Biophilic Spaces;

Transforming commercial Mall spaces into an Urban Oasis

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## Abstract

In an era marked by urbanization and rapid development, the significance of incorporating nature into built environments has become increasingly apparent. Biophilic design, a concept rooted in the innate human connection with nature, offers a compelling approach to reimagining commercial mall spaces as urban oases. This thesis explores the transformative potential of biophilic interventions within commercial malls, aiming to enhance the well-being of occupants while fostering sustainable practices within urban landscapes.

The introduction illustrates the evolution of commercial malls from traditional shopping centers to multifunctional hubs of social interaction and consumer culture. However, the prevailing model of mall design often neglects the human need for connection with nature, resulting in sterile and uninspiring environments. This thesis study aims to argue that integrating biophilic principles into mall design can mitigate these shortcomings by creating spaces that resonate with the innate biophilia of occupants.

The theoretical framework dives into the core principles of biophilic design, drawing from research in environmental psychology, neuroscience, and architecture. It explores the concept of biophilia as articulated by E.O. Wilson and the seminal work of Stephen Kellert, emphasizing the innate human affinity for nature and its profound impact on cognitive function, emotional well-being, and physiological health. By understanding the biophilic imperative, architects can employ strategies such as prospect and refuge, natural analogs, and biomorphic forms to imbue mall spaces with the restorative qualities of nature.

The methodology outlines a systematic approach to transforming commercial mall spaces through biophilic interventions. Utilizing a combination of qualitative and quantitative methods, including case studies, surveys, and design precedents, this study seeks to identify key opportunities for integrating biophilic elements within existing mall infrastructures. Through collaboration with existing infrastructures, including mall developers, designers, and local communities, this research aims to develop innovative design solutions tailored to the unique context of each commercial mall. The precedent studies provide insight into successful examples

of biophilic design implementation within commercial settings, highlighting projects that have effectively integrated nature-inspired elements to enhance user experience and environmental sustainability as well as looking into how the mall was traditionally designed and the design intent behind existing developments. Drawing from precedents such as the Southdale center in Minnesota, the first indoor shopping mall to more biophilic designs like the Jewel Changi Airport in Singapore that has integrated mixed use. This research identifies best practices and lessons learned for adapting biophilic principles to diverse urban contexts and shifting from the traditional view of the mall space.

The design proposal presents a holistic framework for reimagining commercial mall spaces as urban oases grounded in biophilic design principles. Through a synthesis of architectural interventions, landscaping strategies, and experiential programming, the proposed design seeks to reconnect occupants with nature while fostering a sense of place and community within the mall environment. Key design features include green walls, indoor gardens, adaptive strategies, and outdoor spaces and pathways that engage the senses to evoke the restorative qualities of natural environments.

The conclusion reflects on the transformative potential of biophilic design in revitalizing commercial mall spaces as vibrant urban oases. By prioritizing human well-being and ecological stewardship, biophilic interventions offer a compelling pathway toward creating sustainable, resilient, and emotionally resonant built environments. This thesis advocates for a paradigm shift in mall design practices, urging designers and developers to embrace biophilic principles as catalysts for innovation and positive social change in the urban landscape to adapt to the current

ever-changing way of life.

## Introduction

Malls which started as the main centers of trade and social life have been going through major transformations. However, the rise of e-commerce has resulted in the diminished function of these shopping destinations. Most malls are not up to date with meeting environmental care initiatives and thus there is a need to turn the current ecological crisis by probing and rolling out biophilic designs in the development of urban sanctuaries and commercial malls (Olonade, 2021). By using elements of nature, malls will be able to build a strong nexus with the environment, which will then greatly benefit the way users associate with these premises and lead to more environmental conservation.

## A. Evolution of commercial malls as urban hubs

The development of commercial malls began during the twentieth century. Before the enclosed mall, the passageways such as the Passage du Grand Cerf in 18th century Paris covered sidewalks that were put up with shops (Gabriel & Jia, 2019). In the middle 20th century, mall development became a major trend and many of them became the central landmark of communities that were formed in the suburban areas. They provided a closed system of shops, entertainment, and socializing that the shoppers were able to enjoy in a controlled climate.

Nonetheless, the onset of large-scale stores as well as online shopping squarely changed the status of malls as places for spending money. They added into the social life where acquaintances, neighbors and classmates would meet for a cup of coffee and small talk. However, with time, mall patrons have begun looking for more entertaining alternatives like shopping centers with open air and more added greenery.

