

INTRODUCING ARCHITECTURAL-LANDSCAPE ELEMENTS IN URBAN SQUARES FOR HIGHER QUALITY OF LIFE

Mirela COJOCARIU, Ana BOGRUG, Doina Mira DASCĂLU,
Ana-Maria-Roxana ISTRATE, Codrina GRECU

University of Life Sciences “Ion Ionescu de la Brad” of Iasi, 3 Mihail Sadoveanu Alley,
Iasi, Romania

Corresponding author email: codrina_grecu@uaiasi.ro

Abstract

The value and attractiveness of landscaped green spaces stem from their ability to satisfy the general need for urban comfort and quality of life. This study suggests a redevelopment of Independence square by introducing architectural and landscape elements ensuring a higher degree of attractiveness. The square is located in the center of Iasi between Independence Boulevard and Vasile Conta Street, creating a large urban triangle with Union and Mihai Eminescu Squares. The redevelopment solution was created and presented in detail considering site features, using practical functional and urban composition research. The aim of this proposal was to meet such current goals as creating a comfortable urban environment for relaxation, socialization, and contemplation but also raising the quality of daily life and free-time spending in a pollution-free environment. The suggested concept tried to create a unitary and multifunctional space covered by a set of landscaping effects that harmoniously integrate the area into the urban tissue of Iasi.

Key words: landscaped green areas, redevelopment solution, urban environment, urban tissue

INTRODUCTION

As population density in cities increases, the quality and sustainability of urban living environments become increasingly important (Kozamernik. J et al., 2020). Urban green spaces play a vital role in enhancing urban biodiversity and sustainability, contributing directly to human health (Wu et al., 2021). In a heavily anthropized environment, green areas have become essential due to their beneficial effects on the environment through lower pollution, as well as on citizens by providing higher urban comfort and quality of life. Lately, urban green spaces have been increasingly attributed the quality of mitigating the negative psychophysiological effects that people suffer from in densely built environments (Velarde et al., 2007). Moreover, several studies have concentrated on the expansion of green areas on roofs (Zlati et al., 2022) and building facades (Cojocariu et al., 2022a; Cojocariu et al., 2022b) in order to increase the share of green areas in urban environments, Green squares reflect a unity of green space in an urban environment, which plays a key role in

city development. These urban green spaces with a valuable aesthetic component (Kaplan et al., 2006) contribute to improving the quality of life by providing to city inhabitants relatively inexpensive opportunities to connect with nature in everyday life (Wang et al., 2019). Their accessibility and openness often turn them into centres of urban events and social nodes. Squares are green spatial cut-outs providing a breathing area in the middle of constructions, a lung in the urban context (Haq, 2001), an ideal space for socialization and human interaction. They can provide an environment conducive to the development of social life leading to a stronger sense of community and therefore ensuring a higher level of social interaction. So, there are multiple advantages brought by these landscaped green spaces leading to physical, psychological, aesthetic, and social benefits. Therefore, a longer human contact with nature contributes to physical and mental health (Nordh & Østby, 2013) and a longer life.

Vegetation, furniture, and water are the main elements of a landscaped green space, which, organized in a harmonious and coherent way could generate varied impressions, starting from

freedom and naturalness to artificiality and rigidity, from melancholy to joy. All these morphological elements work together in landscape compositions through shapes, colours, textures, and volumes, the manner in which they are linked together enhancing their effect. Vegetation, especially through colour and texture of used plants directly influences mood, bringing to surface memories and emotions. Using plant elements with various textures is a great way to create diversity in a landscaped green space. Colour is highly important in landscape design, adding dimension and interest to any development (Cantor et al., 2018).

Seating places are apparently trivial objects but indispensable in urban green spaces. They should provide great comfort and also be closely linked to the green space. To ensure a high quality of urban space and a pleasant experience, urban furniture items should have several main properties, such as comfort, security, shelter, and design. (Mexi & Tudora, 2012).

