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THE FORMATION AND DEVELOPMENT OF PEDESTRIAN WAYS OF UZHGOROD

TWORZENIE I ROZWÓJ ŚCIEŻEK DLA PIESZYCH NA PRZYKŁADZIE UŻGORODU

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ABSTRACT

The formation and development of pedestrian ways in Uzhgorod began from the end of the XVIII century to the middle of the twentieth century. An analysis of the historical facts presented in the article allows us to distinguish three characteristic periods or stages of the development of pedestrian streets and squares.

Key words: formation and development of pedestrian ways, Uzhhorod, pedestrian.

STRESZCZENIE

Tworzenie i rozwój ścieżek dla pieszych w Użgorodzie rozpoczęła się od końca XVIII wieku i trwała do połowy XX wieku. Analiza faktów historycznych przedstawiona w artykule pozwala wyróżnić trzy charakterystyczne okresy lub etapy rozwoju ulic i placów dla pieszych.

Słowa kluczowe: tworzenie i rozwój pieszych dróg, Uzhhorod, ruch pieszy.

1. INTRODUCTION

The main problem of the cities of the XXI century is the rapid pace of urbanization, leading to dramatic changes in the transport system, road network and mobility of the population, in particular, medium and small cities with a historic center. The process of uncontrolled interference with the pedestrian infrastructure that has been formed for centuries has a negative impact on architectural heritage and reduces the comfort of movement.

Pedestrian infrastructure in historically developed cities requires an integrated approach to solving transport issues within the architectural integrity of ensembles and preservation of historical routes for strategic objects.

The main feature of the small and medium-sized cities of the western region of Ukraine are historically-formed architectural and planning schemes. That is, the development and improvement of transport and pedestrian infrastructure presupposes the preservation of the scale of the historical part of the city center, its environment, the preservation of monuments of history, architecture, archeology, culture, as well as the addition and reproduction of disturbed monuments by building or functional use. In the environment of historical development there is a stable catamorphism of constant and derivative elements. The attractive side of historical development – the concentration of public functions and optimal pedestrian accessibility – are turning into a problem of providing a complete transport service. The factor of disharmonization of the historical core is the incompatibility of the planning structure with the need for transport.

Uzhhorod is the smallest regional center formed under the influence of different nationalities. In addition, close spatial relationships allowed us to follow the transitional patterns of development of the transport network, located in the transboundary zone of influence, according to the change of the historical state system.

The city has a historically formed radial-ring structure of the street-road network. Initially, on the territory of the modern city there were three centers – on the Zamkova hill, in Radvanska and in the Goryan area. For a long time they evolved in parallel, however, later, the Castle Mountain became the main focus of population concentration, for quite logical reasons – it was oblique and steep on the one hand, and on the other – was washed by Uzh and its tributaries, which created natural protection from enemies. It was here that the center of Uzhgorod was formed. The other two settlements became a kind of suburbs. The old part of the city is located on the right bank of the Uzh River, and lies on seven hills: Zamkovy, Kalvaria, Universitetsky, Chervenitsy, Shakhtinsky, Onokivskyy, Goryansky, and the youngest on the left bank, where the Transcarpathian lowland, which is part of the Middle Danube lowland, begins [19].


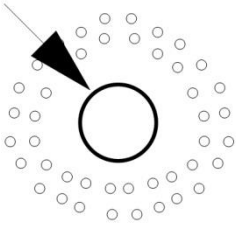

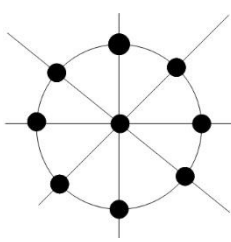

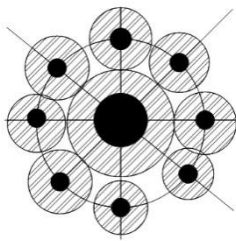
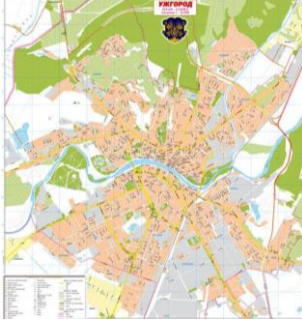
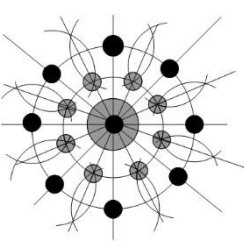
In general, the historically formed street network of the central part of the city – is residential blocks, disassembled by economic buildings on narrow streets and roads, mainly one-way movement, relating to the XIX century.

