

Kyoto

Art in Nature Habitat





KYOTO_ ART IN NATURE HABITAT

by

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of the requirements for the degree

of

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Carolina Sophie von Wiedersperg

April 2009



DEDICATION

This thesis is dedicated to my grandmother, Amama, and all other women, who never had the opportunity to grow in an academic environment.



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I am grateful for all the kind hearted individuals who have welcomed me into their home, family and heart during my stay in Kyoto and made Japan a truly unique, delightful, enriching and unforgettable experience.

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ABSTRACT

The purpose of this thesis is to find architectural solutions which apply the theoretical findings centered around the biophilia hypothesis. The principles resulting from this investigation should help architecture to soften the separated conditions of the natural and the man-made environment. The application of these principles will then result in the design development of an Art in Nature Habitat in Kyoto, Japan.





Preface

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It was in 2006 that my travels took me away from the familiar western world I had known up to that point to the vibrant city of Kyoto which was Japans capital for almost a full millennium.

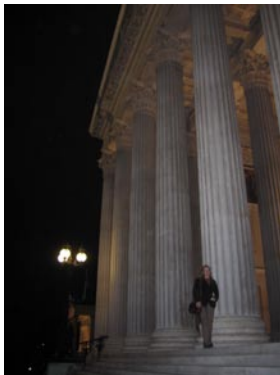
Following three years of architectural education in America and a semester spent studying in Vienna, Austria, I was quite clueless as to what to expect upon my arrival in the East. I had imagined many possible scenarios but I had not anticipated the almost immediate feeling of having arrived at home. It is this sense of wholeness/ harmony first experienced in a place so far away and apparently different from everything I had known, which has spurred my interest in Japanese culture. Not surprisingly, like many westerners, I left carrying a fascination and love for Japan I have not yet been able to satisfy.



I attribute the warm atmosphere in Japan to the uniquely small scale of buildings in Kyoto. Having just left Vienna with its representative and often majestic buildings, the encounter with Japans traditional building culture, apparently tailored to human proportions, seemed a more appropriate fit to the human condition. Another reason lay in the materiality of many of Kyoto's classical, older buildings which employ wood, often exposed as the main building material. The natural appearance of these wooden, temporary dwellings stands in sharp contrast to the massive, permanent construction approach of Europe, which employs mostly stone and concrete in its archetypal architecture. But the most obvious difference lay in the organic fabric of this traditional city, where gardens to this day form an integral and interconnected part of the built environment.

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It is this state of balance between the built world and nature that I was fortunate to observe in the remnants of the classical Japanese building tradition, which inspired the quest to search for the underlying principles of building in harmony with the natural environment.



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1.1 Introduction

“Progenitor and product of the industrial and scientific revolutions, modern man seems to feel neither above “nature”, nor part of it, merely alien. We are out of joint with nature and out of joint with our own natures as a consequence.”⁴

Strangers to this Earth

This thesis is a contribution to the debate about the connection of nature and architecture and how reuniting these can improve the lives of human beings.

The development of humanity has proven to be an ongoing separation of human connection with nature¹. The most obvious separation of this is displayed in modern cities. City culture has created an urban universe that seems oblivious to its dependence on nature.² In 2008, for the first time, more than half the world's population will live in cities and towns, according to the 2007 United Nations report. The urban percentage of the world's population is projected to reach 60 percent by 2030. In more developed countries, the urban share is likely to rise from 75 percent to 81 percent between 2007 and 2030, and in less developed countries from 44 percent to 56 percent.³ As a result, half the world's population is already out of touch with the natural environment today.



The separation of humans from nature was for centuries seen as the ultimate progress and industrialization seems to have allowed us to sever the link between our buildings and their environment. In recent years the awareness has risen that the man-made urban environment has not only provided us with shelter from harsh environmental conditions, but it has come bearing risks we have yet to fully understand. The artificial environment we have created, which Cicero first called, ‘a second environment’⁶, is now negatively affecting our health and it is for this reason that the improvements of our quality of life are no longer directly tied to industrialization. Our protection from nature should instead be seen as the engagement of our architecture with nature to help us reconnect with it. Not only will

the reconnection of our architecture to its environment improve the quality of life, but it will help us diminish the effects of civilization deceases, promote a conservation ethic and reestablish our sensitivity to the natural environment. The search and application of solutions to this connection between nature and architecture lies at the heart of this thesis.



1.2 Thesis Challenge

This thesis challenges the western architectural concept in which the man-made environment represents a boundary to the natural world. Responsible architectural design today must pose solutions to soften the opposing conditions of the natural and artificial environment, without losing the quality of life we have gained through the process of industrialization.

This thesis will try to answer the following research questions:

1. How can the practice of architectural design soften the separated conditions of the natural and artificial environment?

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2. How can nature's positive influence on humanity be consciously applied in architecture?

3. How can the idea of an intimate relationship with nature be conveyed in architectural design?

The resulting principles will promote an architecture in which humans will again see themselves as part of nature.



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The thesis project resulting from this research employs these building principles in a facility for artists to produce nature inspired artworks. These artworks are intended to carry the spirit of nature into urban environments to help the residents reconnect with nature.

Statement

For more than 99 percent of human history, people have lived in hunter gatherer bands totally and intimately linked with the land they lived on. Permanent dwellings were a major step for humanity in asserting itself over nature. The effects of the industrial revolution, as felt have particularly in the western hemisphere allowed for a lifestyle so convenient, that it has shielded us from our connection and dependence on nature.

Considering the environmental impact industrialization has had on our surroundings, it is essential for our well-being today, that of future generations and all species living on this planet, that we see ourselves as part of the natural environment.

“In order for humans to perceive themselves as part of nature, architecture should reflect humanities timeless connection with nature and ease our sense of vulnerability from the elements.”⁸

The presence of nature is therefore the prevailing (central) design criteria of the Kyoto Art in Nature Habitat.

