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THE NEW URBANISM APPROACH IN CITY LOGISTICS PLANNING AND DEVELOPMENT. SEARCHING FOR SOLUTIONS ON THE GOTHENBURG AND GDANSK CASE STUDIES

Abstract

Cities nowadays, “contaminated” with motorization have become an area of contradictory traits: on the one hand, they are still centers of economic and social development, on the other hand their space has become unfriendly and even dangerous to residents and users. In the face of such problems, solutions must be taken to transform the cities’ spaces into friendly and livable along with improving the quality of citizens’ life. Unfortunately, the simplest and cheapest solutions can even have the opposite effects if they lead only to limiting the free flows of resources within urban space. The aim of the article is the comparative analysis of two cities Gdansk and Gothenburg to demonstrate the differences in the streets structure of both cities, and to demonstrate the solutions which make up Gothenburg’s public space, indeed public, and thus allow to all users for coexistence without limiting logistics of economics and social processes. Comparative analysis was done using a local vision and analysis of available literature sources. The article presents the infrastructure’s and organizational solutions used at the center of Gothenburg. Comparative analysis showed the differences in space with similar functions in Gdansk and Gothenburg. Analysis showed how people function within the space unfriendly for pedestrians and how space can change in favor of the inhabitants without losing its functions after applying various infrastructural and organizational solutions.

Keywords: city logistics solutions, city infrastructure, new urbanism, livable and human-friendly cities
Introduction

Cities are perceived as a link of development and social and economic growth. The global trend is intensified urbanization. The attractiveness of cities is constantly growing and attracting people to their educational, economic, social and cultural services (O’Sullivan, 2012). But, cities are also perceived like too burdensome or “unfriendly” places for people to live. Cities have been criticized and treated like the cause of climate change and the lack of suitable conditions for a happy life. According to conservative estimates, the cities emit more than 40% of all major greenhouse gases (Rosenzweig, 2011). If we add to this account consumption of electricity, the consumption of food and other goods, which production relates to burning of fossil fuels, this value increases to 80% (Hoornweg et al., 2011).

City problems are nowadays extremely burdensome for local communities. Most of these problems, are related to the motorization of people mobility and urban freight. Urban space has been dominated by cars’ infrastructure, and by cars and trucks, pushing away pedestrian traffic. Dominance of cars has caused problems in many respects, both ecological, social, but also urban. In an area where most people are moving their own cars, anonymity predominates, resulting in increased crime, noise, accidents, air pollution, congestion on roads that cause stress and frustration, and the reluctance of street users (Gehl, 2014). These urban problems have also been identified by the European Commission, which in the Green Paper – Towards a new culture for urban mobility (2007) outlined the EU policy guidelines on improving quality of life in European cities. This situation had to bring changes in thinking about the city, its functions and role of residents and users, and thus changes in thinking about organizing their space.

Space in cities is a public space. Streets are for everyone. A user moving his own car or a company which buys goods for its needs takes public space for its private purposes. Obviously, cities are a collection of units and individual goals, but a five-passengers-car used only by the driver, or a truck with used only 60% (or less) of its capacity, takes the limited and valuable space in the city streets without paying for it. In such cases, the hosts of the area with the executive power entrusted by the inhabitants, are obligated to the proper distribution of public space among their residents and other users. Using the spatial management tools cause changes in the way people use urban space so that cities become more and more accessible and friendly to everyone. The importance of public spaces within the streets is concentrated by many researchers, especially urbanists and architects. Good examples are research conducted by Jan Gehl (2014) or Barbara McCann (2013). The simplest and cheapest are the regulatory solutions which lead to limitation of access for car users to individual city zones. However, such solutions, cause many problems for the functioning of the entire urban organism, because the urban environment is an environment of innumerable logistical processes related to provide the usability of time and space for all kinds of goods and human resources. Maria Lindholm and Behrends Sönke (2012) confirm that in order to reach attractive urban areas, it is needed to integrate freight transport planning with people mobility planning and land-use planning. The main problem faced by cities is the reconciliation
of traffic congestion while ensuring efficient logistics in all areas of the city. That is why there is a need to cooperation in logistics infrastructure planning among local authorities, urbanists, architects, companies, local society and scientists interested in urban logistics. Although such cooperation seems difficult, is possible. In cities where such cooperation has been undertaken, good examples of realization of all social, economic and political demands can be observed. Despite that every city is different and specific it is worth to recognize good examples and follow them or just be inspire by them in city planning and development.

The aim of the article is a comparative analysis of two cities Gdansk and Gothenburg to demonstrate the differences in the streets structure of both cities, and to demonstrate the logistics solutions which make up Gothenburg’s public space, indeed public, and thus allow to all users for coexistence without limiting logistics of economic and social processes.

