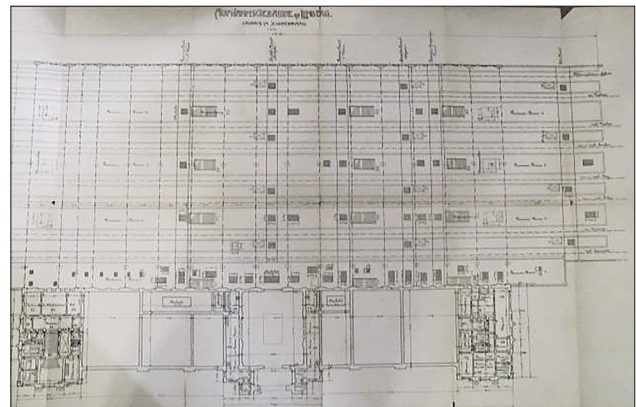


Figure 7. Fragment of the plan of the second (track) level of the main hall of the Lviv Railway Station

Source: Central State Historical Archive of Ukraine in Lviv (n.d.)

of trains would have to be coordinated with the placement of train carriage classes with exits to the platforms to the tunnels of the respective classes.

In the second building of the station, the role of the platform has significantly increased – due to the separation of the platform and sub-track crossings in two levels of construction, a comprehensive approach has been implemented in the preparation, boarding/disembarking, loading/unloading of baggage and mail of passenger trains (Hofer *et al.*, 2010). This is more efficient than the first building and is well expressed in planning. The planning unit “room”/“hall”, which was dominant in the first station building, is significantly supplemented by another planning unit – “passage”/“tunnel”. The size of passenger rooms has significantly increased, service rooms have been moved to the upper levels; spatial ordering has increased. The ideas of a functional approach continue to develop, and in social terms, the “highest” category of passengers is added – In fact, there are four classes of passengers. At the same time, as in the previous building, there is no strict division according to the direction of passenger movement in the tunnels; functional and social regulation is preserved and expanded.

The Main Railway Station of Lviv, which was one of the most advanced in its time, was destroyed during the First World War, the Polish-Ukrainian War of 1918-1919, and the Second World War. It was rebuilt until 1930 and 1957, and the last restoration took place in 2003. The station has retained its original qualities and features, and the second floor has grown between the risalits, and the most remote fifth passenger platform has appeared under the cover of

the platform (landing stage). Modern platforms are extended to about 600 m, from the first platform an external staircase is laid symmetrically on the sides of the building to the station forecourt. The main transport lines and passenger service functions laid down in the second building have been simplified at the same time. Three tunnels are used for passenger movement without dividing them into classes and directions of movement (Fig. 8, 9).



Figure 8. General view of the Lviv Main Railway Station, 2011

Source: M. Striltsiv (2011)

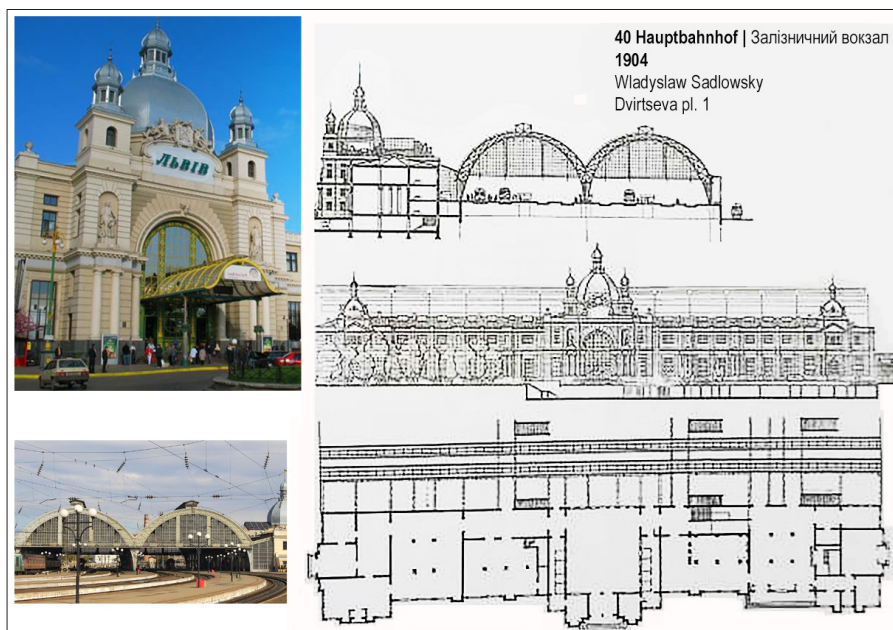


Figure 9. Modern view of the central risalit block and platform; section, facade, and plan of the first (entrance) level of the Lviv Main Railway Station