Analyzing the transformation of the city plan, it is worthwhile to allocate three ways of development of pedestrian ways of Uzhhorod, which gradually change each other:

- **The 1st stage – the feudal (imperial) stage**, which began from the city's foundation to the point concentration of population in the castle mountain and the formation of main roads and routes around it;
- **The 2nd stage – industrial**, characterized by active use of the territory, the construction of new residential quarters, the development of industry and consolidation of urban development, which has already been completed; This segment is characterized by the branching of the street-road network;
- **The 3^d stage – information**, which began in the beginning of the XXI century. and to this day is characterized by the expansion of the boundaries of the city at the expense of joining surrounding settlements, active housing construction and population

growth, the integration of new streets and roads into the existing transport and pedestrian infrastructure.

Table 1. Historical development of transport and pedestrian infrastructure in Uzhhorod. Source:I.Kutsyna

stage	Map-scheme	Development model	Description
The first mention the city	 <p data-bbox="448 893 823 938">A fragment of the world map of Al Idrisi 1154</p>		<p data-bbox="1219 663 1445 860">The first written mention of the city of Muhammad Al Idrisi in 1154 under the name of Ung. There is a formation of the main spatial trade and transport links</p>
the feudal (imperial) stage	 <p data-bbox="448 1220 727 1245">Austro-Hungarian Card 1910</p>		<p data-bbox="1219 949 1445 1196">The population is 15 thousand people. Area up to 2 thousand hectares There is the creation of a uniform road network of urban centers of influence with the formation of the main highways of pedestrian traffic</p>
Industrial stage	 <p data-bbox="448 1612 855 1664">The plan of Uzhgorod in the Czechoslovak period (1933)</p>		<p data-bbox="1219 1252 1445 1449">Population over 30 thousand people. There is an accumulation of urban pressure with the further development of the existing street and pedestrian network.</p>
Information stage	 <p data-bbox="557 2024 754 2049">Modern period 2017</p>		<p data-bbox="1219 1704 1445 1877">The population is more than 120 thousand people. Transformation of the city of Uzhgorod in accordance with new norms and requirements.</p>

In general, historically formed pedestrian paths create a pedestrian communication framework consisting of a landscape and anthropogenic skeleton (namely, a line of coastal slopes, landscaping of the natural skeleton, the impact of the complexity of the relief, areas subject to the risk of flooding), architectural framework (main points of history and architecture, influence of the main historical and recreational routes), the transport frame (main directions of departure and exit from the city, linear pedestrian areas along the river, main transport hubs and pedestrian areas), functional and planning framework (the impact of the countryside, the influence of administrative and community groups, centers of gravity of the focus of the historical center, the impact of municipal and industrial storage areas).

