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The Current Features of the Central Public Space Functioning in the Historical City, A UNESCO World Heritage Site

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Abstract. A common feature of the significant squares in historical cities is the contradiction between the problems of protection and functioning. A striking example of such a contradiction is the Rynok Square in Lviv - public space, which since its appearance in the 14th century, has always been a communicative hub for citizens and guests of the city. In 1998, the central part of Lviv was included in the UNESCO World Heritage Site, and only 15 years later, the entrance of private vehicles to the Rynok Square was restricted, making the central square again a public space. Since then, there is no data on the use of square as a public space. Qualitative changes in the functioning of the city square are visible to the naked eye, but it is difficult to assess the scale and vector of these changes without a detailed study. For a comprehensive understanding of the Rynok Square public space functioning and the level of its socialization, we have developed a methodology for evaluating the quantitative characteristics of the social and cultural aspects of the urban environment. From October to December 2018, a pilot study of the interaction of people with institutions and spaces of the Rynok Square was conducted. The survey data gives us an understanding of the current state of using the Rynok Square as a public space, so it might be a good basis for further sociological and economic research. This will allow us to more detailed study to the issues of organizing new public, cultural or service establishments, and the creation of potential spaces for communication. Due to this data, we can speak about behavioral tendencies of residents and visitors of the historical city, which will allow to qualitatively improve the spaces for their future use.

1. Introduction

Central market squares are a characteristic feature of many cities in Central and Eastern Europe. Historically, it was formed in such a way that the presence of a market square was a sign of the urban status of a territory. They were laid as perfect geometric forms of the spatial centers of life of citizens, and due to the central location, economic and cultural value, were the core of the city, from which the street network was expanded.

The Lviv city center is the Rynok Square, the architecture of which was laid in accordance with that time trends of urban planning, and throughout its history, was the heart of the city, where all the most important events in the life of the citizens were held.

A significant contribution to the study of the architecture and urban characteristics of the Rynok Square was made by V. Vuytsyk **Error! Reference source not found.**, R. Lypka **Error! Reference source not found.**, I. Melnyk **Error! Reference source not found.**, O. Rybchinsky **Error!**



Reference source not found., Cherkes [5], Kryp'yakevych [6] and others. However, it should be noted that most of the studies about Rynok Square relate to, first of all, its architectural style. Accordingly, today there are no theoretical developments that comprehensively characterize the space of the central square of Lviv from the point of view of the sociology of the city, as a place of stay and communication of people among themselves, and with architectural elements on it.

The aim of the article is to determine the features of the central area functioning as the public space of the historic city on the example of the Rynok Square in Lviv. The basis for this article is a field study conducted in October - November 2018, to analyze the geometric characteristics and the use of square as a public space.

2. Historical background of the formation of the Rynok Square in Lviv

Rynok Square in Lviv was planned in the 14th century and is the historical, territorial and cultural center of the city. The architecture of the square was formed over several centuries, and has signs of different styles and layers. Most of the tenements, which now form the image of Rynok Square, were built during the Renaissance, but they carried significant renovations and stylistic modifications during the whole period of their existence.

Rynok Square since its inception was of great economic and cultural importance to the city. First of all, it was the main public space, which served as the place of judicial and public gatherings, was the center of commercial, theatrical and cultural events **Error! Reference source not found.** The tendency to using square as a public space changed in accordance with the transformations of the cultural and functional needs of citizens. With the development of public transport, the Rynok Square has become one of the main transport hubs of the city. However, taking into account the tendency to the formation of open and comfortable for people spaces, starting from 2013, when the area becomes completely pedestrian, thereby regaining the status of the cultural center of the city.

The central location of the Rynok Square in the structure of the city testifies to the historical features of the layout of urban planning, while maintaining the core position of square. As can be seen from Figure 1, the square is not only the main part of the historical area, but in fact is the territorial center of the entire city.

