THE FIVE-MINUTE-WALK DISTANCE CONCEPT, CASE STUDY: CITY OF CLUJ-NAPOCA, ROMANIA

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ABSTRACT. The Five-Minute-Walk Distance Concept, Case Study: City of Cluj-Napoca, Romania. This term, also known as the "pedestrian shed", refers to the distance that would make a person's option of walking or driving to a destination differ. The distance is visualized as a 400-meter radius area most commonly found in some major cities or capitals' downtown areas/main areas. To further highlight the characteristics of this concept I applied it on a case study of the city of Cluj-Napoca, checking the adherence of many areas against the concept's principles. This will display the percentage of studied areas that meet the definition criteria and the results will indicate the proposed collection of measures to be adopted by the local authorities to increase the area definition validity score and to improve the citizens quality of life. This concept could be easily replicated in any city or capital and its metrics could be used to assess citizens.

Keywords: *neighborhood, 5-minute walking distance, urban development, city driving, pedestrian shed.*

INTRODUCTION

Romania witnessed sluggish growth of its cities and its economy alongside other communist countries for an extended period of time. These states and their cities experienced a much different, more rapid development after the fall of the communist regimes, influenced by neighboring countries and particularly by the West.

This paper aims to provide an overview of the growth of large cities according to a concept developed in the 1920s, aimed at developing and attracting investments in multiple key points in a city as well as to supplementing

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the position of the city center, thus making other areas of the city more inviting and desirable for industry, building, governance and daily living.

Today, walkability is becoming a trend in planning as new ideas about urbanism are emerging through the field. Many societies today suffer from rising reliance on vehicles, and road traffic is the main mode of transportation, resulting in development of low density and expanding patterns of growth.

According to Abley (2005, page 3), walkability can be defined as "the extent to which the built environment is friendly to the presence of people living, shopping, visiting, enjoying or spending time in an area".

RESEARCH METHODOLOGY

This paper is based on a concept developed by planner and sociologist Arthur Clarence Perry in 1920 in New York (https://www.conservapedia.com/index.php?title=Clarence_Perry).

The goal of Perry's research was to investigate the scale, spatial arrangement and land use of residential communities and, ultimately, to provide a planning framework for new neighborhoods. He was the first researcher to observe the correlation between distances, heavy traffic and the multitude of people/pedestrians walking more than 5-10 minutes. Thusly, he could appreciate and think of a concept that proved to be revolutionary – The Neighborhood Unit.

### *What is this concept? How does it work?*

The unit of measurement is typical in the planning profession and is usually defined by a radius of one quarter of a mile (400 metres). A human's average walking speed is about 3 miles / h which translates into 5 minutes to 1/4 of a mile (https://morphocode.com/the-5-minute-walk/). Most planners are within walking distance on a proposed plan drawing or an aerial as a circle drawn with the middle of the circle on the destination. Nowadays, the term is called "pedestrian shed" (https://urbanlands.co/2010/08/23/the-five-minute-walk-more-than-just-a-circle/).

The pedestrian shed is usually placed around a community center or a common destination such as a school or a public plaza, where social and commercial activity is focused. The "5-minute-walk distance" sets a framework in urban planning to gather both quantitative and qualitative data on a human scale.

Perry put the elementary school in the center of the neighborhood and used it to assess the size and layout of the residential community: the school

had to be within sight of all residents and set a walking distance quarter-of-a-mile threshold in the unit scheme (Figure 1).