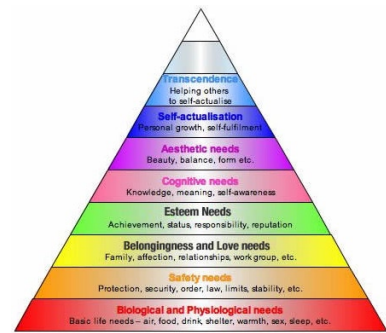


Background

The theoretical framework of this thesis is based on the assumption that modern society is in disaccord with nature.

Abraham Maslow's hierarchy of needs, a theory in psychology from 1943 but still entirely valid today, stated among the aesthetic needs, humans need beautiful imagery or something new and aesthetically pleasing to continue towards Self-Actualization. Humans need to refresh themselves in the presence and beauty of nature while carefully absorbing and observing their surroundings to extract the beauty the world has to offer.⁹

Maslow's Hierarchy of Needs



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Stephen R. Kellert calls natures potential for providing the means for a more personally satisfying experience a “CHALLENGE OF DESIGN”, because, Kellert states, nature is less obvious and apparent among the poor or urban, than the rich and powerful. The most deprived of natures intimate experience is the urban population, found in the degraded concrete jungles of cities. ¹¹

“Societies obligation is not to bemoan the apparent absence of nature in the inner city, but to render its possibility more readily available” ¹²



The fundamental question which Stephen R. Kellert asks in relation to the biophilia hypothesis, which I will discuss in detail later on, is the extent to which people in modern society recognize and appreciate the human need to affiliate deeply and positively with the diversity and variety, nature has to offer. Studies conducted by Kellert among persons living in the highly urban, technologically-oriented, industrial societies, USA and Japan, revealed only limited concern for the natural world among the general public in both countries. ¹⁴

“Most respondents expressed a strong inclination to exploit nature for various practical purposes despite the likelihood of major environmental damage. Especially in Japan, a majority revealed considerable indifference toward elements of the natural world lacking any aesthetic or cultural value.” ¹⁵

The results of these studies are worrisome as these two contemporary industrial superpowers are amongst the most influential countries and set an example for the rest of the world. Stephen R. Kellert therefore calls upon both countries to assume a more creative and ethical leadership in the evolution of a global consciousness. ¹⁶

This phenomenon of a general break from nature has only fairly recently started to receive more attention. Richard Louv, in his book *Last Child in the Woods*, calls the negative effects of our growing separation from our environment ‘Nature Deficit Disorder’. The serious risks and negative influences nature-disdain has on our quality of life, today is most apparent in our children. The average American child spends approximately 44 hours a week in front of a television, computer or video screen. ¹⁷ ‘As we’ve become a more sedentary society’ ¹⁸, most of our time is spent indoors. Amongst the more obvious human costs of alienation from nature are the diminished use of the senses, attention difficulties, and higher rates of physical and emotional illnesses. ¹⁹





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In 1979, Keiki Haginoya began his intended life's work of preparing photo documentaries of children at play on the streets of Tokyo. In 1996, he wrote a sad conclusion to his career. Children's laughter and spontaneous play, which once filled the streets, alleys, and vacant lots of the city, had vanished. His photos show the rapid loss of play space, the separation of children from natural outdoor activities, traditional games, and creative play - indeed the transformation of children's culture. Keiki Haginoya holds the denser construction of buildings, the increase in cars, mass-produced toys, video game machines and school entrance examinations partially accountable for the transformation of the spontaneous outdoor play children used to engage in.²²



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Similarly, Robin Moore, a landscape architecture professor attributes poorly designed outdoor spaces, the rapid growth of domestic air conditioning since the 1950s, apprehensive parents, school curricula promoting indoor study and overly structured family lifestyle for the cultural changes affecting the development of children.²⁵

Studies have shown, that children who have access to natural play areas in daycare centers and schools engage in more complex imaginative and social play than children whose environments consist of built structures and asphalt.²⁶

New, unknown illnesses such as Hikikomori are on the rise.

Hikikomori (acute social withdrawal syndrome) is a recently diagnosed phenomenon unique to Japanese youth. Sprawling city suburbs today harbor an estimated 50,000 to 1.2 million hikikomori sufferers. Ten to twenty percent of Japanese adolescents between the age of 16 and 30 are considered to be afflicted by this social identity crisis.²⁷

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A growing body of evidence indicates that direct exposure to nature is essential for physical and emotional health.²⁹ Recent studies also suggest that exposure to nature may reduce the symptoms of Attention Deficit Hyperactivity Disorder (ADHD) and it can improve cognitive abilities and resistance to negative stresses and depression.

“The occurrence of natural (biophilic) design features in buildings (...) can reduce stress, improve physical health, enhance emotional satisfaction, increase motivation, reduce absenteeism, improve grade scores, foster creativity, facilitate problem solving, and promote productivity. Significant stress reduction and physical and mental health outcomes have been related to even the passive viewing of nature, such as workers with window views who report less frustration, greater satisfaction, and better health than workers lacking natural lighting or outside views; or workers in windowless rooms with plants being more efficient, having lower blood pressure, and greater attentiveness than persons in the same room without plants.”³⁰

In conclusion, the necessity for indoor spaces which offer nature like experiences becomes evident.



1.3 Theoretical position

It was In 1984, when Edward O. Wilson published a theory, he called Biophilia. Evidence favoring this theory has since grown stronger ³¹ and complementing this hypothesis, Stephen R. Kellert has developed a model describing nine Typologies each representing a fundamental aspect of our dependence on nature.

