THE QUALITY OF LIFE INDEX AND ITS APPLICATION TO THE INNER CITY OF TIMIȘOARA BEFORE AND AFTER THE REHABILITATION OF THE PUBLIC SPACE

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Abstract

The study promotes the evaluation of the quality of living in the inner neighborhood of Timișoara – the Inner City, before and after the public space rehabilitation, by calculating an index based on three principal parameters: the value of the buildings, the distance to the closest park and the noise level. The value was determined from other two aspects of the buildings: their age and their condition. The data was taken from written sources and directly from field, or determined using Quantum GIS. All indexes were calculated within this program. Maps where made, based on each parameter, and the final index was calculated both for the year of the beginning of the project and, virtually, for the situation after the renewal of the Inner City. The purpose was to find out if the project would have an influence on the quality of living in the Inner City. Finally, I compared the maps between them and then to the real situation, and decided the correctness of the index.

Keywords: Quality of life, Rehabilitation of Timișoara's Inner City, Building Condition, Noise level, Green spaces.

1. INTRODUCTION

The Inner City (Cetatea in Romanian) of Timișoara represents the central area of the city, the oldest core of Timișoara Municipality. It is so named because of the fact that the area has been, since the 1200s until the beginning of the 20th century, an impressing citadel, being, at a time, under the sceptre of the Hungarians, the Ottomans, and then of the Habsburgs. Until today, only the Theresia Bastion and some other few parts of the old walls survived (xxx, 1982).

The Inner City concentrates today the juridic activity of the Municipality, highly ranked touristic attractions, some churches, many pubs and restaurants, a couple of hospitals, education units, museums etc. Some of the best-known attractions are: the old townhall, the Roman-Catholic Cathedral (1736-1754), the Deschan Palace (1802), the Dicasterial Palace (1850-1854), the hospital and the church of the Misericordians (1735-1737), the Theatre (1872-1875), the Huniazilor Castle (XVth century) (Academia Română, 1992). Because of these and of the old town charm held by this neighborhood, is is a more and more desired residential area. However, unfortunately, many buildings are in a condition unworthy of their history, and this state is often a risk factor for their residents. Because of the big rehabilitation costs, many persons live in surprisingly poor conditions for such an ultracentral area of the city, which can have a rather bad impact on the psychological well-being of people, especially the elder (Philips, D. R. et al., 2005).

Through this study, I wanted to determined which is the vulnerability of the residents (presented here as the quality of life) to the negative environment elements, corresponding to the urban space. For that, I calculated three component indexes: the value of the building, the distance to the closest park and the noise level. It is not a globally applicable index, but a rather local one.
The Mercer Quality of Living index, one of the best in the world, is a global index that analyses factors as political, economic, medical environments, schools, recreation, housing and natural environment (Picardo, E., 2014). On the other hand, the European Comission studies public transport, health care, education, cultural and sport facilities as being elements of the quality of living (European Comission, 2013).

The rehabilitation of the Inner City is the first major project conducted in a such vast part of this neighborhood. The project is based on funds from the European Union, worths 65 millions lei, and was started in November 2013. By its completion in July 2015, 10 streets and 4 squares will be renewed and made accesible only to pedestrians (Primăria Municipiului Timișoara, link 1).

2. METHODS

Because of the fact that the quality of living map is a combined map, the first step towards rendering it was calculating, for each building, the main parameters considered by the author essential for the quality of life, as I mentioned in the introduction.

The quality of living is in fact the combination between three indexes: the value of the building, the noise and the distance to the closest park. The value of the building is the result of other two important characteristics: the age and the condition of the building.

2.1 The age of the buildings

The age of the building is defined in this research as the number of years since the completion of the first building to have the same foundation as the actual building. In the Inner City, as throughout the entire old part of the city, the foundations are formed by long oak piles stuck into the marshy soil, on top of which brick arches were erected. Some of the buildings were completely demolished and others were built on the same place, but in other cases, the building was just raised with 1-2 floors. In the latter case, the age of the building is considered from the completion of the old first story, but in the first case, the building will be seen as a new one.

The origins of the buildings are often difficult to determinate precisely, because many of them are deduced from historic maps. It means, that if a building is shown on a, let’s say, 1736 map and it doesn’t show up on a 1734 map, it would have been built sometime between the two dates. The age will be calculated then from year 1736. Some of the buildings, indeed, have documented origins, including their demolishings and rebuildings.