**B. Limitations of traditional mall design**

The traditional mall design can be attributed to being the reason why things are going downhill with their failing. First, the traditional mall comes with monotony and lack of character (Randall, 2017). Most of them are bland and unwelcoming, and indeed at times follow a set pattern with a repeated experience across facilities. This denies patrons the thrill and proper experience that they are looking for. Second, the traditional malls disconnect from nature. In these malls, the customers face and encounter closed rooms with little access to daylight, fresh air or nature which detaches them from nature. The malls also come with a focus on consumption over connection. The traditional mall builders focus more on having several numbers of units at the expense of green spaces leaving them with no places for talking, napping, or civic life, something that comes with more added greenery.

**C. Introduction of Biophilic Design principles.**

Biophilic design incorporates the conscious inclusion of nature in industrial space and happens to be the necessary antidote to the dullness of commercial traditional malls. This attitude includes people's innate link to nature, suggesting the healing power of mother nature on humans' minds and bodies. Introducing biophilic principles in malls can greatly transform mall spaces in many ways.

To begin with, the design comes with natural elements that introduces a more serene and restorative ambiance. To achieve this, the mall design will need to employ design elements like skylights or large windows to let in more natural light. This can also be realized through the use of plants and water features and incorporation of natural materials like wood or stone into the design. The design also introduces sensory experiences through sensory elements such as water fountain or birds singing, natural texture materials and fragrances reminiscences of nature which all give an additional sense of attachment to the environment.

Social-oriented biophilic design style provides malls with areas that act as green zones for rest, socializing, and for holding ceremonies. A destination with outdoor seating areas, cafes that showcase nature views and community gardens will thus play a significant role in attracting and retaining visitors by allowing them to hang around the environment and interact with others. With the implementation of the above ideas, shopping malls will make the transition from the dull and outmoded shopping centers to green and energetic city areas. This research intends to present case studies and the unique ideas of incorporating biophilic design to illustrate the transformative power of these techniques in reviving large-scale malls. Nature plays as an alternative to malls can offer a source of engagement that is essential for the future of shopping destinations and their ability to keep pace with the changing dynamics of the retail industry.

# II. Theoretical framework

This section analyzes the biophilic design concept and its influence on the mental health of mall patrons with the intention of applying the findings in creating malls that are extremely aesthetic but that also ensure a great clientele experience.

1. **Definition and principles of biophilia**

Biophilia denotes the innate human tendency to seek connections with other life forms, including plants, animals and natural settings. The term was introduced by E.O Wilson (Greyson, 2019). He proposed an inbuilt and absolute gravitation towards life and natural systems that makes us close to the environment. The biophilic design in this process implements the nature-to-building concept into the above-mentioned indoor spaces so as to build a relationship between the two.

Key principles of biophilic design include.

* Inherent Need for Nature: People have an ancestral affinity to the natural habitat. Nature will lower one’s anxiety and improve their mood as well as their cognitive functions. Biophilic design intends to emulate nature and therefore offers these advantages in every type of building structure that mankind inhabits.
* Sensory Stimuli: It is very important to engage multiple senses to develop an environment that is both stimulating and restorative, based on fresh light, air, sounds, textures, and scents.
* Pattern Recognition: Biophilia is an example of modern architectural style that includes forms that have been found in nature or specific abstractions that draw inspiration from fractals, spirals or biomorphic forms. A well-established rhythm and patterns in the environment can foster a sense of balance and ordinance.
* Prospect and Refuge: Our relation to nature is concerned exactly with what we visually perceive as prospect or whose we find a refuge. The answer lies within every human need for security and safety in the natural environment being a central one. Biophilic design is human centered in its design and includes materials that provide clarity and crispness.

1. **Impact of nature on human well-being**

There are numerous advantages of nature on human well-being. First, it results in reduced stress and anxiety. Research carried out on direct contact with the natural world indicates a decrease in stress-related hormones and an improved feeling. Introducing the biophilic design aspects enables us to make a peaceful environment which stimulates human conditions such as relaxation and well-being.

Nature helps in enhancing our cognitive function. Spending more time in nature helps to develop attention, better memory and general cognitive skills. The provision of green spaces inside shopping malls provides an opportunity for visitors to explore and walk around more, therefore actively engaging them in a light form of physical activity which benefits their overall health. The introduction of biophilic designs helps to bring forth places which create spaces for all which enhances the promotion of social interaction and development of community. Natural landscapes help create an intimate and enriching atmosphere ultimately making for a pleasant and involving mall environment.