Biophilia Hypothesis



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Edward O. Wilson is an American biologist, researcher, theorist, and naturalist, known for his career as a scientist and his advocacy for environmentalism who earned his Ph.D. degree from Harvard University.³³ Combining his knowledge in the fields of Sociobiology with his studies on biodiversity, he formulated the Biophilia Hypothesis, which he describes as:

“The innately emotional affiliation of human beings to other living organisms.”³⁴

Its central argument is that the epigenetic rules of mental development are likely to include deep adaptive responses to the natural environment.³⁵ In his book Biohilia, E. O. Wilson gives several examples which illuminate this behavior. One example is gardening, where people invest large amounts of time to improve the appearance of their immediate surroundings. Their aim is to make their habitat more livable according to what are usually called aesthetic criteria.³⁶



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Another example mentioned in Biophilia is that given leisure time, people stroll along shores and river banks. They look along the water and up, to the hills beyond or to high buildings. When people are confined to crowded cities or featureless land, they go to

considerable length to recreate an intermediate terrain, similar to a savanna gestalt.³⁹ This comes as no surprise, as for more than 99 percent of human history, people have lived in hunter gatherer bands totally and intimately involved with other organisms. E. O. Wilson further describes, that the brain therefore evolved in a biocentric world, not a machine regulated world.⁴⁰

"The significance of biophilia in human biology is potentially profound, (...). It is relevant to our thinking about nature, about the landscape, the arts,(...), and it invites us to take a new look at environmental ethics."⁴¹



Given that humanity's relation to the natural environment is as much a deep part of history as social behavior itself, he criticizes, the lack of attention scientific research has paid to the mental consequences a decreased exposure to nature's biodiversity will have on the human brain and humanities further evolution.

"Our ignorance could be regarded as just one more blank space on the map of academic science, awaiting genius and initiative, except for one important circumstance: The natural Environment is disappearing. Psychologists and other scholars are obligated to consider biophilia in more urgent terms. What, they should ask, will happen to the human psyche when such a defining part of the human evolutionary experience is diminished or erased?"⁴²

Biophilia Functions

Stephen R. Kellert, a social ecologist at Yale and E.O. Wilson's collaborator, is recognized as the world's foremost authority on human relationships to animals.¹ Kellert is co-editor with E.O. Wilson of *The Biophilia Hypothesis* and has applied his knowledge in biology and ecology to further explore the biophilia hypothesis by identifying and describing nine fundamental aspects of our biologically based human need to affiliate deeply with the natural world. He refers to these nine hypothesized expressions of the biophilia tendency as the naturalistic, humanistic, moralistic, aesthetic, symbolic, ecologicistic-scientific, utilitarian, negativistic and dominionistic relationships with nature.⁴³



Brief description of the nine functions according to Steven R. Kellert:

1. The **naturalistic** tendency describes the satisfaction, humans experience from direct contact with nature. Nature matters to people and is an important ingredient in a good life. Contact with nature has been proven to have therapeutic and mental benefits.
2. The **humanistic** relationship to nature reflects feelings of deep emotional attachment for individual elements of the natural environment. Although usually directed at larger vertebrates, this so called love for nature can occasionally be extended to natural objects such as trees, particular landscapes or geological forms. This love for individual elements in nature is shown in strong feelings of affection, attachment, care and nurturance and can result in an enhanced capacity for bonding, altruism and sharing.
3. The **moralistic** relationship to nature involves a profound affinity and even spiritual reverence for the natural world. This perspective often reflects a belief in a fundamental order and harmony in nature and a strong feeling of ethical responsibility for protecting the natural environment.
4. The **aesthetic** tendency focuses on the aspects of physical beauty found in nature which humans prefer. Living organisms are often the centrally valued element in peoples aesthetic responses to nature. The human aesthetic preference is usually directed at large animals. Associated feelings of tranquility, peace and harmony, and a related sense of psychological well-being and self-confidence are the result of the aesthetic tendency.
5. The **symbolic** relationship to nature reflects our use of the natural world to facilitate communication and thought. The use of nature as a symbol is most critically reflected in the development of human language.
6. The **ecologicistic-scientific** tendency is characterized by a commitment to precise study and systematic inquiry of the natural world. In short, it is the tendency to belief that nature can be understood through empirical study. It is about the recognition of interconnection and interdependence which can instill respect for nature's conservation.
7. The **utilitarian** relationship describes the diversity of ways in which the natural world provides humans with the physical means for sustenance, protection and security. There is an obvious biological advantage for humans to exploit nature's vast supply of potential food, medicinal, clothing, tool and other material products. The utilitarian tendency is the value humans place on nature as an essential provider fostering life.
8. The **negativistic** relationship is characterized by sentiments of fear, aversion and antipathy toward aspect of the natural world. Motivational factors in the human tendency to dislike and even fear certain aspects of nature may have presented an adaptive advantage during the course of human evolution and can often result in excessive and cruel behavior towards certain species.
9. The **dominionistic** tendency emphasizes nature's mastery, physical control and dominance by humans. Beyond the enhanced capacity to subjugate, conquer and master nature, the dominionistic relationship may facilitate increased knowledge of the natural world. It appears to possess both, the potential for functional advantage as well as the possibility for exaggerated distortion and destructive expression.¹



Function	Definition	Evolutionary role
Naturalistic	Satisfaction from direct contact with nature	Curiosity, outdoor skills, mental/physical development
Humanistic	Strong affection, emotional attachment, "love" for nature	Group bonding, sharing, cooperation, companionship
Moralistic	Strong affinity, spiritual reverence, ethical concern for nature	Order and meaning in life, kinship and affiliational ties, altruism
Aesthetic	Attractiveness, physical appeal and beauty of nature	Inspiration, harmony, peace, security
Symbolic	The use of nature for metaphorical expression, language and expressive thought	Communication, mental development
Ecologistic-scientific	Systematic study of structure, function and relationship in nature	Knowledge, understanding, observational skills
Utilitarian	Practical and material exploitation of nature	Physical sustenance/security
Negativistic	Fear, aversion and alienation from nature	Security, protection, safety
Dominionistic	Mastery, physical control, dominance over nature	Mechanical skills, physical prowess, ability to subdue

Stephen R. Kellert, Nature and Humankind in the Age of Environmental Crisis, Biophilia Hypothesis, p. 213, Table 1



Authors Historic Function Addition

After extensive research on the subject of cultural differences between Japanese and Westerners, I became aware of a very prominent concept Japanese seem to share which is absent not only in Western thinking, but also speech. As there is no direct translation of the uniquely Japanese aesthetic ideal and pilosophy, called '*Wabi Sabi*', I will use Andrew Junipers description:

"Wabi Sabi embodies the Zen nihilist cosmic view and seeks beauty in the imperfections found as all things, in a state of constant flux, evolve from nothing and devolve back to nothing."⁴⁵

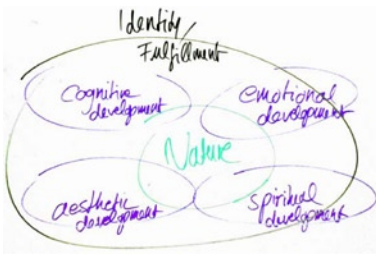
The ability to see and appreciate this transient beauty found in all things impermanent is cultivated and highly valued in traditional Japanese culture and lead me to conceive an addition to Kellert's Biophilia functions. This 10th function I call the **historic** relationship which is characterized by the understanding of our place in time by the awareness of the passage of time and may serve as a tool to further knowledge transfer. It allows generations to pass on knowledge regarding the use of natural materials and elements to ensure progress, safety and survival.