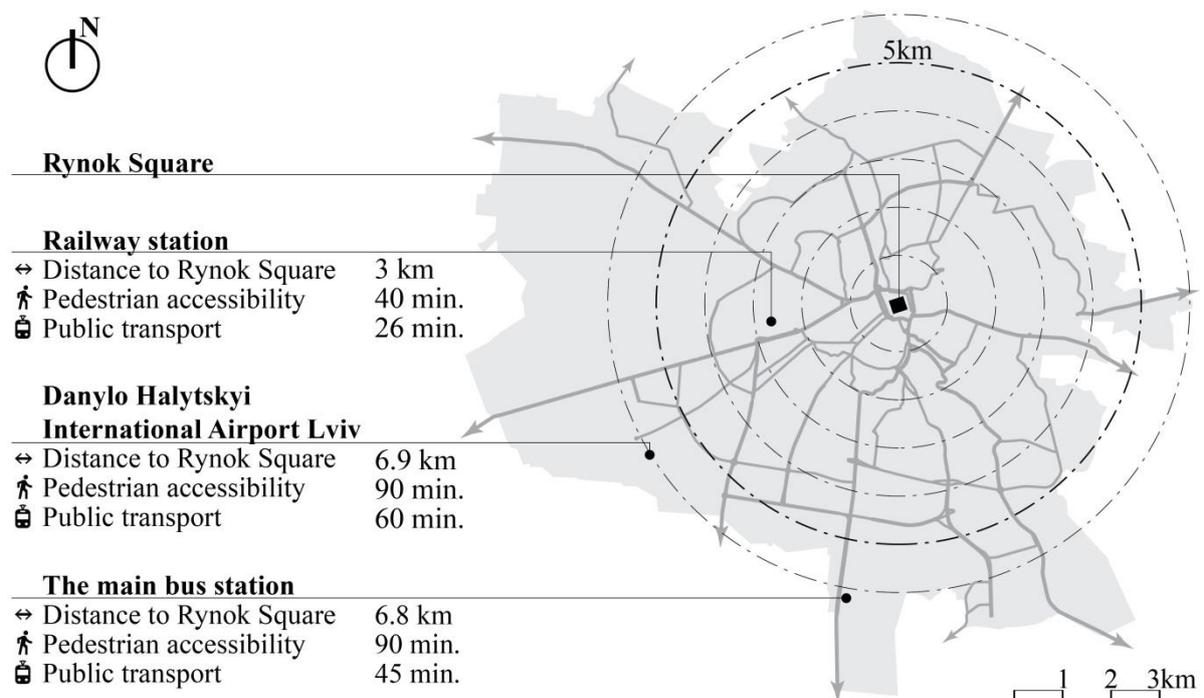


Figure 1. Location of the Rynok Square in the city structure [Drawn by Authors]

3. Research Methodology

To analyze the specifics of using the public space of the Rynok Square, as the basis for a universal study of the historical areas of European cities, we conducted a study using the authors' methodology for evaluation the quantitative characteristics of the cultural and social aspects of the urban environment. The authors selected the period from October to December to obtain more universal data, as this period is characterized by the absence of seasonal attractions (fair houses, an ice rink, etc.), but there are still summer terraces and street space is actively used.

The public space research of the Rynok Square was carried out in two stages:

- The first stage is the determination of the geometric characteristics of the space, and the attachment of the main social functions that are located on the square;

- The second stage - the study of the quantitative characteristics of the area functioning.

Each of the stages involved field research and results mapping on the basic scheme of the Rynok square, with further analysis of the results.

3.1. Stage 1. Determination of geometric characteristics of space, and fixation of the main public functions that are located on the square

This stage was divided into three successive steps, each of which was aimed at a sequent analysis of the geometry and structure of the Rynok Square.

The first step was to mark the current state of development and planning of the area on the basic scheme (figure 2). The next one was the definition of the geometric characteristics of the area by means of measurements, and the fixation of the current state. The main task was to investigate: the dimensions of the square; area of space; ratio of width to length of area; highest point; average building height; the ratio of the width and length of the sides of the square to the average height of the building and, separately, to the point of the highest point; counting the number of trees.

