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## **Urban landscape as a restorative environment: preferences and design considerations**

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### **ABSTRACT**

In this paper, the idea of considering public preferences in design of urban landscapes as restorative environments is explored. A visual landscape preference research was conducted among user groups in Slovenia. In the study, a questionnaire was used, which was based on a selection of landscape scenes. These represented different types of naturalistic and natural landscapes. Possibilities of applying findings about public visual preference for landscape scenes and preferences for selected uses of those landscapes to the landscape design process are discussed. A particular attention is given to restorative and experiential quality of landscapes. Findings clearly suggest that the particular character, spatial organisation, and the character of present natural elements in the landscape influence preference for certain uses and selection of landscape scenes as restorative environments.

**Keywords:** Landscape design, restorative environment, landscape preference, urban landscape, naturalistic design

### **IZVLEČEK**

#### **MESTNA KRAJINA KOT OBNOVITVENO OKOLJE: VŠEČNOST IN OBLIKOVALSKI VIDIKI**

V članku so predstavljene možnosti za vključevanje doživljajskih vidikov in vsečnosti krajine v načrtovanje obnovitvenih okolij. Vidno zaznavna študija vsečnosti urbanih krajin je bila izvedena med uporabniki prostora v Sloveniji. V raziskavi je bila uporabljena metoda anketnega ocenjevanja, ki je temeljila na ocenjevanju krajinskih prizorišč. Ta so predstavljala različne tipe oblikovane in naravne krajine. Obravnavane so možnosti vključevanja spoznanj o vidno zaznavni vsečnosti krajin in zaželenosti krajinskih prizorišč za izbrane rabe v načrtovalski proces, s poudarkom na obnovitveni in doživljajski kakovosti krajin. Rezultati kažejo, da so specifične značilnosti krajinskega prizorišča, njegova prostorska organizacija

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ter značilnosti prisotnih naravnih prvin pomembni v izboru krajinskih prizorišč kot obnovitvenih okolj.

**Ključne besede:** krajinsko oblikovanje, obnovitvena okolja, vsečnost krajine, mestna krajina, naturalistične krajine

## 1 INTRODUCTION

The quality of living in a healthy environment is one of the basic demands of the modern society, particularly in urban settings where the opportunities for contact with green urban spaces are sparser. In this respect, an informed design of urban green landscapes can have major influence on developing quality experiential and restorative everyday landscapes as 'nearby nature' for urban people.

The objective of the research, presented in this paper, was to explore the preferences for a variety of the green urban landscapes, as potentially valuable restorative environments and to show that structural character of different green urban landscapes influences the choice of preferred environments for particular active or passive uses.

People appreciate the qualities of nearby nature, and preferences are reported to relate to specific physical landscape character of designed landscapes (Ulrich, 1986; Kaplan and Kaplan 1989; Purcell, 1992; Peron et al., 1998). The distinction in preference for diverse landscape scenes stems from mere degree of present natural elements, its content. Landscapes, in which a higher number of natural elements are present, are usually more preferred (Kaplan and Kaplan, 1989; Ulrich, 1983). In urban context, higher preference is expressed for landscapes with more vegetation in a view (Herzog, 1984). In general, higher preference is expressed for landscapes with less built elements, more distant views, topography change, and water body present (Steinitz, 1990). In the model of preference for visual landscape, Ulrich (1986) forecasts higher preference for landscape scenes, of which physical character complements perception and understanding of environment. In his mind these environments carry additional spatial information. Higher preference is expressed for landscapes, which are embellished with high level of diversity, coherence, and a certain degree of mystery and legibility (Kaplan and Kaplan, 1989).

Natural elements in the landscape scene are perceived also as a spatial system (Simonič, 2003), since their spatial organisation influence preferences for those landscapes. Structural articulation and spatial complexity are the essentials for diversity of landscape experience. Nature is perceived also in its spatial-temporal dimension, through which its dynamics is well acknowledged. People show higher awareness of natural processes, which is based on deeper knowledge about nature (Nassauer, 1995; Nassauer, 1997). In addition positive ecocentric values, which people hold, reflect through behaviour and respect for nature (Simonič, 2002).

