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LANDSCAPE VISUAL CREATION AND EXPERIENCE OF LANDSCAPE IN GREEN ROOFTOP DESIGNS AS A NEW FORM OF URBAN SPACE

KREACJA WIZUALNA KRAJOBRAZU A DOŚWIADCZENIE KRAJOBRAZU W PROJEKTACH ZIELONYCH DACHÓW JAKO NOWEJ FORMY PRZESTRZENI MIEJSKIEJ

Abstract

City often provokes to creation of substitute places. Scenographic art has penetrated a sphere of public space. Its new form is spectacular, public green roofs that give a substitute for communing with open landscape. They are not random places on a map of cities – they become a space for creating viewing strategies – carefully planned, focused on specific goals. Theoretical considerations regarding landscape perception and experience of landscape are illustrated by seven examples of green rooftops from around the world, which makes it possible to confront to what extent these “truly” places are.

Keywords: green rooftops, scenographic architecture, landscape perception, experience of landscape, urban space

Streszczenie

Miasto często prowokuje do tworzenia miejsc zastępczych. Sztuka scenograficzna przeniknęła do sfery przestrzeni publicznej. Nową jej formą są spektakularne publiczne zielone dachy, które dają namiastkę obcowania z krajobrazem otwartym. Nie są przypadkowymi miejscami na mapie miast – stają się przestrzenią do tworzenia strategii widokowych – starannie zaplanowanych, ukierunkowanych na konkretne cele. Teoretyczne rozważania dotyczące postrzegania i doświadczenia krajobrazu zilustrowano 7 przykładami takich realizacji z całego świata, co pozwala skonfrontować, na ile są to miejsca „prawdziwe”.

Słowa kluczowe: zielone dachy, scenograficzność architektury, percepcja krajobrazu, doświadczenie krajobrazu, przestrzeń miejska

1. INTRODUCTION

Green roofs, in various forms, were implemented in almost all historical eras, fulfilling various functions. However, these were not commonly used forms as urban spaces. As an element of open space and a principle for new architecture, they appeared in the modernist idea, presented by Le Corbusier at the beginning of the 1930s. At that time, the use of a public roof was something new. This social function of green roofs is currently not the

only one – they perform new tasks.¹ A contemporary form has been developed since at least the 1980s by combining solutions typical of scenographic architecture and uses possibilities of pro-ecological shaping of an urban environment, creating a place of multiple experiences: social, visual, cognitive, cultural, environmental.

“Truly” city is reflected by everyday space, ‘pedestrian,’ which is connected with system of public space, while green roofs that claim to be such a form have some element of uniqueness and occasionality. Perspective of view from a high point, and verticalism of architecture promoted in recent times, can be referred to experiences – reaching summit, or feelings of sublimity, some kind of ‘epiphany,’ opposing the laws of nature. This fact places green roofs differently in system of traditional urban spaces. Nevertheless, in a quite specific way they open up to the urban landscape, showing its multithreading.

Landscape is result of interaction of climate, geological, ecological and cultural processes. In this approach, it can be said that it illustrates the true state of affairs. It is most often defined after the European Landscape Convention as ‘an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors.’ This universal definition can be attributed to almost any type of landscape, but this approach focuses on perception and possibility of creation.

Perception is largely associated with visual nature of landscape. Studies found that it accounts for 87% of it is just visually perceived.² This is how aesthetic experiences and interpretations are created. But aesthetic experiences of nature and landscape differ significantly from aesthetic experiences of art or cultural landscape – the former are not limited by convention of creation. Looking generates sensations, experiences, builds experience through cognition, causes image processing into information. A slightly different aspect, expanding perceptive possibilities, is experiencing landscape in a phenomenological sense, as a sense of place – *genius loci*, capturing depth through other properties. Both perception and experience of landscape depend largely on knowledge and sensitivity of an individual observer/user.³