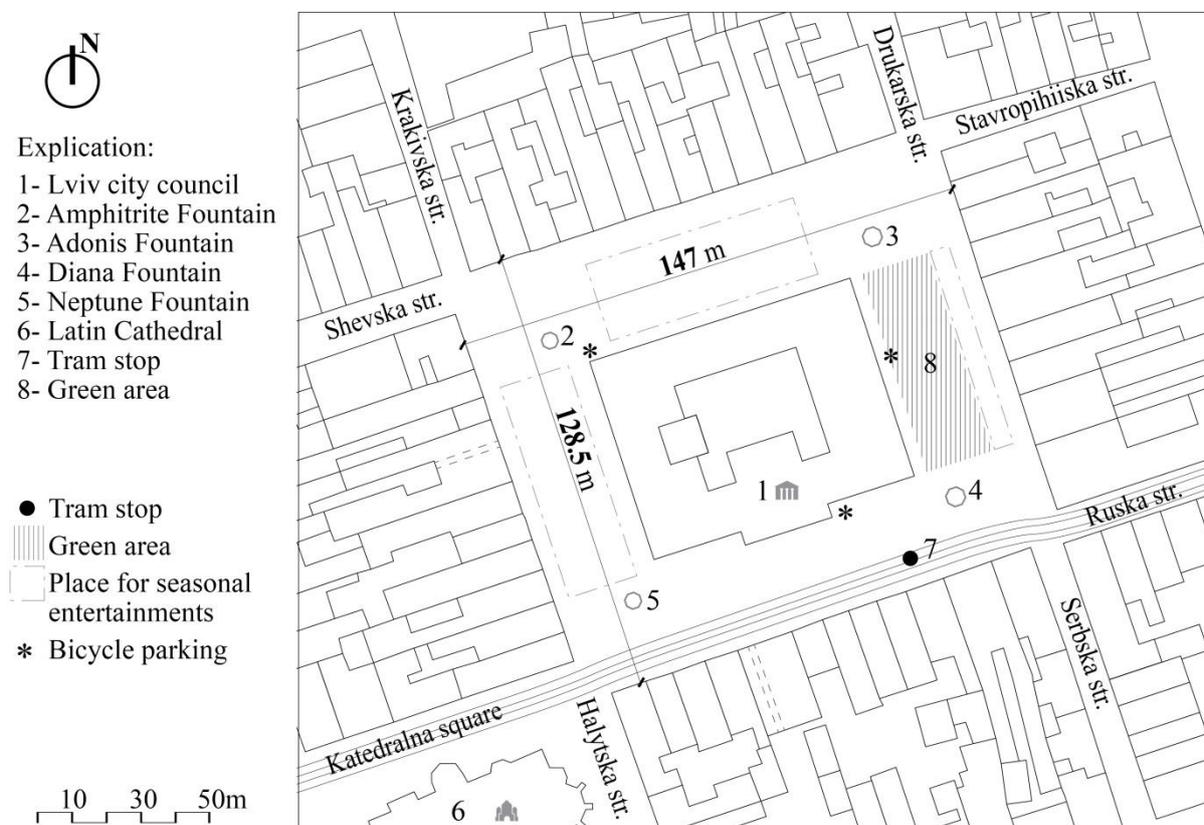


Figure 2. Master plan scheme of Rynok Square [Drawn by Authors]

The third, final step of this stage was to mark various types of public institutions, which are located at the research site. Attention was paid primarily to the functions of the first floor of the building, since they are most actively used, and have a direct connection with the street space of the square. Despite the fact that the study was conducted during a period when there were no seasonal attractions on the square, we took into account their locations and marked them on the map (figure 2).



Figure 3. Photo of Rynok Square from observation deck on Lviv Town Hall [Taken by Authors]
a. On the Southern Side **b.** On the Northern Side

For convenience, all types of public institutions were divided into three large groups: administrative institutions, service institutions (banks, exchangers, pharmacies, shops, catering establishments, catering terraces), cultural establishments (museums, galleries, observation platforms) (figure 4).