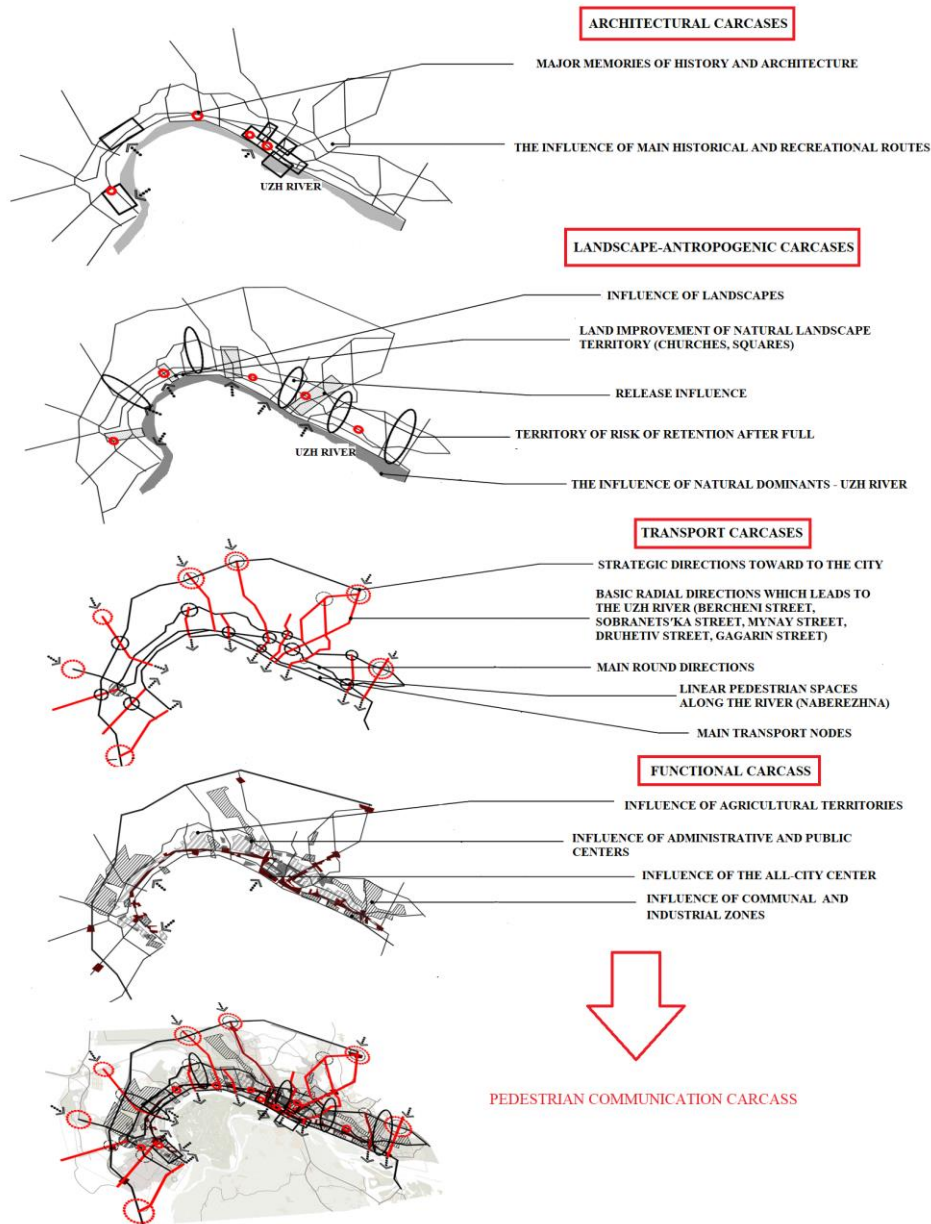


Fig. 1. Pedestrian communication carcass of Uzhhorod. Source: I.Kutsyna

2. THE FIRST STAGE: THE FEUDAL (IMPERIAL) STAGE

The feudal (imperial) stage, which began from the founding of the city to the point concentration of population in the castle mountain and the formation of main roads and routes around it. This stage can be divided into two periods:

1) **early feudal** (the beginning of the nineteenth century). At the time of the arrival of the Hungarian tribes in the Carpathian Basin at the end of the nineteenth century. Uzhgorod was already formed by the early feudal center of Slavonia, which existed in Upper Potys. In 903, Hungarian tribes under the leadership of their leader Almosha stormed the fortress Gungvar, Prince Laborets was defeated. From the middle of the XI century. The town entered the Hungarian kingdom, later – into the Austrian kingdom of the Hapsburgs[19].

2) **Austro-Hungarian** (1867-1918). According to the city there were 36 streets, on the central one were built several storey stone houses and shops, large cellars, where wine was stored and sold. During this period in the city lived 6.6 thousand people. The factories and factories with exports to Germany, France, and Italy were opened. Most of the central streets were paved, sidewalks were organized for pedestrians, night lighting was installed. Since 1897 the city had a telegraph connection with Budapest, and in 1902 the first Uzhgorod power plant was built in the province. In 1904-1906 the railway was built through Uzhotsky Pass, which connected Uzhhorod with Lviv.

The first records about bridges in Uzhhorod come from 1631 and 1690. In 1691, one of the streets of the right bank was named Mostova (later Velykomostova), because it led to a large (main) bridge across the Uzh River (now a pedestrian bridge). It was not until 1898 that the first iron bridge was built, intended for pedestrians, with iron arches, at public expense. The first city bus will follow this bridge. There was a wooden bridge to the railway bridge in Uzhgorod, and when they were damaged for various reasons, they ran between the banks by ferry.