Source: A. Hofer *et al.* (2010)

However, since the Soviet era, the division into ticket offices, information field and passenger zones of the station has been preserved in accordance with the so-called

“passenger” and so-called “suburban” trains, which is a kind of radical division into types of passengers of conditionally long-distance and short-distance connections. In



addition, these “passenger ticket offices” in the main hall are also divided among themselves according to the time of purchase of tickets (daily departure ticket offices, pre-sale ticket offices), into categories of passengers (general, preferential, service), ticket offices for domestic and foreign communication, refund ticket offices, etc. In the main passenger hall, information is distributed only about “passenger” trains, and in the hall of “suburban” ticket offices – only about “suburban” trains. Suburban ticket offices with their own information boards are located separately in the hall behind the entrance in the right (Northern) part of the building. The operation of paid and free waiting rooms confirms the hidden “class” approach. Such separation and organisation of ticket offices and premises makes it difficult for customers to navigate, forces them to stay at the train station for a longer time, slows down service, and, in general, does not contribute to facilitating travel, democratisation, or security.

From the above material, it is clear that nothing remains of the first building of the Main Railway Station of Lviv (the station of the former Galician Railway of Archduke Carl Ludwig). From its initial planning ideas, the ideas of directed and regulated communications and processes for passengers and staff in the building and in the entrance/access to/from the station forecourt developed. These ideas are more noticeable in the second existing building of the Lviv Main Railway Station (on the site of the old one) in

the connection from the station forecourt through the new building to a completely new and large platform. The second building, together with the platform, is still functioning well in 2024, and has a great architectural and urban planning potential that needs to be developed. Pedestrian connectivity along the line “station square – station building – platform” is most commonly evolving by shortening distances and times between connecting nodes (transfer points, modal shift points, vertical connections, customer and service contact points), increasing the number and widening the number of lanes and aligning the directions of movement. In planning terms, this is expressed by communication through underground tunnels and passages. This is one of the ways of evolution of railway stations, which is the subject of the study by M. von Gerkan (1996) and S. Parissien (1997).

A good example of the development of the layout of the sub-track level of communication, vertical communications and passenger and service facilities is the reconstructed Salzburg Hbf in Austria. The passenger building of this station dates back to 1860 (F.R. Bayer, O. Thinemann). The development and semi-cylindrical metal-glass covering of the platform took place in 1906-1909. The last reconstruction with the extension of the platform to a length of about 500 m with the restored old and extended new covers, and with the sub-track space, was completed in 2014 (arch. K. Kada) (Fig. 10, 11).



Figure 10. Building of Salzburg Main Railway Station, 2018

Source: photo by Yo. Rotchniak

There was a cross-section connection of the Elisabeth-Vorstadt through a sub-track passage up to 200 m long and up to 20 m wide from the Station Square from the Northwest through the station building to the Southeast in the section of Schallmoos towards the city centre. This



Figure 11. Sub-track passage from the lobby of the main hall of Salzburg Main Railway Station, 2015
Source: photo by Yo. Rotchniak

simplifies pedestrian traffic between two parts of the city that are separated by tracks. The platforms are connected to the passage by stairs, escalators and elevators, which significantly improves communication, service and creates a new construction of the space and a different aesthetic (Fig. 12, 13).





Figure 12. Platform with restored and expanded cover, sub-track passage of Salzburg Main Railway Station, 2015
Source: photo by Yo. Rotchniak



Figure 12. General view of the Salzburg Main Railway Station

Source: Central station... (2013)

Sub-track pedestrian communications are widely used in the reconstruction of historical railway stations and the construction of new ones. A pass-through pedestrian connection under the tracks has been introduced at Vienna Main Station. Long underground passages connect the

continuous pedestrian strip of the South Tyrolean square (Südtiroler Platz) with the metro station (U1) and the Rapid City Railway Line (S-Bahn) with the new Vienna Main Railway Station building almost on the site of the demolished Vienna South Station (Fig. 14, 15).



