

01 “...for his faith that in a modest way he could, as an architect, contribute a little toward the preservation of human kind and existence- something of objective value.”
-Richard Neutra, *Survival Through Design*

I believe that routine engagement with the natural environment is a basic human need.

During the last half century, science has begun to confirm what was simple intuition for thousands of years in regards to the human relationship with nature. Science has shown and continues to expand upon the fact that our relationship with the natural environment has profound effects on our mental, physical, and emotional well-being. Therefore, satisfying contact with nature needs to be an integral part of our daily lives.

More than any time in human history, this need is not being met. Technological advances have contributed significantly to humanities quality of life, but not without serious side effects that must be addressed before the quality of life can genuinely be raised. The separation of human beings from the natural environment has been a gradual shift throughout history coupled with the progression of technology; especially as this technology relates to both the built environment and the occupation of our attention. However, within the last century, this growing divide grew exponentially due to the ability to mechanically control interior spaces, followed by the emergence of a culture addicted to entertainment by means of digital screens.

- 1. The advent of mechanical means to control our interior environments brought with it greater comfort and unlimited freedom in choosing a location for habitation due to the new ability to largely disregard climatic effects of the region.
- 2. While our engagement with nature has rapidly decreased over the previous half century, our engagement with, or addiction to, electronics has skyrocketed. We often spend much more time focusing on screens than we spend having face to face interactions with other human beings. According to recent studies, the average American child spends 7 hours and 38 minutes per day engaged with media outside of school. It is no surprise that “the ascent of screen culture has occurred in association with the decline in mindful engagement with nature.” – Eva Selhub, *Your Brain on Nature*

Biophilia: the inherent human inclination to affiliate with natural systems and processes, especially life and life-like features of the nonhuman environment.

Personal Context

Raised on a 160 acre ranch in Missouri, I was blessed to have ample opportunity to routinely engage with the natural environment. The hills formed in such a way that I could never see a neighbor from the property, adding greatly to my connection to the land through the ability to feel lost in it. The land provided me with heavy wooded areas, small springs, ponds, a large creek, and plenty of rolling open fields to explore while developing my imagination and sense of wonder. My discovery of Biophilia was at once the beginning of the articulation of part of my soul. The discovery that there was science behind what I had felt since childhood gave me the affirmation I needed to devote my career to this objective.

“to explore and affiliate with life is a deep and complicated process in mental development. To an extent still undervalued in philosophy and religion, our existence depends on this propensity, our spirit is woven from it, hope rises on its currents.”
- E.O. Wilson, *Biophilia*

Objective
To answer the question:

Can design help mend the growing divide between human beings and the natural environment by effectively encouraging routine engagement with nature?

The built environment we choose to create is one of the biggest factors in determining how we interact with the natural environment.

I believe that design can play an important role in reversing the growing divide between human beings and the natural world. On the scale of the individual building, design can create a sense of blending between the interior and exterior by creating ambiguous spaces that offer the advantages of both inside and outside. On the scale of the community, proper planning can insure adequate and immediate access to healthy natural landscapes for the benefit of all community members.

Biophilia, and more directly, Biophilic Design, has taken a substantial step towards offering a solution by “emphasizing the necessity of maintaining, enhancing, and restoring the beneficial experience of nature in the built environment.” - Stephen Kellert, *Biophilic Design*

Through the lens of design and development, I seek to have a positive effect on humanity. My objective is to create built environments that help mend the growing divide between humans and the natural environment. Through thoughtful and socially responsible design that integrates the built and natural environments, communities can be built that help people to thrive instead of merely live.



WHY
HOW
WHAT

“To forget how to dig the earth and to tend the soil is to forget ourselves.”
- Mohandas Karamchand Gandhi

WHY is it important?

Because routine engagement with the natural environment is a basic human need.