Urban landscape is organized as a whole with identity elements. It has a limited range of orientation and identification. It is determined according to structural properties specified in the categories: places, zones and roads⁴. In cities with high building density, there are opportunities to shape places whose spatial dimension and significant is different from the previous traditional spaces. Rooftops of buildings, which were first scenic attractions, become an alternative to public spaces – squares and city gardens.⁵ They are places located in specific viewing zones, so the landscape experienced from the roof perspective is perceived both on the scale of the place and its surroundings. These are two important perspectives of looking and scales of being in space. Impressions of watching panoramic view of cities from above and in distance are based on romantic, eternal desire to reach for the stars, but human’s psychophysical conditions shaped by evolution are also significant.

Aspirations of these places to be public spaces contribute to shaping them in an extremely attractive, representative way. The question arises about their nature as an agora

¹ B. Kotzen, *Green Roofs Social and Aesthetic Aspects* [in:] K. Perini, G. Perez (eds.), *Nature Based Strategies for Urban and Building Sustainability*, Butterworth-Heinemann, 2018, pp. 273–281.

² S. Bell, *Elements of Visual Design in the Landscape*, Spon Press, London 2000.

³ C. Lévi-Strauss, *Anthropologie structurale*, Plon, Paris 1958.

⁴ C. Norberg-Schulz, *Existence, Space and Architecture*, Studio Vista, London 1971.

⁵ J. Pomeroy, *The Skycourt and Skygarden*, Routledge, London 2014.

and manner of reception, restrictions on use, etc. Discourse regarding the features of 'true' public space is very wide, but undoubtedly public space plays a specific role – it is an arena for social and political relations, which requires framing and hierarchy. In the mid-twentieth century, Erving Goffman's research included social attitudes in public space, related to, among others with meetings, assemblies or spectacle referred to as 'interactive order.' Therefore, all decorations, surrounding objects, but also architecture and landscape become a supporting element and means of expression.⁶

Kenneth Frampton, architecture critic, negatively referred to the concept of stage design of architecture, and identified it with the superficial facade, decoration, and therefore with visuality. Over time, understanding of scenographic architecture was deepened towards orientation towards the place itself. Tschumi's or Pallasma's view of architecture as a venue contributed to this. Gernot Böhme writes: "Recognition of the space of physical presence as the actual subject matter of architecture moves perilously close to stage design. The latter has always known that spaces it creates are spaces of atmosphere. And stage design has always made use not only of objects, walls, and solids, but also of light, sound, colour, and a host of other conventional means: symbols, pictures, texts."⁷

Cognitive significance is undoubtedly feature of 'true' space. Space of nature can not pretend. Cultural space is a place of nature processed to varying degrees by man. It can be testimony of the past or spatial and artistic creation. It often becomes almost a theatrical stage. By design, each space contributes to recipient's experience.

Difference between title visual creation and experience of landscape is the same as that which can be attributed: to see landscape and to be in it. Landscape experience defines our sense of place – deep and authentic contact with the surroundings.

The article analyzes visual and non-visual properties of landscape. Against the background of these relationships, landscape potential of green roofs is presented, which differ from traditional landscape interiors. They are distinguished by: defined boundaries, lack of horizontal continuity with other public spaces (and thus are not classic nodes), viewing potential – especially possibility of distant perspectives, clear, spatial scenery creation.

2. VISUAL ASPECT OF LANDSCAPE – THEORETICAL CONCEPTS BASED ON AESTHETIC PROPERTIES

To visual assessment of landscape, can be used analysis of features established in different aesthetic concepts that constitute theoretical framework. In the paper possibilities of assessing green roofs as a type of landscape place were referred to them.

One of the features of any landscape is its complexity. It was found that multiplicity, richness of landscape elements translates into content that the viewer receives, thus increasing its cognitive capabilities, conditions for information processing, time to contemplate landscape, and thus affects a better assessment of landscape scene.⁸ It turned out that both

⁶ E. Goffman, *Presentation of Self in Everyday Life*, University of Edinburgh, Social Sciences Research Centre, Edinburgh 1956.

