

Biophilic Design and Flooring

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The idea of being one with nature is not a new idea, but recognizing and quantifying benefits associated with being connected to nature is a new and evolving concept. The influences and appreciation of nature span the centuries from great civilization like the Inca Empire whose artistic forms mimicked nature to the Egyptians whose art valued and reflected nature. The term biophilia, is derived from Greek meaning love of life, but it was not until 1984 when Harvard University Ecologist, Edward O. Wilson, penned “Biophilia” that the term began to be commonly used to express the innate tendency of humans to seek connections with nature (Wilson, 1984). Wilson, who popularized the term in his book, Biophilia, once said, “Nature holds the key to our aesthetic, intellectual, cognitive, and even spiritual satisfaction. So the more direct connections people have with nature, the better.” These connections start from the ground up or in the case of buildings from the flooring up.

Biophilic Design

The idea that design mimicking nature’s characteristics is not new, and many argue that good designers and architects mimic nature intuitively. For example, early twentieth century architect, Frank Lloyd Wright, designed structures that were in harmony with humanity and its environment, a philosophy he called organic architecture. In Wright’s words, organic architecture “exalting the simple laws of common sense or of super-sense if you prefer determining form by way of the nature of materials ...” (Wright, 1939). As Wright used the “nature of material” to influence the idea of form, he intuitively incorporated nature in his designs such as Falling Water, a home in which Wright famously incorporated a waterfall as well as locally sourced sandstone flooring which provides a granular earthy texture. The term “biophilic design” had not been coined when Wright built Falling Water in western Pennsylvania in 1935, but today the home is considered and an example of biophilic design. By incorporating the waterfall into the home, Wright introduced “Nature in Space”, one of the three concepts of Biophilic Design (Browning, 2015). The other two concepts are Nature of Space and Nature Equivalents.

Nature in Space

Nature in space introduces visual and/or non-visual natural elements into a space. Examples of natural elements include, air, light, sounds, water and vegetation. Some elements like water can be both



Figure 1: Nature material such as hardwood flooring bring nature in the space.

visual and non-visual, as the sight and sounds of water can invoke feeling of relaxation. By adding natural elements such as hardwood flooring as shown in Figure 1, designers can bring nature into the space. As depicted in Figure 2, evidence based design research by Ulrich and colleagues (1993) showed that patients exposed to a nature view of water and trees demonstrated less anxiety, required fewer strong pain doses and had improved recovery outcomes compared to patients who were exposure to abstract pictures and control groups given no pictures, (Ulrich, Lunden, and Eltinge, 1993).

Nature of the Space

Nature of the Space incorporates spatial configurations found in nature – think overlooks and enclosures - into a space. These spatial

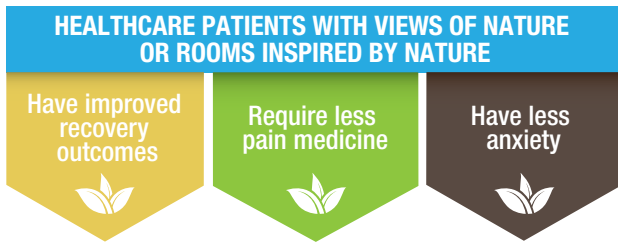


Figure 2: Benefits of Biophilic Design in Healthcare.

configurations are often innate or instinctive and are associated with the desire for safety. Nature of the Space usually includes four patterns: Prospect, Refuge, Mystery and Risk/Peril.

Prospect is simply a viewpoint or vantage point that provides an unimpeded view over a distance. This vantage point may prevent people from “sneaking” up on us and may allow us to know who or what is coming. Refuge or retreat is a place where you feel at home and safe. The concept of a “man cave” or the family “den”, which is what my parents called our living room, come to mind and conjures up the innate desire for safety and security. Grant Hildebrand, who evaluated Frank Lloyd Wright’s textile block houses for spatial patterns, to determine why Wright’s dwellings were liked by their owners and the general public developed the theory of prospect and refuge.



Figure 3: Flooring designs can create mystery which invite people to explore the nature of space

Hildebrand argued that Wright’s work evoked a positive sense of well-being in observers, because of the distinct pattern of enclosure and outlook that served as an architectural manifestation of our lingering biological needs. Hildebrand demonstrated how these patterns – prospect and refuge – can either positively or negatively affect people’s perception of how safe an environment appears to be. He stated of Frank Lloyd Wright’s Falling Water, “We are invited to savor danger from a haven of safety.”

The third pattern associated with Nature of the Space is mystery which is the “promise of more information, achieved through partially obscured views or other sensory devices that entice the individual to travel deeper into the environment” (Browning 2014).



Figure 4: Flooring inspired by natural materials and patterns provide nature equivalents in a space

Mystery can be introduced into a design by creating obscured views or pathways that invite the occupant to follow or further investigate. Whereas Risk/Peril introduces a danger, but provides a reliable safeguard such as a balcony or a fireplace.

Nature Equivalent

Nature equivalents are objects, colors, materials, shapes or patterns that inspired by nature or found in nature. These equivalents provide an indirect connection with nature: while they are real, they are only similar of the items in their ‘natural’ state. Nature inspired flooring such as stone or wood patterns are examples of Natural Equivalents.

Benefits of Biophilic Design

Evidence based design is the process of basing decisions about the built environment on credible research to achieve the best possible outcomes. Mounting evidence based design research demonstrates the positive benefits of biophilic design. In the Human Spaces’ 2015 report, The Global Impact of Biophilic Design in the Workplace, employees in environments with natural elements were reported a 15% higher level of well-being, were found to be 6% more productive, and 15% more creative overall (Copper). While “The Economics of Biophilia,” a report by Browning et al. al. showed that integrating views to nature into an office space can save over \$2,000 per employee per year in office costs, whereas over \$93 million could be saved annually in healthcare costs as a result of providing patients with views to nature (Browning, 2012).

Green Buildings and Biophilic Design

Elements of biophilic design have been incorporated into green building rating systems for years. The United States Green Council’s (USGBC) Leadership in Energy and Environmental Design (LEED®) System incorporated elements of Biophilic Design into their first rating system in 1999 which the inclusion of their Daylight and Views. The WELL Building Standard® recognizes the importance of creating an interior environment that nurtures the innate human-nature connection and includes Feature 88 Biophilia, which requires project teams to develop a three (3) Part Biophilia Plan.



Figure 5: Benefits of Biophilic Design in office environments

Biophilia and Flooring

The floor is the base or the platform of all interior space. Flooring plays a critical and versatile key role in biophilic design as it contributes to all three concept of Biophilic Design. Natural flooring materials such as wood, linoleum or bio-based flooring are examples in Nature into Space, while innovative products such as luxury vinyl tile or sheet vinyl are Nature Equivalents inspired by natural shapes, patterns and colors. The ability of flooring to reflect light, provide warmth and comfort underfoot demonstrate how flooring contributes to Nature of the Space by providing comfort and security.

Flooring can contribute to biophilic design by replicating colors and textures found in nature and by create graduated transitions that are commonly seen in nature. Whether flooring designs are inspired by nature or made from wood and other natural elements, flooring can contribute to biophilic design.

Conclusion

Biophilic Design creates exciting, sustainable buildings which connect to nature both inside and outside and can potentially increase health and wellness, as well as increase productivity and reduce human resource costs.

While biophilic design is a popular concept and many designers and green building rating systems have adopted biophilic design concepts, research that empirically demonstrates the biophilic hypothesis in buildings is still being gathered. Still, much antidotal evidence demonstrates and recognizes the importance of creating an interior environment that nurtures the innate human-nature connection.

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