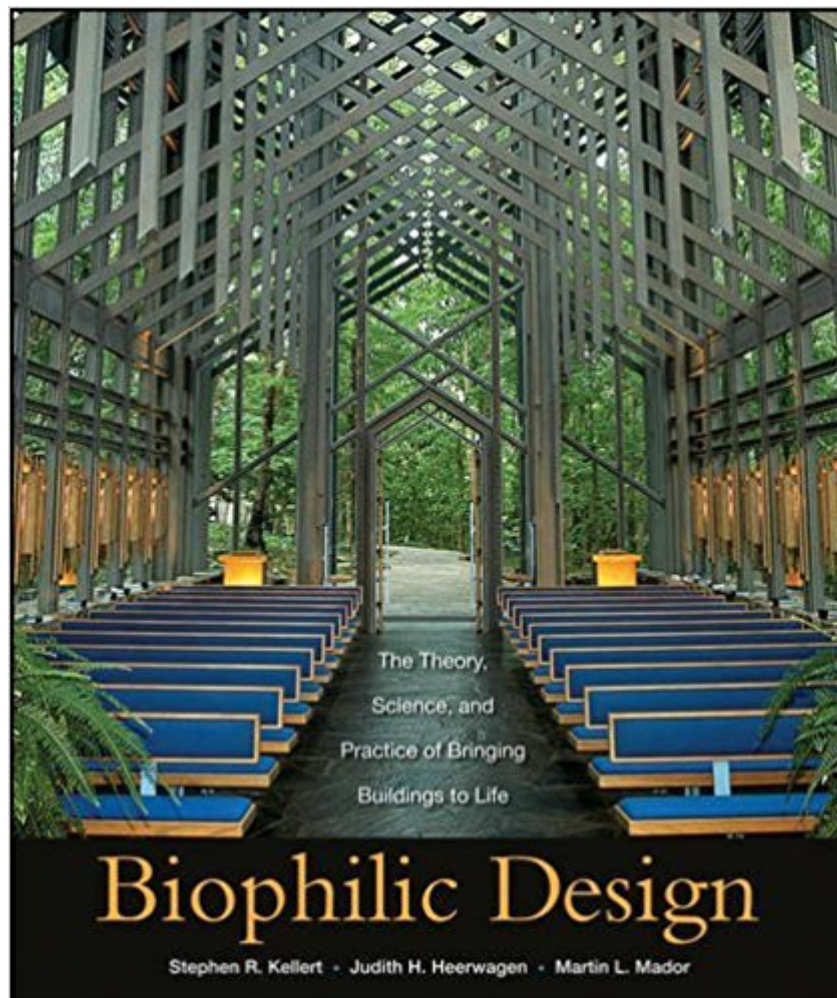




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# Biophilic Design: The Theory, Science, And Practice Of Bringing Buildings To Life



## Synopsis

"When nature inspires our architecture-not just how it looks but how buildings and communities actually function-we will have made great strides as a society. Biophilic Design provides us with tremendous insight into the 'why,' then builds us a road map for what is sure to be the next great design journey of our times." -Rick Fedrizzi, President, CEO and Founding Chairman, U.S. Green Building Council

"Having seen firsthand in my company the power of biomimicry to stimulate a wellspring of profitable innovation, I can say unequivocally that biophilic design is the real deal. Kellert, Heerwagen, and Mador have compiled the wisdom of world-renowned experts to produce this exquisite book; it is must reading for scientists, philosophers, engineers, architects and designers, and-most especially-businesspeople. Anyone looking for the key to a new type of prosperity that respects the earth should start here." -Ray C. Anderson, founder and Chair, Interface, Inc.