⁷ G. Böhme, *Atmosphere as the subject matter of architecture* [in:] P. Ursprung (ed.), *Herzog and de Meuron: Natural History*, Lars Muller Publishers, London 2006, p. 406.

⁸ R. Kaplan, S. Kaplan, *The Experience of Nature. The Psychological Perspective*, Cambridge University Press, Cambridge 1989.

too simple and too complex landscape is rated low in terms of preferences – mainly due to the natural feature of mind to organize and structure information. Sometimes high complexity can be assessed high – e.g. for natural landscapes.

Landscape complexity is studied through: distribution of landscape attributes; their spatial organization (e.g. edge density and heterogeneity); degree of aggregation of land cover/patches, differentiation of individual elements, degree of contrast, expression of shapes, differentiation of scale.

On a city scale, publicly accessible places such as green roofs broaden landscape diversity to a large extent – in densely built-up areas, they allow for distant prospects. Complexity of urban landscapes viewed from above is usually high. This feature is expanded by wealth of green roof elements: a variety of greenery, spaces, interiors, furnishings, and scenic views.

Unity of landscape scenery, repetition of individual elements (forms, patterns, colors, textures), adapting system to natural conditions or to existing conditions make up consistency. It affects readability and understanding of landscape.⁹ Indicators developed for coherence test refer to natural areas, but they can also be applied to urban areas, including green roofs, by examining, e.g. the spatial distribution of vegetation, use of native species, degree of fragmentation of landscape types and repeatability of landscape pattern.

Disturbances in landscape, which are part of or a series of spatial barriers, cause a lack of consistency and ability to relate individual scenes to a wider context. High levels of disturbance result in low data processing and low ratings. Research covers: presence of elements/areas disturbing unity of scene, degree of occurrence and their impact on landscape. In case of landscapes analyzed from rooftops, such a disturbing element may be, for example, a neighboring degraded area or an object obstructing panorama.

Visual assessment is also affected by degree of management, which is a feature that speaks about level of control (planning, protection) over landscape. In case of cultural landscape, the control is at a high level – then measure of such a feature is degree of composition, layout of different elements: status and maintenance of these structures – e.g. in border of roof space. For green areas, level of vegetation management is determined, level of abandonment (e.g. by quantity of weeds). A city landscape viewed from above can also be created in terms of planning or randomness.

For architecture, which can be described as scenographic, image of the scene (landscape scenery) is associated with its property to perpetuate in recipient image that is recognizable, expressive, legible and durable. Relationships that give rise to these properties are difficult to grasp. They are attributed to such phenomena – like spirit of place (Bell), genius loci (Lynch), topophilia (Tuan), luminosity (Litton). In such picture, individual elements can be distinguished as: spectacular, unique, cult, or historical, referring to the past – binding other threads. Other level of assessment is accumulation of viewpoints, opening viewer to attractive scenes, and therefore scenery concept of shaping. This feature is closely related to visual representation of landscape.

Form of space, which stimulates to various forms of exploring space through deeper views, or arousing interest, focus of attention, has trait that can be described as

⁹ *Ibidem*.

mysterious view.¹⁰ The mystery decreases with shortened distance or expanded visual control of some elements – when views are not covered by other objects, and increases with distance and physical access and character of surroundings, special elements that define the place.

Sharpness, depth of view, texture of ground are features that have a visual impact by focusing a fragment of the image in one point and then attracting sight. It can be achieved also by directing attention by other elements. Depth of image causes orientation in spatial scenes and impact on distance. Depth and texture help in getting more legibility and recognize the size of landscape elements. For large roofs, depth of views is one of the designated urban landscapes.

Visual scale has a similar meaning for landscape perception. The perception of scale is based on human evolution and ‘habitat theory’¹¹ according to which man over the years has adapted his spatial preferences on protective possibilities – basing on avoiding being a victim and on the other hand possibility of hunting. This results in preferences for open or closed views, particular interest in observation points. Research shows that open views are perceived as safer, although roof being a space of limited movement may be perceived differently in this respect.