The tremendous work regarding the Inner City’s buildings history was succesfuly begun, conduced and finished by Architect Mihai Opriș and his team from the Timișoara Townhall’s B.R.C.C.I. (Biroul Reabilitări șii Conservare Clădiri Istorice – Bureau for Rehabilitation and Conservation of Historic Buildings). The documents regarding each block of the Inner City have been published on the website of the Townhall (Primăria Municipiului Timișoara, link 2).

This work was the principal help in determing the age of the buildings. I completed the corresponding field in QuantumGIS’s opened project with each building’s age. As in geomorphologic analysis, I reclassified all my information in categories, five in my case: 0-70, 70-140, 140-210, 210-280, >280 years. The marks assigned for each of these are 1,2,3,4 and 5. Note that the reference year for calculating the age was 2014, as it could be applied as a middle point between the two studied reference times: before and after the rehabilitation of the public streets. The resulting age map looks as following .
2.2 The condition of the buildings

The condition of the building regards its external appearance, and is important because of multiple factors. It shows the general state of the building, that including also the interior, because, in general, neat buildings tend to have an appealing interior too, however the viceversa is not always true. The plaster damaging is the main issue regarding the buildings in the Inner City, this being a problem for both walkers and air quality, as it produces dust. It is a great disadvantage for the residents to have such degrading walls as it is also an appearance issue. Residential buildings alter the quality of living also by the power of attraction of other families, clearly lower in the case of ageing buildings (Ng, S.H. et al., 2005). In addition to this matter, the urgent need of renewal of the old buildings is sustained by the dicision makers’ need and wish for relating cultural values to development (Vicente, R et al., 2014).

The field research was conducted by the author in september 2013, in order to create a database for a WebGIS, and I created initially nine categories. In order to preserve a five-category analysis I reduced this number to 5 (rehabilited building – mark “5”, in good shape – mark “4”, affected plaster – mark “3”, strongly affected plaster - mark “2”, walls in danger to colapse – mark “1”) plus 1 (in ruins – mark “0”). Because of this last special category, the final index calculated for the buildings in ruins will have a null mark.

I then inserted in the specific QuantumGIS field the marks for each building. The resulted map is shown below.
2.3 The value index

Based upon the age and condition marks, I calculated the value index, with the following formula:

\[ VM \approx (C + A/3.5) - 1 \]

where: VM – value mark; 
C – condition; 
A – age.

The formula was created by myself, as it is specifically helpful in determining the value of the building, because the newly built communist blocks of flats should have a lower value compared to the historic buildings, even if they are in good condition. The old buildings have an appealing historic look, determining the containing apartments and the space, in general, to be more expensive than those in modern buildings, even if both are situated in the Inner City. The formula highlights the condition as being the main factor in determining the quality of living, and then adds to the building as it has a greater past.

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2.4 The distance to the closest park

The next step represented the calculation of the distance to the closest park for each building. The activities and recreation offered by parks is an important aspect of the quality of living in a city (1). In the urban landscape, there must be fair relations between building, streets, planted spaces, parks and resting places (2). The parameter is specifically important due to the fact that the Inner City has large green areas outside its blocks: the Civic and I.C. Brătianu Parks to the south-east, The Botanical Garden to the north-west, the park around the Huniade Castel to the south, the park in Ionel I.C. Brătianu Square to the north-east, and a tiny plane park to the north. The densely built area, the vehicle and human traffic determines the utter need of the residents for large, close, green spaces. Libertății Square, which has a central position in the region, can’t be considered a relaxing park because of the traffic and tram noise. The renewal of the city center came with both benefits and downsides. As Libertății Square becomes a pedestrian-only space, without any lateral roads, the amount of noise will turn down considerably. However, most of the trees were cut down as the rehabilitation of the city center began. Unirii Square and Sf. Gheorghe Square are covered by grass lawns, the latter losing it after the works began.

So calculating the distance to the closest large park is important for finding out how well the buildings are placed. For doing that I created in QuantumGIS four buffers around the parks (at 50, 100, 150 and 200 meters). I then checked the position of the building centroids in relation with those buffers. I assigned marks, ranging from 5 (the first buffer 0-50 meters) to 1 (distance greater than 200 meters) to each building. The resulted map shows up like as following.
2.5 The noise level

The last intermediate step was determining the noise level, which is an important issue. Even if the new PVC windows reduce the sound pretty much, the vibration and some of the noise of outer traffic can’t be stopped. So it is very important to check the best and the worst sites for buildings. In correlation with an increased noise from traffic comes also a bigger amount of exhaust fumes, this being a big disadvantage for the residents. The commercial pedestrian street is seen as the quietest, although at great crowd densities, it can too become unpleasant, even masking the nearby vehicle noise (Meng, Q. și Kang, J., 2015). The noise is perceived differently, depending on the orientation and position of living room/bedroom and of workplace, and noise sensitivity of each person (Paunović, Katarina et al., 2009).

