Biophilia Effect

Environments rich in nature views and imagery reduce stress and enhance focus and concentration.[1]

Poets and philosophers have long held that exposure to natural environments produces restorative benefits. In the past few decades, this claim has been tested empirically and, indeed, it does appear that exposure to nature confers benefits emotionally, cognitively, and physically.[2]

For example, in a longitudinal study following seven- to twelve-year-olds through housing relocation, children who experienced the greatest increase in nature views from their windows made the greatest gains in standard tests of attention (potential confounding variables such as differences in home quality were controlled).[3] A comparable effect was observed with college students based on the nature views from their dorm windows. Studies that examined the effects of gardening, backpacking, and exposure to nature pictures versus urban pictures corroborate the effect. One interesting finding is that the effect does not seem to require real plants in the environment, but mere imagery—window views, posters on the wall, and so forth seem to suffice.[4]

Although some non-natural environments may confer similar benefits, nature scenes appear to be the most reliable and consistent source for the general population. Why should nature imagery be more restorative and conducive to concentration than, for example, urban imagery? The effect is believed to result from the differential manner in which the prefrontal cortex processes nature imagery versus urban imagery. However, given that photographs of nature versus urban environments are sufficient to trigger the effect, it is likely that the biophilia effect is more deeply rooted in the brain than the prefrontal cortex—perhaps an innate bias for greenery evolved in early humans because it conferred a selective advantage, a bias likely related to the savanna preference.

Consider the biophilia effect in the design of all environments, but in particular, environments in which learning, healing, and concentration are paramount. Although nature imagery seems to suffice in lieu of real nature exposure, the latter should be favored when possible as it is more likely to produce a strong generalizable effect. Though the amount of nature imagery required to maximize the effect is not fully understood, architectural classics such as Frank Lloyd Wright's Fallingwater and Mies van der Rohe's Farnsworth House suggest that more nature in the environment is generally better.

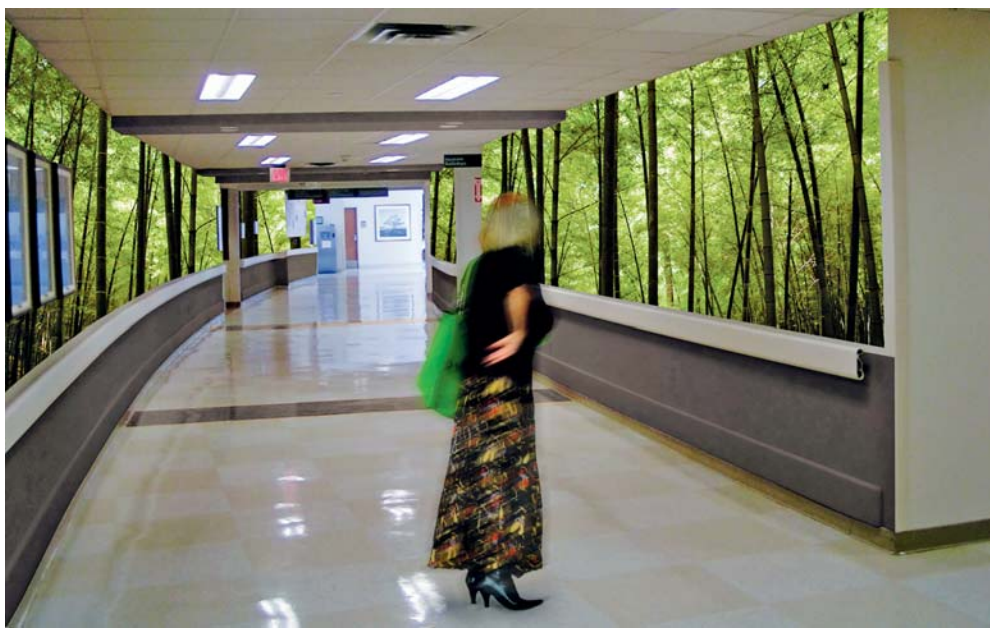
See also Cathedral Effect, Immersion, Performance Load, Prospect-Refuge, Savanna Preference, and Top-Down Lighting Bias.

[1] The term *biophilia effect* is based on the biophilia hypothesis first proposed by Erich Fromm and popularized by Edward Wilson. See, for example, *The Biophilia Hypothesis,* by Stephen Kellert and Edward Wilson (Eds.), Island Press, 1995.

[2] The seminal work on the biophilia effect is *Psychology: The Briefer Course* by William James, Holt, 1892. The seminal empirical work on the effect is *Cognition and Environment: Functioning in an Uncertain World* by Stephen Kaplan and Rachel Kaplan, Praeger Press, 1982.

[3] "At Home with Nature: Effects of 'Greenness' on Children's Cognitive Functioning" by Nancy Wells, *Environment and Behavior,* 2000, vol. 32(6).

[4] "The Restorative Benefits of Nature: Toward an Integrative Framework" by Stephen Kaplan, *Journal of Environmental Psychology,* 1995, vol. 15, p. 169–182.



Before-and-after proposal for a central hallway redesign in a leading U.S. hospital based on the biophilia effect. The installation, titled “Bamboo Forest,” employs vivid high-resolution imagery and nature sounds to greet and comfort patients as they move from the lobby to their destination. The redesigned hallway serves as a memorable landmark assisting wayfinding, an inspiring passageway that is harmonious with life and healing, and a visible expression of the hospital’s commitment to patient comfort and quality of experience.