Due to its aesthetic and therapeutic qualities, water completes the other morphological landscape elements (Faggi et al., 2013). Being a visually attractive element, water brings charm to a landscape, managing to enhance its value. In turn, water should be enhanced by ingenious landscaping, balanced architectural elements, and also by subtle plant arrangements (Dascălu & Cojocariu, 2016).

MATERIALS AND METHODS

Independence Square is located in the centre of Iasi between Independence Boulevard and Vasile Conta Street, creating a large urban triangle with Union and Mihai Eminescu Squares (Figure 1). The historical Independence Statue is located here, a symbolic element of the square bearing the same name. The Myth of the Mothers Church, the Saint Spyridon Church, Doctor Ludwig Russ Monument, and the Craftsmen's Insurance House are the other historical monuments in the immediate vicinity of the square.

The Independence square appeared due to city reorganising. After the 1977 earthquake, Independence Boulevard was extended and rearranged, being renovated as a main street in 1980. The Independence Statue was made by

Gabriela Manole-Adoc and Gheorghe Adoc after a national competition in 1975, aimed to celebrate the centenary since the proclamation of national Independence in 1877. After the passing of time, the pedestrian alleys and access ways to Independence Square reached a state of disrepair, the steps to the historical monument being damaged and detached and becoming a danger for the pedestrians in the area.

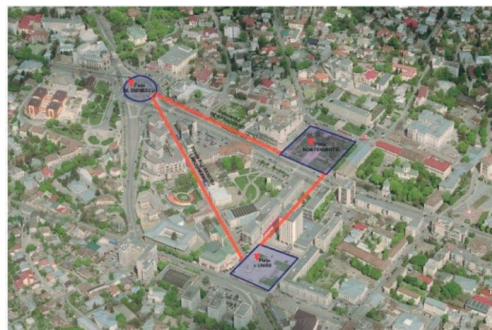


Figure 1. Urban triangle: Independence-Union-Mihai Eminescu Squares Aerial view

Therefore, square redevelopment was highly necessary. The statue plinth and the pedestrian walkways were repaired in 2019. Plus, a part of the old undecorated plant elements was removed and new plants were added, being mainly grouped in oval-shaped areas of the square.

Today, Independence Square is partially exploited in its urban context. This study aims to provide a square redevelopment landscaping to shape a new perspective to the area and enhance the landscaping value of the site. The main goal is to animate the green space in the urban context and put an accent on the landscaping effects of the newly introduced morphological elements. Although this area has been recently rehabilitated, it lacks strategically placed natural and mineral elements so that the place could provide new experiences to the strollers.

RESULTS AND DISCUSSIONS

Public or semi-public spaces are the places maintaining and feeding a human need of interaction, exchange of ideas, and relaxation, while also providing a place where events take place. The main feature of such a space is provided by the functionality and aesthetics of the morphological elements of the landscape

design, which are placed in public spaces and where the main focus is being placed on the effects of such elements on users. There are spaces not reaching their full potential in every city due to a wrong approach or unsustainable exploitation (Pașcu et al., 2021).

However, the application of principles aimed at building harmony and unity in diversity may lead to a composition with an attractive and sustainable architectural silhouette (McPherson & Peper, 2012).

Yearly, hundreds of new hectares of green spaces are designed and arranged - gardens, parks, squares, plantations along traffic arteries, green spaces next to residential areas, along tourist routes, which, irrespective of their style, provide landscapes with multiple functions, such as work and rest stimulation in a pleasant and healthy environment.

Green space arrangement is a long process that involves successive steps of putting into practice the thinking behind the design created in an office. The exploitation of this potential and obtaining the effects of high aesthetic value depend not only on a well-thought distribution and balanced combination of the elements but also on their care as the preservation of such elements over time relies on it.

Description of current state

The Independence Square with a surface of around 6800 sqm has an almost rectangular shape in plan.