Historic	Understanding of our place in time by the passage of time	Knowledge transfer, progress, safety, survival
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S. R. Kellert suggests that human identity and personal fulfillment are dependent upon our relationship to nature.

“The human need for nature is not just linked to the material exploitation of the environment, but also to the influence of the natural world on our emotional, cognitive, aesthetic and even spiritual development.”



The biophilia notion further asserts that much of the human search for a coherent, fulfilling and meaningful existence depends upon our relationship to nature.

Biophilic values constitute threads of relationships between people and nature that foster an ethic of care for the natural world. S.R. Kellert predicts that the design challenge of the 21st century will be the integration of the natural and the man made world.⁴⁶ Interweaving nature and the built environment is one of the most challenging and promising tasks we face today.

Overall, the influences of nature can positively affect our biological, cognitive, and spiritual wellbeing. As our modern, busy lifestyle forces us to spend on average between 80% and 90% of our time indoors.⁴⁷ Therefore it is imperative to consider the impact an architecture which is 'open' to variations of seasons, weather conditions, day and night transitions and the passage of time could have on the quality of our lives.

“The architecture which then surrounds us should speak to all our senses.”⁴⁸



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1.4 Key concepts

For the key concepts guiding the architectural development of this thesis, I will be expanding on S. R. Kellert's nine functions. I will assign each function (kind of bond between people and nature) representative architectural strategies. These strategies propose answers to the first thesis challenge, how the practice of architectural design can soften the separated conditions of the natural and artificial environment.

Functions and corresponding architectural elements:

Kellerts Functions			Authors proposed strategy
Function	Definition	Evolutionary role	Architectural elements / strategies
Naturalistic	Satisfaction from direct contact with nature	Curiosity, outdoor skills, mental/physical development	• Natural ecotone color palette • Self finishing materials • Day-lighting strategies • Natural cross ventilation • Accessible green spaces • Courtyard strategies • Exposed storm water retention • Deciduous trees as shading elements • Porches • Covered walkways • Water features • Building close to / on water • Biomimic pattern design • Sliding doors • Alcoves



Humanistic	Strong affection, emotional attachment, "love" for nature	Group bonding, sharing, cooperation, companionship	• Human scale, • Attention/ framing of existing trees • Shared living spaces • Communal in and outdoor spaces • Pavilion • Benches • Welcoming entrances • Water features • Communal gardens
Moralistic	Strong affinity, spiritual reverence, ethical concern for nature	Order and meaning in life, kinship and affiliational ties, altruism	• Teahouse • Reflection pond • Waterfall • Houses built adjacent / on water • Light wells • Elements for noise control
Aesthetic	Attractiveness, physical appeal and beauty of nature	Inspiration, harmony, peace, security	• Water features to attract animals, • Attention to view corridors, • Sliding doors, • Porches, • Borrowed scenery
Symbolic	The use of nature for metaphorical expression, language and expressive thought	Communication, mental development	• Places for conversation/ communal exchange • (Rare) plant species, plant signage • 'Attention design*', eg. Folly • Playground • Stone (zen) garden features
Ecologicistic-scientific	Systematic study of structure, function and relationship in nature	Knowledge, understanding, observational skills	• Viewing platforms • Benches • Pathways • Bee hive



Utilitarian	Practical and material exploitation of nature	Physical sustenance/security	• Solar orientation • Cultivation of useful trees, herbs and plants • Watermill • Rainwater collection • PV's • Natural materials (wood, stone, clay,...) • Tree covered benches, • Beehive • Hedges • Rock walls
Negativistic	Fear, aversion and alienation from nature	Security, protection, safety	• Trees as natural shading devices • Covered walkways • Walls • Building below ground • Dark spaces • Spaces to be discovered
Dominionistic	Mastery, physical control, dominance over nature	Mechanical skills, physical prowess, ability to subdue	• Stone (zen) garden features • Pervious paving • Man made architectural features

'Attention design' has symbolic and sometimes meditative qualities. The unusual and unexpected design aspects grab our attention and stick in our memory.

Authors Function			Authors proposed strategy
Function	Definition	Evolutionary role	Architectural elements / strategies
Historic	Understanding of our place in time by the passage of time	Knowledge transfer, progress, safety, survival	• Reuse of historic artifacts imbedded in / already on the site • Reference to historic events • Return to indigenous landscape state • Restorative Environmental Design • Sundial • Temperature, Rainfall measuring devices • Use of 'aging' materials (eg. patina)

None of these architectural features or strategies by itself are new. Most of them have been practiced for centuries. What is new is the idea of a holistic design approach which specifically addresses each of these functions and therefore offers the variety we experience in nature.



Biophilic Design

I will briefly introduce the concept, features and characteristics of biophilic design as these form the foundation of the following design development.

Biophilic design, as described by S. R. Kellert, tries to achieve direct, indirect and symbolic contact between humans and nature in the built environment.

It is the answer to the second thesis challenge, how nature's positive influence on humanity can be consciously applied in architecture.