Assessment of this feature can be conditioned by: number of open areas, size of fields of view, possibility of visual penetration, number of elements obscuring the views.

Naturalness of landscape is a well seen feature that is based on need for human contact with nature and a positive assessment of such scenery, pleasure of observing life processes. On this basis, biophilia developed – the concept of a special attitude to the environment. Three types of naturalness are distinguished: presence of vegetation and degree of its naturalness; naturalness of landscape itself; presence of water as a frequent element of natural landscape. Green roof, regardless of degree of greening, is a cultural space, it is only a reference to the natural landscape, however, in built-up environments, every greenery is perceived positively.

Historicity of landscape (rooting in time) is a feature that defines and describes its space-time continuity, giving opportunity to identify individual time layers, which include: cultural elements, landscape heritage, vegetation. All these elements are usually included in utility roof view. Richness and diversity of these elements reinforces the trait. Cultural landscape is part of study of scenery in the theory of topophilia,¹² in which preferences change as historicity features change. Presence of historical elements in landscape (density and significance), as well as vegetation (length of vegetation), land use and organization of landscape attributes may be subjected to studies of historicity.

Assessment of landscape may be affected by its ephemerality – susceptibility to variability – usually seasonal or weather. Roof spaces are sensitive to these changes, they are often insulated against undesirable weather conditions – e.g. there are wind guards or canopies in case of rain – to ensure comfort of use. Seasonality is manifested through

¹⁰ J.A. Lynch, R.H. Gimblett, *Perceptual values in the cultural landscape: A computer model for assessing and mapping perceived mystery in rural environments*, Computers, Environment and Urban Systems, 1992, 16(5), pp. 453–471.

¹¹ J. Appleton, *The Experience of Landscapes*, Wiley, London 1975.

¹² Y.F. Tuan, *Topophilia: A Study of Environmental Perception, Attitudes, and Values*, Prentice-Hall, Englewood Cliffs 1974.

vegetation (depending on degree of coverage and type of occurring species) and in manner of use. Sometimes roofs are out of service if seasonal weather conditions are unfavorable.

Among ranges of few visual assessment presented above, we can distinguish purely visual features, but also those that affect other aspects of perception – feeling of landscape by processing its various aspects, affecting emotions.

3. IMPACT OF NON-VISUAL FEATURES ON LANDSCAPE ASSESSMENT

Non-visual features include, e.g. assigning a specific label – place name / type, which predetermines recipient's relationship to the place. Some types of places that generally have a high assessment improve the rating of a given place from the very beginning. In this way, green roofs have a higher rating because they are generally perceived positively.

Sound and movement also influence reception and evaluation of the landscape. At the same time, movement without consistent sound effects is perceived as a static image. Sound and movement enhance feeling of place and perception of its dynamic nature.¹³

Important element is the location of image in time, but also the length of observation, stay.

Swanwick defines landscape, among others, through perceptual/aesthetic factors in which there is a group of non-visual aspects that define its perception: memory, associations, preferences and senses such as: touch, smell, taste.¹⁴ Many of them make up the phenomenological nature of landscape – e.g. the mood of a place or build its tradition or culture – important aspects of the nature of the landscape. This approach is complemented by factors such as authenticity, harmony, uniqueness, content, emotional value, value in use, etc.

In context of roofs, authenticity preserves urban landscape, reflecting subsequent stages of spatial evolution of the city, while spatial arrangement of roof itself is often a creation appropriate for art of landscaping.