Together with local retail shops, public spaces and residential units, the elementary school was one of the four main functions in the neighborhood unit which means around 65 ha in size that provides housing area for a population of 5,000 to 10,000 people (Sharifi, A. 2013, page 52).
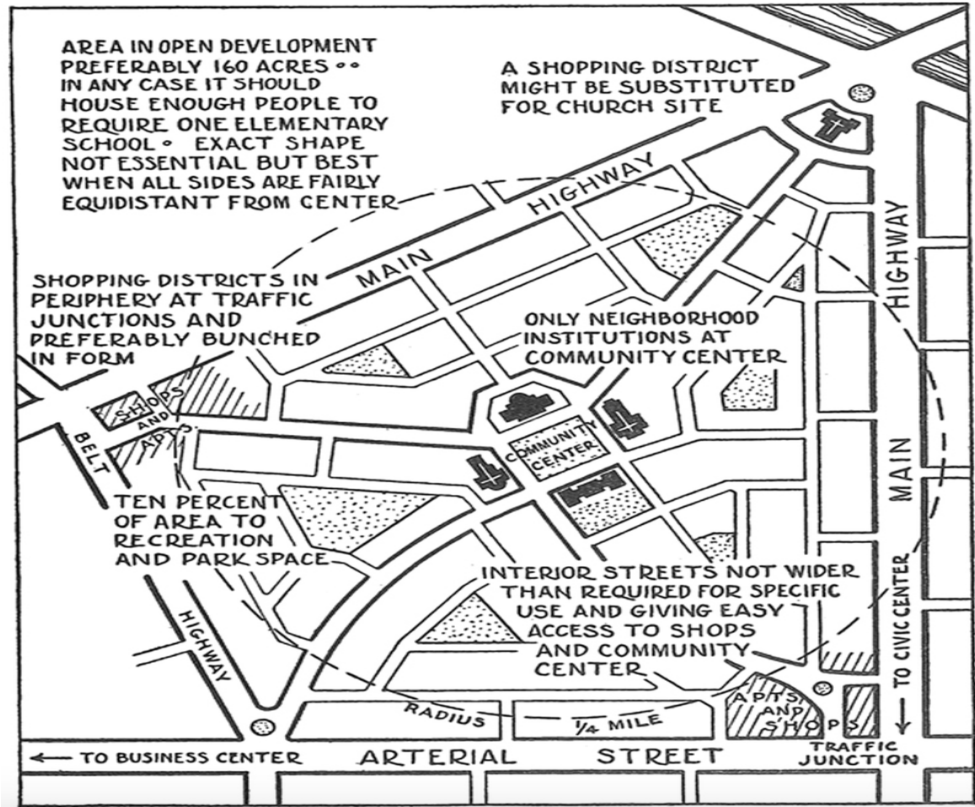
Fig. 1. Perry's diagram
Source: https://morphocode.com/the-5-minute-walk/

In urban planning the general presumption that most people are able to walk for about five minutes before deciding to drive was the topic of debate. A substantial portion of walking behavior research focuses on commuting and transit connectivity. The duration of walking trips also depends on their purpose. Shopping trips and transportation links are shorter while casual walks

tend to be longer. Walking behavior depends on a number of location-specific factors such as proximity to destinations and perceived safety.

It also varies across age groups and socio-economic status. Both the 5 and 10-minute walk thresholds are applied in planning (Yong, Y. And Diez-Roux A.V.,2012, page 2). From these works, we can point to Chi-Chang Wang's study in a district of Vancouver (Wang, 1965), Banargee and Baer (1984)'s study focusing on residential environments and public policy, and the neighborhood concept developed by architect Plater-Zyberk (1991) for Atlanta, Georgia.

In regards to this concept, a number of important articles have been written over time without having a materialized impact within a city, being rather parallel studies on a possible variant of regulating and organizing cities like Chicago, Vancouver or Atlanta. The general inference drawn from Perry's definition is that the idea can be implemented in various ways, depending on the planner's vision and the main point to be made – the social or the physical.

CASE STUDY – CITY OF CLUJ-NAPOCA, ROMANIA

Most researchers agree that the quarter-of-a-mile (400 m) radius defining the walkable circle area is a fair distance from which to assess access to public facilities and therefore to calculate how walkable a neighborhood is.

I applied the concept of "5 minutes' walk distance" in the City of Cluj-Napoca, focusing on three study areas:

- Bulgaria neighborhood
- Gheorgheni neighborhood
- Downtown

I chose a list of three particular neighbourhoods, the key points being reflected by the facilities and services that are available in that area, from the necessity of providing a clearly specified study that can view the definition in a more accessible way and that makes the definition easy to understand.

The location of the neighborhoods represents three different categories: the downtown is the central area of the city, where the most numerous and diversified types of services and facilities are located, the Gheorgheni neighborhood, which displays medium characteristics, and the Bulgaria neighborhood, which is the last positioned in terms of services and endowments. With this perfect difference between all these three neighborhoods, I figured the contrast between them would better explain the idea Perry had created.

I used the Google Earth service and its role of calculating pedestrian distances to measure the distances from the selected main point (where most of the

services and facilities in that neighbourhood were concentrated) and destination (the final service / place). I have used the tool www.traveltimeplatform.com to validate the data given by Google Earth, which, like the service provided by Google, facilitates the measurement of the pedestrian distances from a specified point on a map to a selected destination in a predefined area.

In the analysis, I considered a set of 14 elements to be absolutely necessary to be present in the immediate vicinity of a residential area in order to be chosen as a "typical area", that is, to fit into the "5-minute walk distance" definition. I chose as a landmark the central point of the area, where most of the services needed for the population are located. These 14 elements were chosen according to the everyday or weekly needs of a citizen: medical services, financial services (banks, insurance, etc.), public transportation station, university, schools, kindergarten, commercial services (shopping & retail), park, entertainment services (theatre, cinema), car parking (including underground parking), spare time and meeting points/socializing (restaurants, bar, pedestrian area, coffee shops), beauty services (barber shop, nail salon, hair salon), accommodation services (hotel/guest house), and religious activity (churches).