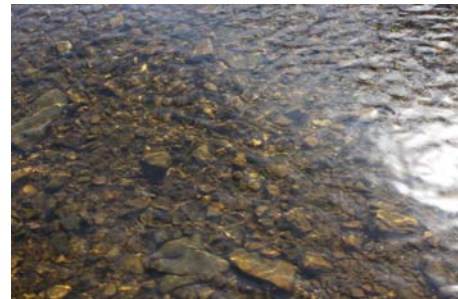
Science

The need to interact with life is embedded in our genome and our current social structure that urges us to spend more and more hours devoting our attention to technology has caused major health problems; physically, mentally, emotionally, and spiritually.

Human beings are intrinsically linked to the natural environment through the two million years of evolution experienced while depending daily on the natural environment for survival. Our current culture of the screen has plucked us from this mutually beneficial relationship at a rate that is unfathomable in comparison to the rate at which our DNA can evolve. Today, science is able to show how this separation has led to many harmful effect, including: obesity, depression, anxiety and stress, fatigue, diminished imagination and problem solving skills, lower IQ's, societal strife, childhood learning and behavioral disorders, and overall happiness, to name a few. The movement towards screen time and away from the natural environment is nothing short of an attack on mind, body, and soul. Therefore, it is critical that this growing divide is mended in every way possible.

Science is able to show that when people have meaningful interaction with natural environments (with life) there are important benefits:

- Overall better mental and physical health
- Greater productivity and energy
- More restful sleep
- Greater creativity
- Increased problem solving skills
- Increased memory and attention capabilities
- Improved mood
- Stronger sense of empathy for others
- Stronger sense of community



Average child today spends less than 40 minutes outside per day
Average child 20 years ago spent 4 hours outside each day
Average child today spends 52 hours engaged with an electronic screen per week.
- Stephen Kellert, *Building for Life*

“The concept of biophilia implies that humans hold a biological need for connection with nature on physical, mental, and social levels, and that this connection affects our personal well-being, productivity, and societal relationships.” – Terrapin Bright Green, LLC

From Science to Design

In order to live well and have a healthy mind, body, and soul, one must be made aware of the natural world around him/her and truly engage with it. This is true despite our modern ability to live almost independently from the natural environment. However, the interaction we need is simply ordinary or routine; we do not need to abandon our cities for the wilderness in the pursuit of health. If we design a built environment with the natural environment in mind, we can make engagement with it as natural and routine as brushing teeth.

The Built Environment's Role

“When a body of research reinforces what we know intuitively and emotionally, isn't this really the best guider for the design? The ideas and principles behind biophilia, built upon our understanding of human evolution in a biocentric world, enrich the design palette enormously. The biggest challenge we face is to ensure that the benefits are equitably distributed to people of all ages, abilities, and economic status. This can happen when we look at every design as an opportunity to invest in human health and well-being.”

- Judith Heerwage *Biophilia, Health, and Well-being*

The affect the built environment has on our mental, physical, and spiritual well-being is all too often underestimated. The devastating reality is that the majority of the environments we have built for ourselves have had an increasingly negative effect on our overall health. We have the ability, and we have shown the desire, to manipulate the world and its resources in incalculably more drastic ways than any species we share this planet with. Yet, we often build environments that fall drastically short of providing us with our most basic needs. Our founders, through the Declaration of Independence, wasted no time in laying out the most basic of human unalienable rights: life, liberty, and the pursuit of happiness, as the most basic of needs for the human spirit. Our culture is directing us towards a world where we engage more with machines than life, while feeling less alive ourselves. A world where our natural desire to crave information is enslaving us to digital devices. A world in which, according to Gallup World Poll's and independent researchers, less than 20 percent of us are happy. In order to create built environments where humans can thrive, not just survive, we need to bring life back into the equation. By designing with the natural environment instead of despite it, the built environment can have a truly positive affect on human life.



“Nature is loved by
what is best in us.”

- Ralph Waldo Emerson

"We negotiate our relationship to nature through every design choice we make."
– Marmol Radziner

HOW

HOW can it happen?

