

## THE AESTHETIC AND ECOLOGICAL VALUES OF CLUJ-NAPOCA URBAN LANDSCAPE

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**ABSTRACT. – The Aesthetic and Ecological Values of Cluj-Napoca Urban Landscape.**

The aim of the paper at hand is the aesthetic and ecological evaluation of the City of Cluj-Napoca urban landscape, relevant for designing and developing the contemporary urban space and outlining Cluj-Napoca urban landscapes. The method used in this endeavour is based on the relation between the landscape's ecological and aesthetic values. A combined matrix was developed, containing the above mentioned values, and points were awarded for every type of identified landscape (nine in total). The correlation based on these points was represented graphically. Higher scores were awarded to those landscapes with high ecological as well as aesthetic values, such as parks and public gardens which also contain wild flora, while lower scores were obtained by industrial areas and abandoned sites. Our undertaking is interdisciplinary, combining the results of geographic research with aspects of urban planning.

**Keywords:** *Cluj-Napoca, landscape, General Urban Plan, Grigorescu neighborhood, Mănăștur neighbourhood, Gheorgheni neighbourhood.*

### 1. INTRODUCTION

Scientific literature offers numerous definitions for landscape, as well as for geographic landscape. "The landscape represents the exterior, physical side, perceived through direct sensors, of the terrestrial surface, part of a territory defined by the homogeneity of natural and human features" (Cocean, 2010). The geographic landscape is more than the exterior aspect of the terrestrial surface as perceived by the human being. It is the image of a whole made of dynamic elements, each and every one having a precise role and expression within the general context in which the way of perceiving and observing its features plays and essential role. It is defined as a spatial

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structure with its own individualised physiognomy due to the interaction between abiotic, biotic and man made factors, capitalised differently depending on the manner in which it is perceived (Drăguț, 2010).

The European Landscape Convention (2000) enforces the judicial recognition of landscapes as essential components of the environment, the establishment of landscape policies and instruments for its protection and management, the integration of landscape into territorial planning, urbanism, cultural, environmental, agricultural, social, and economic policies, establishing ways of raising awareness, population involvement and specialist preparation (according to the Landscape Identification and Evaluation Methodology, 2008). This act defines landscape as follows: „The landscape is a part of a territory, perceived as such by the population, whose feature is the result of the action and interaction between natural and/or human factors”.

The main elements of a landscape, which give its specificity depending on the manner in which they combine, are: *substratum, the hydro-atmospheric elements and the biotic elements*. The landscape structure, from a systemic point of view, is identified by the relations between the elements associated with the landscape. The main structural elements of a landscape are: *ecological potential, biological exploitation, and human action*. The ecological potential is the result of combining the geomorphological factors with climatic and hydrological ones. Biological exploitation is expressed by the animal and plant communities of the area, while human action refers to the economic infrastructure.

*Urban landscapes* are defined by building density and type, size of green areas, and the active presence of human beings. In fact, urban landscape is far remote from nature, even if some elements of the natural environment are still present (the relief that defines the city's morphology, the regional or zonal climate, the existence of a river, etc.) (Taillefer, 1972, p. 167).

Vittorio Gregotti (1991), referenced by Huzui (2012) and Ileana Stupariu-Pătru (Stupariu-Pătru, 2012) sees the city (the urban environment) as the most important effort of human civilization to completely transform the natural environment, the most radical swap from “natural” to the state of culture, to the global building of a landscape.

According to the 1974 Varna Congress, the urban landscape is a snapshot of the cultural landscape and represents a type of landscape which emerged due to man's intervention. Within Ileana Stupariu Pătru's landscape typology, the urban landscape is a category of human landscapes alongside the cultural and rural landscapes (Ileana Stupariu-Pătru, 2012).

Parks and public gardens, green spaces of different sizes and purposes are the only areas offering a part of nature to the people. In contrast to the natural landscape, the urban one is the most intensively anthropicized, and increases in size every single moment.

Parks and natural green areas are the live component of the urban landscape, alongside other elements, such as the street network and public squares, cemeteries and private gardens, houses, industrial areas, abandoned sites and agricultural land. Furthermore, we may include public pools, water, playgrounds, gardens, public transport, historic protected areas, sports parks, urban forests and natural protected areas, and so on. The list is extensive, while the urban landscape is rich and complex, each piece of land contributing more or less to the urban landscape. Each category deserves special attention and careful research.