1. **Key concepts in biophilic design: Prospect and refuge, natural analogues, biomorphic forms**

Biophilic design relies on the precise techniques of nature transfer to translate the benefits of natural wealth into the artificial environment (Norbert, 2015). One of the key concepts in biophilic design is prospect and refuge. It is essential to offer far-reaching avenues of natural parks or to integrate in the building structure large windows that lead to nature experiences outside the building to give a feel of openness and of being connected. The second concept is refuge. Constructing comfortable, smalls areas with excellent natural materials and comfortable seats can provide physical and mental security. Necessary physical activities or just having a planned sanctuary, a comfortable spot in the vegetation or a designated location for resting provided by the park may be sufficient to fulfill this function. The other concept includes biomorphic Forms. These could comprise things such as circles, triangles, and stripes which are made possible by nature itself. Arched walkways which are similar to branches, furniture shaped like the twists of vines, or even ceilings that remind one of leaves are only several examples of biomorphic forms. Such natural elements have the unique ability to connect us with the outside world and give rise to some unarticulated sentiments like peace, respect, and harmony. By following the biophilic design principles, the commercial malls can be reconstructed from boring and lifeless places into friendly paradises (Norbert, 2015).

# III. Methodology

1. **Qualitative and quantitative research methods**

This study involved the use of mixed method research with both qualitative and quantitative research methods. The qualitative data was obtained through surveys and interviews conducted to get answers of visitor experiences and their choices of biophilic design elements in malls. Pertinent figures were obtained through questionnaires and foot traffic analysis, and these were utilized in assessing the effect biophilic design has on such metrics as customer satisfaction, the time spent by the customers, and per prospective spending. This helped analyze how biophilic design influences building users and how it plays a supporting role in the success of the mall environment.

## Case studies of successful biophilic design implementations

The first case study of a successful biophilic design implementation is the Westfield Newmarket in New Zealand. It is built with a beautiful rooftop garden, which includes paved walkways, play areas, and cafes. The lush greenery of the surrounding neighborhoods and the open spaces perfectly feed the need of the residents for an opportunity to unwind from the routine automatically (Purushotham, 2011).

The Gardens by the Bay, Singapore is a multifunctional complex that combines architecture and nature. Greenhouses that measure the size of a large building grow numerous types of plants, which in turn immerse the visitor in the biophilic experience of an urban microcosm. The Dockside Green in Hong Kong is a waterfront development project for the city that contains not only a coastal park with a sandy beach but also an ample number of trees of different species (Purushotham, 2011). The regional commercial center makes the most of natural views and employs an open-air walkway layout, meaning that lines between interior and exterior space are blurred.

## C. Design charrettes and stakeholder engagement

   Design charrettes are workshops with high intensity where stakeholders (architects, tenants, neighborhood representatives) cooperate creating space designs of the mall. Charrettes may be a powerful instrument in helping to transform commercial malls. Programs organized through these workshops will help transform shopping malls by bringing in the relevant stakeholders such as the shopping mall tenants, community members, and architects. In the process of working together, there is a better exchange of ideas with the members of the group. By doing so, the constructed design is able to bring on board the responses and views of mall patrons and a sense of ownership for those who will later use the mall.

# IV. Case Studies

## Amazon Spheres, Seattle

Amazon Spheres consists of glass spheres, which are overloaded with lush greenery, and the circulation area around the spheres resembles the typical layout of a rainforest (Logan, 2018). Employees are also exposed to natural light, fresh air, and nature, which is a great stressbuster, recreational tool, as well as a resource for inspiration. Individuals are exposed to moving waterfalls and foliage and a variety of plant life. This in a way helps play a role in bettering peoples’ well-being and increasing their productivity in the workplace.

1. **Jewel Changi Airport, Singapore**

This green air gate is not just a standard airport, but it turns out also to be a biophilic paradise. It incorporates a seven-story indoor garden, hiking trails, and over 1000 trees and plants with cascading waterfalls (Gonchar, 2019). There is a natural light that glows through the window which then brings calm for any traveler. The rhythm of this outdoor space is a result of an open-air terrace, which gets stunning city views, as the line between indoors and outdoors conflates. The airport is a good example of how biophilic design leads to a redefinition of utilitarian space into a lively and unforgettable site.

1. **Shanghai Suhe MixC World**

This extraordinary shopping mall has a fabulous rooftop terrace with a walking trail, greenery and breathtaking views of the city, blurring the line between indoor space and the surrounding nature.

1. **Shanghai Greenland Center**

The office complex has a green roof public park that creates a pleasant shopping space where the exterior and interior, the city and nature all blend together offering a good shopping experience.