Urban landscapes with a high content of vegetation elements in particular, have thus potentials to perform a variety of social functions and as such to establish or regain a role of healthy, desirable and restorative urban landscapes. The 'restorative environment concepts' offers a theoretical framework for exploring and understanding the relation of health to experiences in natural environments (Hartig et

al., 2003; Hartig, 2004). Hartig (2004) defines 'restoration' as 'the process of renewing physical, psychological and social capabilities diminished in ongoing efforts to meet adaptive demands'.

The restorative environments theory relates people, who go through the restoration process, process of the restoration, and the restorative environment itself. The reports of what people feel and their perceptions of the environment can be related to the specific character of the environment (Kaplan et al., 1998; Herzog et al., 2003). This preference is directly linked to the desired activities and uses of the selected environment (Hartig, 1993; Hartig, 2004). Restorative urban environments are those urban landscapes, which people preferred more and choose as places of their recreation or use. Uses are either dynamic, or static (Rapoport, 1986:169). The examples of dynamic are walking, jogging and taking care for plants, whereas leisure, bird watching and meditation and retreat to solitude are regarded as static activities. All are likely to contribute to restoration. However, the question remains of what are the physical characteristics and structural differences of green urban landscapes to perform as valuable restorative environments. Such knowledge can inform the creative exploration of different landscape design ideas and approaches with the aim of developing a modern urban landscape.

## **2 MATERIALS AND METHOD**

### **2.1 Participants**

In the research, the visual questionnaire was delivered to 550 households in two towns in Slovenia, namely Maribor and Idrija. The participants returned 214 (38.9%) filled in questionnaires by mail. Of them, 39.9% were men and 59.3% women, with average age of 44.3 years and an age range from 14 to 84 years.

### **2.2 Questionnaire**

A questionnaire was designed to test the visual preference judgements and desired activities for such landscapes for selected 21 landscape scenes. The landscape scenes were independently presented and judged. They were selected from an examination of landscape design legacy and are thoroughly presented elsewhere (Simonič, 2003). They represented 8 different landscape types, grouped in three landscape type groups, namely Natural landscapes, Naturalistic landscapes and Geometrical landscapes. The landscape scenes are described in Table 1.

Table 1: Description of contents of representative landscape scenes. Visuals of the landscape scenes are presented elsewhere (Simonič, 2003).

Landscape type group	Landscape type		Landscape scene contents	
Natural landscapes	Natural landscape	3	Wetland area, water surface hardly visible, free plant growth, entirely vegetated water edge, multi-layered vegetation	
		4	Spruce woodland, tree trunks visible, course ground surface partly visible rock outcrops, multi-layered vegetation	
		11	Beech woodland, shrubs and tree trunks visible, course ground surface partly overgrown, multi-layered vegetation	
Naturalistic landscapes	Landscape style	6	Open lawn, open water surface, irregular water edge, several large trees, trees in the background	
		14	Open lawn, large solitary tree, trees in the background	
	Picturesque	15	Partly overgrown water surface, groupings of plants, flowering plants, trees in the background, high structural complexity	
		16	Groupings of flowering plants, high structural complexity, trees in the background	
		Wild garden	7	Groupings of shrubs and herbaceous plants, rockery, gravel path
	10		Groupings of shrubs and herbaceous plants, lawn, gravel path	
	Parkland	1	1	Open lawn, solitary trees, irregular arrangement
			8	Open lawn, solitary birch trees, irregular arrangement
			18	Open lawn, solitary spruce trees, only trunks visible, irregular arrangement
			21	Open water surface, curving man-made water edge, lawn, tree clumps, irregular arrangement
	Abstract	2	2	Large homogenous flowering field in front, trees in the back
			13	Large homogenous surfaces ground cover planting in front, trees in the back
	Biotope	12	12	Large open water surface, partly overgrown, vegetated water edge in the background, partly visible managed water edge
19			Large open water surface, partly overgrown, vegetated water edge in the front and in the background, partly visible managed water edge	
Geometrical landscapes	Geometrical landscape	5	Orthogonal landscape design, regular flower and water beds, man-made edges and paving	
		9	Orthogonal landscape design, regular flower beds, colourful planting man-made edges and paving	
		17	Orthogonal landscape design, regular flower beds, clipped hedge, paving	
		20	Orthogonal landscape design, regular trees arrangement	

In the questionnaire visual preference for landscape scenes was judged for each scene on a 5-point scale. People also selected the most preferred landscape scenes for active and passive uses, which have restorative role, namely gardening, walking, jogging, meditation, bird watching and relaxation. The acquired data was processed and analysed by descriptive statistics methods.

