

Nature by Design

The Practice of Biophilic Design

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Benefit and Principles of Biophilic Design

“People are ever more separated from nature in today’s world, especially in the modern city and built environment.”

8 **values** of biophilia, each relevant to the advancement of human health and fitness: Affection, Attraction, Aversion, Control, Exploitation, Intellect, Symbolism, Spirituality

Principles of Biophilic Design:

1. Biophilic design focuses on human adaptations to nature that advance physical and mental health, performance, and wellbeing.
2. Biophilic design creates integrated settings where the ecological whole is experienced more than its individual parts.
3. Biophilic design encourages engagement and immersion in natural features and processes.
4. Biophilic design is strengthened by satisfying a range of values that people inherently hold about the natural world.
5. Successful biophilic design results in emotional attachments to structures, landscapes, and places.
6. Biophilic design fosters feelings of membership in a community that includes both people and the nonhuman environment.
7. Biophilic design occurs in a multiplicity of settings, including interior, exterior, and transitional spaces and landscapes.
8. Effective biophilic design involves an “authentic” experience of nature, rather than one that is artificial or contrived.
9. Biophilic design seeks to enhance the human relationship to natural systems and avoid adverse environmental impacts.

Experience of Nature:

Direct Experience of Nature: Light, water, air

Indirect Experience of Nature: colors, shapes, form

Experience of Space and Place: transitional spaces, mobility

Biophilic Design Elements

There are many ways to incorporate biophilic design elements:

- Views: A view of nature is a frequently employed strategy for enriching a sense of contact between people and the natural world
- Images: Images of nature are an ancient means for bringing the likeness of the natural world into the built environment.
- Materials: Natural materials are often an effective means for inserting indirect contact with nature into the built environment. Natural materials possess visual and tactile qualities that few if any artificial materials can replicate
- Texture: Texture refers to the feel, appearance, and arrangement of parts in relation to one another in the built environment. Important biophilic properties of texture highlight the size, shape, tactile quality, and proportion of a building or landscape. People experience texture visually and through a variety of their other senses.
- Color: Color is an especially salient aspect of how humans connect the natural and constructed worlds, its presence can often convert a complex and confusing scene into one with structure and coherence.
- Shapes and Forms: Natural shapes and forms are among the most enduring and powerful ways of bringing nature into the built environment, these shapes and forms inspired by nature, especially living organisms, can also be more a product of human imagination and creativity, rather than exact replicas of those encountered in the natural world.
- Natural Geometries: Natural geometries refer to mathematical properties often encountered in nature that have a special role in human evolution and development.
- Biomimicry: The term biomimicry can denote the adoption of distinctive features of other species to serve human needs. This means of bringing nature into the built environment is related, but somewhat different from biophilia.

- The art historian Owen Jones (1986) concluded that many designs are often inspired by images of nature, brilliantly stating: “In the best periods of art all ornament was rather based upon an observation of the principles which regulate the arrangement of form in nature, than on an attempt to imitate the absolute forms of those works . . . True art consists in idealizing, and not copying, the forms of nature”

- “The human need for metaphorical expression finds its greatest fulfillment through reference to [nature and especially] the animal kingdom. No other real affords such vivid expression of symbolic concepts” observed by Elizabeth Lawrence (1993), reflecting on the importance of such symbolic images,

Biophilic Design Applications

Many constructions of communities owe their special attraction to the various direct and indirect ways nature is incorporated. Natural materials, natural geometries, organic shapes and forms, areas of prospect and refuge, organized complexity, ecological connections to place, and more.

- **Mobility:** moving with relative effectiveness and efficiency from one spatial environment to another. Effective biophilic design provides clear pathways between spaces and a relative ease of movement between settings
- **Transitional Spaces:** primarily link the interior of buildings to exterior settings, although they can also connect interior spaces. Contribute to people's feelings of orientation, mobility, and security. (i.e. porches, balconies, courtyards)
- **Place:** emotional attachment to a space (Physical, mental, emotional)
- **Integrating Parts to Create Wholes:** creating connections between various characteristics of a space in order to comprise a coherent ecological experience. This integration as a whole fosters human physical and mental health, wellbeing, and productivity

Historic to Modern - Frank Lloyd Wright -- He worked more by intuition than by using a systematic and standard approach. His work lacked a clear understanding of human evolution and biology, or a theoretical methodology for incorporating biophilia into the design of the built environment. Fallingwater (Vacation House in Pennsylvania) has a plethora of biophilic features such as natural materials, colors, and textures; transitional spaces, integration of the structure into its geological surroundings, and integrates these details into a larger whole

Living Architecture -- Much of modern architecture focuses on green roofs and walls, extensive plantings within atria and courtyards. These can accomplish low-environmental impact objects, energy insulation, enhancement of biodiversity, etc. By itself, it remains an insufficient basis for transformative application fo biophilic design.

Healthcare Facilities -- Contact with nature was discouraged by healthcare facilities most of the 20th century. Now, after conducted studies, it's found nature has many healing effects. Great example that successfully applied biophilic principles is the Smilow Cancer Center at Yale-New Haven Hospital. It is filled with the sight of plants and sound of water, natural materials as furnishings and fabrics; fish tanks and a healing garden.

