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Social ecology in urban landscape design

Abstract

The purpose of this research is to design the landscape of urban space based on ecological-social systems, which causes the design and molding of functions based on the relationship between nature, environment, and man in an urban system. The present research is descriptive, content analysis, and correlation. The sample was part of the Farahzad statistical population, the results of which were generalized to the whole population. In the descriptive-analytical research method, the approach to the research is systematic, to determine the main purpose of the research. Data analysis was performed using SPSS software. The findings, based on the components of design, suggest that "everyone is a designer" is increasingly being applied by the new generation of people who work with all the designers and relevant people at the center of their design process. Also, the main motivation of this social movement is that it allows the whole community of users to participate collectively in the design of their urban landscape, and in this case, the degree of ecological-social integration and sustainability of the urban landscape will always grow. Conclusion According to the obtained indicators, with the development of ecological-social infrastructure in the context of designing and recognizing the capabilities of local and indigenous residents, good partnerships emerge.

Keywords: *Social Ecology, Urban Landscape Design, Ecological System*

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Introduction

Introduction The ecological approach to the visual environment of the city in the direction of sustainable design, based on social structure, sustainable space, and modeling of nature, represents the new position and role of the urban landscape in which appropriate answers to ecological issues, economic welfare, and a collective life in the context of aesthetics. Ecologically, these issues are analyzed differently in each context. The distinguishing point of this research compared to others is that landscape design with a socio-ecological approach as a guide and manifestation of comprehensive and all-around urban design and part of the city's appearance, is the connection between urban man and nature. (Vallés-Planells2014)

On the other hand, changes in ecological conditions related to urbanization, such as watershed pollution, biodiversity loss, and climate change, change the ecosystem's ability on a local and global scale, which ultimately challenges the sustainability of cities and communities. Ecological landscape design is based on a comprehensive understanding of the landscape that encourages a dynamic and responsive approach. This is a comprehensive approach because it simultaneously considers the patterns and processes of the local and regional landscape of the past, present, and future. In ecological social systems, individuals and organizations are key components. We refer to formal and informal laws that shape human interactions. People may change their relationships with other people, their strategies, and the rules they use. Individual strategies and organizational rules often interact and evolve in unpredictable ways.

In the face of accelerating social and environmental change, and achieving a sustainable future for the urban landscape and the people to whom it depends, we need to manage, plan and design interconnected ecological systems (SES). The ES (ecological-social) paradigm emphasizes the interrelated links between social change and the environment. Thus, the purpose of the ES view is to provide a systematic framework that recognizes the interactions, interdependencies, and interactions between social and ecological systems.

Based on case studies, some characteristics of urban ecological landscapes can be summarized as dynamism and principled news (Makhzoumi 2000), health creation (Cao et al. 2002), adaptability, greenery, multi-use, and multi-level (Ostrom). 2009), culture, balance and harmony, livability, environmental protection, and energy conservation (Zhao. 2011). Urban ecological landscapes have sustainable characteristics, including ecological, social, and economic sustainability. First, urban ecological landscapes must follow the systematic and dynamic principles of ecosystems, preserve the structure and process of ecosystems, and provide environmental protection. According to the above, the purpose of this study is to study the social ecology in the design of urban architecture.

Table (1) compares the framework of social and ecological concepts of the system. The framework of the human ecosystem was first used in cities by Pickett Del Khor, which expanded the proposed framework for ecological research. The framework separates social and ecological systems through a hierarchical method to identify a set of nesting components for each subsystem. This framework consists of four variable classes with three main subsystems: the human social system and the resource system in which the resources of the nest ecosystem are composed.

This framework uses the concept of the ecosystem from traditional ecology and seeks to use the framework as a tool to

teach how to add humans to ecosystems in urban areas. Researchers with a stronger background in ecology and natural phenomena aim to picket existence in the nested social system, and theories of spatial heterogeneity and hierarchy place great emphasis on this framework.

Table 1 : Comparison of selected frameworks for studying urban socio-ecological systems

Framework	Social elements	Ecological elements	Integration
Human ecosystem (Pickett et al., 1997)	It divides the social system into social institutions, social cycles, and social order because ecologists are less familiar with social dynamics. Investigation of cultural and socio-economic resources in the system of resources and ecosystem resources	The details of the ecosystem are due to the possibility that ecologists are familiar with environmental processes (energy, water, nutrients, and materials) and the patterns (species, soil, vegetation) of their surface.	Some parts of social systems in urban areas are not considered independent of ecological phenomena (for example, economic and social resources are considered along with ecosystem resources). Graphically, the components of the subsystem are depicted as interacting with each other, and then the social system and human resources interact at a higher level.
Ecosystem dynamics (Grimm et al., 2008)	Humans are primarily connected to ecological patterns and processes through land use. Human perception affects social patterns and processes (which affect land use).	Land use is a mediator for the impact of social and ecological contexts on environmental processes, which then receive feedback from human perceptions and ecological conditions.	Large-scale (climate, geology, and history) Environmental contexts and patterns and social processes (culture, demographics, and social institutions) are related through their effects on land use, but social patterns are also directly related to Ecological conditions are affected.
Urban ecology (Alberti et al., 2003)	Focus on high-level drivers, patterns, processes, and effects/changes in the separation of urban components into social and ecological subsystems. Urban dynamics is embodied as a single feedback loop in which both social and ecological stimuli (population growth, climate) affect the observed patterns (ie land use and land cover) that affect ecological and social processes. Processes in turn affect both patterns as well as the effects/changes observed in cities.		