Fig. 2. Small building of the railway station in Uzhhorod in 1915 [9]

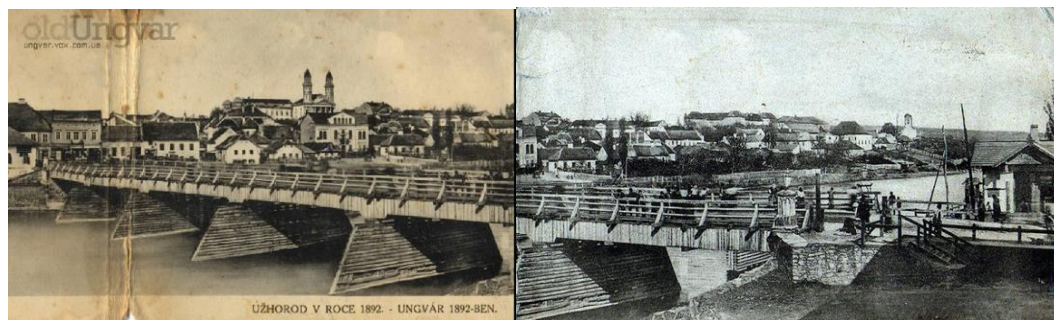


Fig. 3. Pedestrian bridge in 1892 [8]

Before the great flood of 1893 the bridge was wooden. The stormy water of the Uzh had destroyed it, and in the years 1896-1897 a railway bridge was built, which became a pedestrian-transport vehicle – it was the first city bus (1921) [20]. He traveled along the route to the new railway station – street. Station – st. Mukachevskaya – sq. Masaryka (now Petefi) – pedestrian-transport bridge – sq. Theatrical – street. Velykomostova (now Korzo) – sq. Koryatovich The bridge was not at all like the current, reminiscent of the railway – with three huge arched metal farms and two bulls, which held the design. As you know, the German troops, retreating, blew all Uzhgorod bridges. Thus, two parts of the city were torn apart, so the question arose about the urgent construction of a temporary bridge.



Fig. 4. The first pedestrian bridge of Uzhhorod, connecting the modern area of Teatralna and Petefi Square, 1893-1905 [15]

3. STAGE II: INDUSTRIAL STAGE

Industrial, characterized by active use of the territory, the construction of new residential quarters, the development of industry and consolidation of urban development, which has already been completed; This segment is characterized by the branching of the street-road network. It also consists of two periods:

1) Czechoslovakia (1919-1939). in accordance with the Saint-Germain Treaty of 10.09.1919, Subcarpathian Rus is included in the newly formed Czechoslovak Republic under the conditions of an autonomous region. In 1920, 20.6 thousand people lived in the city of Uzhhorod. During this period the city is growing geographically and changing its face, new quarters are built, streets are arranged. Since 1923, planned work on regulating the flow of the Uzh river within the city began. In 1929, an airport was built. In 1930 there were 24.7 thousand people living in the city. The street and road network of the historical core has been improved, the main framework of streets and roads has been formed [5].

A special highlight of the city is the lake alley, located on the right side of the Uzh river, and extends from the promenade of Independence to the Student Quay. According to various estimates, its length is about 2.5 km, and more than 300 trees are quantified. The alley appeared in the minds of the 20s of the last century (1928), in the heads of Czech architects, who undertook the construction of a new neighborhood, Galago (Galagov) [6]. In the western part of the alley is "Parterny Square", and in the east – "Ash Masarika". And next to the avenue, in the middle of April-early May in Uzhgorod on Pushkin Square, the streets of Dovzhenko and Rakotsi blossom Sakura, which also became the "chip" of the city. Japanese cherries were brought to Uzhhorod in 1923 from Vienna; now sakura grows practically all over the city. In 2009 and 2011, on the Kiev and Slavic embankments, they landed a saucer alley, which also claims to be the longest in Europe.



Fig. 5. The lake alley, located on the right side of the Uzh river in 1928 and 2017 [12,14]

It is also worth telling more about the formation of the main pedestrian streets of Uzhgorod. The oldest part is the Castle Hill. He is a product of volcanic activity during the formation of the Carpathians. Its height is about thirty meters. Once upon a time the hill was washed not only by the main channel of the Euphrates (from east to south), but also by its sleeve (from north to east), the so-called Small Uzh. The castle mountain lies approximately in the geometric center of the city, limited to the streets of Predgradskaya – Fidzinka – Korzo. The southern slopes pass unnoticed into the river flood plain. From the side of the Pumpkin Park, the cliffs of Zamkova Mountain are impregnable. There are several roads to the summit: from Pidzamkovoy bridge across Ivan Olbrachta Street, from Pyushhidnogo – through the Theater Square, the passage and the street Augustine Voloshin and from the market – on the street. Dukhnovich The hardest climb – the castle stairs. The top is 96 steps. Close by the scenic landscape of the northern part of the regional center.