Figure 14. Two levels of the entrance to the Vienna Main Railway Station, 2015

Source: photo by Yo. Rotchniak

A multi-level organisation of spaces exists at the renovated main railway stations in Berlin (Reuter, 2007; Preuß, 2007), Graz, Katowice, Kraków, and other cities. The extensive development of underground platforms, tunnels, and vertical connections is being carried out in coordination with the construction of new passenger rail and other track connections (metro, urban railways), which further transforms the station into an important urban planning factor. Such an example is the ongoing and controversial construction of Stuttgart's Main Railway Station (Roser, 2008; Preuß, 2010). The Munich Main Railway Station building (built in 1960) has been completely demolished as of 2024, and a completely new one will be created in its place while maintaining and expanding access to it (not implemented in 2024). Over time, train stations turn into "temples of consumers", which continue to develop. They become iconic objects, as reflected in the paper by J. Gympel (2020) on the example of 40 railway stations in Germany.

The key idea of modern railway stations in highly developed countries is fast and safe boarding/disembarking to/from the train in connection with the settlement. This idea is implemented through the possibility of approaching the station from different sides of the city, the presence of many entrances/exits to/from the station and several lanes of passenger movement, and shortening the time spent on the way and on the platform, etc. Due to various methods of purchasing travel documents – through ticket offices, ticket machines in different places of public space and outside the railway station, the possibility of paying in cars or remotely in advance via electronic network means – the time before the trip is shortened. This significantly reduces the need to equip a large number of ticket offices and spaces for long waiting periods. Unified visual and audio information at train stations, when approaching them, in other public spaces and in the media sphere accelerates orientation and promotes quick selection. In addition, the simplicity and clarity of repeated messages work together with the client's determination – to get to their car or



Figure 15. Crossings

at the Vienna Main Railway Station, 2020

Source: photo by Yo. Rotchniak

back – to the right place in the settlement, leaving the car and station. Due to a sufficient number of trains and regular traffic, there is no need for a long wait, as it was a long time ago. Mail and baggage cars as part of passenger trains have been reduced or practically disappeared, which, in turn, simplifies and frees up the flow of correspondence, cargo and loading/unloading places. The service is being introduced in road trains – primarily in large cities with mainline connections. For this purpose, special car trips to railway stations are arranged, if possible, near railway stations. At the client's choice, there is still the possibility of a longer stay at railway stations with extended information, various assistance, trade, service, respite, entertainment, etc. (halls, rooms, passages, other spaces). Such processes pass into the rank of additional relative to purely primary transport, and become the basis for the development of railway and station complexes. This is thoroughly investigated by I. Dreval (2019).

A large number of sub-track tunnels in the Lviv Main Railway Station have the potential for fast and convenient movement. It seems appropriate to update two long-standing baggage tunnels for the needs of passenger traffic. The same applies to two other side tunnels outside the station. Notably, with the current increased length of boarding platforms, it seems unfair that there are no scattered underpasses – the end cars of long trains are far removed from the existing exits and tunnels. The installation of an additional one on each side of the edges of the platform cover (with stairs, escalators and elevators to each platform), in addition to speeding up communication, would also increase the level of overall security at the station. Passenger (reception) buildings and platforms (tracks with platforms), which are connected by underground tunnels, play an important role in protecting against airborne hazards, similar to underground metro stations. Dispersing people, regulating, directing their flows, and creating opportunities for informing, staying, and monitoring – these and other processes should be considered when optimising station planning.



In the context of Lviv's urban development, it is possible to envisage a pedestrian connection through the tunnel from the station square from the North under the platform of the Main Railway Station to the Northwest of the tracks to Estonska Street in the Levandivka urban district, considering the needs of the rest of the railway station. Another area of the underground pedestrian tunnel-passage could run from the platform of the main station to the South, connecting the underground and the platform of the Suburban (former Chernivtsi) station and Horodotska Street. Thus, the platforms of the two railway stations would be connected underground. In

these two tunnels, passengers could get to the desired platform by the shortest route, bypassing the station buildings, and also have the closest connection to tram and bus services along Horodotska Street with a number of trade and service facilities (Skrynya shopping centre, station market, etc.). More radical would be an underground car passage near the building and under the platform of the main station, close to the axis of Chernivetska and Shyroka Streets, connecting Horodotska Street and Levandivka. The possibility of arranging such passages and driveways will require more in-depth research and substantiation (Fig. 16).