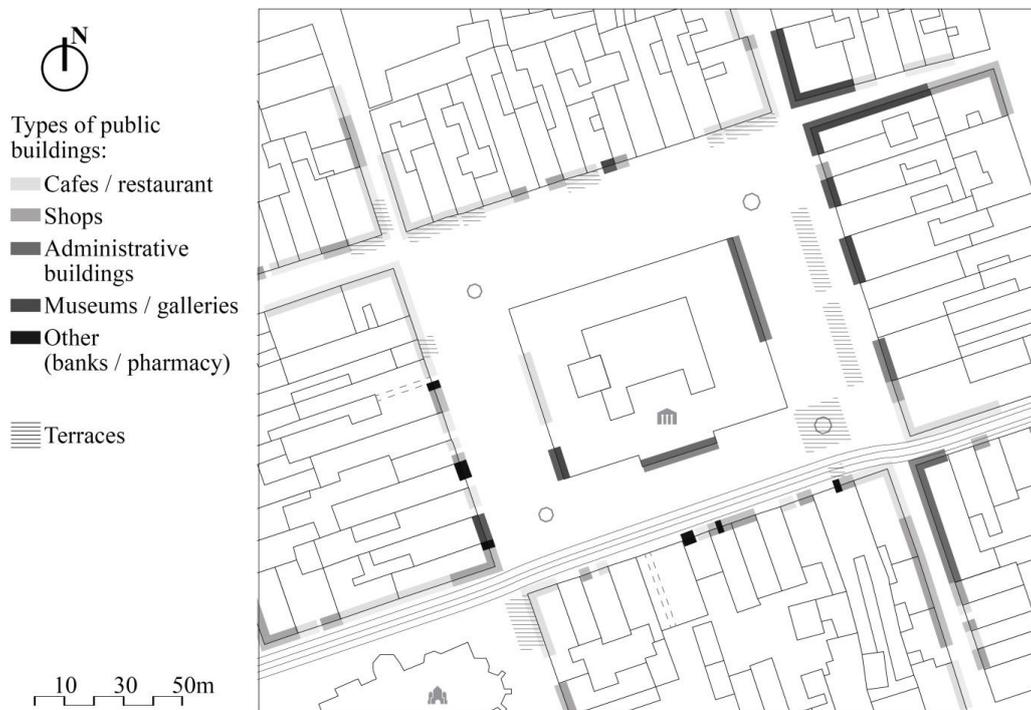


Figure 4. Scheme various types of public facilities, located on the first floor of buildings [Drawn by Authors]

3.2. Stage 2. Study of the quantitative characteristics of the operation of the area.

The second stage of the study determines the quantitative characteristics of the interaction of people with different buildings, located in them institutions, and public areas of the square. In the process of work on the first stage, the architectural and planning features of the space are taken into account, and, for the sake of further research, the territory is divided. Accordingly, the second stage included the study of the quantitative characteristics of the operation of the square.

According to the types of activity of users and visitors, two main criteria of data are distinguished: the number of visitors of public, cultural objects and service purposes and, accordingly, the total quantitative value of people using the Rynok Square as a public space in itself.

During this period, there is a mixed interaction of users with institutions (incomplete interaction with the summer grounds and wider interaction with the internal part of institutions compared to the same period in the summer), which allows taking into account the most optimal overall picture. One of the most significant elements of the study is to take into account the ratio of users of the external and internal environment of buildings, in order to create a complete picture of the load on the Rynok Square as a separate public environment.

Also, the complexity of the study is achieved by conducting research on weekends on the one hand, and weekdays on the other. This is due to the fact that the vector and destination of most spaces varies depending on the day of the week. For example, the Town Hall plays the role of a business center from Monday to Friday, and people use the Rynok Square mainly as a transit point in their daily routings. At the weekend, the situation changes radically - the central square begins to play a more recreational role in the city structure, and for its users becomes a destination. A similar situation can be observed in other historical areas of the cities of Central-Eastern Europe.