1. Methodology

The study was system analysis and deduction method based on the literature and real-life examples. To compare the characteristic of chosen streets were used the local vision and taken by author photographs. The method of examining the structure of streets based on the photographs analysis is a method adopted by urban morphologists (McCann, 2013; Baharuddin at al., 2016; Del Monte at al., 2016; Oliveira, 2016). The local vision and photographs were taken in the city of Gothenburg and Gdansk in November 2016. Additionally, analysis was based on the interviews with local researchers.

Gdansk is a city located in Northern Poland with a current population of 463,754 (Gdańsk w liczbach, 2016). However, it is the capital of an agglomeration consists of many other cities. In total, the entire agglomeration has the size of over 1.2 million inhabitants (Bank Danych Lokalnych, 2016). This is important because when speaking about Gdansk’s logistics, it is also necessary to consider users who move within the city area during the day, even though they are registered and officially reside outside Gdansk. Gothenburg is a city in developed country. Swedish society is much more aware of a need for sustain development. Gothenburg, ten years ago had similar problems like Gdansk today. Then city’s authorities understood the need of changes in city logistics and started implementing variety of new solutions. Gothenburg is good benchmark because of its similarities with Gdansk. Gothenburg is a city on the west coast of Sweden. It has 533,300 inhabitants, but it covers the local labor market with a potential of a total of 1.1 million inhabitants (Andersson, 2016). Gothenburg has a similar climate (climate-data.org), although even less favorable than Gdansk, there are more rainfalls yearly and it is cooler. It has similar land differentiation (topographic-map.com). Those characteristics have meaning when we compare the mobility ways chosen by inhabitants. As it is shown in next chapters, we can observe much more bicycles and public transportation users within the city space of Gothenburg than in Gdansk.
The examples of comparing spaces in these two cites were taken from the districts and streets having similar meaning and usability. That means, compared spaces fulfill the same functions within analyzed cities. Based on that analysis some characteristics of Gothenburg’s streets were pointed as factors which correspond to “new urbanism” demands. The characteristics of Gdansk which are now barriers for proper city development were pointed to show the areas which should be prioritizing in future city’s investments.

2. The new urbanism approach vs city logistics needs

Current demands towards cities have been defined by the United Nations during the Habitat III – Conference on Housing and Sustainable Urban Development in October 2016. According to United Nations, cities should “fulfil their social function, including the social and ecological function of land, with a view to progressively achieving the full realization of the right to adequate housing as a component of the right to an adequate standard of living, without discrimination, universal access to safe and affordable drinking water and sanitation, as well as equal access for all to public goods and quality services in areas such as food security and nutrition, health, education, infrastructure, mobility and transportation, energy, air quality and livelihoods”. Meeting all these demands was a statement, that urban development must be people-centered development (United Nations, 2016).

The idea of people-centered development is directly connected with taking people needs and their quality of life as a main determinant in decision making in city planning. Many cities compete in the rankings, in which the main criterion is the quality of life (Majer, 2014). They use the phrase ‘livable’, means ‘city of the good life’. Criterion ‘livable’ is a comprehensive evaluation of the quality of life in the city. Is the answer to the questions: whether the city is a good place to spend your life in it; whether it is safe and its people are friendly; whether all social and ages groups easily move around it; and whether in this city is easy to take care of your health. This category consists of many factors. The concept of a ‘livable’ city connects directly with the concept of ‘soft city’. ‘Soft city’ is a city where people can see and meet other people on the streets and squares instead of cars and individual units behind the wheel. The experience of inhabitants and users in a city is radically different when they can meet people in public spaces, not only cars (Zakowska, 2013).

However, it is very important that the solutions adopted do not adversely affect the possibilities of carrying out logistical services of economic processes within cities. Particularly important is the part of logistics that is involved in the physical delivery of goods. Maria Lindholm (2012, p. 4) outlined the problem clearly. “Goods are important for the quality and livability of the urban area, since without goods transport, there would be no shopping, no offices, no restaurants, etc. goods transport is a driver of the urban economy but also an issue that is important from an emissions perspective, where statistics show that freight transport has
an important role regarding sustainability (...). Furthermore, vehicles serving urban delivery operations are a well-established contributing factor to urban traffic congestion (...). Freight transport is a part of the many different transport operations performed. Cycling, walking, public transport and private car use are among the means in use. During the day, most of the transport operations performed involve moving people from one place to another (...). However, both people and freight need to use the same infrastructure”. As long as urban freight transport is important component for economic vitality of cities but also is responsible for a number of negative impacts, the only way of its development within the city structure is sustainable development. However, this is the least feasible aspect of urban space management (Sönke, 2011).

