



Towards Restorative City: Rethinking Public Space Design from Ecological and Biological Perspectives to Promote City and Community Wellbeing.

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Abstract:

The urban development of the city emerges from the constantly changing local circumstances. As human beings, we have an inherent tendency to cohort with nature. During the pandemic, people occupied public green spaces to be a haven. With the dramatic increase in the urban population of cities, cities are becoming more multicultural and heterogeneous environments. As the physical environment and the social behaviours generate each other. The paper will address the importance of designing public spaces as spaces that support human well-being. Social interactions and community cohesion are organically and iteratively developing inside safe public spaces. Thus, the paper will concentrate on developing concepts for prospering public spaces to inspire people's wellbeing and promote community cohesion through its design. Public spaces design impact people's sense of belonging and sense of place in the city, and those senses are related to the people's social and physical experience with the city's structures, spaces, pedestrianization, including city blocks, street dimensions, walking aisles, building heights, and city ecological, biological components.

Accordingly, this paper highlighting existing and new concepts to rethink the design of cities' public spaces starting from understanding people's experience in those spaces from ecological and biological perspectives aiming to enhancing people's physiological, psychological health, and city's life quality using ecological components and principles in public spaces design, urban mobility, considering space air quality, noise pollution, and place-based relationships (Biophilic dimensions). The paper highlights the lack of literature about Biophilic architecture and Restorative Environment concepts and applications in designing cities' public spaces specifically. Considering both concepts as potential solutions that can assist in improving city liveability and capabilities in enhancing and maintaining its social prosperity and its environmental resilience.

City Trends and Public Health

People's health is becoming almost synonymous with urban health and safety with the increment of city's challenges from climate change, health pandemics, air pollution, and cities densities crisis. Considering a healthy safe environment should be revolving around being a healthy and safe physical environment for people but also healthy and safe for their well-being. Accordingly, mental health and human wellbeing are important subjects to be investigated in the field of urban planning and architecture. Thus, city design can increase or decrease public health through its components and structures. This paper is bringing an important opportunity to question how urban design can significantly impact public health according to certain literature.

The **'Designing Healthy Living'** report on the state public health in Canada, 2017, examines how the built environment works as a foundation for mental wellbeing and physical health. The report investigates healthy living and the built environment structure and the interrelationship between them. This report concluded what kind of places in Canadian cities can promote mental health by creating new connections to be added to the new urban agenda that promote the existence of community social prosperity, public green spaces, and secure public spaces.

Therefore, public health is essential for achieving prospering, resilient cities as "First we shape the cities then they shape us." (Neema Kudva, 2012). Urban design affects public health and thus city prosperity. This realization of the interrelationships between public health and wellbeing and space planning and design approaches requires more than debating these interrelationships but investigating new solutions to integrate health prosperity into space design projects as one of the missing key questions in the field of architecture and urban space design. New trends and concepts in urban planning and architecture such as 'Biophilia' and 'Restorative city' have emerged seeking a healthier urban environment and people-friendly cities despite the antibiosis between the urban and natural environment.

Biophilia And City Ecological, Biological Dimensions.

Biophilia, is "the love of life" German social psychologist Erich Fromm introduced in his book, *The Anatomy of Human Destructiveness* 1973(Fromm, 1992). In 1984 American Naturalist Dr.Edward O. Wilson described Biophilia as "the desire for humans to emulate nature in the structures of everyday life."(Edward O. Wilson, 1986). Biophilic Architecture was used in many environments, such as hospitals, and offices to improve the well-being of people, but its use in public spaces has not been sufficiently researched (Co and Hayhurst, 2017). Therefore, it is consequential having more research on biophilia and its attributes in all sorts of the built environment not only the biophilic prevalent greenery attributes. The paper is aiming to review the

development of public space using the biophilic design because as humans we are biological creatures, we tend to build physiological, psychological relations with the biological Forms and components of plants, trees, and natural light materials, and natural geometrical forms. Accordingly, it is logical to back to our roots and attempt to use nature and its features as a method to improve our cities and life.

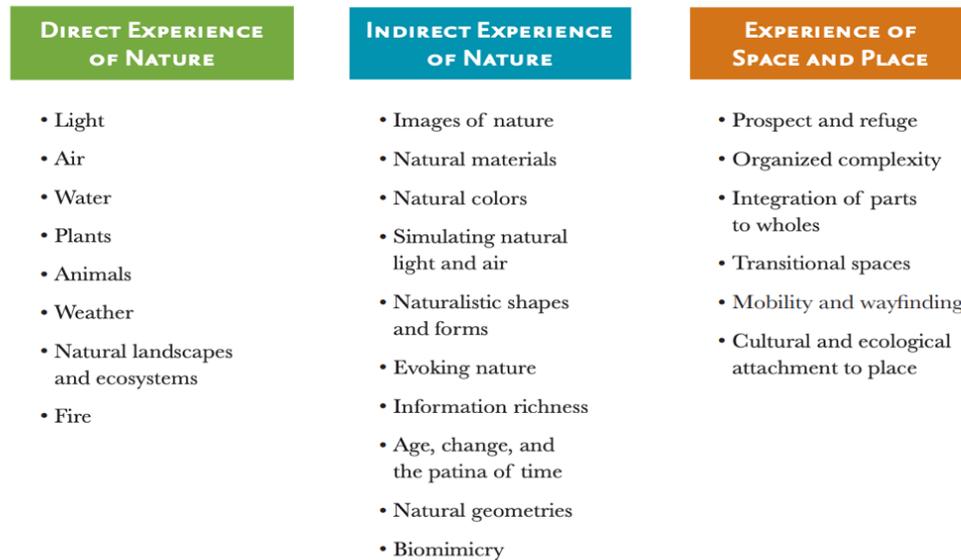


Figure 1 Biophilic Architecture Attributes. (Kellert & Calabrese, n.d.)