Common features of biophilic design identified by S. R. Kellert :

- Natural lighting
- Natural ventilation
- Natural materials
- Natural and indigenous vegetation
- Ecological landscape design
- Open space
- Water
- Views and vistas of nature
- Shapes and forms that mimic organic forms
- Vistas characterized by refuge and prospect
- Natural features that evoke mystery, exploration, and enticement
- Natural features characterized by Order and complexity
- Natural rhythms
- Natural processes and change
- Aesthetic and recreational values of nature
- Informational and intellectual values of nature
- Emotional and spiritual values of nature

Biophilic Design Guidelines /Principles:

- Connecting the interior with the outdoors
- Windows become doors
- Attention to views
- Daylighting strategies / sunlight
- Fresh air / breezeways / passive ventilation
- Natural comfort
- Design of outdoor spaces / activities
- Circadian regulation
- Chronobiological (seasonal) considerations
- Climate
- Sounds
- Smells
- Providing habitat for Life
- Spaciousness and refuge
- Organic forms
- Water features (exterior and interior)

Biophilic Landscape Design Guidelines:

- Open space around buildings
- Maintaining existing trees/native landscapes
- Pleasing natural settings/plantings
- Pathways through naturalized landscape areas
- Replacing impervious surfaces with native plantings
- Living walls on building exteriors⁵⁰



The following table can be seen as a more detailed set of guiding principles to biophilic architectural design.

Biophilic design characteristics:

Key Dimensions	Attributes and Qualities
Prospect (ability to see into the distance)	• Brightness in the field of view (windows, bright walls). • Visual distance • Ability to get to a distant point for a better view. • Horizon/Sky imagery (sun, distant mountains, clouds) • Strategic viewing locations • View corridors
Refuge (sense of enclosure or shelter)	• Canopy effect (lowered ceilings, screening, branch like forms overhead) • Variation in light levels (darkness suggests refuge) • Enclosing surfaces (walls, partitions, screens) • Penetrable barriers and surfaces for views out
Water (indoors or in view)	• Glimmering or reflective surface (suggests clean water) • Moving water (also suggests clean, aerated water) • Symbolic forms of water
Biodiversity	• Varied vegetation indoors and out (large trees, plants, flowers) • Windows designed and placed to incorporate nature views • Outdoor natural areas with rich vegetation and animals
Sensory Variability	• Changes and variability in environmental color, temperature, air movement, textures, and light over time and space
Biomimicry	• Design derived from nature • Use of natural patterns, forms and textures • Fractal characteristics (self similarity at different levels of scale with random variations in key features, rather than exact repetition)
A Sense of Playfulness	• Incorporation of décor, artifacts, objects, spaces whose primary purpose is to delight, surprise and amuse
Enticement	• Discovered complexity • Information richness that encourages explanation • Curvilinear surfaces that gradually open information to view

Judith Heerwagen, Ph.D., and Betty Hase, IIDA, ASID Building Biophilia: Connecting People to Nature in Building Design, in Environmental Design + Construction March 8, 2001

Prospect	Refuge	Water	Biodiversity	Sensory Variability	Biomimicry	A Sense of Playfulness	Enticement
							



Because biophilic features tap into inherent human affinities they are often experienced in ways people hardly recognize. Biophilia directly confronts the issue of aesthetics and our evolved sense of beauty. Incorporating this natural sense of beauty into our buildings has the ability to enhance people's physical and mental well-being through positive connections to the natural environment.

Biophilic design can be fostered by a number of low tech, organic design elements such as natural lighting, natural ventilation, natural materials, biomimicry, views and prospects of nature, but in no way does it exclude the incorporation of high tech (low environmental impact) design features.

Thorncrown Chapel, located in Eureka Spings, designed by architect E. Fay Jones was the first 'biophilic' building I visited by chance, when I was 16. To this day I vividly remember the impression it had on me. Unlike any other church I have been in, Thorncrown chapel had the ability to truly move me.



1.5 Case Studies

The third thesis challenge, how the idea of an intimate relationship with nature can be conveyed in architectural design, I chose to illustrate with the use of architectural examples which in my opinion successfully convey this idea.

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3. Wingardhs Mill House
4. Nakashima studio/ Miguren museum
5. Alden B. Dow, Dow House
6. Priests' living quarters at Reigenkou-ji

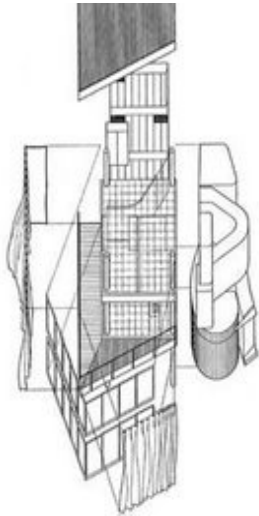


1. Shigeru Ban, Curtain Wall House

Where	Itabashi, Tokyo, Japan
Who	Shigeru Ban
When	1995
Size	179 square meters



Term	Architectural elements
Naturalistic	- Daylighting strategy - Natural materials - Natural cross ventilation - Large Balcony - Sliding doors
Humanistic	Large open entrance
Moralistic	Lighting strategy
Aesthetic	- Attention to views - Sliding doors - Balcony - Curtains (make air movement visible)
Symbolic	'Attention design'
Ecologicistic-scientific	Viewing platform
Utilitarian	Solar orientation
Negativistic	Extreme exposure
Dominionistic	Complete site paving



- The Curtain Wall House is Shigeru Ban's contemporary, steel-frame interpretation of traditional Japanese-style home.
- spacious lofty feel can be attributed to the open facades and the large deck
- 'Attention design' as the outward exposure does the opposite of traditional Japanese style courtyard house
- The double curtain wall creates a cocoon like environment and permits the residents to control temperature, light and privacy.

► The house is a wonderful interpretation of classical Japanese building principles because the curtains allow the house to be one with its surroundings. I am not convinced of the ground floor studio and parking garage design. The latter feels particularly tacked on as well as the staircase and utility rooms which to my disappointment appear as separate building components.