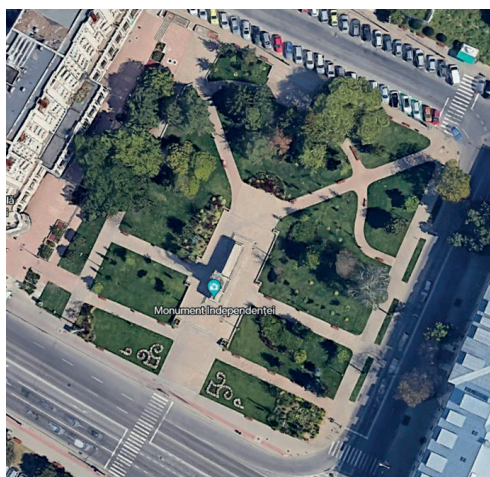


Figure 2. Aerial view of Square (Google Earth)

There is access to the market from all its sides through perimeter pedestrian circulation. Besides these, the square is bordered by traffic lanes on three sides (to the North, South, and East). To the west, the square is connected by a series of planted spaces and tiered planters with the adjacent built complex aligned to the Independence Boulevard (Figure 2).

The existent formal concept is mainly based on orthogonal shapes with small angular interventions or curves in the area behind the statue towards Vasile Conta Street.

The studied location is both a pedestrian circulation node, a central and cultural area, a symbolic place due to Independence statue placement, as well as a place of social expression for important political events. All these coexisting dimensions should be put on a single plan by creating a suitably landscaped space.

Due to its central location in the city in the middle of historical and public utility buildings, the main function of Independence Square is that of transition and partially relaxation.

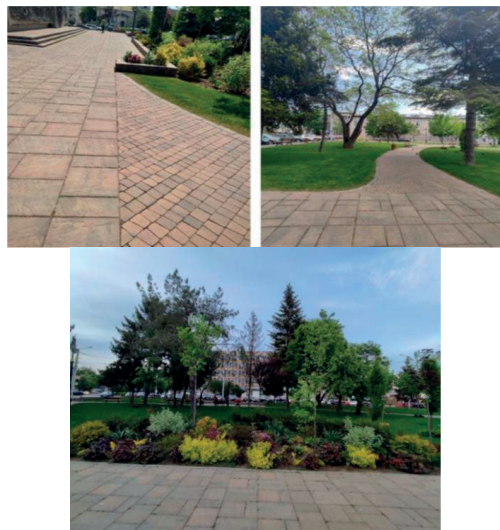


Figure 3. Current state – Pictures (original)

In terms of vegetation, there is a varied assortment of used trees and shrubs (Figure 3). Specimens of trees from the species of *Abies concolor*, *Aesculus hippocastanum*, *Acer platanoides*, *Acer negundo*, *Betula pendula*, *Carpinus betulus*, *Catalpa bignonioides* 'Nana', *Morus alba*, *Picea abies*, *Pinus strobus*,

Platanus occidentalis, *Ulmus pumila*, *Tilia tomentosa* are randomly found in the square perimeter. Such shrubs as *Berberis thunbergii*, *Cornus alba*, *Juniperus horizontalis*, *Weigela florida*, *Euonymus fortunei* are planted together in plant compositions alongside such flowering species as *Canna indica*, *Lavandula angustifolia*, *Heuchera* sp., *Hosta* sp., *Yucca filamentosa*, and ornamental grasses from the *Festuca*, *Stipa*, and *Miscanthus* species.

Description of constructive solutions and analysis of suggested functional areas

The entire suggested square ensemble is dominated by a geometric style and is based on regular geometric shapes, made of straight rectangular lines. General effects and appearance of the arranged square suggest order and formality, also strongly conveying tranquillity and contemplation through the finesse of landscaping arrangements.