Corzo Street in Uzhhorod was first called Mostova Street, it appeared in the 12th century, the next name was in honor of the writer Kazintsy, but then chose Korzo as the most suitable name for this pedestrian street. The current name of the street was from the princes Drugetiv, who were the owners of this city. Even individual houses here carry a historical and architectural value. You can see the building of the philharmonic society of the 20th century, a house called the White Ship (built in the 19th century), as well as the Roman Catholic Church of St. George built in the 18th century [2]

In fact, in the translation the name "Corzo" means the place for walks, the promenade. Previously, the street was a place where a large number of small shops were located. Among the owners were many Jews. Local fashionistas could satisfy the most ambitious desires and dreams here. After a successful purchase, it could be celebrated in one of the many coffee shops. The street leads towards the Pedestrian Bridge, which is another Uzhgorod card.

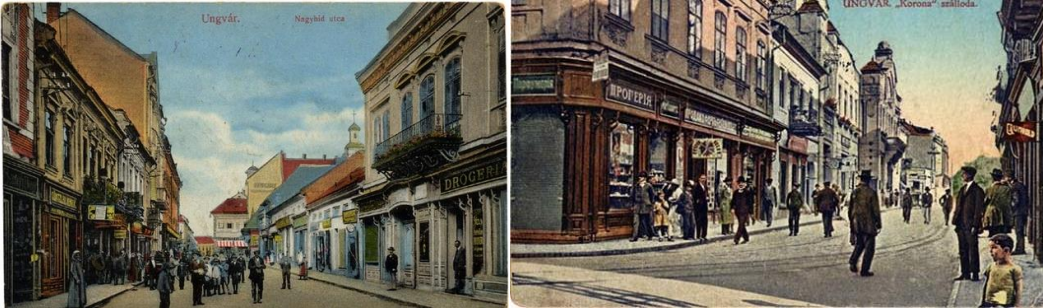


Fig.6. Historical pedestrian street Corzo [7]

A. Voloshin Street deserves special attention. Leaving for a minute a journey to the Pedestrian Bridge, it is worth turning at the "White Ship" to the right and inspect its sights. Previously, this part of the street was called Malomostova, because it led to the Small Bridge, thrown through one of the sleeves of Uzh – Small Uzh. Despite its "petty" name, the street is famous for its "big" affairs. Among the first it was packed. In 1855 this tradition was extended to other streets, completing them part of the important path Koshitse – Mukachevo. In the place of the exit of the street on the square of F. Korjatovich there is a building, the construction of which began in 1909. Subsequently, it hosted the hotel and restaurant "Bercy". At that time, the institution was considered one of the most prestigious and it was going to local aristocracy [17].

Since 1923, planned work has begun to regulate the flow of the Uzh river within the city of Uzhgorod, which has made it possible to make significant areas of wetlands for construction on the right bank of the city for new residential neighborhoods. From the main river there was a small Uzh, which flowed through the center of Uzhgorod near the streets of Pidhradskaya and Fedinca and fell to the Uzh near the modern Pushkin square. In 1936, Little Uz was flooded



Fig. 7. Small Uzh already during the formation of the flow [10]



Fig. 8. The process of burial of the Small Uzh River in 1936, when Uzhhorod was part of Czechoslovakia [11]

Petefi Square was built practically in a marsh, which constantly flooded the waters of the Uzh river. Even in the XVII century houses were not there at all, they were erected away from the banks of the river, forming the outlines of the current streets of Mukachivska, Tolstoho, Shvabska.

Joseph Kobal writes in the book "Uzhgorod famous and unknown" that this boggy spot was also a convenient place for fairs. As at the entrance to the Great (now pedestrian) bridge there were special people who took a toll for traveling to the city, it was more profitable to trade in the marsh. These items gradually became so big that the first name of the square appeared itself – Trade Square. [10] The second name – the square of Orlina – spread in the XIX century, and it appeared through the famous hotel "Black Eagle". At the end of the XIX century, the area was named after the Hungarian revolutionary Layos Kossuth.