2. The Bloedel Reserve Japanese (western style)
Teahouse

Where	Midland, Michigan, USA
Who	Alden B. Dow
When	1933
Size	13 acre estate



Term	Architectural elements
Naturalistic	• Natural ecotone color palette, • self finishing materials, • daylighting strategies, • ntrl. cross ventilation, • accessible green spaces, • deciduous trees as shading elements, • porch, • water features, • building close to/on water, • sliding doors
Humanistic	• Human scale, • attention/ framing of existing trees, • communal in and outdoor spaces, • benches, • welcoming entrance, • water features, • communal gardens
Moralistic	• Teahouse, • reflection pond, • waterfall, • houses built adjacent to water, • light wells,
Aesthetic	• Water features to attract animals, attention to view corridors, • sliding doors, • porch, • borrowed scenery
Symbolic	• Natl. playground, • places for conversation/ communal exchange, • rare plant species, • 'attention design'
Ecologicistic-scientific	• Viewing platform • benches • pathways
Utilitarian	• Cultivation of useful trees, herbs and plants, • natural materials • Treecovered benches, • solar orientation, • hedges,
Negativistic	• trees as ntl. Shading devices, • wild, dark spaces
Dominionistic	• stone (zen) garden • pervious paving



- Intended to be a place where people may find refreshment and tranquility in the presence of nature.
- 'Attention Design'- The Guest house combines design concepts of a Japanese Teahouse with elements reflective of the indigenous Native American "Long House".
- 200 foot long reflection pool in the forest
- Japanese Garden was selected as one of the top five Japanese gardens out of some 300 Gardens in the United States
- Mr. Bloedel was quite conservative in his use of architectural features:

"Architectural features such as gazebos, walls, pavilions, fountains, ornamental lighting, grand staircases, parterres, sculptures, etc. should be used sparingly if at all. Where used they should be compatible with their surroundings, particularly hard to do in the natural areas); they should be subsidiary to the plants and trees- not dominate these or be distractions."⁵³

- *Ethical convictions of Prentice Bloedel:*

"Man is not set apart from the rest of nature- he is just a member of that incredibly diverse population of the universe, a member that nature can do without but who cannot do without nature. One realizes that we humans are trustees in this world, that our power should be exercised in this context."⁵⁴

► The sharp contrast of the meticulously controlled and tended to Japanese garden, reflection pond and parkscape to the wild, natural, uncontrolled, rich woodlands stirred up a wild array of emotions within me upon my visit to the reserve. The western style teahouse was quite spacious, though I didn't like the restricted layout on the shorter ends. The unique interior furniture were designed by George Nakashima and accomplish a refined Japanese feel. Paul Hayden Kirk's idea to incorporate the glass atrium into the peak of the roof was quite ingenious because it opens the interior up to the sky- marvelous!



3. Wingardhs Mill House

Where	Västra Karup, Sweden
Who	Wingardh



Term	Architectural elements
Naturalistic	• Natural ecotone color palette, • self finishing materials, • daylighting strategies, • ntrl. cross ventilation, • accessible green spaces, • exposed storm water retention, • deciduous trees as shading elements, • porch • covered walkways • water features • building close to/on water, • biomimic pattern design, • sliding doors
Humanistic	• Human scale, • attention/ framing of existing trees, communal in and outdoor spaces, benches, • water features, • garden
Moralistic	• reflection pond, • houses built adjacent/on water, • light wells
Aesthetic	• Water features, • attention to view corridors, • sliding doors, • porches, • borrowed scenery
Symbolic	• labyrinth like walkway
Ecologicistic-scientific	• Porch • benches, • pathways
Utilitarian	• rainwater collection, • natural materials • treecovered benches, • hedges, • rock walls
Negativistic	• trees as ntl. Shading devices, • covered walkways, • below ground, • dark spaces
Dominionistic	• pool



- The Mill house is a small guest house and sauna
- Due to the insufficient depth of the creek a small pool was constructed adjacent to the sauna to allow for the Swedish ritual to cool off after the sauna
- The exposed construction demanded excellent carpentry

“It promotes the atmosphere of a Zen master’s tea house.”⁵⁵

► I immediately fell in love with the meticulous attention paid to all the details comprising the surroundings of this snug little Swedish bath house. I love the refined simplistic approach, craftsmanship and the sensual attention which was paid to the material selection. The Zen spirit resonates throughout.



4. Nakashima studio/ Miguren museum

Where	Historic Bucks County, Washington,USA
Who	Katsuharu Nakashima
When	1965



Panoramic South view Miguren Museum (left), Cloister (right), completed 1967



Panoramic view west wall with Ben Shahn mosaic.

Term	Architectural elements
Naturalistic	• Natural ecotone color palette, • self finishing materials, • daylighting strategies, • ntrl. cross ventilation, • accessible green spaces, • courtyard strategies, • deciduous trees as shading elements, • porches, • covered walkways, • water features, • building close to/on water, • biomimic pattern design • sliding doors
Humanistic	• Human scale, • attention/ framing of existing trees, shared living spaces, • communal in and outdoor spaces, , benches, • water features
Moralistic	• pond, • houses built adjacent/on water,

Aesthetic	• Water features, • attention to view corridors, • sliding doors, • porches,
Symbolic	• places for conversation/communal exchange, • 'attention design' -Hyperbolic Paraboloid shell roof construction
Ecologicistic-scientific	• Viewing platforms, • benches, • pathways,
Utilitarian	• natural materials • solar orientation, • rock walls
Negativistic	• trees as ntl. Shading devices, covered walkways, • dark spaces
Dominionistic	• Paraboloid shell roof

- The Cloister guest rooms were a manifestation of Nakashima's devotion to the monastic tradition.
- The roof of the Minguren Museum is a plywood Hyperbolic Paraboloid shell; illustrating Katsuharu Nakashima's skill and fascination with thin-shell construction.
- George Nakashima, Katsuharu Nakashima's son reached fame status in America with his unique, natural and sophisticated wood carpentry style. The respect for nature and the material sensibility echoed in all his designs becomes apparent in his quote:

"A tree is our most intimate contact with nature."⁵⁶

► The Miguren museum perfectly portrays the love and respect Katsuharu Nakashima carried for his home country- Japan. He apparently followed some aspects of the Sakuteiki when he chose the site by the location of the guardian stone. The architecture is his unconventional and liberated interpretation of Japanese building principles which encompass the traditionally open floor plan. The addition of guestrooms to keep alive the monastic tradition is a good insight into Nakashima's personal philosophy, offering an open house and heart to anyone. The studio today is run by his daughter who continues in the family tradition and produces splendid wood workings. As the initial design set out to represent mural works it is hard to say how flexible the design was in incorporating the mural into the structure. Personally I believe the mural- west wall takes away from the overall natural feel as it doesn't speak the same language in its materiality and geometry.

