



Szent István University

**Landscape architecture and environmental psychology**

**Open space quality and place attachment  
in Budapest housing estates**

PhD THESIS

Abridged Thesis

**Fruzsina Zelenák**

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## **RESEARCH HISTORY AND OBJECTIVES**

Almost fifty years ago, one of the fundamental literature of Hungarian landscape architecture, 'The history of the garden design and its practice' by Imre Ormos was born. In the first half of the hundred-page book, he writes finely and sensitively about the "psychological impacts of nature and the landscape" in the chapter of ideological aspects of garden planning.

Since the concise subchapter, using psychological (perception, percept) and even environmental psychological concepts (sense of space), only few study has been written in Hungarian which would have clarified on scientific level what psychological processes could be related to urban open spaces; or what are the basic psychological knowledge for a landscape architect to be aware of, in order to design liveable and usable spaces.

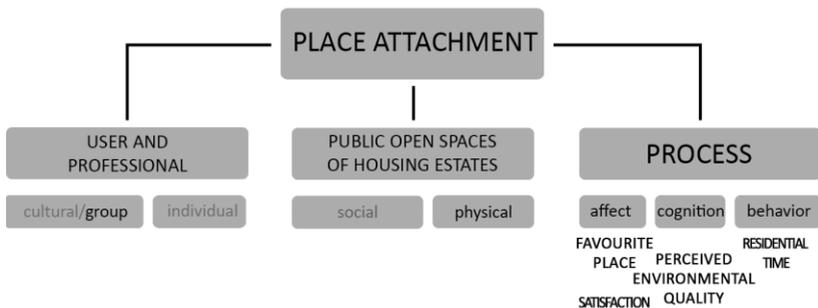
In my thesis, I am looking for the possibility of connecting two – basically young – fields of science in Hungary. Landscape architecture, which has been named since 1963, now has a solid professional embeddedness. In Hungary environmental psychology has been founded by Andrea Dúll's work two decades ago. Although the discipline is exploring a wide range of environments, scientific and practical cooperation has developed in Hungary with architecture and urbanism. In my research, I examine open space renewals of residential areas through the approach of environmental psychology.

**The purpose of the thesis is to explore the possibility of linking landscape architecture and environmental psychology and to investigate the place attachment in the open spaces of Budapest housing estates.**

The sub-objectives of the research were assigned to the following **research questions**:

1. How can environmental psychology help landscape architecture and how can landscape architectural expertise contribute to the development of environmental psychology?
2. How can the concept of place attachment be interpreted in open spaces in the housing estate?
3. Where are the *favourite places* in the studied Budapest housing estates, and what is the pattern of the square?
4. What is the correlation between public open spaces renewal and favorite places?
5. What kind of open space functions play a role in the attachment to the open spaces of housing estates?
6. What is the relationship between green space intensity and favorite places?
7. How do residents of the housing estates relate to the open spaces on the different satisfaction scale?

The theoretical background of the research is provided by Scannel and Gifford (2010) three dimensional model. The **PERSON** factor refers to the group of users and experts, the **PLACE** component refers to the public open spaces of housing estates. With regard to **PROCESS**, the research investigate the residential-satisfaction, favorite places and perceived open space quality.



## **RESEARCH METHODS, DATA COLLECTION**

Location-based understanding of the relationship between people and the environment is not only a theoretical but also a methodical challenge that has to take into account spatial (eg physical environment) and personal (eg, individual preference) factors. The latest developments in the field of GIS offer new opportunities, Public Participatory GIS (PPGIS) methods enable mapping of users' spatial experiences. In one hand the research were conducted by on-site questionnaires (N = 464, N = 782) on the inner pedestrian zone of the housing estates. On the other hand, using the PPGIS method, a location-based online questionnaire (N = 126, N = 481) was used with access sampling. The research deals with the 70's and 80's industrialized housing estates in an integrated approach of environmental psychology and landscape architecture. The locations of the research: the XIII. district Országbíró, the IV district Újpest and the X, District Újhegyi housing estates.

## **RESULTS**

**My investigations** – in line with the theories of environmental psychology and the results of Hungarian sociology – **have shown that place attachment can be interpreted along different spatial scale and the social factor in housing estates.** The survey of affective attitudes showed that the favorite open spaces of people living in a housing estate are primarily related to community spaces, mainly squares and pedestrian zones. **These spaces with active and passive open space functions have outstanding restorative potential and play an important role in the environmental self-regulation.**

## **THESES**

By exploring the research questions formulated in the dissertation and the research results, the following theses can be formulated:

**1. Landscape architecture and environmental psychology can be well-integrated in theory and practice.**

In the field of landscape architecture, I defined five main topics related to environmental psychology, within the context of environmental psychology, seven main themes can be formed concerning to landscape architecture. From a theoretical point of view, science areas can effectively assist each other in exploring the health effects of green spaces and researching restorative environments. The environmental psychologist can assume an expert role in the beginning and end stages of the planning process.