A Piece of the Puzzle

There is a multitude of professionals across many disciplines working to discover the specifics of the human nature connection so as to give us a better understanding of the bond in both an analytical and metaphysical way. The multifaceted analysis is not only confirming our intuitions about the vital nature of this connection, but it is also giving us information into how we can mend this growing divide. The design of our built environment is one of the important factors in both the quality and frequency in our interactions with the natural environment. Through the lens of design and development, I hope to spend my career discovering how effectively the built environment can create meaningful change in this area of great concern.

Designs Ability to Affect

"[Architectures] aim could be nothing less than the creation of man as the perfect follower of nature."
– Frank Lloyd Wright

The built environment's ability to direct us and influence us daily is the key to design's ability to play an important part in mending the growing divide between our society and nature. Architecture is the backdrop of the stage upon which we play out our everyday lives, and as such, it is in a unique position to affect perceptions, as well as actions. This critical component of architecture renders it mandatory that design has a purpose beyond the simple creation of buildings. Therefore, design should always be embedded with a passion driven by a worldview, which at its core, must be the honest desire to improve lives. My passion is driven by the belief that design can effectively encourage inhabitants to achieve a more meaningful and routine connection with the natural environment for the benefit of mind, body, and soul.



"There was a child went forth every day,
And the first object he look'd upon, that object he became,
And that object became part of him for the day or a certain part of the day,
Or for many years or stretching cycles of years.
The early lilacs became part of this child,
And grass and white and red morning glories..."
–Walt Whitman

"When we are trying to use architecture as a vehicle for change, it must both relate to the society as it exists and as a representation of the change it is trying to create. If architecture is part of a social context, then its task is not to embody a cultural critique but to become part of that culture's critique...not a formal representation of resistance, but an instrument of resistance."
– Thomas Dutton, *Cultural Studies and Critical Pedagogy*

Precidents

The desire to tie architecture to the natural world has been a major motivation behind most of the prominent architects of the last century. Figures like Le Corbusier, Lois Sullivan, Frank Lloyd Wright, Richard Neutra, and others have used humans' vital relationship with nature to inform and even create their designs. These prominent architects played major roles in shaping the way the subject is approached today.

Le Corbusier's idea was to build vertically with large "X" shaped towers that allowed more space to be left to open land.

Louis Sullivan believed that architecture should encounter nature on a more tangible level. "His buildings were to be reminders that out of imperative necessity mankind must establish an intimate bond with nature." – Menocal, Narciso G. *Architecture as Nature* Sullivan believed humans should be connected to nature through all their senses and therefore architecture should imitate nature's behavior and manner of production as closely as possible. His belief was that man's greatest accomplishment would be communion with nature and that architecture should try and encourage this communion by expressing philosophical concepts related to the highest truths of nature.

Frank Lloyd Wright's work, especially Fallingwater, serves as a poster child for the topic. Wright thought of the connection between architecture and nature as inseparable. Wright often told his students at Oak Park to stop reading and to do nothing but study nature. Perhaps Wright's most fundamental idea is that a building should serve as a foil to nature, and nature should serve a building as ornament.

Richard Neutra may be the best example of this group of an architect following the principals of Biophilic Design. Neutra believed that the natural world could greatly improve an individual's life and therefore he strove to create architecture that leveraged this belief. Not only did Neutra believe that architecture could improve lives but he also believed it could affect behavior in such a way that it could impel people to take action and move.



“The architects primary and most important material is human nature.”
- Richard Neutra

WHAT could it look like?



A Design Principal Over Style

Creating a built environment that enables people to thrive through the direct and routine contact with nature is essential for overall well-being. But what would the design look like? Biophilic design is not a style; it is an ethic. Therefore, as a concept unbounded by an architectural style, the design can be adaptable in both form and style, while the intent remains universal. In fact, the architecture should vary greatly based on specific location and context. So while the design cannot be categorized by an architectural style, design principals bring cohesiveness and direction.