All the areas being compared are equivalent for the neighborhood they represent. This case study is aimed at gathering on how the definition of neighborhood used in urban areas affects walkability within community areas.

a) Bulgaria Neighborhood

Fig. 2. A street in the Bulgaria Neighborhood
Source: Google Street View

At the origin of the name was a small community of Bulgarian farmers, who arrived in Cluj-Napoca in the ninth century. Although this community numbered only a few dozen families, the name of the area in which they settled has survived even today. Local historians say that the Bulgarians settled in Cluj-Napoca's eastern region, fled the Ottomans, and were also strong gardeners. Over time, the identitiy of the area's Bulgarian ethnic community vanished and created a neighborhood with largely industrial characteristics but experiencing residential changes, today housing about 28,000 inhabitants.

Most of the services found in this neighborhood are mostly concentrated in the same place. Although the neighborhood does not easily find several common services such as kindergartens, shops, financial institutions, the area is constantly developing and expanding, with the daily approval of residential and commercial projects and buildings.

Table 1. Results of the case study on the Bulgaria neighborhood

	Distance (in minutes)	Distance on foot (in km or m)
Medical services	6 min	500 m
Financial services, banks	15 min	1.2 km
Public transport station	2 min	120 m
University	19 min	1.5 km
Schools	6 min	450 m
Kindergarten	9 min	750 m
Shopping center	15 min	1.3 km
Park	6 min	500 m
Entertainment (cinema, theatre, opera)	20 m	1.7 km
Car parking	- *	- *
Free time/ Socializing (restaurant, bar, coffee shop)	5 min	400 m
Beauty services (barber shop, hair salon, nails salon)	1 min	90 m
Accommodation services Hotel/Guest house	4 min	350 m
Church	9 min	750 m

Source: Own compilation

in the area there is no paid parking and monitored by the local administration; cars can be parked in any available space along the street

In the table, results shown in red are beyond the 5-minute distance. The results show that most of the elements in the Bulgaria neighborhood are located at a distance of more than 5 minutes on foot. The inhabitants of this

neighborhood have to use a car or public transport instead of walking in order to perform their daily tasks like going to shopping, taking the kids to school or to the playground, using medical services, paying bills, etc.

b) Gheorgheni Neighborhood

Fig. 3. Gheorgheni Neighborhood
Source: Own photo

Neighborhood Gheorgheni is the greenest neighborhood and the one that has undergone the least changes. The neighborhood name comes from the very easy to reach village of Gheorgheni. The area also includes Gheorgheni Lake, which is also named "Bottomless Lake".

The first document dating the existence of the lake is from 1370, and belonged to the king of Hungary, Louis of Anjou. Later, the lake was transformed into a fishery but over time, the lake became one of the most beautiful places of leisure in the city and the most beautiful in the neighborhood. Today, the Gheorgheni neighborhood is green, airy and highly sought-after residential area for home purchase, housing the largest shopping center in Cluj-Napoca, near the lake.

Here, the residents can enjoy various facilities, being relatively within short distances, such as public transit stations, parks, etc. Around 47,000 people currently live in this area.

Table 2. Results of the case study on the Gheorgheni neighborhood

	Distance (in minutes)	Distance on foot (in km or m)
Medical services	1 min	96 m
Financial services, banks	3 min	220 m
Public transport station	2 min	180 m
University	10 min	850 m
Schools	4 min	350 m
Kindergarten	5 min	350 m
Shopping center	3 min	220 m
Park	2 min	200 m
Entertainment (cinema, theatre, opera)	12 min	1.0 km
Car parking	11 min	850 m
Free time/ Socializing (restaurant, bar, coffee Shop)	6 min	500 m
Beauty services (barber shop, hair salon, nails salon)	3 min	210 m
Accommodation services Hotel/Guest house	7 min	550 m
Church	1 min	69 m

Source: Own compilation

Unlike the neighborhood of Bulgaria, the people who live in the neighborhood of Gheorgheni had to select the car instead of walking for only a few services. They will walk for things such as getting kids to school, shopping, paying bills, and so on, since all of these facilities are within a maximum 5-minute walk distance.

c) Downtown – City Centre

Fig. 4. City Centre
Source: Own photo

The key central area of Cluj-Napoca is the administrative, financial, commercial and not in the least the cultural centre of the city. It is arranged in 3 wide squares forming a triangle: Unirii Square, Mihai Viteazul Square and Avram Iancu Square (where both the Romanian Opera and the Orthodox Cathedral are situated).

