

Biophilia

What is Biophilia?

The word biophilia was coined by biologist E.O. Wilson and describes the innate human tendency to be drawn to the natural world.¹ Biophilic design incorporates real or simulated natural elements in an effort to promote well-being. The physical and emotional benefits of a connection to nature have been well documented. For example, patients in hospital rooms with morning sunshine need pain medication about 23 percent less than patients in rooms that only get drab, shadowy afternoon light.² According to a study about daylighting in schools, students that had a well-designed skylight in their room, one that diffused the daylight throughout the room and which allowed teachers to control the amount of daylight entering the room, also improved 19-20% faster than those students without a skylight.³ Biophilic design involves the use of local, natural materials, plants, natural light and ventilation, water, and generally blurring the boundaries between building and landscape. This approach to building design recognizes that the positive experience of natural systems and processes in the built environment is critical to human health, performance, and well-being. A few underlying concepts in biophilic design include:⁴

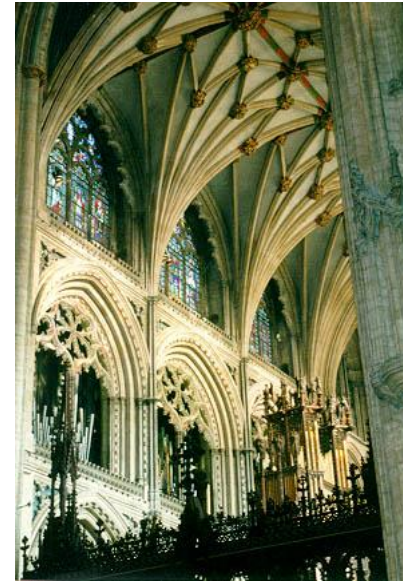


Figure 1- A cathedral has many biophilic elements in the way in which it manipulates light and space and air, and material and shape and form, and color.

(Source:

<http://www.stanford.edu/~dorris/photos/ely3.jpg>)

- Looking beyond survival to well-being
- Building on "primitive preferences" and connections to nature
- Designing for the senses as well as the body

¹ Living Building Leader. Beauty + Inspiration. <http://cascadiagbc.org/lbl/beauty-inspiration/B03> (accessed April 15, 2010).

² Sole-Smith, Virginia. "Nature on the Threshold." *New York Times*, September 7, 2006, Style section.

³ Heschong Mahone Group. Daylighting in Schools. 1999. <http://www.coe.uga.edu/sdpl/research/daylightingstudy.pdf> (accessed April 16, 2010).

⁴ Whole Building Design Guide. Psychosocial Value of Space. http://www.wbdg.org/resources/psychspace_value.php (accessed April 16, 2010).

The Key Elements of Biophilic Design⁵

- Environmental features
- Natural shapes and forms
- Natural patterns and processes
- Light and space
- Place-based relationships
- Evolved human-nature relationships

These attributes of biophilic design are defined and described in *Biophilic Design: The Theory, Science and Practice of Bringing Buildings to Life* by Stephen R. Kellert, Judith Heerwagen, and Martin Mador.

Examples

Sunlight and Water, Queens Botanical Garden Visitor Center, Flushing, NY

The window placement in the first floor corridor of the Queens Botanical Garden Visitor Center is designed to capture the sun reflecting off the rainwater harvest feature that runs along the exterior of the building. Depending on the time of day and amount of sunlight, an occupant of the building will see patterns of sunlight reflected on the interior walls and ceiling. The interplay between sun and water connects people inside to the changes in the outdoor environment throughout the day.

<http://www.queensbotanical.org/103498/sustainable>

Benefits

- Biophilic elements have real, measurable benefits relative to such human performance metrics as productivity, emotional well-being, stress reduction, learning, and healing
- Biophilic features foster an appreciation of nature, which, in turn, should lead to greater protection of natural areas, eliminate pollution, and maintain a clean environment

⁵ Living Building Challenge v2.0. Biophilia. <http://ilbi.org/the-standard/LBC2-0.pdf> (accessed April 16, 2010).

Costs

Biophilic design elements are sometimes considered an unnecessary expense because it is difficult to attach a monetary value to them. As studies move forward and evidence mounts about the health and psychological benefits of incorporating these ideas into the built environment, the value of biophilic design is gaining acceptance. Vivian Loftness, FAIA, of Carnegie Mellon University, argues that both the benefits of biophilic design and problems experienced with conventional design can be measured. There are real costs associated with headaches, asthma, and depression. “You can actually translate those problems into dollars.”⁶

Resources

Heerwagen, Judith, Kellert, Stephen, Mador, Martin. 2007. *Biophilic Design: Theory, Research and Practice of Bringing Buildings to Life*. John Wiley.

Biophilic Design: Opening the Door to Nature (Podcast)

http://environment.yale.edu/topics/urban_ecology_and_environmental_design/4184

Whole Building Design Guide – Psychosocial Value of Space

http://www.wbdg.org/resources/psychspace_value.php

World Changing

<http://www.worldchanging.com/archives/000664.html>

Ask Nature – A project of the Biomimicry Institute

<http://www.asknature.org/>

⁶ Wilson, Alex. “Biophilia in Practice: Buildings that Connect People with Nature.” *Environmental Building News*, (July 2006), <http://www.aia.org/practicing/groups/kc/AIAS077174?dvid=&recspec=AIAS077174> (accessed 4/16/10).