Figure 5. Photo of the interaction of people with the square at the weekend [Taken by Authors]

a. On the Southern Side

b. On the Northern Side

In each of the days of the study (Tuesday and Saturday), the measurements were conducted from the beginning of the activity at 8.00 am until its actual completion - at 22.00, every two hours, in order to accurately determine the tendency of changes in people's behavior towards the Rynok Square. Each of these goals included the following parameters: the number of people currently located inside and outside institutions and organizations, the total number of pedestrians present in the area at the time of measurements, as well as the number of users of buildings coming with appropriate functions.

One of the significant parameters for determining was taking into account vehicle and cyclist use of the area, as the Rynok Square entry for individual transport is limited. Measurements and analysis of characteristics according to the relevant factor were conducted in a manner similar to that of pedestrian traffic.

As a result of the study, territorial imbalance in the functioning of the Rynok Square as a public space was identified. Thus, there is a more active use of the north-western part for various public and service establishments, which is associated with higher pedestrian activity and a more simple rental situation. The southern side, due to public transport passage, historically has a transit role in the city's structure. The eastern side is a cultural center, - most of the museums are located there.

The methodology of this study can be used to determine the problems and characteristics of loaded streets and historic cities, as it is a universal tool in the hands of architects, investors and government structures to analyze and regulate the filling, distribution and vector of interaction between people with public spaces. Following the given methodology, a study of the Serbian street in the city of Lviv was also conducted, which is also part of a complex of objects included in the UNESCO World Heritage Site.

4. Results and discussions

The result of the study is to determine the key characteristics that are depicted in the diagrams and reflect the geometry of the area layout, the location of various public institutions (stage 1), as well as various quantitative data reflected in the diagrams that provide information about the numerous characteristics of different types of space use (stage 2).

Rynok Square has an almost regular geometric shape - a square (side 128.5 x 140 m), from which eight streets diverge, two for each corner. The space of the square forms 44 tenements, and the building of the town hall in the center. Also here are four fountains that are significant landmarks for visitors.

As a result of measurements, the following characteristics were established:

- dimensions of the area - 147 m x 128.5 m;
- area - 14,200 square meters (excluding the area of the territory occupied by the town hall)
- the ratio of width to length - $128.5 \text{ m} / 147 \text{ m} = 0.87$;
- the highest point - 65 m (Viewing Tower on Lviv Town Hall);
- the average height of the building - 16 m (the number of floors of buildings 3-4 floors)
- the ratio of length to average height of building - $147 \text{ m} / 16 \text{ m} = 9.2$;
- the ratio of width to average height of building - $128.5 / 16 \text{ m} = 8$;
- the ratio of the width at the highest point - $128.5 \text{ m} / 65 \text{ m} = 1.98$;
- the ratio of the length at the highest point - $147 \text{ m} / 65 \text{ m} = 2.26$;
- number of trees – 36

The plan of the Rynok Square took place in accordance with the then tendency to form regular development using a modular grid. The area was divided into modules of 9.25 m. (30 feet, or 2 rods), that is, 14 and 16 modules, respectively **Error! Reference source not found.**

The study of the types of functional content of the active first floors, and the space of the area, provided the following data:

- administrative institutions -4 pcs. (it includes the largest building of square - the Town Hall)
- service institutions (banks, exchangers, pharmacies, shops, catering establishments, terraces of catering establishments) - 45 pieces;
- cultural institutions (museums, galleries, Observing Tower) -8 pcs.

As can be seen from the numerical data, the most quantitative in the Rynok Square is the service maintenance establishments (78%), among which catering establishments predominate (45% of all public institutions in the square).

The result of this survey was the division of the Rynok Square into five main zones for further research: four zones corresponding to different sides of the Rynok Square, according to their location relative to the cardinal points, and the fifth zone - the central part, which includes the Town Hall and fountains.

There is an imbalance in the functional planning of the Rynok Square. Thus, the southern side performs a significant transit role, since the tramway passes through it and the public transport stop is located here. The functional filling of the first floors are exclusively service establishments. The eastern side is formed by cultural institutions, mostly museums and galleries. The northern and western sides are the main catering establishments in the Rynok Square.