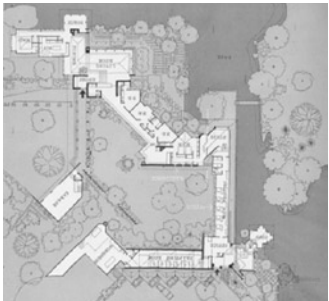


5. Alden B. Dow, Dow House

Where	Midland, Michigan, USA
Who	Alden B. Dow
When	1933
Size	13 acre estate



Term	Architectural elements
Naturalistic	• Natural ecotone color palette, daylighting strategies, • ntrl. cross ventilation, • exposed stormwater retention • accessible green spaces, • courtyard strategies, • deciduous trees as shading elements, • porches, • covered walkways, • water features, • building close to/on water, • biomimic pattern design,
Humanistic	• Human scale, • attention/ framing of existing trees, shared living /work space • communal in and outdoor spaces, , welcoming entrance, • water features, • communal gardens
Moralistic	• reflection pond, • houses built adjacent/on water, • light wells
Aesthetic	• Water features, • attention to view corridors, • borrowed scenery
Symbolic	• 'attention design'
Ecologistic-scientific	• Viewing platform • pathways
Utilitarian	• natural materials • solar orientation
Negativistic	• trees as ntl. shading devices, • covered walkways, • walls, • below ground, • dark spaces
Dominionistic	• block unit system



- Inspired by nature, the melding of color, textures, form and light.
- The Home and Studio personifies Dow's idea that gardens never end and buildings never begin.
- Thirteen acres of magnificent gardens, laid out and built for Mr. Dow's father, Herbert, by a Japanese Zen gardener in the 1930's.
- It integrates the best elements of nature with the remarkable visions of man-made ingenuity.

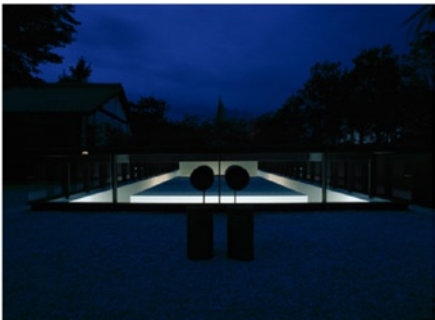
“A thing of quality must have what I call humility. By this I mean the ability to give and take gracefully. It seems to be a combination of justice, respect and love. A building that has humility must contribute something to the land it sits on and the land in turn must contribute to the building.”⁵⁷

► The way the house merges with the surrounding pond fascinates me and I can easily believe that Alden Dow sold each project to the client simply by presenting it in the self designed space directly overlooking the water. The incorporation and design reference to Japanese elements is evident throughout and the way he directed the studio growth supports the informal, random and additive, classical Japanese *sukiya* planning approach. The spaces are obviously directed out from man towards the exterior landscape.⁵⁸ The two things I am not particularly fond of are his block unit system which in some places feels sterile, unnatural and unnecessary and his layout of the interior walls in the central space.



6. Priests' living quarters at Reigenkou-ji

Where	Reigenkou-ji, Kyoto, Japan
Who	Takashi Yamaguchi and associates
When	ca. 2005



Term	Architectural elements
Naturalistic	• daylighting strategies, • accessible green spaces • courtyard strategy • deciduous trees as shading elements, sliding doors
Humanistic	• Human scale • communal garden
Moralistic	• Symbolic reflection pond • Building representative of water • light wells • elements for noise control
Aesthetic	• attention to view corridors • sliding doors • borrowed scenery
Symbolic	• 'attention design' modern approach- underground glass temple
Ecologicistic-scientific	--
Utilitarian	--
Negativistic	• trees as ntl. Shading devices • walls • below ground • dark spaces
Dominionistic	• stone (zen) garden

- The triple glazed blue water like glass box is a visual metaphor for water, one of the basic elements in traditional Japanese gardens.
- Inside the subterranean white concrete box are two levels of offices, living and exhibition spaces.
- A void within a void lit by a skywell - the physical interpretation of a Zen koan, or puzzle.



“A garden transformed into Architecture.”

► Without a visit it is hard to comment on such an illusive structure which is hidden to the eye as it is mostly underground. The reason I have incorporated it here is because of the mannerist interpretation of a single, pristine idea into a metaphorical form. It has a different take to the merging of man-made construction and nature by mimicking the element of water.



Case Study Summary

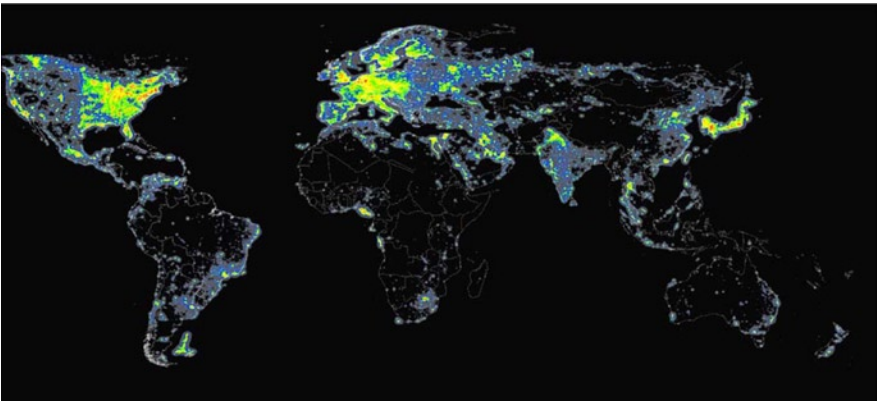
Each of these projects not only varies in location, scale and age, but they show that there are different possibilities to achieve an intimate relationship between the built environment and nature. Addressing one function does not have to exclude another and they often overlap. The ideal of addressing all functions may not always be possible, but the design of the Kyoto Art in Nature Habitat will try to do just that.