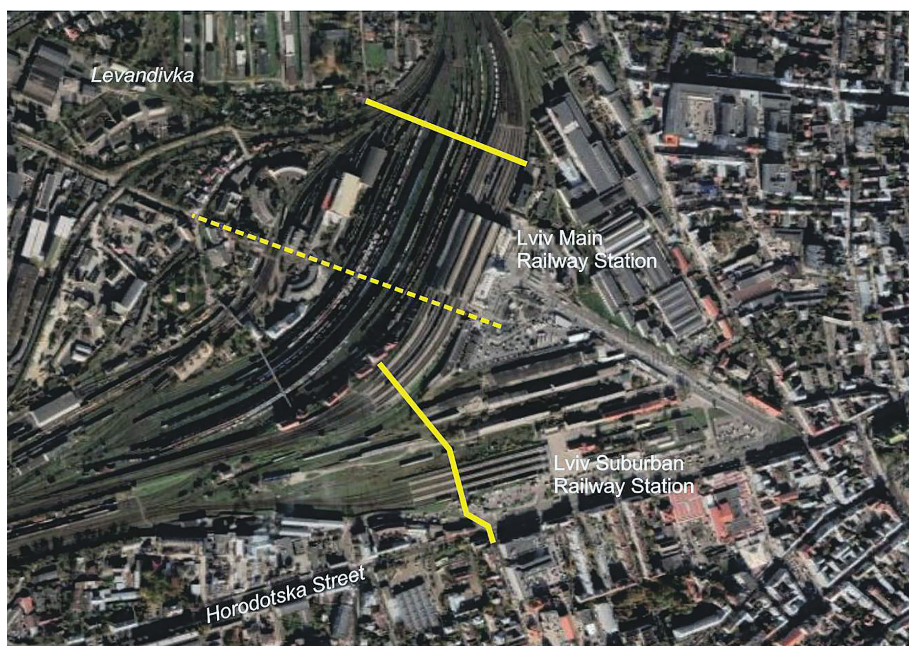


Figure 16. The proposed tunnels connecting the platforms of the Main and Urban Railway Stations in Lviv between Horodotska Street (South) and Levandivka (North-West)

Notes: upper line – from the Station Square to Estonska Street; lower polyline – from the station, the platform of the Main Station to Horodotska Street; dashed line – from Chernivetska and Horodotska Streets to Levandivka

Source: compiled by the authors based on the Google imagery

The development of new railway stations is largely based on the organisation of travel and stay spaces, based on existing planning properties in the urban context and the buildings themselves. At the same time, the historical construction substance is integrated into broader architectural ideas, losing its original significance in some places.

CONCLUSIONS

The evolution of the layout of buildings of the Lviv Main Railway Station took place by replacing the dominant corridor-cell scheme in the first building with a mixed corridor, hall, and enfilade scheme of the second station building. In the second building, movements and processes were regulated when the platform was raised to the second level of the building with eight tracks, four boarding, and four luggage platforms. Seven tunnels connected the platform to the building and the station forecourt using stairs for

passengers and elevators for luggage. The station platform has acquired a separate method of planning in comparison with the platform of the first station building. This was a new phenomenon in the architecture of railway stations at the end of the 19th-beginning of the 20th century, revealing the ideas of functionalism.

In the second building of the Lviv Main Railway Station, the lines of train traffic and the lines of movement of pedestrians-passengers, their luggage are divided in two levels, which in a horizontal projection forms a rectangular grid of these lines. On the platform, at the intersections of the movement axes, nodes appear that correspond to the location points in the horizontal projection of stairs and elevators. Such a scheme of arrangement of movement lines goes beyond the station building and is the basis for the organisation of platforms of large railway stations of the 20th century.