The groundbreaking guide to the emerging practice of biophilic design This book offers a paradigm shift in how we design and build our buildings and our communities, one that recognizes that the positive experience of natural systems and processes in our buildings and constructed landscapes is critical to human health, performance, and well-being. Biophilic design is about humanity's place in nature and the natural world's place in human society, where mutuality, respect, and enriching relationships can and should exist at all levels and should emerge as the norm rather than the exception. Written for architects, landscape architects, planners, developers, environmental designers, as well as building owners, *Biophilic Design: The Theory, Science, and Practice of Bringing Buildings to Life* is a guide to the theory, science, and practice of biophilic design. Twenty-three original and timely essays by world-renowned scientists, designers, and practitioners, including Edward O. Wilson, Howard Frumkin, David Orr, Grant Hildebrand, Stephen Kieran, Tim Beatley, Jonathan Rose, Janine Benyus, Roger Ulrich, Bert Gregory, Robert Berkebile, William Browning, and Vivian Loftness, among others, address:

- \* The basic concepts of biophilia, its expression in the built environment, and how biophilic design connects to human biology, evolution, and development.
- \* The science and benefits of biophilic design on human health, childhood development, healthcare, and more.
- \* The practice of biophilic design-how to implement biophilic design strategies to create buildings that connect people with nature and provide comfortable and productive places for people, in which they can live, work, and study.

Biophilic design at any scale-from buildings to cities-begins with a few simple questions: How does the built environment affect the natural environment? How will nature affect human experience and aspiration? Most of all, how can we achieve sustained and reciprocal benefits between the two? This prescient, groundbreaking book provides the answers.

## Book Information

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## Customer Reviews

"Stephen Kellert, a social ecologist, has spent much of his career thinking and writing about biophilia, the innate human affinity for nature. Biophilic Design is an exploration of how we cut ourselves off from nature in the way we design the buildings and neighborhoods where we live and work. And it's an argument for re-connecting these spaces to the natural world, with plenty of windows, daylight, fresh air, plants and green spaces, natural materials, and decorative motifs from the natural world." (Yale Environment 360, December 2009) "â Kellert asserts that people "learn better, work more comfortably, and recuperate more successfully in buildings that echo the environment in which the human species evolved." He says there are a number of ways to improve worker productivity and retention and reduce absenteeism. The most basic step is to improve the availability of natural light. Kellert is analyzing the effect of biophilic design on office work productivity, absenteeism, number of sick days. Kellert believes there is a definite connection between biophilic spaces and improved productivity, and some studies point to a positive relationship." (dirt.asla.org, September 2009) "By applying biophilia to design, the editors and contributors hope to go beyond the standard green architecture goal of simply lowering the environmental impact of buildings. They hope to enhance the human relationship with nature through buildings believing, that one's affinity for light or water should be incorporated into the placement of windows. The book is divided into three parts. The first provides a theory of biophilic design and offers general guidelines. The second offers a more focused look at health issues and

the role of nature. The third examines applied instances of biophilic design. Summing Up: Recommended" (Choice, September 2009) "These authors urge architects to do what they can to incorporate nature in the design of buildings." (GreenSource, April 2009) "Biophilic Design collects descriptions of current destructive practices, analyzes their roots in human nature, and offers low-cost, low-impact strategies for change." (Architecture Boston; Nov/Dec 2008) "Stephen Kellert's Biophilic Design brings together biologists, ecologists, psychologists, architects, designers and city planners to probe the confluence of people, nature and design." (Miller-McCune.com, 7/14/08) "Make no mistake: Biophilic Design, all 400 pages of it, is one of the best design books of this decade." (New Urban News, April-May 2008)

"When nature inspires our architecture; not just how it looks but how buildings and communities actually function; we will have made great strides as a society. Biophilic Design provides us with tremendous insight into the 'why,' then builds us a road map for what is sure to be the next great design journey of our times." ;Rick Fedrizzi, President, CEO and Founding Chairman, U.S. Green Building Council "Having seen firsthand in my company the power of biomimicry to stimulate a wellspring of profitable innovation, I can say unequivocally that biophilic design is the real deal. Kellert, Heerwagen, and Mador have compiled the wisdom of world-renowned experts to produce this exquisite book; it is must reading for scientists, philosophers, engineers, architects and designers, and; most especially; businesspeople. Anyone looking for the key to a new type of prosperity that respects the earth should start here." ;Ray C. Anderson, founder and Chair, Interface, Inc. The groundbreaking guide to the emerging practice of biophilic design This book offers a paradigm shift in how we design and build our buildings and our communities, one that recognizes that the positive experience of natural systems and processes in our buildings and constructed landscapes is critical to human health, performance, and well-being. Biophilic design is about humanity's place in nature and the natural world's place in human society, where mutuality, respect, and enriching relationships can and should exist at all levels and should emerge as the norm rather than the exception. Written for architects, landscape architects, planners, developers, environmental designers, as well as building owners, Biophilic Design: The Theory, Science, and Practice of Bringing Buildings to Life is a guide to the theory, science, and practice of biophilic design. Twenty-three original and timely essays by world-renowned scientists, designers, and practitioners, including Edward O. Wilson, Howard Frumkin, David Orr, Grant Hildebrand, Stephen Kieran, Tim Beatley, Jonathan Rose, Janine Benyus, Roger Ulrich, Bert Gregory, Robert Berkebile, William