3. City’s space unfriendly for people – Gdansk example

Unfriendly city is a city which space does not encourage spending time within it. In such a city, people are just passing through the traffic, do not want to spend time in the public space more time than the minimum necessary. Streets of such a city are characterized by continuous movement and are only places of flows in different directions. Streets dominated by motorization are uncomfortable and dangerous. According to the researches, even greater discomfort than the pollution causes noise (Nicchi, 2014). Car traffic also causes a high risk of accidents. The consequences of such risks are fences and strict separation of pedestrian routes from the carriageway (Figure 1). Technical barriers for walking and bicycling are fences, hurdles, rails, green belts, high curbs and light signals. Separating pedestrian traffic increases drivers’ confidence and driving speed. The increase in speed results in a further solution for pedestrian safety such as, underground passageways or pedestrian traffic lights (Figure 2). Unfortunately, all these solutions, which seem to provide users with security, only cause huge barriers to movement. This leads to the necessity of overtaking the road, extends the time and distance of travel, the need to constantly stop and wait for lights changes, the need to climb the numerous stairs. Such conditions discourage users to move on foot or even by bicycle.

Figure 1. Gdansk, Grunwaldzka street, November 2016
Source: (Author owns collection)
The present structure of Gdansk’s tissue is a consequence of many factors, especially its territorial postwar development was shaped by the ideas of socialism and mono-functional urbanism (Słodczyk, 2012). In addition, the geographical location of Gdansk has caused many years of limited development opportunities. Development of Gdańsk was limited by bay, harbor and the shipyard on the north, and by moraine hills and protected forests of Trójmiejski Landscape Park. The Gdansk structure was also shaped by the development of the entire agglomeration dominated by location of urban rail (SKM) network (Koźlak, 2017). Under such topographical conditions, the railways infrastructure was leaded along the coast. Newly established housing estates and towns focused around the railway network.

The second direction of development after 1990 was the completion of East-West route. This route divided the city’s districts, limiting the people flows. Gdansk’s spatial development was also limited by the west bypass route, which became the main communication barrier for settlements located on the other side. Because of all these determinants, Gdansk consists of many monofunctional districts spread out linearly and satellite housing estates connected by urban “freeways”. These roads have 2–3 lane. Additionally, despite of they are in the center of the built-up area, the permissible speed exceeds to 60–80 km/h (although the speed in the built-up area in Poland is 50 km/h). These urban “freeways” and the urban rail line constitute barriers and factors disintegrating the city. These lines intersect the structure of individual districts by limiting the ability to move only to designated passages with traffic lights, tunnels and bridges (Figure 3).

Consequently, the Gdansk tissue is characterized by very wide arteries, with separate lanes for each type of communication (car, tram, bicycle, walking). The city is characterized by very large walking distances, which is quite a barrier for pedestrians and cyclists. According to the research, the comfort and time are the main factors of choosing means of transport in daily commuting to work (Gdańskie Badanie Ruchu, 2016).
4. Logistics solutions in Gothenburg

Gothenburg’s development for decades has been limited to a centrally located harbor, which has now moved out of the city center, giving the city great potential for attractive sites in the center and in the waterfront area. Gothenburg 10 years ago faced similar problems like Gdańsk. Crowded by cars city center did not encourage spending time within it. However, the actions taken over the past ten years have led to a change in its image today (City of Gothenburg. Environmental Programme, 2015; The innovative delivery, 2015).

There were two most important projects in the city. First it was introducing charges for enter cars and trucks to the city center. Already this activity significantly reduced the nuisance of motoring in the center. Additionally, The Urban Transport Administration continuously works on improvement of the freight distribution in the City. The Concept of “Smart Deliveries”, launched in 2012, is based on the main idea of consolidated deliveries with electric powered vehicles. It consists of four projects: 1) Stadsleveransen, consolidated deliveries of goods in the city center; 2) Cargo bikes, electric assisted bikes for deliveries; 3) Lindholms Leveransen, combining goods and waste handling and 4) Fiskleveransen, demonstration of new fields of applications. The main objectives of that concept were to reduce congestion, increasing safety, creating more attractive urban environment and reducing environmental impact. The most significant, “city’s Stadsleveransen system pools deliveries for 500 shops and businesses – drastically reducing shopping center traffic and freeing up once-congested streets for pedestrians and cyclists” (The innovative delivery system, 2015). Figure 4 shows the area of city center which is totally closed for truck traffic and location of the consolidation center for deliveries of goods. Freight transport from the consolidation center to the Stadsleveransen zone is support only by small electric vans (Figure 5), bikes and six-wheeled cargo
The cars are stretching 14ft long but only 34 inches wide (The innovative delivery, 2015). The project assumed common goods reception for shops and offices in the city center; one last mile operator for transport companies; reception check and consolidation of goods; handling of small shipments (packages); deliveries according to time schedule; trained personnel managing the reception/registration and the deliveries, operated by a local company specialized in distribution with electric vehicles (City of Gothenburg. In the front edge..., 2015).