Biophilia as a concept is the knowledge of the natural human evolution in nature within the natural environments. As 99% of the species were biologically developed in a natural adaptive environment contrasted with the manufactured ones that humans created and designed. Therefore, the newly built environment design should include natural ecological components on all scales to preserve human healthy development as biological organisms in the built environment.

“The problem of man and nature is not one of providing a decorative background for the human play, or even ameliorating the grim city: it is the necessity of sustaining nature as a source of life, milieu, teacher, sanctum, challenge and, most of all, of rediscovering nature’s corollary of the unknown in the self, the source of meaning.”

(Mcharg, 1969, p.19)

In the study, ***Biophilic Design Patterns in Uk Landscape Architecture***, the study discusses the concept of the ***Biphobia***¹ as a contradictory of ***Biophilia***. Biphobia

¹ **Biophobia**: a human fear of certain species and aversion to nature that creates an urge to affiliate with technology and other human artifacts. (Ulrich, 1993)

hypothesized to be an evolutionary trait as response to threats and enhancing survival. (Joseph Oliver Clancy, 2014). As most of the biophilia is a new concept that is used to solves many obstacles it is important to have a contradictory approach to be discusses these applications from another perspective.

In the Book, **Unified Architectural Theory: Form, Language, Complexity, 2013**. By Nikos Salingaros. In chapter 10 of the book, the author discussed Biophilia through understanding Biological Forms and human evolution. He indicates that the biological roots of urbanism are related to the human brain's perception of form, and space and he argued that architecture was built to give a form of constant physical and psychological nourishment to people, and the improper formation of the built environment generates stress and decreases human energy. This literature body defends the hypothesis of the relation between arch-ecology and human comprehensive wellbeing as the authors indicated "Our physiological nervous system is precisely developed to deal with those ancient natural environments: natural light, fresh air, savannas, open plains, shrubs and trees, visual access to water, etc. Our body has a highly developed ability to detect environments that are good for us." (Salingaros & Alexander, 2013).

In the report, **Restorative Cities: Urban Design for Mental Health and Wellbeing 2021**, the authors indicate that there is a strong connection between street characteristics and the reduction of the risk of depression and stress, anxiety and improved social conviviality, and community belonging. The concept explains that all the spital characteristics of streets can promote social well-being using urban science and a studied framework of how cities can be designed to be safe for the people by relying on multi-disciplinary investigations in a restorative environment. (Roe & Mccay, 2021).

Therefore, despite the antibiosis between the urban and natural environment, integrating natural (biophilic) attributes, and materials in the creation of the built environment is crucial for rethinking cities to be more restorative cities. This integration should concern all city layers not only the layer of the buildings but more public spaces, city streets, and its urban components. This paper is focusing on the scale of the public spaces considering it a potential city structure that can support the city's social and physical wellbeing through its design and components using the Biophilic design and Restorative Environments² principles. In the systematic review by Bowler et al, he stated: "Differences between a natural environment and an alternative environment could arguably be due to factors of the alternative

² **Restorative Environments** environment that reduces people's mental fatigue and stress and has positive impacts on the individuals and stimulates continued attention by providing a sense of being away, fascination using its spatial components. (Egner et al., 2020)

environment rather than those of the natural environment. For instance, an outdoor built environment might provide additional stresses, such as traffic, which do not feature in a natural environment” (p. 8)(Bowler et al., 2010). Thus, natural context is essential for preserving people wellbeing in cities. The authors Gifford And Mcguinn’s stated in their study that “ biophilic design falls under a larger umbrella of restorative design”. (Gifford & Mccunn, 2012). Thus, using biophilic design to rethink public spaces could be a starting point for the transformation of the cities to be restorative.

Despite, that there are many studies about integrating nature and restorative environments to create a health and wellbeing potential environment, there is a lack in the literatures to support this concept in the scale of public space design as well as in scale of public buildings since the Biophilic architecture and the Restorative Environment can be considered relatively new concepts.

CONCLUSION

The urban fabric of the cities is a sensory stimuli system that impacts people's health and wellbeing. It is a system loaded with stressors that can lead to heart disease, anxiety, depression, social disconnectedness, and many physical and social disorders if the urban environments that we live in were not designed well (Sarah Willson, 2018). The urban environments that commuters use daily from home to work to leisure enable commuters to move in between controlled climate spaces such as dwellings, workplaces, hospitals, and schools) and non-controlled spaces like public squares, parks, playgrounds, and miradors. (Owen, 2009; Speck, 2012). Understanding the ecological and biological aspects of the public spaces inside cities will assist in having a more resilient city that promotes human health, productivity, and human biological nature.

This paper underlines the lack of literature and research about the ecological and biological dimensions of designing city spaces. also, this paper is a review of previous concepts aiming to highlight the possibilities of using these concepts in rethinking potential healthy and restorative public spaces that can assist reshape cities to be restorative which will shape a restorative community, starting from rethinking its public spaces using ecological attributes of the biophilic architecture. According to the previous literature and data, the integration of biophilic elements into the design of public spaces might help in making them restorative environments and therefore allow the creation of restorative and healthy cities and individuals. A future study about how the impacts of designing cities' public spaces under the umbrella of biophilic design can assist cities' quality of life.

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