**2. The people living in the Budapest housing estate relate different in the different scale sociophysical environment.**

Residential attachment - in the 1970s and 1980s, industrialized housing estates – can be interpreted along different scales (housing estates, residential buildings, flat, open spaces) and the social factor. In my research, I have revealed that there is a difference in satisfaction with each scales. The residents of the housing estate are the most satisfied with the housing estates and their flat, least they are satisfied with the community and with the building. Satisfaction with open spaces varies. In the case of a complex open space rehabilitation, the satisfaction ranges between the housing estate and the building, while in the case of the other two housing estates the satisfaction approaching the building.

**3. The favorite public open spaces can be connected to the community spaces, mainly squares and to pedestrian traffic areas.**

The housing estates in Budapest have "squares" and "streets" that have a psychological restorative potential for the people living here. Based on the the "favorite place" research it can be shown that people living in a housing estate show some stronger bonds in certain open spaces. When examining the same spatial structure Budapest housing estates, it can be stated that people's favorite places appear mainly on the inside pedestrian zone of the housing estate; while the least favored places typically show scattered patterns, they can be linked to transport areas and outer zone zones of housing estates.

**4. The favorite places of those who living in a housing estate are more linked to the renovated open spaces**

In each of the three surveyed housing estates I have shown that the favorite places can be connected to the renewed open spaces. The high quality renewal of a public open space in a housing estate – regardless if it covers or not the entire housing estates – attend higher preference of public place users. However, the renewal is not necessarily an antecedent of a space becoming favorite place.

**5. In the case of a complex public open space building renewal, the favorite places appear significantly higher in the renewed open spaces.**

Comparing the results of the three surveyed housing estates, I demonstrated that in the case of a complex recreational renovation project (Országbíró housing estate), a significant percentage of favorite places overlap with the area of renewals. In the case of the Újhegy and Újpesti housing estates, the favorite places are also significantly higher and concentrated in the area of renewals, but this rate is significantly higher for the Országbíró housing estate

Complex open space can lead to a stronger attachment of the inhabitants to open spaces.

**6. In the case of a housing estates's open space, a favourite place can coincide with the need of its renewal.**

Although favorite places are joining higher rate to open space renovations, there are some cases when the renovation is not the background of place preference. In Újhegy housing estate the on-site and location-based online questionnaires consistently mark the areas of the „Bányató” and „Sportliget” as their favorite places. However, the online survey confirmed that these two sites are considered to be significantly renewed. So in some cases, the affective factors associated with the space can be separated from the cognitive-based assessment.

**7. A kedvenc helyek és a zöldfelületi intenzitás tekintetében kimutatható összefüggés van. There is a significant relationship between the favorite places and the green space intensity.**

I have found that as long as the favorite places are evenly distributed in the 0-80% green space intensity open spaces, the least favored sites are bound to open spaces with lower green intensity. So, with higher green intensity the place preference does not increase directly proportionally.

**Practical results of the thesis:**

**1. Geospatial (PPGIS) questionnaires are suitable for favorite place research.**

The favorite place research were done with two types of research tools, on-site and location-based online questionnaires. In this respect both the on-site and the online questionnaire show a similar pattern, unlike my expectations, the results of the online questionnaire are in great agreement with the results

of on-the-spot investigations. Based on my research, I have determined that PPGIS method and online surveys with geospatial backgrounds are successful and suitable for favorite place research.

**2. Location-based surveys (PPGIS) can effectively help evidence-based open space design processes.**

PPGIS technology opens up a new chapter in traditional public place use research. Objective, location-based surveys of user habits can be the underlying parts of a user-sensitive design. PPGIS tools can be used well in the garden and open space design and can contribute to successful design decisions.

**3. The information about the spatial-related affective-cognitive attitudes of users can also enrich the public place use research studies besides the quantitative data of behavioral factors.**

The research highlights the fact that we make decisions about certain environments along the processes defined by complex – affective, cognitive, and behavioral – factors. Quantitative data on traditional public place research does not provide sufficient information on the users' expectations and aspirations. A space-use research that integrates quantitative and qualitative aspects can give a more complete picture in the design of residential areas, which are particularly sensitive to environmental psychological factors.

## CONCLUSIONS AND PROPOSALS

Environmental psychology can provide a great deal of information for landscape architecture about the dimensions of the space perceived and experienced by people. It can help the design process can primarily to create concepts that serve the expectations and (psychological) needs of the users as much as possible. Landscape architecture can provide theoretical and practical experience for environmental psychology and share objective datas about the landscape and open spaces.

Considering the number of favorite and least favored places, it can be stated that the residents of the housing estates have nominated almost two and a half times as many positive places for all three housing estates, than less popular places. **The most favored places in housing estates are related to areas of primary community use public places**, but in certain housing estates, depending on open space quality, **pedestrian or mixed traffic areas may also be positive**. The most beloved open spaces of the housing estate in the study have both active and passive open space functions.

**The research have highlighted that an open space renewal, a high open space quality can be a reliable antecedent of an affective attitude to a public space, but it is not exclusive in this aspect.** For example the 'Bányató' and 'Sportliget' at Újhegy housing estate. Although these places are very attractive for those who live here, but still considered places to be renewed. However, the investigation clearly shows if the quality of an open space does not fit into the public place quality of the housing estate, it becomes divisive or negative in terms of affective attitude. Examples of these are the Béke square at Országbíró housing estate and the northern (between Harmat street - Mádi street) and southern (between Gergely street and

Bányató street) parts of the pedestrian promenade of the Újhegyi housing estate.