Browning, and Vivian Loftness, among others, address: The basic concepts of biophilia, its expression in the built environment, and how biophilic design connects to human biology, evolution, and development. The science and benefits of biophilic design on human health, childhood development, healthcare, and more. The practice of biophilic design; how to implement biophilic design strategies to create buildings that connect people with nature and provide comfortable and productive places for people, in which they can live, work, and study. Biophilic design at any scale; from buildings to cities; begins with a few simple questions: How does the built environment affect the natural environment? How will nature affect human experience and aspiration? Most of all, how can we achieve sustained and reciprocal benefits between the two? This prescient, groundbreaking book provides the answers.

I finished reading *Biophilic Design*--having read every chapter--on a recent trip. I think it is one of the most important design books ever written, not just in the decade. Readers should know that this book is not just for architects, builders, designers or city planners. Its rich array of chapters brings the message, with clear and compelling examples, to life for any of us who care about creating spaces and places where nature and culture are in a vibrant, beautiful, and healthy balance. Everyone benefits--from individuals to families to whole communities.

Quintessential reading for today's architectural considerations.

The book is upfront about admitting that the scientific validity of this biophilic approach is scanty. It is hard to strictly test the efficacy in a plausible scenario involving controls. But given this caveat, the explanation of biophilic design is thorough. Roughly speaking, it describes how to integrate more of nature into a building or group of buildings. The extensive set of colour plates (which is surely needed in any book on architecture) gives good accompaniment by illustrating the ideas. Depicted are two of Frank Lloyd Wright's buildings from around 50 years ago. But the rest are mostly recent vintage. The ideas include having as much natural sunlight entering the building as possible. To reduce lighting costs. Plus vegetation is brought close to the building, or indeed placed in it, like on the roof. The shade helps reduce cooling costs in summer.

Stephen Kellert et al describe in detail the concept of biophilia in their book *Biophilic Design: The Theory, Science and Practice of Bringing Buildings to Life*. Biophilia, which until recently has not been a very well known topic of discussion, is the relationship between the natural human condition

and the natural world, more specifically how people need an outlet to their natural environment. The description goes further on to discuss how a building's focus should emphasize the health of its inhabitants as well as its environmental and social impact. As indicated by the title of the book, the organization of information is divided into three distinct parts as to leave no subject matter overlooked; theory, science and practice. This comprehensive display of information does not leave room for argument due to the book's wide collection of topic ideas and professional backgrounds of its contributors. Scientists, sociologists, psychologists, architects and environmentalists give Biophilic Design the diverse background needed in order to successfully convey the essence of the subject, which is the relationship of man and nature in the physical built environment, as well as the psychological relationship we instinctively inherit as humans. As part one discusses the theory of biophilic design, the reader is introduced to Edward O. Wilson, considered by most to be the first individual to elaborate on the idea of biophilia in his publication of *Biophilia* in 1984. His original ideas influenced architects to consider how nature can impact constructed spaces and the environment through their designs. Outlines of projects and case studies reinforce Wilson's ideas that natural connections exist between human built forms and nature's fluid and organic geometries. Much of what has been built in our industries stems from what we view in the natural world, and this is by no means accidental. His thorough and quantitative analysis into the human-nature connection leads professionals to realize the essence of our humanity as our bond with nature. This leads humans to instinctively desire a connection with the natural environment and the inclusion of sustainable elements within the built form helps to ensure well-being. The second part provides scientifically based evidence from human interactions within constructed space that have benefited from the effects of biophilic design. Chapter 6 in particular discusses Biophilic Theory and Research for Healthcare Design, and how facilities have incorporated natural elements to assist in the healing procedures of inpatient treatment centers. It discusses how the theory of biophilia and exposure of humans to nature will "reduce stress, lessen pain and foster improvements in other health outcomes (100)." There are obvious benefits to designing with natural sunlight, renewable materials and ventilation as they can reduce operational costs, but the social impact on one's health is a greater aspect that needs to be developed. The scientific data given for the inclusion of larger expanses of windows of a project in relation to the recovery time of patients clearly suggests a 'no-turn-back' attitude by the authors towards having natural elements into the design of our hospitals. This hard evidence is much welcomed, as current implementations of LEED (Leadership in Energy and Environmental Design) buildings do not convey the emotional outcomes on their inhabitants upon their completion. This section provides the reader with new ideas for designing uniquely and