Connection to the Sustainability Movement

“...the current environmental crisis is considered a design failure rather than an unavoidable aspect of modern life. Both the knowledge and the technology exist to better reconcile and even harmonize the natural and human environments. However, meeting this enormous challenge will require two conditions. First, we must minimize and mitigate the adverse environmental effects of modern construction and development. Second, and just as important, we must design the built environment to provide sufficient and satisfying contact between people and nature.”
- Stephen Kellert, *Building for Life*

The first point made by Kellert is defining the objectives of the sustainability movement. The second point is referring to Biophilic Design. Unfortunately, the latter is getting left behind despite the growing worldwide environmental awareness. The sustainability movement is a positive change and needs to be continued, but it is not enough without Kellert's second point. The sustainability movement focuses on how we effect the natural environment. We need to give equal importance to how the natural environment affects us.

Current Model is Flawed

The current built environment as a whole lacks the connectivity needed to fulfill our basic need of routine access to the living ecosystem. However, one segment of the built environment commits more egregious transgressions against every individual's basic right to routine engagement with the natural environment than others.

Suburban sprawl not only fails to create the opportunity for residents to have a meaningful relationship with nature, it also destroys vast amounts of natural environments during its creation. The suburban model does not work when viewed from the perspective of general human prosperity; however, it continues to be copy and pasted across the United States due to the economic prosperity of the minority. I have a belief that we as a nation can house ourselves in a manner that is better for our general welfare than the current suburban model.

An Obstacle to Change: The American Dream's Influence on Land Ownership

The early Jeffersonian model for our country as a nation of small farmers caused an unbreakable connection between the American Dream and land ownership. When this model was translated into suburban living, it caused an individualistic experience of nature to progress. By subdividing land into as large of lots as the economy of the region will allow, we managed to give everyone as much “nature” as they could afford, while stripping them of the natural landscapes needed for prosperity.

By blurring the boundaries between man and nature in architecture, the interdependence between the two is emphasized.

A Solution through Layering

Design can work at many scales to play a role in solving this issue. From a single room or feature, to a house, neighborhood, city, and country, design can encourage a strong connection between the built environment and the natural landscape.

A layering of scale shows how the natural environment can be implemented into the built environment (the particular example described below is in relation to how it originates from a house in a neighborhood setting; however, a similar model could be applied to various aspects of the built environment such as schools, business districts, and entertainment centers).

1. The design of a house can encourage a relationship through various design techniques including but not limited to: indoor plants, views, natural materials, pets, paintings of nature scenes, decoration that mimics natural forms, overall form, extension of forms into the landscape, repetition from inside to out, and threshold conditions with an emphasis on creating ambiguous spaces.
2. The immediate surroundings of the house can be used for the incorporation of outdoor spaces into the floor plan. These spaces need to be an integral part of the design rather than an afterthought. Owners can use this space in many different ways such as: Zen garden, working garden, flowers, grass, outdoor living/dining. This private green space only requires roughly the same square footage as the footprint of the home. This space is very different from the large lots surrounding many suburban homes today. Instead of occupying an unnecessary amount of land, it efficiently provides an intimate setting for the human nature connection. The rare activities that large suburban yards can be used for, such as a game of baseball, can instead take place in a more useful communal space (Layers 3, 4, or 5)
3. Shared green space among 15 -25 neighbors. This is a semi-private space that could take many forms but should be influenced by the existing natural environment. Should be a safe outdoor place for kids to play in and explore on their own. Fosters a sense of community with immediate neighbors while taking the place of subdivided back yards.
4. Neighborhood green space for a collection of roughly 200 families. Park like area with varied types of natural environments and features. Still a semi-private area for the neighborhood to mingle in, exercise, and explore.

Layers 5 thru 7 are a part of the existing urban fabric that can be tied into:

5. City /Town parks
6. Forests, open land, and ranch/farmland
7. National and state parks/forests