Figure 4. Gothenburg – the Stadsleveransen zone
Source: (Author’s own work using Google Open Street Map)

Figure 5. Electric vehicle using for delivery in Stadsleveransen zone, November 2016
Source: (Author owns collection)
Additionally, the DB Schenker in cooperation of City of Gothenburg and Stena Recycling AB introduced its own pilot project of distributing goods and packages in central Gothenburg. DB Schenker settled its own little hub (size of container) just next to the “City delivery” area (see Figure 4). Instead of using vehicles driving from store to store they unload goods in early morning to this little hub and then with the help of newly developed electric pallet truck, they distribute deliveries on foot (DB Schenker).

Activities undertaken by the City of Gothenburg for the past 10 years have led to the changes in the structure and function of the streets. Gothenburg streets are multifunctional and free of technical barriers for pedestrian and bicycle traffic like curbs and hurdles, reduced number of traffic lights (Figure 6).

![Figure 6. Gothenburg streets in the central districts](Source: (Author’s own work using Google Open Street Map; Author owns collection)](image)

5. Comparative analysis of Gothenburg and Gdansk

The comparative analysis of two cities was based on a comparison the streets system solutions of comparable importance in both cities. Photographs were taken in the working day in week, at time 1 pm–2 pm, before peak hours.

First pair of compared streets create space in front of the central rail station (Figure 7). For both streets, dominant function is to support the communication of the central rail station with other areas of the cities. Pictures were taken across the street opposite the buildings of rail station. The difference is noticeable. Access for pedestrians is much easier for Gothenburg users. The street’s facilities make the square with easy approach to every kind of public transportation, convenient for walking and cycling. In Gdansk, access from one side of the street to opposite side is only by underground tunnel. Pedestrian tunnel offers some small purchases, like snack, press. The access to the tunnel is by stairs. There is no elevator from the tram platforms to the tunnel. Space for walking is narrow. Bicycle roads conflict with sidewalks and bus stops.
Second pair of photographs (Figure 8) presents one of the main junctions in both cities. Both junctions have similar functions. They are located near the railway main station, so must handle streams flow of every kind of public transport forms as well as huge pedestrian and bicycling flows. The most noticeable is the space division and many cars on the pictures which shows the priority. In Gdansk, every kind of flows have exactly dedicated lines: sidewalks, marked pedestrian crossings and bicycle roads, separated by fences tram-lines. For comparison in Gothenburg the whole junction space is perfectly available for every kind of users. There are no marked pedestrian crossing or even curbs. Cars, trams and bicycles move within the same space with pedestrian and bicycles priority. While the Gdansk’s pedestrians must wait in full-cycle traffic lights and then must try cross the huge space between both street sides in very short time (which makes usually stress and need of running at the end of the green light cycle), in Gothenburg pedestrians and cyclists can move in every needed direction without stopping and waiting.

Figure 9 shows the examples of streets which are connectors between the districts. Both streets are surrounded by park area and some academic facilities. The pictures and maps show the priorities on both streets. While the road in Gdansk is dominated by six lines for cars and separated by fence tram line along the axis of the street, in Gothenburg the main part is sidewalk and cycling road. Additionally, tram lines both way with dedicated bus lines. Transport lines are narrow, safe, with easy access for pedestrians.
Figure 8. Drottningtorget junction in Gothenburg (upper) and Hucisko junction in Gdansk (below)
Source: (Author’s owns collection)

Figure 9. Vasagatan in Gothenburg (upper) and Zwyciestwa street in Gdansk (below)
Source: (Author’s owns collection)
Conclusions

According to the analysis, the improvement of the situation in cities is based primarily on the transition from mono-functional space to space with many functions. It is important in the cities to offer space for each type of user. The best results can be achieved when users share the same space without dominating any group over another. The essence of quality of life in cities is not just to create the restricted zones. It is important to organize the space and create an infrastructure that will limit walking and cycling barriers and will not push to the margin any of the groups.

The analysis covered the space including logistic infrastructure, especially the streets. Streets should be multifunctional spaces. It is important that pedestrians and cyclists can move on one level. Using stairs or lifts for these groups involves additional effort and time, which creates costlier alternative for moving (with higher alternative cost). Streets dedicated to pedestrians should consist multifunctional squares. Squares can also perform additional cultural or service functions just to encourage people to stay in the city space, not just to flit away.

A city where people are seen in the streets, not only in daily traffic but also present, spending time within public spaces, fulfills all economic, social and ecological functions. Such space organization also creates greater social sensitivity, builds civil society, leading to reductions in crime, pathology and segregation. That is why it is so important to take it into consideration by local authorities during city logistics infrastructure planning and development.

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