When it comes to natural elements (relief, water, vegetation), they can interlock within the city's composition, enriching its esthetics, influencing its character, determining the path, the direction, and the value of a composition. These elements, accommodated in a composition, can be kept in their original natural state or can be transformed, adapted to an idea, thus aiming towards a compositional unity between the natural environment and architecture.

Rough terrain, rivers, or panorama spots have always been elements that contributed to city creation. These aspects, which helped determine its character, are part of the cities' artistic patrimony. Maintaining and capitalizing a valuable natural environment or influencing and transforming nature in a traditional manner is a form of connecting the new ensembles with the images gradually integrated in the city's composition, a way of emphasizing its character.

## 2. CONCEPTUAL ASPECTS REGARDING THE AESTHETICS OF URBAN LANDSCAPES

*Ethical* comes from the word *ethos*, meaning inhabiting the world, while *aesthetic* derives from ethical (even ethymologically). In other words, the way in which we inhabit the world determines the way in which we envision the world.

From a conceptual standpoint, one might consider that *the city's aesthetics* involves a architectural-urbanistic approach. Within such an approach, it is possible to acknowledge the way in which the new constructions and infrastructure have taken into account the old built stock, a principle mandatory for connecting the city's old form with the new ensembles in order to reach unity.

Symmetry and asymmetry are part of the structure of the cities' compositions. The symmetric and asymmetric systems used in an ensemble contribute, alongside building orientation and height level, to the compositional dynamism, crucial in determining the city's character.

Dominance and contrast are other important elements of city composition. The value of a composition is acknowledged especially through its unity, that is the way in which the parts are subordinate to the whole, how the parts settle and regroup in relation to a dominance. Dominance is also attained by using certain construction materials for facades or roofs, and contributes to the creation of a specific local atmosphere; furthermore, dominance can derive from the dimensional and morphological aspects of the urban weave (Laurian R., 1962).

The balance between the natural and human landscapes has always been a goal for social sciences, in search of beauty, delight and equilibrium between human presence and its relations with the environment. A quality environment reduces the costs of running an urban system, fact proven by recent research (Vandermotten et al., 1999 quoted by Cristea V. et al., 2010). *Biodiversity* plays an important role in the normal operation of what is more and more defined as „the urbs ecosystem” (Cristea V. et al., 2010). This is a specific type of ecosystem that must offer its inhabitants not only conditions for living, working, travelling, and relaxing, but also for breathing, resting, safety and quietness, for handling the ever so present and ever so diversified stress (Duvigneaud et Denaeyae de Smet, 1977, Cristea V. et al., 2010).

Currently, *environmental aesthetics* is an interdisciplinary field, relevant for diverse disciplines such as geography, planning, landscape architecture, psychology, and philosophy. This means that the landscape's esthetic evaluation is an increasingly acute issue, a research field complementary to sustainable development, planning, and resource management (Berleant, 1997, quoted by de Saraiva Maria et al, 2005).

*Aesthetic parameters* are currently evaluated through different approaches. A large part of the scientific literature is dedicated to this evaluation from technical and mathematical standpoints, with applicability in territorial planning. Other approaches are provided by social sciences, such as environmental psychology, and integrated behavioural studies that employ perception and public preferences for esthetic values. The phenomenological approaches refer mostly to the intangible aspects of landscape assessment (Saraiva Maria et al, 2005).

Within the context of the urban landscape, the most stable balance between the natural component and the built environment is perceived as an important challenge for urban development, in close connection to insuring a better quality of life, aiming to reclaim the invigorating effects of nature for the city, as well as the natural elements in the city (Hough, 1998, Kaplan, 1995 quoted de Saraiva Maria et al, 2005)