Fig. 9. Petefi Square [13]

2) Soviet (1945-1991). The city, as the regional center of Transcarpathian Ukraine, became part of Soviet Ukraine. The new authorities have taken measures to increase the population of the city, builds new streets and residential areas, kindergartens, schools, universities, factories and factories. During the Soviet period, Uzhhorod became a developed economic, educational, cultural, medical center of the region.[4]



Fig.10. Pedestrian street Korzo in 1935 and 1989 [16]

4. THE 3D STAGE: THE DEVELOPMENT OF INFORMATION STAGE

Information, which began in the beginning of the XXI century. and to this day, is characterized by the expansion of the city boundaries by connecting the surrounding settlements, active housing construction and increasing the population, integrating new streets and roads into the existing transport and pedestrian infrastructure.

Today, Uzhgorod is being built outside the historical core in the south-easterly direction and southwest, absorbing the nearby villages Minai, Rozivka, Dravci, Baranyntsi and Domanintsi. The complete development of the radial-circular scheme makes it impossible in the southwestern part of the city to close the state border with the Slovak Republic.

In the city there is one pedestrian and three road bridge crossings through the river Uzh. From the southern and eastern side of the city there is a detour road, which provides transportation of transit vehicles from the main street network of the city.

To date, almost all territory of the historical and architectural center of the motor transport is limited. The main streets forming the pedestrian zone of the historic core are Korzo Street and Voloshina Street. In general, for today in the city there are such pedestrian zones: nab. Independence – st. Korzo – Voloshina-prov. Theatrical – square Ferencik, nab. Orthodox – sq. Sh. Petefi – nab. Kievskva and introduces a mechanism for regulating the procedure for driving the road transport of residents of the city into the territory of the pedestrian zone.

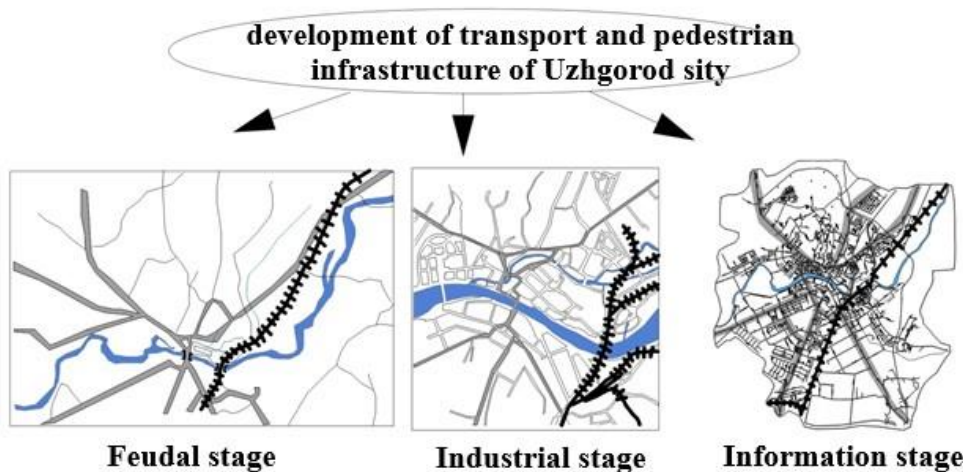


Fig.11. Historical development and transformation of transport and pedestrian infrastructure in the city of Uzhgorod. Source: I.Kutsyna

Analyzing the historical development of the pedestrian movement, regularities of spatial quantities adapted to the scale of this movement are determined. For this purpose the territory of the city center must be subordinate to a certain value – the module of the pedestrian movement and with its help it should find its spatial expression.

As a result of studying the organization of pedestrian traffic in different centers of a number of foreign cities set the following distances [3,18]:

- 1) traveling on foot from the most distant public transport stop to the center is a distance of 100-150 m for the inhabitants of the center, 250-500 m for working in the center;
- 2) the length of one segment of the pedestrian path depends on the architectural and spatial environment and comfort is 250-500 m;
- 3) the distance between the stops of the transport moving at low speeds and complements the pedestrian movement, may be from 100 to 300 m;
- 4) the range of one pedestrian travel varies from 250 to 1800 m.