Method

The present research is descriptive, content analysis, and correlation. In this study, the statistical population is a part of Farahzad residents and also those who refer to this neighborhood (men and women). According to the population of 5193 people in the Farahzad neighborhood, 221 people have been selected as the sample size. First, a questionnaire was designed and completed by people familiar with the field of architecture and landscape architecture (20 professors and landscape students of Tarbiat Dabir Shahid Rajaei University)**.** In the second phase of this research, to assess the importance and use of each of the criteria and sub-categories in design, scores were divided into 4 sections under the headings: social landscape indicators, ecological landscape indicators, and level of responsibility and social participation. And in the form of a questionnaire was distributed among the statistical population in a scattered and uncertain manner.

The urban landscape design questionnaire is based on ecological-social systems, in the first part, measures the amount of ecological and social demands of people in urban environments (according to the case study), and the second part includes questions related to respondents' personal information and gender variables. Ethnicity, marital status, age, and level of education. The internal consistency of this questionnaire was calculated using Cronbach's alpha coefficient of 0.813, which indicates that the questions have good reliability. To determine the formal validity of the questionnaire questions, experienced and expert professors in the field of landscape who were familiar with the subject of the research were asked whether the questions are appropriate to meet the purpose of the research or not

The obtained data were analyzed and analyzed using Excel and SPSS software.

Result

Four main factors that can be effective in urban landscape design with a socio-ecological approach were identified and their importance in the study area was investigated. The obtained factors include their sub-indicators that are considered in the design and ecological-social approach and are effective

According to the obtained analyzes and the following diagram, by considering the maximum of these parameters, each of the following factors can be considered as a basis for prioritizing and classifying design indicators.

Hypothesis 1: Investigating the relationship between landscape, ecological and social components

The social approach in landscape and its design is considered as an operational and communication system, making this approach possible as a subsystem of an ecological ecosystem, which in this study leads to more sustainability based on natural science. This allows a better understanding of the "disability" of social systems (such as the economy), which is often seemingly incomprehensible, to be better understood and to deal more easily with environmental consequences. Landscape, ecological and social aspects are a close, direct, dependent, and influential relationship according to the studied and influential factors, and we consider that the balance of each factor is effective in the greater stability of the factor and dependent factors.

Hypothesis 2: The degree of stability of the region with landscape design appropriate to the Farahzad site

The aim of the socio-ecological approach is to be involved in self-directional landscape design to achieve urban sustainability. However, some urban areas, such as the Farahzad neighborhood, have been forgotten and are very prone to look back with constructive approaches. Considering the obtained indicators, according to the questionnaire, the relevant design is very effective in repairing, renovating, and renovating the specified site and neighborhood of Farahzad. Farahzad site, in interaction with natural systems, opens its biophysical sections, including the human population in combination with the forgotten natural environment. By organizing energetic currents and key elements of the environment using background design with minimal interference in nature, transforming natural systems through work and technology into specific ways to exploit them, makes itself part of the sustainability of the study area. Becomes. This in turn leads to relevant and unintended changes in the natural environment to which communities in the area respond. Therefore, the people living in Farahzad are structurally connected to a part of their area (designed area), so that both of them mutually cover each other's future evolutionary options and take steps towards urban sustainability.

Hypothesis 3: The effectiveness of landscape design based on social ecology and its relationship with urban and nature sustainability

If the landscape is a combination of an ecological-social communication system that is structurally related in structure, anything that affects ecology and social relations also affects the landscape. The design and terminology of nature itself cause change and in this regard also stimulate developments and social relations.

According to the review and measurement of the design criteria, Figure 4 includes a summary of the classification of the main design indicators approved by experts.

Conclusion

After reviewing and announcing the plans, programs, and methods of implementation, macro and micro policies and strategies to achieve these policies in the neighborhood and the Farahzad Valley are presented (Table 2). It should be noted that the following factors have been proposed based on the main criteria of the research, which are the same related ecological, and social**.**

Table 2: Develop-policies, strategies, and approach to achieve a social-ecological system

methods	Small politics	Enormous politics
Development of a framework and comprehensive design for the protection and sustainability of the natural and ecological environment of Farahzad Alborzi slopes	Protect and promote the natural and green environment	Ecological landscape upgrade
Development of urban-natural green infrastructure in the valley river and slopes		
Preserving the identity of Iranian gardens and composite design according to the existing context		
Prevent the spread of activities incompatible with natural tissue		
Protect and rehabilitate existing river valleys and gardens		
Creating beds with proper functioning and usefulness in spaces		

Creating a suitable platform for communication with nature		
Upgrade pedestrian and bicycle infrastructure		
Conservation and development of biodiversity		
Promote health-related benefits		
Climate rehabilitation using the protection of existing gardens and urban green development on the river slopes	Climatic and climatic stability	
Implementation of a comprehensive plan for surface water disposal	Control and management of waste and surface water	
Construction of wastewater collection and disposal network		
Promote access to justice	Creating sustainable and balanced social development	Social development and increasing responsibility
Creating social equality		
Development and balanced access to welfare and comfort facilities		
Upgrade local security		
Development of public and private spaces		
Create spatial diversity		
Increase vitality and vitality		
Increase the feeling of belonging		
Increase the desire for the right to choose and social participation		
Improve accountability by keeping the neighborhood clean		
Development and revival of recreation, tourism	Promote the benefits of a dynamic local economy	Economic Development
Create local markets		
Rehabilitation and creation of agricultural lands		
Revitalize existing gardens		
Create different places for group discussions	Creating infrastructure and enhancing social participation	Promoting social participation
Development of recreational-tourism infrastructure		
Create a free learning and training platform on site		
Participatory green planting development		
Creating cultural-religious-artistic infrastructure and...		
Participatory agricultural development		
Creating the virtual and face-to-face infrastructure to collaborate on various local public events		

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