### **3. THE CITY OF CLUJ-NAPOCA – BRIEF CONSIDERATIONS REGARDING THE LANDSCAPE MORPHOLOGY AND DYNAMICS**

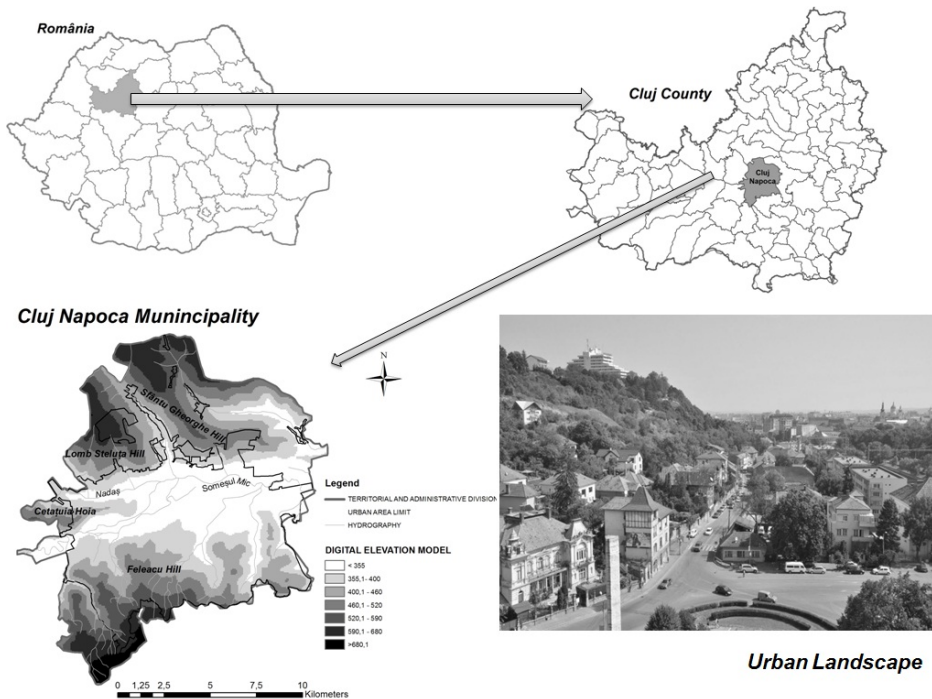
The name of Cluj comes from the Latin *Castrum Clus*, the toponym *Clus* meaning “closed” in Virgil's tongue and referring to the hills that surround the city. Another accepted hypothesis is that the name came from the German *Klaus* or *Klause*, meaning “mountain pass” or from *Clusa*, that is “dam”, “barrier” (according to Cluj-Napoca General Urban Plan, 2012).

Its position at the confluence of three important water streams, Someșu Mic, Nadăș and Chinteni, the presence of the northern hills (Lombului, Sfântu Gheorghe), of the southern hill of Feleac, and of Hoiia-Cetățuia Hill with North and South aspects bestow Cluj-Napoca a great morphological and landscape diversity (fig. 1).

The analysis of Cluj-Napoca dynamics indicates that the city grew from 135 ha at the end of the 16th century to 3978 ha in 1989 and 10465 ha in 2012. The city grew 29 times in the last 400 years, and compared to the 19<sup>th</sup> century, when it had 770 ha, five times. In the last 100 years, the surface area occupied by constructions expanded by 400%. The population grew 6.6 times between 1900 (49295 inhabitants) and 1992 (328608 inhabitants), while the East-West axis increased from 5950 m in the 18<sup>th</sup> century to a current value of 10250 m (V. Mitrea, 2009).

“Cluj, a city situated on the banks of Someșu Mic, benefits from large panoramas from the southern and northern hills. The city's silhouette is a uniform mass of constructions, enlivened by church spires, relatively evenly set in comparison to the dominance, bulk and tower of St. Michael's Cathedral” (Laurian R., 1962). Compared to this image from the 60's, Cluj-Napoca now benefits from positive aspects such as a well established centre, historical peripheries of different standards, and urban habitation in its fringes. The negative aspects, however, are more numerous, like the insufficient attention

given to Someșul Mic River, the urban dispersion produced by the real estate bubble, the lack of a coherent transportation system, and the built up area's chaotic and poorly thought expansion.



**Fig. 1.** Cluj-Napoca in regional and county contexts

The new General Urban Plan of Cluj-Napoca is currently in its final stages of approval. The objectives of this plan, relevant for our study, are (General Urban Plan, 2012):

- creating rich and quality public spaces;
- protecting the city from planning abuse;
- “turning the city towards Someșul Mic River”
- creating an urban development strategy that will mainly target the relationship with the territory;
- providing urban quality and starting the process of urban regeneration.

#### 4. PAPER OBJECTIVES

The aim of the article is to esthetically and ecologically evaluate Cluj-Napoca urban landscape. This endeavour is scientific in nature without any obvious practical significance. We decided to evaluate the manner in which the landscape's ecological and esthetic traits contribute, separately and also in conjunction, to shape the physiognomy of Cluj-Napoca urban landscape.