In the framework of the European Mobility Week in Ukraine, on September 21-23, 2017, a pedestrian traffic survey was conducted in the city center of Uzhhorod during peak hours for 15 minutes, 30 minutes and hours, data were reduced to Table 1.

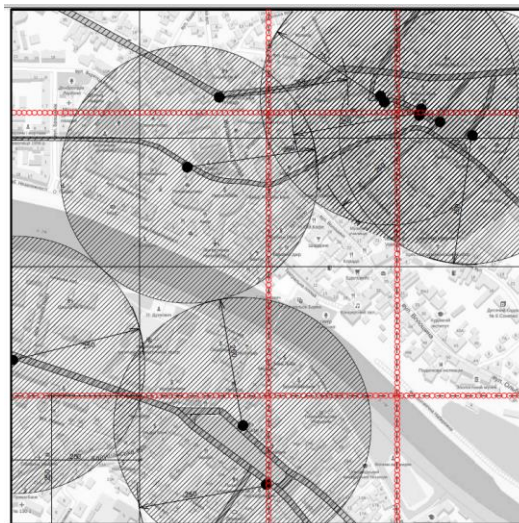


Fig.12. The scheme of pedestrian accessibility of the city center of Uzhhorod. Source: I.Kutsyna

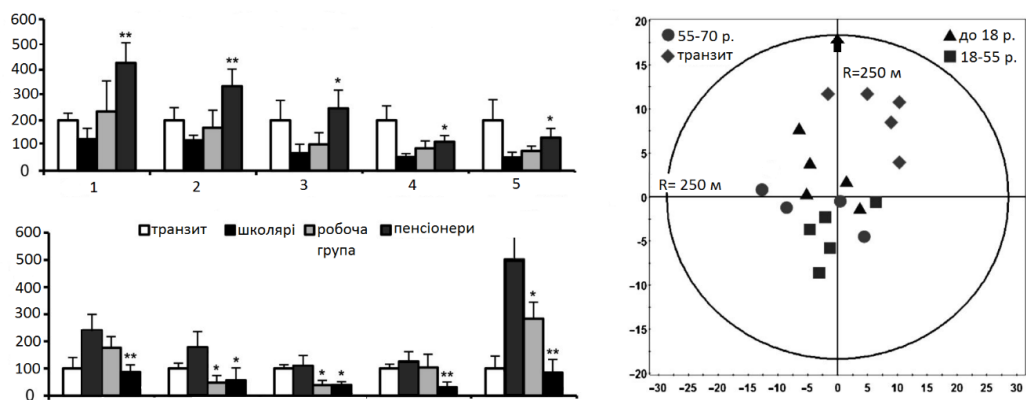


Fig.13. the distribution of pedestrian flows in the historical center for the social component. Source: I.Kutsyna

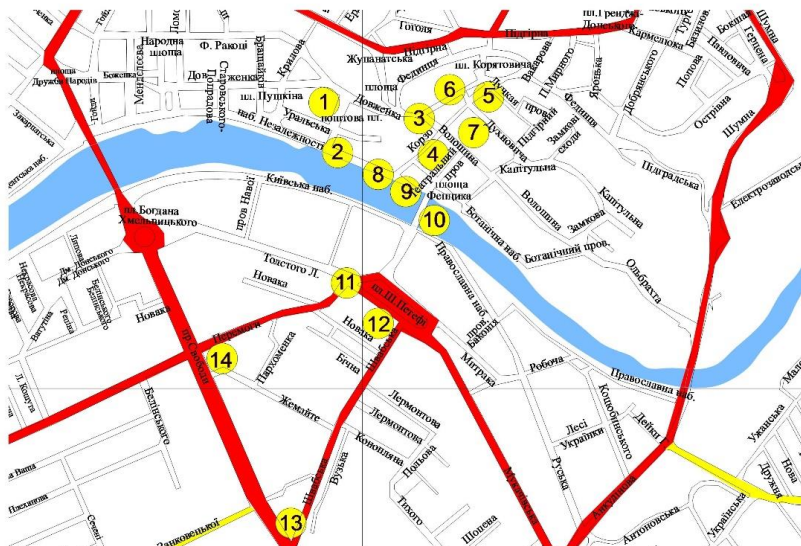


Fig.14. Scheme of pedestrian traffic measuring points in historical center (Uzhhorod). Source: I.Kutsyna

Table 1. Historical development of transport and pedestrian infrastructure of the city of Uzhgorod