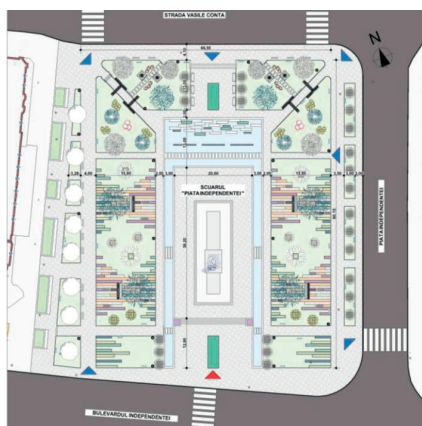


Figure 4. Arrangement plan

Although justified by the existent anthropized framework comprising buildings with a strong representative character, the organic makes its presence felt by means of plant elements. The plants are arranged orderly and geometrically, while plant material seems to be subordinated to the built elements. This creates an effect of hierarchical submission denoting order and rigour.

The overall composition was generated by the rectangular geometry of the site defined by linear alleys dividing the entire development into four landscape areas (main access, central interest, relaxation, promenade), each having its

own identity and being harmoniously connected to each other (Figure 4).

The central axis expressed by the Independence Square, for which, a dual composition approach was preferred for the pedestrian alleys accompanying the median axis on both sides, being also supported by the water mirror is an interesting particularity of the square, which is highly exploited in the landscaping. This solution gives a dominant force position to the mineral defined by the statue underlining further the main theme and purpose of the Independence Square.

The main access area serves as a meeting place and introduction to the space to be explored and travelled along the central axis. The central area is also the centre of gravity of the composition, where the Independence Statue is located - the main attraction point of the square. The promenade area invites the public for a walk and transitions through the square decorated with pergolas and resting places, the resting area containing relaxation and recreation spaces.

To create a floating effect of the statue, a mirror of water around it is suggested. This way, the value of statue appears much better. Also, it is suggested that pergolas covered in decorative vegetation should be put in place to increase the attractiveness of the square and extend the amount of time spent by the inhabitants here. Their purpose is to provide shadow areas for the space that would bring a new aesthetic and functional perspective.

Each landscaped area was based on the idea of meeting the needs of the general public and be accessible to all ages, starting with children who can play, explore and feel the water underfoot in the water mirror arranged on the central axis, and ending with teenagers and adults who can enjoy nature in a harmoniously arranged environment designed for relaxation. It has also been suggested for some routes to be restored.

General arrangement of square composition was done considering the central area of interest defined by the Independence Statue, the main element accompanying the ensemble along the long line towards Vasile Conta Street. Here the water mirror plays a key role in creating the effect of tranquillity that could be quickly contrasted by its dynamism using the water jets suggested on the central axis of the composition (Figure 5).



Figure 5. Water play



Figure 6. Aerial view of the square area



Figure 7. Vegetation square

The studied land plot is a relatively flat requiring a more dynamic approach for avoiding the monotony of the site. To achieve a more animated setting (Figures 6 and 7), there were

used colours were used (purple from flower species, green from trees and ornamental grasses, cherry from shrubs); contrasting textures of warm laminated wood and cold and

hard stone, mineral elements (furniture arranged in a line in the relaxation areas); natural elements (various vegetation decorating by means of leaves, flowers, bark), being followed a contrast between the natural and the built (the heavy and massive statue floating on the water mirror).

Water is an essential element used in the rearrangement and revitalization of the square. Water washes, purifies, and signifies meditation and the return to the pure spirit within us. The presence of a water surface has become necessary in the arid and polluting urban environment. Several studies have shown that people see as more attractive a green space containing this element (Faggi et al., 2013). Water, like a transparent mirror, generously offers its naturalness and creates a state of tranquillity. Therefore, as it has been mentioned above, we decided to have a fine line of water on the perimeter of the statue as to underline the fragility of water in contrast with the hardness of stone and grandeur of the monument. To animate the area overseeing Vasile Conta Street, the suggestion was made to use water jets as a natural element, whose dynamics helps in generating ozone around water.

Water is an essential element used in the rearrangement and revitalization of the square. Water washes, purifies, and signifies meditation and the return to the pure spirit within us. The presence of a water surface has become necessary in the arid and polluting urban environment. Several studies have shown that people see as more attractive a green space containing this element (Faggi et al., 2013). Water, like a transparent mirror, generously offers its naturalness and creates a state of tranquillity. Therefore, as it has been mentioned above, we decided to have a fine line of water on the perimeter of the statue as to underline the fragility of water in contrast with the hardness of stone and grandeur of the monument. To animate the area overseeing Vasile Conta Street, the suggestion was made to use water jets as a natural element, whose dynamics helps in generating ozone around water.