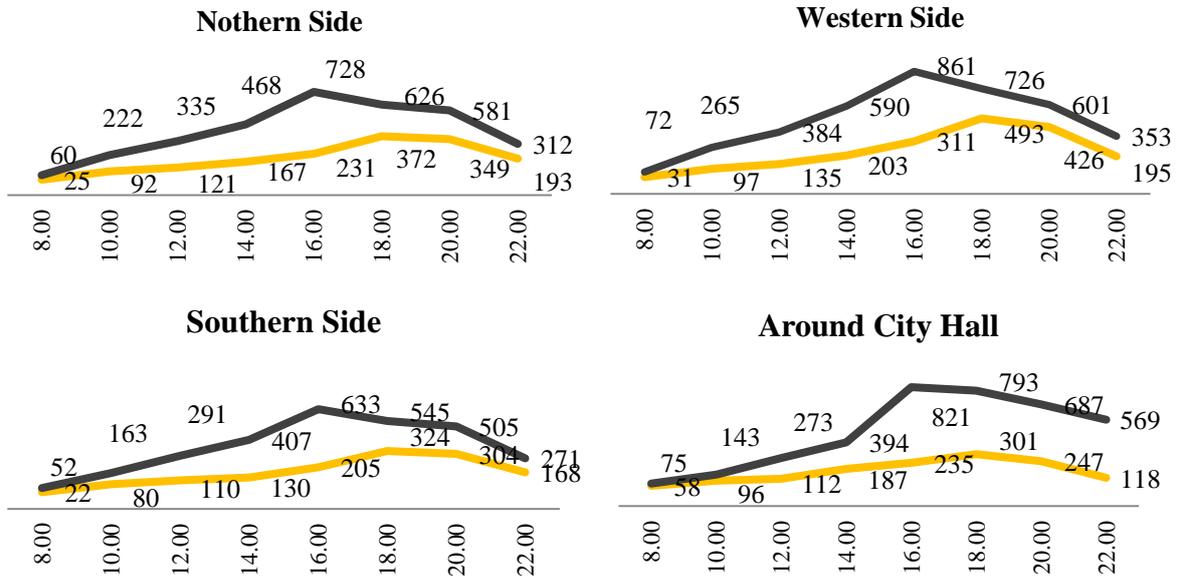


Figure 6. The Diagrams that show the number of pedestrians by each side [Drawn by Authors]

What is more, second stage of study allowed us to apply the results to the next steps.

- Areas of influence and activity of users of the square were calculated;
- Whole square is divided due to different action zones with their current and possible features;
- Institutions and places that are most and least popular are determined;
- The tendency of changes in the interaction of people with architecture is shown, according to the research time (Tuesday and Saturday, 8.00-22.00);
- Overspent points and potentially attractive areas are detected;
- Possibilities of the Rynok Square as a place of transit and destination point are estimated;
- Disproportion in use of architectural and social space of the square is shown;
- Specification of vehicle use is detected.