### 3 RESULTS

#### 3.1 Preferences for selected landscape scenes and landscape design types

In general, the scenes, that scored highest in preference, were those that contained water and trees, the texture of groundcover was however less important as oppose to findings of Ulrich (1986). The diversity of landscape elements and presence of colours in the scene also seem to play an important role in determining preference, as long as their spatial organisation was organic and naturalistic. As found by several researchers (Ulrich, 1986; Kaplan and Kaplan 1989; Peron et al., 1998) this study demonstrated the effect of landscape with prevailing natural elements on preference. In addition to that, two more points can be outlined. The natural and naturalistic landscape scenes are more preferred to geometric designs. Moreover, different responses to different types of naturalistic design itself were observed. The differences are found on the higher hierarchical level of form and content of a landscape scene, and on lower hierarchical level. The later was structural and compositional character of the setting (Simonič, 2003).

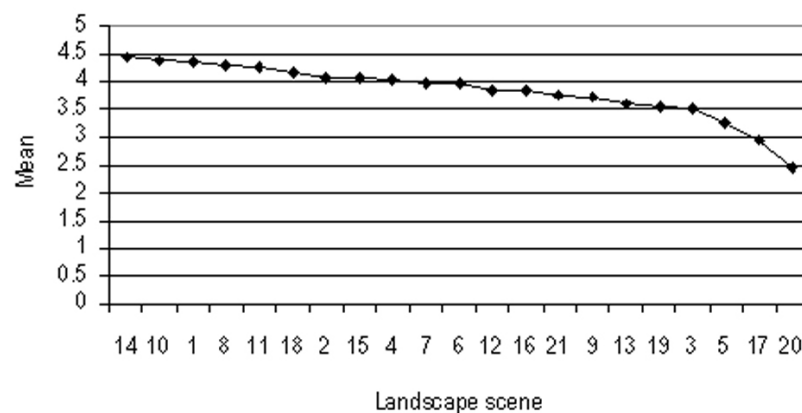


Figure 1: Preferences for landscape scenes: mean scores.

The most preferred scenes contain larger areas of open managed grassland, large trees and tree clumps or well structured volumes of vegetation. The least preferred landscape scenes were landscapes with uniform arrangement of the same species of trees and areas of orthogonal flower beds. The landscape scenes which were less preferred were also more vegetated landscapes, with less open space, overgrown and apparently less managed. These scenes also lacked articulated spatial organisation. As already shown elsewhere (Simonič, 2003), also differences in preference for various naturalistic landscape design types were established. Means scores for preferences for the selected landscape types are presented in Table 2.

Table 2: Preferences for landscape design types: mean scores.

<i>Landscape type</i>	<i>Landscape scenes</i>	<i>Means</i>
<i>Landscape style</i>	6, 14	4.31
<i>Parkland</i>	1, 8, 18, 21	4.18
<i>Wild garden</i>	7, 10	4.17
<i>Picturesque</i>	15, 16	4.03
<i>Natural landscape</i>	3, 4, 11	3.99
<i>Biotope</i>	12, 19	3.90
<i>Abstract</i>	2, 13	3.82
<i>Geometrical</i>	5, 9, 17, 20	3.10

In general Landscape style, Parkland landscape, Wild garden and Picturesque landscape design type scenes are found to be most preferred. The least preferred were Abstract and Geometrical landscape type. In addition, higher preference was expressed for structurally more complex and organically designed scenes, and lower preference for simplified and abstracted landscape scenes containing geometrical orthogonal patterns.