Way (street)	code	School-children	Work-group	pensioners	all
Poshtova Sg-Koryatovicha reverse direction	1	43	161	25	219
	1	32	140	23	205
Poshtova Sg- Nezaleshnosti reverse direction	2	24	129	47	200
	2	21	125	44	190
Koryatovicha str-Voloshina reverse direction	3	56	91	30	177
	3	61	150	46	257
Korzo st-Koryatovicha reverse direction	4	154	568	175	897
	4	65	523	162	750
Korzo St- Koryatovicha st. reverse direction	5	42	227	108	377
	5	102	299	119	520
Koryatovicha-Duhnovicha reverse direction	6	26	75	40	141
	6	19	52	90	161
Korzo st-Voloshina st reverse direction	7	17	201	91	309
	7	105	173	57	335
Nezalezhnosti-Korzo st. reverse direction	8	115	117	32	264
	8	129	126	48	303
Nezalezhnosti- Teatralna S. reverse direction	9	94	76	40	210
	9	58	75	20	153
Teatralna Sg-Petefi reverse direction	10	143	383	224	750
	10	140	330	214	684
Petefi Sg- Kapushanska st reverse direction	11	27	149	37	213
	11	28	118	51	197
Petefi Sg- Shvabska st reverse direction	12	51	197	52	300
	12	29	129	35	193
Shvabska st-Mynaiska st reverse direction	13	30	86	47	163
	13	34	99	61	194
Kapushanska st-Pr.Svobodi reverse direction	14	48	101	95	244
	14	46	121	63	230
All:					8836

Thus, the mobility of the population on working days has predominantly a working function and a movement to the points of application of labor, on weekends – mostly recreational and cultural function. The ratio of work and domestic mobility on weekdays is approximately the same for a working category of people and students, and almost absent for pensioners, which is explained by the priority of using public transport. Also, having graduated on the division into female and male mobility, studies have shown that women have twice the mobility, which is explained by the total movement of women and children, as well as household needs. In addition, this coefficient of mobility requires an amendment to the climatic conditions and socio-economic conditions.

5. CONCLUSIONS

In the process of analyzing the historical experience of the formation of urban pedestrian areas, that are specialized in public and recreational functions are considered and are intended exclusively for pedestrian movement. There are two main areas of urban pedestrian areas were identified:

1)The creation of pedestrian streets and pedestrian spaces – as the main communication spaces, from the time of the appearance of the first cities to the end of the XIX century, when the automobile industry itself was born. The main representatives of this type of pedestrian areas are: pedestrian multifunctional areas, forums, pedestrian streets of cities (non-motorized traffic is allowed), viaducts, markets, tunnels, bridges. (Korzo street, Petefi Square, Koriatovicha Square, Pedestrian bridge).

One of the first reasons for creating a central pedestrian space – by urban planners was their understanding of the need for human contacts. The public pedestrian square was created as an open space, underlined by the cathedral and other public buildings, which in turn contributed to their better perception. The square was the market, the place of declarations, religious and civil ceremonies and, finally, a resting place. But by the beginning of the twentieth century, the pedestrian spaces of city, formed during the medieval period, represented a continuous developed network. They self-organized in accordance with the prevailing conditions of internal order. Pedestrians and transport used the street space together, while pedestrians had a numerical advantage.

2)Creation and improvement of open landscaped spaces. This type of pedestrian spaces is the oldest and has retained the basic elements and functional purpose. The main distinguishing feature is the presence of natural components of natural origin or created by means of landscape design. These include: parks, public gardens, public gardens, embankments, boulevards, sanitary-protective gardening (The lake alley, Bozdosh park)

The basis of the research was the historical and cultural approach, which allowed to consider the organization of pedestrian streets in urban centers as a phenomenon included in the general history of urban culture and design of the urban environment, to identify its main prerequisites and factors affecting this process

The vast experience in the construction of non-transport zones has been accumulated now in many countries: England, USA, Italy, Austria, Germany, Bulgaria, France, Brazil, Argentina, Australia, New Zealand, etc. The success of the best pedestrian streets is explained by three main advantages: the organization of convenient entrances by personal or public transport for purchases or other services; creation of car parks in close proximity to exits to the pedestrian zone; turning a shopping street into a pedestrian zone, reconstructing and using old buildings, and arranging recreational facilities for visitors.

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