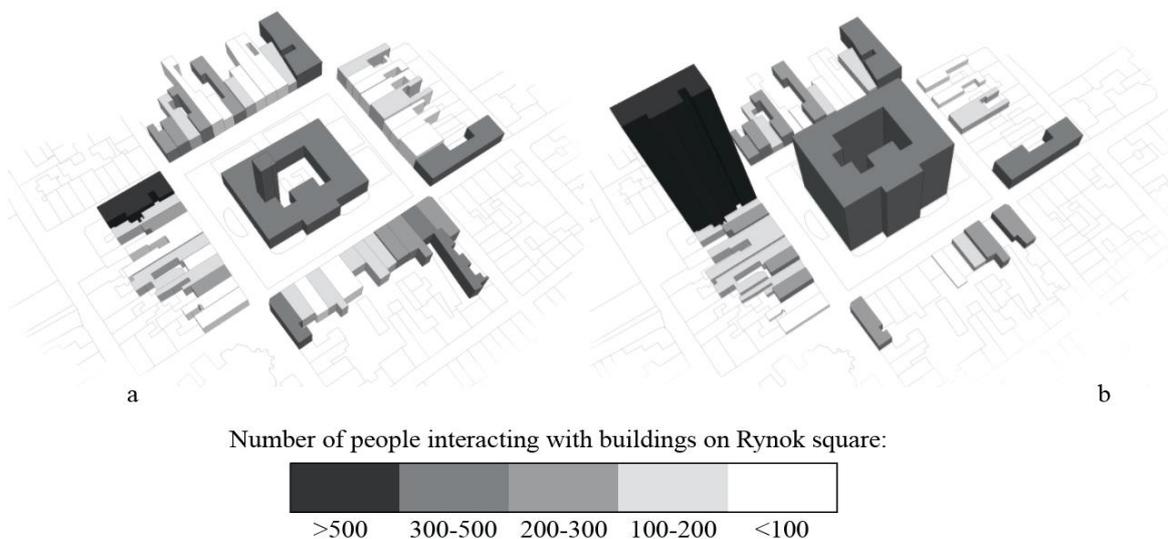


Figure 7. Comparative diagram of the buildings' height of the Rynok square [Drawn by Authors]
a. Real buildings' height **b.** Optimal for accommodating people interacting with these buildings

5. Conclusions

The authors' methodology for researching the use of social public space, developed in the course of work on the analysis of the Rynok Square, allowed to obtain a comprehensive result regarding the significant features of the space: geometric and quantitative data. Due to this method, it was possible to analyze the current state of the Rynok Square, the next stage will be the analysis of adjacent streets, to discover the subsequent picture, and, as a consequence of checking this technique, for the use of city-wide structures that are different in scale.

The authors first conducted a study of the historical space as a part of UNESCO World Heritage Site, not only from the side of their geometric significance, but also according to its social characteristics. For this purpose, the separated concepts of architectural geometry and interactive-social space were introduced. Only in this combination can be developed the areas and streets of cities, both developing, and historically-formed architectural.

References

- [1] Vuytsyk V . Derzhavnyy istoryko-arkhitekturnyy zapovidnyk u L'vovi, 2-he vyd., dopov.,L'viv : Kamenyar, s. 175, 1991.
- [2] Vuytsyk V., Lypka R., Zustrich zi L'vovom : putivnyk, L'viv : Kamenyar, s.175, 1987
- [3] Mel'nyk I.. L'vivs'ki vulytsi i kam'yanytsi, mury, zakamarky, peredmystya ta inshi osoblyvosti Korolivs'koho stolychnoho mista Halychyny., L'viv: Tsentr Yevropy, s.384, 2008.
- [4] Rybchyns'kyy O., Rynkovi ploschi istorychnykh mist Ukrayiny - L'viv: Vydavnytstvo Staroho Leva, s. 776, s.19-23, 2016
- [5] Tscherkes B., Hofer A., Leitner E.(Hrsg.): Львів-Lemberg-Lwow-Lviv-Львов-Leopolis, Handbuch Architektur und Stadt. Wien: Fachbereich Stadtebau der TU Wien und „L'vivska Politechnica”, s.122, 2010 (in German and Ukrainian)
- [6] Kryp'yakevych I. Istorychni prokhody po L'vovi, Lviv: Kamenyar, s. 168, 1991
- [7] Arkhitektura L'vova: Chas i styli. XIII—XXI st., Tsentr Yevropy, s. 62-63, 2008
- [8] Gehl, J., “Cities for People”, Island Press, p. 288, 2010
- [9] Mitchell D. The End of Public Space? People's Park, Definitions of the Public, and Democracy. In: Annals of the Association of American Geographers, Vol. 85 (1), pp. 108-133, 1995
- [10] Kohn M. Brave New Neighborhoods. The Privatization of Public Space. New York and London: Routledge, 2004
- [11] Whyte W. H., The Social Life of Small Urban Spaces, New York: Project for Public Spaces, p. 1225, 2001
- [12] Savka M., Horun P., Ploscha Rynok u Lvovi : fotoputivnyk, Lviv : Kamenyar, s. 88, 1977