Surveying the green space intensity and the favorite places shows similarities with the results of the last decade research results examining the relationship between urban green spaces. The research highlights the fact that in urban environments, people's preference differs between 0-80% green intensity surface, while the least favored places associated with sites with lower green intensity. According to the former, **place preference in the urban environment does not coincide with the growth of the green surface intensity.** Therefore, any strategy, directive that refer to the psychological restorative sense of green spaces which emphasizing the quantity of the green is questionable. **Urban green space strategies and regulations need to combine quantifiable targets and quality indicators for green areas.**

**The thesis supports evidence-based design in landscape architecture.** Based on these, strategic and regulatory decisions related to the open spaces of the housing estates can be brought into line with the preferences and expectations of the residents. The results of my research clearly show, in a case of a complex open space renovation, the perceived open space quality is more positive and even the residential attachment can be stronger (Országbíró housing estate). However, in the rehabilitation of the housing estates in Hungary, there are still very few interventions in which the open spaces are treated as unity in their quality and appearance. **But the location-based surveys can help to identify point-like interventions, that can provide everyday restorative environment for communities, which renewal can be realized more quickly and cost-effectively than a complex rehabilitation of public spaces of housing estate.**

**The thesis is the first summative study to review the current research directions of landscape architecture concerning to environmental psychology and the other way round; as well as the first comprehensive research that investigates psychological processes in connection with landscape architecture.** In line with international scientific trends related to the topic, this research combines people experiences of their physical environments with objective, measurable indicators. Regarding its data capture tools and the processing method it uses nowadays' applications.

Beside the second half of the 20<sup>th</sup> century's great urban and architectural heritage, we have also been given the inheritance of housing estates without human scale. If we are allowed to talk about the "psychological effects of the nature and the landscape", then high-quality public open spaces in housing estates have multiple missions to support positive spiritual processes. **Although the architect's work is always limited by the possibilities and expectations, in the 21<sup>st</sup> century's exceptional world, everything is available to serve users' needs.**

## **AUTHOR'S PUBLICATIONS RELATED TO THE TOPIC**

### **Journal articles**

Szilágyi, K., Zelenák, F., Kanczlerne Veréb, M., Gerzson, L., Balogh, P.I., Czeglédi. Cs. (2014): Limits of ecological load in public parks - on the example of Városliget. Applied Ecology and Environmental Research. 3(2): 427-448. ISSN: 1589 1623 (Print), ISSN: 1785 0037 (Online), DOI: 10.15666/aeer/1302\_427448

Zelenák, F., Valkai, Cs. (2016): Hello Wood Balatoni Hekk, 2016/Hello Wood Balatoni Hekk, 2016. 4D Tájépítészeti és Kertművészeti folyóirat. 41: 50-59. ISSN: 1787-6613

Zelenák, F. (2011): Budafok-Belváros szabadtérépítészeti terve/Budafok-Downtown open space design plan. 4D Tájépítészeti és Kertművészeti folyóirat. 22: 54-63. ISSN: 1787-6613

### **Conference Proceedings and Online Publications**

Zelenák, F. (2014): Public Park Ask! Answer – An international outlook on park use research. Történeti értékű városi közparkjaink című konferencia tanulmánykötete. Budapesti Corvinus Egyetem, Tájépítészeti Kar. 69-73. ISBN: 978-963-503-572-4

Zelenák, F., Balogh, P. I. (2015): The layers of park use. Visitor surveys of the Városliget in Budapest since the 90`s. Landscapes in Flux, ECLAS Conference Tartu, Book of proceedings. 464-469. ISBN: 978-9949-536-97-9

Szilágyi, K., Zelenák, F., Fekete, O. (2016): Space structure and open space recreation in time dimensions. Contemporary and historical city parks and their role in composing space Conference, Krakow. Teka Komisji Urbanistyki Architektury, tom XLIV, 277-282. PL ISSN 0079-3450

Zelenák, F., Balogh, P. I. (2017): City image, environmental quality, environmental psychology. In: Budapest Zöldfelületi rendszerének fejlesztési koncepciója, Budapest Zöldinfrastruktúra koncepciója, I. kötet, Helyzetelemzés- és értékelés. Budapest.

### **Lectures on the Topic**

Zelenák, F. (2018): Favorite places in the housing estates' open spaces. SPACE – BLOCK – COMMUNITY Urbanisztikai Workshop. EKF Debrecen 2023. Debrecen.

Zelenák, F., Balogh, P. I., Dúll, A. (2017): *Environmental psychological aspects of the public spaces of housing estates*. Város-liget-köztér-szórakozás, VI. Magyar Várostörténeti Konferencia. Budapest.

Zelenák, F. (2011): Man in space - Landscape architecture in the context of environmental psychology. Doktorandusz továbbképzés, Kutatási szeminárium, Kőszeg, Program- és absztraktfüzet. 26. Budapesti Corvinus Egyetem. Kőszeg.