## 5. MATERIALS AND METHODS

A pleasant, attractive, beautiful space is often associated with transformed landscapes, with landscapes modified by man. There is a theory stating that natural landscapes are not always desirable within the human environment. People find it difficult to directly see the ecological quality of a landscape, which means that biodiversified landscapes are perceived as dirty and in disarray, while landscapes arranged by human hands are often seen as beautiful (fig. 2) (Nassaurer 1995, Maija Jankevica, 2012).

These statements do not contradict important concepts of modern and contemporary urban planning: ecological city, green city, green planning, sustainable *planning, sustainable city, smart growth*, etc. „Green urbanism” (T. Beatley, 2000, quoted by Păcurar B., 2011) has three main intervention patterns (Filip S., 2009, quoted by Păcurar B., 2011):

- encouraging the development of compact urban forms and promoting integrated land usage;
- reducing air and water pollution, and using alternative means of transport;
- improving economic competitiveness and eliminating impoverished areas as a starting block for urban renewal.



**Fig. 2.** The first image is that of Cluj-Napoca Central Park, immediately after its 2012 rearrangement. It is a landscape created by man with low biodiversity. The second image was taken in Făget Forest and presents a natural landscape with high biodiversity. Source: google images.com

The trend of “natural aesthetics” emerged in the United Kingdom and is based on the combination of landscape's ecological and esthetic values. This idea implies that a landscape that has been planned and created based on ecological principles will always be one to satisfy all esthetic principles (Thompson, 2000, quoted by Maija Jankevica, 2012). However, landscapes created solely on esthetic principles proved sustainable even though their planning and creation were not based on ecological principles.

The article at hand and its methodology is based on *The Landscape's Aesthetic and Ecological Evaluation Matrix* (Jankevica M., 2012), adapted to local conditions.

There are countless relations between the ecological and esthetic values of landscapes. If natural, ecological factors are manifold, the landscape is perceived as one with esthetic valences. If another landscape bears the signs of human esthetic intervention, this landscape will be perceived as more beautiful than one without any human intervention.

Landscape values as well as several types of landscapes were identified and set in a *combined matrix* with the help of the scientific literature. The landscapes are ranked on a scale of 1 to 10, 1 being poor quality landscapes, while 10 landscapes with the highest esthetic and ecological values.

The landscape's natural characteristic confers a high esthetic potential, not just an ecological one. The highest aesthetic and ecological values of the landscape coincide within this matrix. A blueprint containing the parameters with different properties was developed. The evaluation criterium was based on gradual principles. The elements that are considered ecological can be replaced with their corresponding esthetic elements.

This evaluation matrix uses landscape cluster analysis. The territory under discussion is divided based on *the functional criterium* into nine types landscapes:

- small private gardens in residential areas with houses;
- the city's historical centre;
- planned parks and public gardens;
- partially natural green areas and gardens;
- natural pastures, other agricultural land and forests;
- natural water reservoirs and wetlands;
- residential areas – individual or collective housing;
- abandoned, degraded sites;
- industrial areas.

In the case of ecological values, according to methodology, we awarded high scores to landscapes with natural pastures, other agricultural land and forests, as well as to natural water reservoirs and wetlands. Low scores were given to industrial areas, followed by abandoned sites. High scores for aesthetic values were given to central areas – the city's historic centre, and to planned parks and public gardens. Low scores went to abandoned sites and industrial areas.

*The scores were awarded based on direct observations in the field, as stipulated by the method.*

The obtained data can be represented graphically. The X axis contains the aesthetic values, while the Y axis the ecological values. The graph synthesises the interaction between ecological and esthetic for different kinds of landscapes. The landscapes with low scores in both categories are generally abandoned sites, parasitic industrial areas, and cluttered collective housing. Wild areas situated on river banks or between hills, uninhabited wetlands or large forest areas have high ecological values, but lower aesthetic quality. Landscapes that have been modified by man, such as public parks and gardens, have a low ecological quality, but amass superior esthetic qualities. The landscapes that have high scores in both categories are English type parks with spontaneous flora. The ideal situation will be the aim of future research.