Reception, landscape experience can be the subject of analysis describing the process. Study of landscape perception using the Skalski method,¹⁵ which is used for design, assumes a 5-step approach. Its use for landscape assessment of green roofs shows the uniqueness of these structures. In the first stage, there is a visual isolation of a fragment of the landscape – it can be a green roof, captured as a landscape interior. The second stage involves identifying entrances and gates to the analyzed area / fragment of the landscape, which are border points, introductory roads. Usually used for such forms of entry are staircases, elevator shafts – i.e. elements of vertical communication. In the third stage, analysis takes place inside the structure of the analyzed landscape: identification of layout and its elements. The fourth level is analysis of the same fragment, but in terms of physiognomic background. Due to isolation of green roof area, this is one of the most difficult

¹³ J. Hetherington, T.C. Daniel, T.C. Brown, *Is Motion More Important Than it Sounds?: The Medium of Presentation in Environment Perception Research*, Journal of Environmental Psychology, 1993, 13, pp. 283–291.

¹⁴ C. Swanwick, *Landscape Character Assessment: A guidance for England and Scotland*, Wetherby, On behalf of The Countryside Agency and Scottish Natural Heritage 2002.

¹⁵ J. Skalski, *Sztuka patrzenia jako analiza percepcyjna krajobrazu [The art of looking as a landscape perception analysis]*, Czasopismo Techniczne. Architektura, 2007, no. 5-A, pp. 241–242.

stages – the place itself as a background, when the background is also a city landscape outside the roof. However, you can analyze complexity of green roof landscape, recognize objects and details. The last stage is to see distant views – and this is a key stage, because the scenic conditions of green roofs are based on these relationships.

View management can be a design strategy, especially used in the design of green roofs, although in the past there were also such utility roofs that were surrounded by high walls (e.g. Kensington Roof Garden in London).

4. SUMMARY

Green roofs against the background of presented methods of assessing visual perception and landscape experience present features that distinguish them from other urban spaces. The distinction between landscape perception and landscape experience is captured by Appleton's definition of landscape as a visual environment.¹⁶ On this basis, an experience can also be associated with non-visual aspects of landscape, i.e. environment. For civilization reasons, green roofs will be a developed form of urban spaces. The examples presented in illustrations show that it is common to treat green roof as an interior landscape additionally connected with an urban landscape in terms of view. Many of realized roofs have scenic relations with exceptional objects – the garden at the Centre for the Meeting of Cultures in Lublin with the Saxon Garden (Ill. 1); the garden at the University of Warsaw Library with the Old Town, center and Vistula (Ill. 2); the Garden at 120 in London with the cathedral of St. Paul, skyscrapers in the City (Ill. 3); the Vauxhall Sky Garden with the Battersea Power Station (Ill. 4), etc. The extent of these green roofs varies and shows the complexity of landscape – the garden at the University of Warsaw Library (Ill. 2), the Salesforce Park in San Francisco (Ill. 5), the Melbourne Sky Park (Ill. 6) or planned garden at Google headquarters in London (Ill. 7). They are interesting alternative to urban spaces, but their technological dimension deprives them of their natural element, in the simplest terms, directly binding the earth and the sky, and thus in a sense 'the truth.'



Ill. 1. Garden at the Centre for the Meeting of Cultures in Lublin (architecture: Bolesław Stelmach). Photo by Renata Józwick 2018

¹⁶ J. Appleton, *op. cit.*



Ill. 2. Garden at the University of Warsaw Library (landscape architecture: Irena Bajerska). Photo by Renata Jóźwik 2011



Ill. 3. Garden at 120 in London (landscape architecture: Gillespies). Photo by Renata Jóźwik 2019



Ill. 4. Vauxhall Sky Garden in London (landscape architecture: Gillespies). Visualisation: Gillespies



Ill. 5. Salesforce Park in San Francisco (landscape architecture: SHED Landscape Architecture). Photo: Jane Tyska/ Digital First Media



Ill. 6. Melbourne Sky Park (landscape architecture: Aspect Studio/Oculus). Visualisation: Aspect Studio/Oculus



III. 7. Melbourne Sky Park (landscape architecture: Aspect Studio/Oculus). Photo by Alison Hoelzer/Oculus 2020



III. 8. Google Headquarters – Kings Cross in London (landscape architecture: Gillespies). Visualisation: Gillespies

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