specifically for each ecosystem as to preserve site-specific human connections, in which a person feels familiar to their surroundings, and not a visitor. A constant effort is made to preserving comfort and belonging to people and their built environments. As Alvar Aalto had created his rooftop terrace at the Paimio Sanatorium in Finland for patients suffering from tuberculosis, this design feature could be considered a precursor to modern-day biophilic design for drawing a distinct connection between a patient and the natural surrounding forest and landscape for the betterment of the patients. The implementation of biophilic design into built form is discussed in part three, giving the reader an understanding and guidance for changing the current practice of sustainable design into a design that fosters a greater connection of man and nature. As the second part was presenting undeniable evidence of projects on the human quality, this section focuses primarily on case studies. It is interesting to see the varying scales of the projects, from a biophilic architectural meditation space to large-scale biophilic urban neighborhoods, thus showcasing the wide-range use of this idea. The discovery of how nature "creates a sense of pleasure, well-being and engagement with place (227)" ties back into earlier chapters of creating natural aesthetics that create an environmental and healthy refuge for building inhabitants. The way the authors fully integrate the ideas of biophilia into the actual buildings is praiseworthy. Their suggestions are valid by designing structures that incorporate environmental features in every aspect though a buildings' situation on a site, mechanical systems and the internal atmosphere in relation to the human well being, and not as systematic building ornamentation add-ons such as solar panels. The entire psychological landscape of human feelings and emotions are at play, and how successful designs take these ideas into account are displayed as a formula for future iterations. Biophilic design is presented as the inherent link of man and nature, and the authors describe projects of virtually all scales and sizes from small rooms within buildings to entire urban developments that are meant to include this way of thinking. Biophilia reinforces a person's place within their natural environment, and the design of the built landscape should respect and preserve the relationship to the natural space around man. The science and technological aspect in this way of thinking goes beyond what we have come to know as the "green" or "sustainable movement", as they only explore a limited aspect of the built world that is more concerned with conserving and re-using natural resources. Kellert proposes that there should be a greater push to achieve a fusion of man-made elements, human ideals, and their ecological counterparts. By educating both people and designers on this topic, professionals can then understand the importance of creating spaces that enhance human psychological aspects towards nature that will then translate to a thoughtful and positive atmosphere in which people live their lives. This book achieves not only capturing the audiences

attention with the subject matter, but instills within each reader a desire to pursue a greater relationship with our environment and to educate our colleagues, friends and clients on the benefits nature can have on the health, well-being, and recovery of patients and building users. This focus on the emphasis of a human-nature connection will undoubtedly aid in our development and planning of healthcare facilities.

I just finished reading this wonderful book - I highly recommend it. Stephen Kellert puts forth an outline for biophilic design components, which I find fantastic and tremendously useful. Having a scientific mind myself, this outline provides a perfect platform to which the contributing writers are able to venture in their essays (chapters). Having a Feng Shui practice and being an ardent believer in bringing nature into building environments and design of new structures and communities, I am very excited about seeing where I fit in. This is the next evolution of the eco-friendly design movement and I am ready to start participating. This book gives weight and significance to our inherent need for connection to nature. It provides a multitude of scientific studies that give credence to this evolving and emerging discipline and will hopefully receive more mainstream readership. My advice to you: buy a copy, absorb the knowledge and pass on the word!!

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