## 6. RESULTS

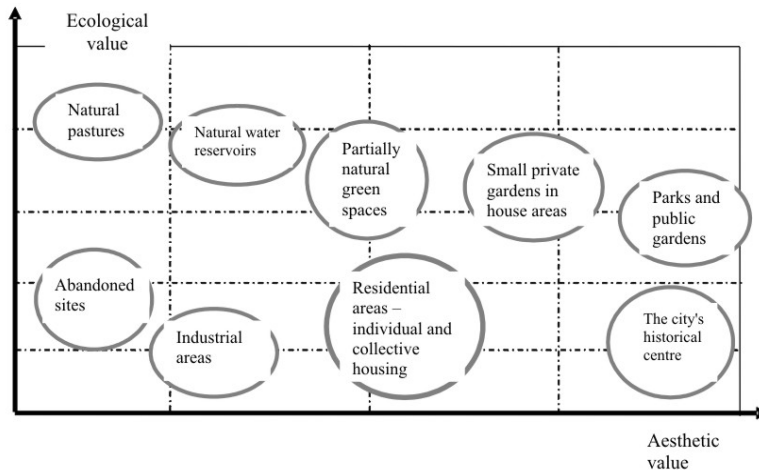
The research report entitled „Biodiversity and ecological sites in Cluj-Napoca”, commissioned for the city's General Urban Plan, emphasized the fact that Cluj-Napoca has a rich and specific biodiversity, being the first city in the country with complex environmental studies. There is a large number of species included in several national and international regulations, and the expansion of the city's built up area must also take into account the conservation of some areas for scientific research. Furthermore, the above mentioned study sees no opposition between ecological protection and social-economic aims (Cristea V. et al. 2010).

Taking into account the used methodology, we adapted and filled out the aesthetic and ecological matrix for Cluj-Napoca City (table 1). Then we made a graphical representation of all the obtained data, based on the same model provided by the consulted literature (fig. 3).

## 7. CONCLUSIONS

The aesthetic and ecological evaluation of Cluj-Napoca landscape, according to a method found in foreign literature and adapted to local conditions, led to the following results.

High ecological values of the urban landscape are registered by the natural pastures found on Cluj-Napoca administrative territory, within and also outside the built up area. High values are also registered by water areas, followed by partially natural green spaces such as the Botanical Garden, Iuliu Hașeganu Sports Park, Agronomia Park and Garden, the Central Cemetery, other green areas with a considerable natural component. Next come small private gardens from residential areas, parks and public municipal gardens mostly built on sites that kept their function within the city.



**Fig. 3.** Graphical representation of the correlation between the landscape's aesthetic and ecological values



**Table 1.**  
The aesthetic and ecological evaluation matrix for Cluj-Napoca landscape

Types of landscape values	Small private gardens in residential areas with houses	The city's historical centre	Planned parks and public gardens (*)	Partially natural green areas and gardens (**)	Natural pastures, other agricultura l land and forests (***)	Natural water reservoir and wetlands (***)	Residential areas – individual and collective housing	Abandoned, degraded sites (****)	Industrial areas	Approach
Order, regularity	8	10	9	6	3	3	6	1	4	
Quality of human elements	8	7	8	9	6	1	4	1	8	
Visible human intervention	9	10	10	8	4	7	10	1	8	
Particularity	8	8	9	9	8	8	6	2	7	
Usage of decorative flower species	8	10	10	7	1	1	4	1	1	Aesthetic value
Capitalisation of the natural landscape potential	6	2	3	9	10	9	3	4	2	
Architectural conformity	7	7	9	8	-	-	4	-	3	
Biodiversity	5	2	2	7	10	9	1	1	1	
Conformity with the natural landscape	8	4	7	8	10	9	3	4	5	
Presence of indigenous flower species	6	3	6	7	10	8	3	5	2	
Presence of natural elements	7	3	6	7	10	8	4	5	1	Ecological value
Indifference towards the landscape	1	2	4	5	7	8	7	10	4	
Presence of wildlife	4	1	5	7	10	9	4	8	1	
Lack of human intervention in natural processes	1	1	2	4	9	7	2	8	1	

(\*) This category includes the city's Central Park, The Roses Park on Popilor Street, Cetățuia Park, and the rest of the city parks with playgrounds for children and recreational areas.  
 (\*\*) Comprised of the Botanical Garden, Iuliu Hațieganu Sports Park, Agronomia Garden and Park, The Central Cemetery, other remodeled green areas where the natural component has a considerable presence.  
 (\*\*\*) Includes lakes and water streams.  
 (\*\*\*\*) The old industrial areas, currently abandoned or under economic redevelopment

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