1. **Other Global Precedents**

Additional examples of buildings that incorporate biophilic designs include Trudo Vertical Farm in The Netherlands. It contains a vertical farm inside a shopping mall. It allows shoppers to indulge in tasting farm-grown products and thus exploring bona fide organic farming activities. Another example is the Green Planet in Dubai. This one allows a walk through a rainforest biodome allowing one to see different fauna and flora from various parts around the globe. The Queensbridge Square in Melbourne Australia contains a sequence of linear gardens, water surfaces, and open-air art compositions. It functions as a dynamic civic center with a taste of a rural retreat that is pleasantly set within the center of a busy city.

# V. Design Proposal

This biophilic design proposal concentrates on retail mall change into a natural sanctuary through an orderly mix of natural elements.

1. **Integration of biophilic elements within commercial malls**

One of biophilic elements that can be included in malls includes living walls and indoor gardens (Gabriel & Jia, 2019). To replace tarmac pavement, one can add lush vertical gardens with a range of plant life to cleanse the air and decoratively improve the visual experience. The indoor gardens can be scattered with seating spaces giving patrons a feeling of wanting to stay. Another element that can be included is incorporating water features. The delicate sound relief of water features such as fountains or waterfalls will add the sound of water motion to make an atmosphere correspondingly serene and perfect. Another element that can be incorporated is the use of natural materials. Wood, stone as well as bamboo furnishing can be used to make up the flooring, walls and furniture, thus, the place gives out an inviting atmosphere.

1. **Architectural interventions: Green walls, indoor gardens, daylighting strategies**

Some of the daylight strategies that can be incorporated in the mall can include large area glass windows and skylights to help with maximum natural lighting access (Gabriel & Jia, 2019). Another intervention can also include open floor plans which helps to ensure a sense of spaciousness and also enable more natural elements viewing. A biomorphic design will introduce walking paths with curves and organic design detail both in pieces of furniture and rest of decorations and also in ceiling shapes which are imitated leaves to invoke the atmosphere of nature in a subtle way.

1. **Landscaping Strategies and Sensory Pathways.**

Landscaping strategies will include use of plants that may vary from flowering plants to ferns and trees. These will help create a nicer, more exciting and diverse environment. Plants have a fragrance of their own that serves as aroma emitters near human sitting areas. The sensory pathways may comprise stone surfaces and ground grass. These will provide visitors with a sense of touch and encourage exploration. Natural sounds can be introduced by having birds that will chirp together and also have light wind chimes that will help make the biophilic experience even more immersive.

# Conclusion

1. **Reflection on the transformative potential of biophilic design**

Commercial malls have often been considered as traditional, conventional places and artificial environments but this is changing through the incorporation of biophilic design. Biophilic designs have the ability to encourage the accessibility of outdoor surroundings, and this has led to numerous positive effects for mall patrons. Research indicates that biophilia brings about reduced stress, enhanced mood, increased cognitive capacities for people and it also leads to a longer patronizing time at the mall (Randall, 2017). This leads to a better purchase situation, which likely leads to happier and more efficient customers. Biophilic design, however, is more than just aesthetic and when done correctly, it brings about a healing environment restoring one to good health and facilitating a sense of community in the “urban jungle”.

1. **Advocacy for a paradigm shift in mall design practices**

Though the shops in the mall have been the key consideration in the current design, a more cohesive approach should be considered, one that puts emphasis on human-nature connections. There is a need for a transformation in the way malls' design is done as well as an integration of biophilic qualities. Such a change will require cooperation from architects, designers and environmental specialists to integrate nature in the malls in an at most visible and least scaled manner. This can be done from using water features to employing natural materials and taking benefits of natural light fully. The biophilic designs will provide a rich choice of various tools to be used in all kinds of case scenarios providing a truly transformative experience.

1. **Call for further research and implementation of biophilic principles in urban environments**

The current research on biophilic design in commercial real estate has been limited and more work should be done to learn the usefulness of this design concept. Research on the biophilic elements that suit a certain target group by taking into consideration the contextual factors would be highly beneficial. In addition, there is need for research that emphasizes the long-term cost-benefit analysis of biophilic design in comparison to traditional approaches. Bringing biophilic design theory to shopping malls is not the only thing that should be done and should go beyond this. This building concept can be used in different places, like office buildings, transport confluence-points, and also for home-zoning. Humanizing the urban jungle could assist in forging a closer bond with the nature embedded in the heart of the city, which may ultimately result in a better existence for the cities, both environmentally and socially through a more sustainable, healthier, and livelier future. As time progresses, we can look at biophilic design in malls and neighborhoods as the unique chance to create in our urban areas little oases that bring people together and in turn, promote health and full life.

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