The alleys are another element playing an important compositional role in square development and in the creation of high-impact landscape effects for users. They directly focus

on the geometric character generated logically by the leading lines to attraction and recreation points. The relaxation space is highlighted with the help of seating places made of rectangular laminated wood, metal and concrete elements arranged linearly (Figure 8) on the access path, which stem from the horizontal pavement, climbing continuously until turning into pergolas. The pergolas are covered with the plants belonging to *Wisteria sinensis* species providing shade for the seating areas on hot summer days, as well as comfort and coolness to the public. The promenade area invites the visitor to discover gradually lianas decorated pergola arrangements, while the seating place accessible under the pergola reveals where an amazing scenery where *Yucca filamentosa* is the main element of the image projected on the vertical elements of the pergola (Figures 9 and 10). The contrast is accentuated by the green colour in the vegetation reflected on the bright white colour of the marble. In the sub-zones inside the park, there could be noted a subtle transition from the force of the geometric composition to the free-organic style achieved using the arrangement of flower species, shrubs, trees and ornamental grasses. After the analysis of site vegetation, it was suggested to keep a part of what there is now. The proposed plant compositions were arranged following the principles of composition - scale, proportion, rhythm, harmony, balance. They were arranged at different heights, and aesthetically harmonized with the landscape through colours, rhythms of shapes and volumes that will be gradually decorating each season, including winter.

There were suggested the following landscaping species of trees: *Betula pendula*, *Acer platanoides*, *Acer negundo*, *Catalpa bignonioides* 'Nana', *Tilia tomentosa*, *Picea pungens* 'Glauca' and shrubs *Berberis thunbergii* 'Crimson pygmy', *Cornus alba* 'Sibirica variegata'. To complete the selection of plants for green square arrangement, we have also used such ornamental grasses as *Festuca glauca*, *Stipa tenuissima* 'Pony tails', *Miscanthus sinensis* 'Gracillimus', as well as flower species *Lavandula angustifolia*, *Heuchera vilosa* 'Palace Purple' and *Hosta undulata* 'Mediovariegata'.



Figure 8. View from the east side



Figure 9. The promenade area arranged with pergolas



Figure 10. View from the southeast side

CONCLUSIONS

Green spaces are spatial cut-outs in the context of urban settlements with a key role for better environment. Vegetation, a living component of nature, regulates the cycle of oxygen and carbon

dioxide, enriches the atmosphere with oxygen, and reduces carbon dioxide in the atmosphere. Nature provides an unlimited source of textures, shapes, colours – the elements that have been subtly exploited in the arrangement of the square in order to create harmonious and contrasting

effects between the built and natural components. The presence of water in the Independence square arrangement is a point accentuating the central area around the statue and shaping a relaxing and peaceful atmosphere in line with the goal of this redevelopment. Water is also used to stimulate the senses. So, visitors have the opportunity to explore and feel how cold water flows under their feet on a summer day by touching the stones placed on the water mirror. Apart from these advantages, the public could benefit from the value brought by the natural elements meeting the need for recreation and relaxation in a comforting environment.

The solution for Independence square arrangement was created and presented in detail in line with location specificity and derives from functional and urban composition research. The aim of this proposal was to meet such current goals as creating a comfortable urban environment for relaxation, socialization, and contemplation but also raising the quality of daily life and free-time spending in a pollution-free environment. The suggested concept tried to create a unitary and multifunctional space covered by a set of landscaping effects that harmoniously integrate the area into the urban tissue of Iasi.