### 3.2 Preferred activities for the restorative environments

As presented in the Figure 2, the cumulative scores for landscape scenes show, that the highest scores received scenes, which include trees, are transparent and mostly show clues of presence of man. The lowest score received geometric and abstract landscape scenes, which lack more complex spatial organisation. However, as expected, the differences in selection of preferred scenes for different uses are evident. The highest scores for 'relaxation, leisure' activity received landscapes which are wooded but transparent in character, offering possibilities to walk around, namely Natural landscape type and Parkland type. The water is present in larger surfaces, the groundcover is not vegetated. The least chosen were landscape scenes from the geometric or abstract landscape type. The most preferred scenes for the activity 'Bird watching' were natural landscapes and vegetated water landscapes. The least preferred were the geometric landscapes. For the passive activity 'Meditation, retreat to solitude' similar landscapes were chosen as for the 'relaxation' activity, however, also more vegetated water landscapes received higher scores. Geometric landscape, which lack trees or complexity in general, again received the least scores. Most often chosen landscapes for the activity 'Walking, jogging' were open grassed parklands or natural settings. The lowest score received landscapes which were either geometric in spatial organisation or too vegetated to allow the movement. Even for the activity 'Gardening, care for plants' the geometric landscapes were less readily first preference choice. The most often selected were landscapes with flowering plants but complex in structure and mostly organic in spatial organisation. The least preferred for this activity were natural landscapes and Open Park like landscapes. Figure 2 shows score frequency of selected landscape scenes for particular activities.

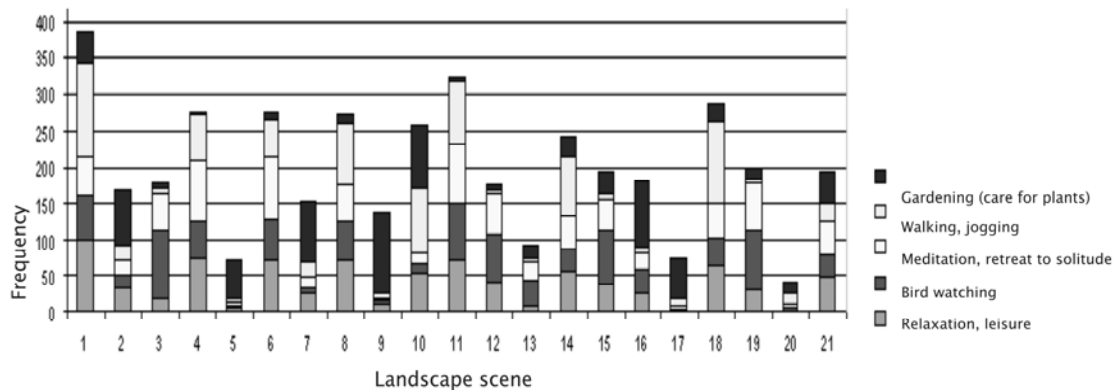


Figure 2: Preferred activities for landscape scene. Visuals of the landscape scenes are presented elsewhere (Simonič, 2003)

#### 4 DISCUSSION

A visual landscape preference research, conducted among the user groups in Slovenia based on the presumption that urban landscapes with a high content of natural elements, well structured spatial organisation and the setting character, which allows for a passive and active uses, may also work as valuable restorative environments. Findings confirm that landscape scenes are perceived as a spatial system in which the character of spatial organisation of elements in the observed landscape influence perceptions and hence preferences for those landscapes. The basis for landscape attractiveness is its visual diversity, degree of articulation and balance of natural and man made elements, which are present in the landscape. Structural articulation, spatial complexity and affordance are the essentials for diversity of landscape experience and restorative effects.

More importantly, findings also give certain clues for designing naturalistic landscapes, in regard to the organisation of landscape experience. It may be concluded, that findings show diverse preference responses to different naturalistic landscape design types and they can be considered in landscape design process. Naturalistic and landscape style landscapes were more preferred to geometrical and they are also considered as landscapes with higher restorative quality. The low preference and also desirability for proposed activities for geometric landscapes both suggest that when designing geometrical landscapes a particular care should be given to the complexity of spatial organisation of green structures and higher diversity of landscape experience to likely yield more restorative role.

A comprehensive approach is suggested for creative search of multiple design solutions for restorative urban landscapes. Such approach should allow a transparent and holistic view of the design problem. The need for quality nearby nature should be considered at appropriate steps in the greener urban landscape design process. An urban space is more likely to acquire the role of a restorative environment if designed as a complex, coherent landscape in which users would already visually recognise potentials for the variety of uses, related to their contact with natural elements. The result can be higher quality experiential landscapes which can improve the quality of everyday life in the city. Desires, needs and actual availability of 'nearby nature' should be understood and taken into consideration when designing urban landscapes. Preferences for nature should be incorporated in the planning and design process as guidelines for creating valuable experiential landscapes with high restorative potentials. As such these restorative landscapes, particularly in urban context, can importantly contribute to healthier lifestyles and greater awareness of nature by users.

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