Biophilia's place during the 20th Century

Office Space: (also can apply to all spaces during 20th century)

- In 20th Century connection with nature viewed as a waste of money, time, and space.
- Advanced technology viewed as solution
- Short term cost benefit analyses were favored over long term health effects.
- These views have begun to change as new research has connected nature = workers improved satisfaction, health, performance, recruitment, and retention.

Educational Spaces:

- Only time connected to nature during outdoor recess and still often playing is on man made equipment and surfaces

Shopping Center:

- Extreme popularity in 20th century but lost popularity. Changes being made to these spaces include introducing (vegetation, natural materials, natural lighting, outdoor amenities, and pedestrians only streets).

Hospitality:

- Luxury Hotels often have biophilic design features as they design the space for relaxation and beauty.
- Motels lack biophilic design as the design of the space focus on efficiency and providing a inexpensive service.

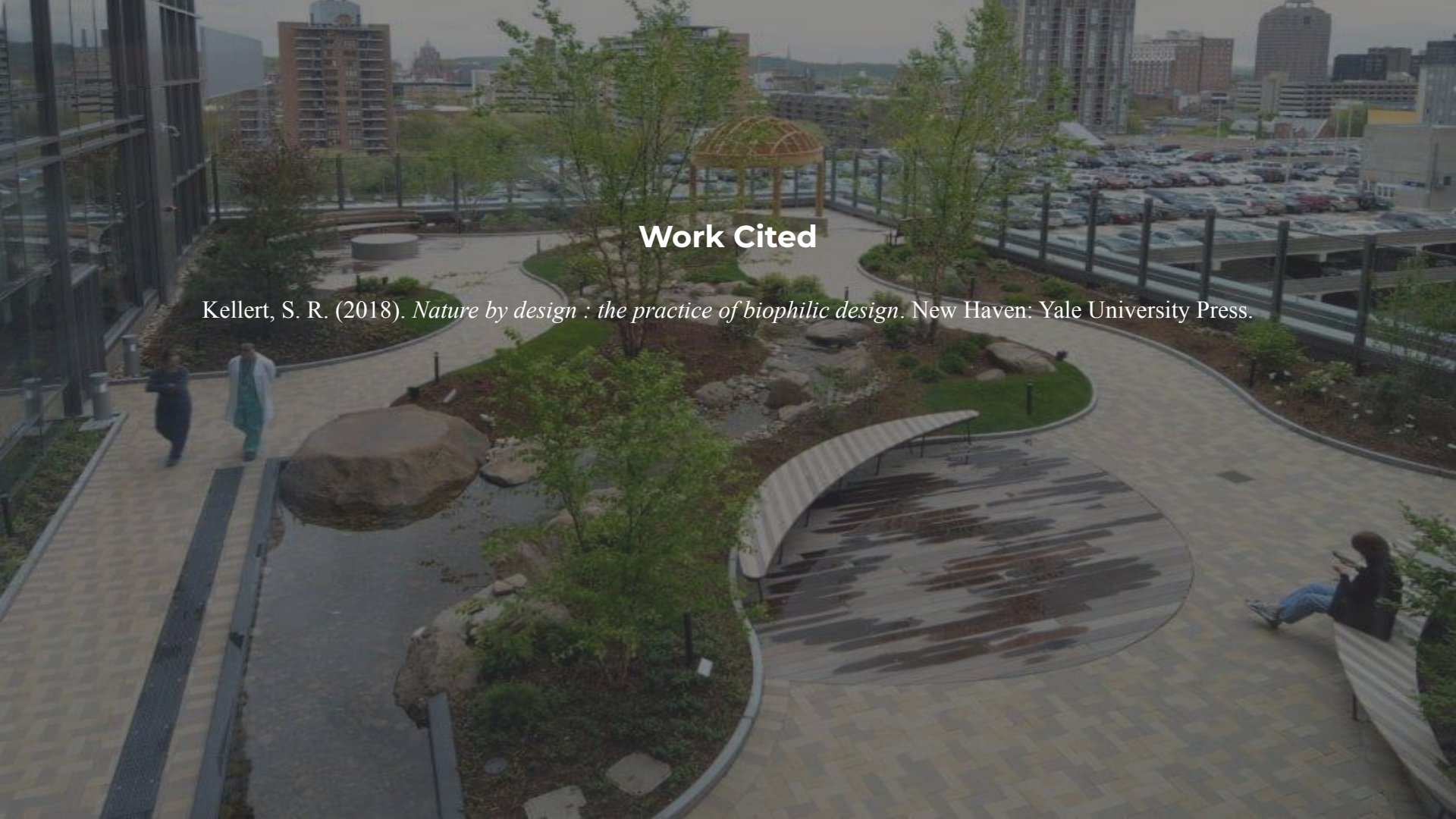
Sacred Spaces:

- Biophilic design has always a central part (natural materials, shapes, scattered natural light, natural geometries, often use of water)
- Losing use of biophilia as sacred space are often design to be versatile incase the building ever needs to be changed.

Homes:

- Home owners often have biophilic design features as they design their space to be comfortable and relaxing.

“Restorative
Environmental
Design”



Work Cited

Kellert, S. R. (2018). *Nature by design : the practice of biophilic design*. New Haven: Yale University Press.