REFERENCES

- Cantor, M., Grosu, E.F., Buta, E., Zaharia, A., Jucan, D., Sabo, R.A. (2018). Implementation of landscape design solutions with the color and texture of plants *Journal of Horticulture, Forestry, and Biotechnology*, 22(1), 22- 28.
- Cojocariu, M., Chelariu, E.L., Chiruță, C., Pașcu, R., Avarvarei, B.V. (2022a). Comparative Study on the Behaviour of *Plectranthus Forsteri* and *Coleus Blumei* Species Growing on the Ground and in Vertical Systems for Green Façades in the Climate of North-East Romania, *Scientific Papers. Series B, Horticulture, LXVI*, (1), 657-666.
- Cojocariu, M., Chelariu, E.L., Chiruță, C. (2022b). Study on Behavior of Some Perennial Flowering Species Used in Vertical Systems for Green Façades in Eastern European Climate, *Applied Sciences*, 12(1), 474; <https://doi.org/10.3390/app12010474>.
- Zlati, C., Pașcu, R., Bernardis, R. (2022). Using Fruit Growing Species for Green Roofs, *Scientific Papers. Series B, Horticulture, LXVI*, (1), 773-777.
- Dascălu, D.M., Cojocariu, M. (2016). *Design Peisagistic*, Ion Ionescu de la Brad Publishing House, Iasi,
- Faggi, A., Breuste, J., Madanes, N., Gropper, C., Perelman, P. (2013). Water as an appreciated feature in the landscape: a comparison of residents' and visitors' preferences in Buenos Aires, *Journal of Cleaner Production*, 60, 182-187, <https://doi.org/10.1016/j.jclepro.2011.09.009>.
- Haq S.M.A. (2011). *Urban Green Spaces and an Integrative Approach to Sustainable Environment*, *J. Environ. Prot.*, 2, 601-608, <https://doi.org/10.4236/jep.2011.25069>
- Kaplan, A., Taşkın, T., Öneç, A. (2006). Assessing the Visual Quality of Rural and Urban-fringed Landscapes surrounding Livestock Farms, *Biosystems Engineering*, 95(3), 437-448, <https://doi.org/10.1016/j.biosystemseng.2006.07.011>.
- Kozamernik, J.; Rakuša, M., Nikšić, M. (2020). How Green Facades Affect the Perception of Urban Ambiences: Comparing Slovenia and the Netherlands. *Urbani Izziv*, 31, 88-100.
- McPherson, E.G., Peper, P.J. (2012). Urban tree growth modelling, *Arboriculture & Urban Forestry* 38, 172-180.
- Mexi, A., Tudora, I., (2012). Livable urban spaces. public benches and the quality of daily life, *Scientific Papers, Series B, Horticulture, LVI*, 367-376.
- Nordh, H., Østby, K. (2013). Pocket parks for people - A study of park design and use, *Urban Forestry & Urban Greening*, 12(1), 12-17, ISSN 1618-8667, <https://doi.org/10.1016/j.ufug.2012.11.003>.
- Pașcu, R., Zlati C., Calance Al., Bernardis R., Dodu D. (2021). *Methods of rehabilitation of a degraded area in Orăștie*, *Scientific Papers. Series B. Horticulture, LXV* (1), 684-693,
- Velarde, M.D., Fry, G., Tveit, M. (2007). Health effects of viewing landscapes - Landscape types in environmental psychology, *Urban Forestry & Urban Greening*, 6(4), 199-212, ISSN 1618-8667, <https://doi.org/10.1016/j.ufug.2007.07.001>.
- Wang, R., Zhao, J., Meitner, M.J., Hu, Y., Xu, X. (2019) Characteristics of urban green spaces in relation to aesthetic preference and stress recovery, *Urban Forestry & Urban Greening*, 41, 6-13, <https://doi.org/10.1016/j.ufug.2019.03.005>.
- Wu, Y., Zhixiong, Z., Qunyue, L., Kunyong, Y., Qitang, H., Jian, L. (2021). The Relationships between Perceived Design Intensity, Preference, Restorativeness and Eye Movements in Designed Urban Green Space, *International Journal of Environmental Research and Public Health*, 18(20), <https://doi.org/10.3390/ijerph182010944>.