The symmetrical composition of the facades of the first and second buildings of the Lviv Main Railway Station partially corresponds to the internal layout; approximate lines of passenger movement in buildings with the axes of entrances in risalit blocks. In general, the exterior of buildings is an artistic framework beyond which the functional and social diversity of the interior space does not extend. The order and style of the facades form an independent and expressive composition, which generally corresponds to the then general ideas about the architecture of public buildings.

The planning scheme of the existing Lviv Main Railway Station is naturally developed by expanding the horizontal grid of movement axes: the addition of former baggage tunnels for pedestrians, the construction of new tunnels symmetrically and remotely from the existing platform covers, the installation of elevators, escalators to each platform. The existing pedestrian connections between the station and the city should be considered. The evolution of the layout of the historical station building goes beyond the building and concerns primarily the arrangement of station forecourts, platforms, and connections between them. Such an underground pedestrian “expansion” is familiar to the newest and adapted historical railway stations.

The proposed underground pedestrian passages-tunnels are an alternative to the “usual” underground pedestrian lanes and connect the main station platform, the suburban station platform and Horodotska Street, and the Levandivka urban district. In addition to the convenience of comprehension and the absence of intersections with other modes of transport, underground spaces are formed for staying and protecting against air hazards. These crosswalks can partially serve as shopping passages, which contributes to comfort. Pedestrian passageways-tunnels become an integral part of the latest railway stations, have a significant length and take over part of the maintenance

and maintenance processes before and after the trip.

The construction of pedestrian underground passages and spaces near the building of the Lviv Main Railway Station is seen as one of the possible ways to develop the latest architecture, urban planning relations with the preservation of the spirit of this place. This approach looks more humane, more sensitive to the environment and more expedient in comparison with the ideas of a large-scale construction of the “new international railway station” in Lviv next to the existing main one, or a “transport hub” at Sknyliv station in a remote area from the station under study.

Understanding the history and actual state of architecture of the Lviv Main Railway Station and its planning opens the way for research of other similar stations. The twin goals of conservation and development are the guiding principles.

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CONFLICT OF INTEREST

None.

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Еволюція розпланування будівель головного залізничного вокзалу Львова

Анотація. Архітектуру залізничних вокзалів визначають суспільні, економічні, технічні, військові, історичні, культурні та інші чинники. Їхні дії відбуваються постійно, але через певні періоди стаються більш радикальні зміни шляхом перебудов і розбудов будівельної субстанції вокзалів. Розуміння цінності історичних споруд повинно узгоджуватись із неминучими соціальними і транспортними змінами, що відбуваються повсюдно та відображаються в архітектурі вокзалів, зокрема через планувальну структуру. Метою дослідження було виявити розвиток розпланувальних властивостей – на базі горизонтальних проєкцій споруд – двох історичних будівель Головного залізничного вокзалу Львова у подальшому його використанні. Для цього застосовувалися загальнонаукові методи дослідження та використання їх у відповідності до архітектурних студій. На основі архівних матеріалів, літературних джерел та польових спостережень уможливилось проведення власного дослідження та отримання висновків. Було проаналізовано різні рівні двох будівель залізничного вокзалу Львова та проведено їхнє порівняння. Описано розпланувальні схеми, сполучення і послідовність приміщень цих будівель, а також їхні зв'язки з пероном (коліями та посадковими платформами) і з привокзальною площею. Зазначено, що вже у першій будівлі вокзалу проявляються риси функціоналізму як концепції первинності процесів у визначенні розпланування та цілої будівельної оболонки споруди; друга будівля продовжує цю концепцію. Було розглянуто варіанти застосування підземного пішохідного сполучення перону існуючої другої будівлі Головного залізничного вокзалу Львова з пероном Приміського вокзалу Львова, а також сполучення їх з магістральною вулицею та відділеною коліями однієї з історичних дільниць Львова. Підземні пішохідні сполучення утворюють громадський простір, що має великий ресурс, у тому числі й для тимчасового захисту від повітряних загроз. Ці міркування опираються на еволюцію історичних вокзалів залізничних станцій великих міст Європи. Практичною цінністю роботи є встановлені шляхи подальшого можливого розвитку архітектури Головного залізничного вокзалу Львова у закладених історичних концепціях та схемах на базі напрямків і траєкторій руху пішоходів і транспорту

Ключові слова: залізниця; платформа; перон; тунель; пасажир