The noisiest part of the Inner City is represented by the Ring I, with biggest traffic. I assigned the neighboring building the “1” mark. Because of the fact that the transversal tram line is the busiest part of Timișoara’s network, and because of the loud trams, the buildings neighboring the line were assigned the “2” (road with vehicle traffic) and “3” (without) marks. The “4” mark refers to buildings adjacent on at least one of their sides with a road, while “5” was attributed to the buildings next to pedestrian places only.

The resulting map is displayed below.
In the second phase of the study, that would be the state of the Inner City after the renewal of the public space, I created the same map, but based upon the new pedestrian streets. The resulted map can be seen below.

### Noise level for buildings in the Inner City of Timișoara (year 2015)

2.6 The quality of life

The last step of both phases was creating the final index, which was simply calculated by multiplying the three big indexes:
QOL = VM • DCP • NL,

where QOL – quality of life;
VM – value mark;
DCP – distance to closest park;
NL – noise level.

3. RESULTS AND DISCUSSIONS

By creating two new columns in Quantum GIS, based upon the formula seen above, I managed to create two final maps, representing the quality of life before and after the renewal of the public space in the Inner City. Note that the age of the buildings was considered as unchanged for the 2-year interval.

The results shown by the map must, however, be compared and confronted with the reality in terrain. As a citizen of Timișoara, I could track the advantages and drawbacks of using this index. In other words, I could determine how correct the index presents the reality.

As it can be observed from the two maps, the southern rim of the Inner City has the best evaluated buildings, according to the calculated index. In truth, there are many neat buildings, it is a pedestrian area, it is close to the Civic and Ionel C. Brătianu Parks, and as a coincidence, they are positioned right next to the Victoriei Square, maybe the best-known square of Timișoara.

The second area with high standard of life is the northern third of the Inner City. Again, the index correctly evaluates the real condition of the area, as it is a orderly area, with little noise, close to several parks and to the Botanical Garden, and, as another coincidence, it is distributed around the Unirii Square.

However, the central horizontal third of the Inner City has a rather poor quality of life, as a consequence of the degrading building and distance from parks.
Also, these maps show up the residential buildings in contrast to the others. In general, both non-residential (with cross-pattern) and residential (without cross-pattern) tend to illustrate the same distribution of the quality of life index, although the first have just a virtual quality of living, as they do not have residents.

The comparison between the two maps – before and after the rehabilitation of the city – shows that the renewal of the public space has a rather low effect on the quality of life in most buildings, just few of them (as those on Lucian Blaga, Francesco Griselini, General Traian Doda and Sergent Constantin Mușat Streets). The main reason of the low change is the poor state of the buildings close to the renewed area and the big distance to the parks. The main error seen in the index is the low quality resulted from both maps, for the buildings on the upper Vasile Alecsandri Street and half of the block delimited by the street and Unirii Square, wrongly attributed to the great distance to parks. However, in reality, it is, and it will certainly be, maybe the best residential area of the whole Inner City.

4. CONCLUSIONS

Timișoara’s Inner City is the most important historic area of the municipality, but despite this, it is not yet a homogenous space by means of living quality and aesthetics. Many buildings are rehabilited, but more than half are in poor condition.

Futher work must be done, and quickly, because of their degradation and the implementation of the public space renewal in the Inner City, which will highlight out the contrast between the street and the building. This renewal will have little impact on the quality of living if there no action is made to renew the buildings.

There can be separated two neat regions, with high life quality, that means the southern rim and the northern part of the neighborhood, and one central region, which is in bad condition.
As I analysed above, the quality of life index is a fairly correct index, correctly determining the hierarchy of the buildings as a matter of living standard. However, its main issue is the false equality attributed to the three composing indexes, as the distance to the closest park is forcibly upheld to the same rank as the condition of the building and the noise level.

More components could be added to the index like the distance to the closest church, to parking lots, to public transport stations, to local supermarkets etc.

In conclusion, it is a rather coarse, but fair index. It provides few strange results, but in the error range.

5. REFERENCES

European Comission, 2013, Quality of life in cities. Perception in 79 European cities, Oficiul de Publicații al Uniunii Europene, Luxembourg