Preserving a set of monumental and historical architectural buildings dating from the XVII-XX centuries, the center is individualized as opposed to the rest of the city. Cluj-Napoca's zero point is Unirii Square, which is the "medieval core of the city", clustered around Saint Michael's Catholic Cathedral and Matei Corvin's Statue.

The walls of the medieval fortress delimit the former historical fortress of the city that once had only 45 ha. Unirii Square is the largest square (220 m x 160 m) in the countries of Eastern and South-Eastern Europe.

After 1980, the square was called Unirii Square, a name that is still preserved today. Colloquially, it is also called the Great Square or simply the Centre. Unirii Square also houses other famous buildings such as: on the side is the Bánffy Palace, which now houses the Art Museum and the two buildings built in the mirror, from which Iuliu Maniu Street begins.

The former City Hall and the National Bank are situated to the south. The Continental Hotel Building, built in 1894, is located at the southwest corner. The Central region, in a smaller measure, also plays a residential function in addition to the geographical, architectural, cultural, administrative, financial and commercial position it successfully fulfills.

Table 3. Results of the case study on City Centre

	Distance (in minutes)	Distance on foot (in km or m)
Medical services	2 min	190 m
Financial services, banks	1 min	34 m
Public transport station	2 min	150 m
University	4 min	270 m
Schools	5 min	400 m
Kindergarten	7 min	550 m
Shopping center	5 min	350 m
Park	4 min	350 m
Entertainment (cinema, theatre, opera)	8 min	650 m
Car parking	1 min	84 m
Free time/ Socializing (restaurant, bar, coffee shop)	1 min	64 m
Beauty services (barber shop, hair salon, nails salon)	3 min	220 m
Accommodation services Hotel/Guest house	3 min	210 m
Church	1 min	40 m

Source: Own compilation

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Most of the buildings in which this residential function is found are in the buildings with the minimum height of the ground floor and one floor/attic, where on the ground floor there is an ongoing commercial activity/services and upstairs are in most cases, the homes of the business owners.

It is very convenient for a buyer to opt for a home in the central area, even small, since almost all form of facilities, schools, walks, shopping, hospitals are in the central area, so it is no longer necessary to drive to other areas in the city, excluding the airport that is located at the city exit. Currently the central region is home to around 38,000 residents.

In contrast with the other two neighborhoods, the Downtown area provides a full range of services and the longest distance that a citizen has to walk is about 650 m, which means 8 minutes. In the Downtown area, the citizen may find all required services and facilities. There are enough parking spaces in the central part of the city, whether they are clustered in the form of a car park (multi-level) or along the streets, and they may be used for a fee. Residents of the entire city may take advantage of a position or a maximum of two parking spaces in the vicinity of the building, in the form of a monthly fee payable to the local government.

Also, depending on the area where the person lives or where the parking place is located, there are different fees about the proximity to the central area - the closer the parking place is to the central area, the higher the fee. Fortunately, no building project is approved by the local administration that does not benefit from an underground car park containing at least one parking space per apartment and including parking spaces for visitors. As a result, the parking spaces in the central area are used predominantly by visitors/people working in that area for a certain period.

CONCLUSIONS

After analyzing the three areas – the Bulgaria neighborhood, Gheorgheni neighborhood and Downtown – we can draw the following conclusions:

- the services in the central area are diverse, diversified and it is easy for people to travel by public transport from any point in the city to the city centre facilities / facility goals. They can easily complete their duties, since these services are at a reasonable distance of 5 minutes from each other, so they can return home using public transport again. They can also use their own car that may be left in a parking space in the central area and then use it again to return home. This is only required if they do not live in the central area; residents of downtown can access goods and services on foot.

- there are also various services in the Gheorgheni neighborhood, though less extensive than in the central part of the city. Basic services operate and the people can handle most of their regular or weekly tasks without having to use their car because the services are located at a maximum distance of 5 minutes from home.
- in terms of services, the Bulgaria neighborhood ranks the worst, lacking services and facilities, which forces residents to walk distances of more than one kilometer or even drive their car or use public transport in order to solve their daily tasks.

This study will suggest that urban community design is still lacking in the City of Cluj-Napoca to encourage people to walk. In addition, many community services are not provided at key locations in urban residential areas. In planning a neighborhood, the sustainability concept can be applied to enhance the walkability of residents in the urban community.

A further conclusion is that the Perry walking distance standard (400 m) is very suitable to be used in a city like Cluj-Napoca.

Solution

Investors who want to build a corporation, kindergarten, or a shopping center in those areas, where they are lacking and are completely required should be given tax incentives by the local authorities.

By embracing the idea of "5-minute-walking-distance", the local public government and the architects and urban planners responsible for horizontal development might create future urbanization plans that will allow people to walk to the necessary services/facilities, drive their cars less, and if they need to walk more than 5 to 10 minutes, choose public transport.

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