World context: Settlement Blueprint

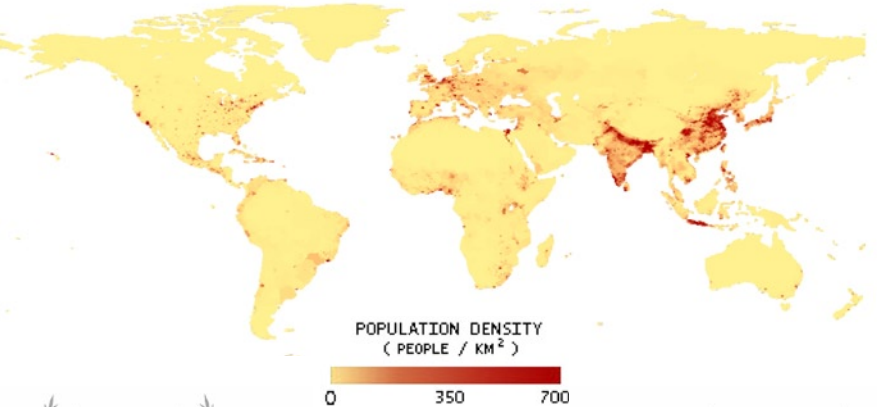
From space it is possible to see our ‘human footprint,’ outlined by the lights of urbanization at night. Satellite technology has provided us a synoptic view of the globe and from this we can get an explicit idea of where the human-dominated areas are, especially with respect to cities. These global maps help us measure the spatial extent of urbanization.

The following is a world map of global light pollution as seen from space which shows artificial city lights shining into the night sky. These are not the most densely populated areas but they are a good indication of industrialization and wealth distribution mostly focused in the west with Japan being the exception. Japan is no longer following in the footsteps of the western model but it has progressed to one of the most advanced economies in the world and thereby setting the standard and example for the future development of the east.



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The second map stands in sharp contrast to the first one, as it shows the current population density across the world. South Eastern Asia's much higher population density is clearly outlined in red. Comparing the two, the opposing wealth and population density can give us good clues to the changes further industrialization will have on the world, particularly in Asia. As Japan is the most industrialized country in the east, as seen on the light pollution map, it can be seen as setting the example for how the rest of Asia will progress



0 350 700

The way we direct the future growth of rural land areas consumed by urbanization will have major implications on our quality of life and that of future generations.

In this thesis, I am reinterpreting traditional Japanese building traditions to show a model of development which is rooted in Japan's unique culture and therefore respectful and conscious of the natural environment in the inevitable further advance of urban development.

The Major Metropolitan Area - Keihanshin

Once a city sprawls far enough to reach another city with a combined total population in excess of 10 million people, the region can be called a metropolitan area, consisting of a cluster of urban areas.⁶³ Most of the largest, densely-populated cities today are located in southern and eastern Asia. The Keihanshin Major Metropolitan Area is Japan's second largest and the world's tenth largest metropolitan area with a population of 17,280,000 over an area of 11,169 km². It consists of Osaka, Kobe and Kyoto.



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"The Japanese approach to environmental policy has been technological. Therefore, to Japan, global environmental problems have been so called "brown" issues; industrial pollution, energy use, waste use etc. The so called "green" issues; like species and habitat conservation, have not been priorities."⁶²

The site I have chosen for this project lies in the north-eastern outskirts of this urban agglomeration, in Kyoto.



2.2 Site in the Historical context

Kyoto, with its hundreds of temples and gardens, was Japan's imperial capital between 794 and 1868, and remains to this day the cultural center and treasure house of Japan.

The name Kyoto was first used in 1100, before it was called Heian-kyō which translates to “Capital of Peace and Tranquility.” Kyoto is located in the south of Honshu, one of the four largest islands of Japan, amongst thousands of smaller islands. About 75% of the country consists of mountain ranges.

Kyoto's location was chosen after the Chinese geomantic principles following the model of *Ch'ang-an*, China's Capital during the *Sui*- and *T'ang*-Dynasties. Japan incorporated these Chinese geomantic principles to bring luck for its citizens after the devastation caused by catastrophes in *Nagaoka*, the former capital which were believed to be due to its poor choice in location. *Kamogawa*, the main river dissecting Kyoto, originally ran diagonally through the basin. This course was altered in accordance with geomantic and town planning practices.

In A.D. 794 the new city and capital was established on a grid pattern of streets in the center of a basin, bisected by a long north-south avenue, leading to the emperor's palace. The city's general layout to this day remains intact even though much of it was destroyed in the latter part of the nineteenth century. In the Meiji period (1869-1912) the capital was moved to Tokyo, and Kyoto underwent several modernization efforts, one of which was the construction of the Biwako Sosui, a channel to draw water from Japan's largest freshwater lake, lake Biwa, I chose the Kyoto incline which leads up to the beginning of the canal for implementation of this project.

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京都市



Kyoto grid layout with the four guardian gods (shijin)



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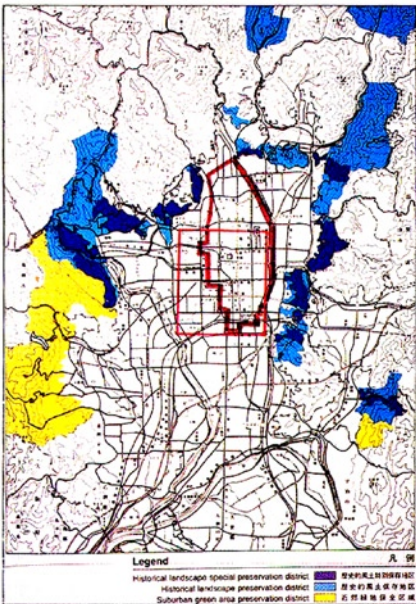
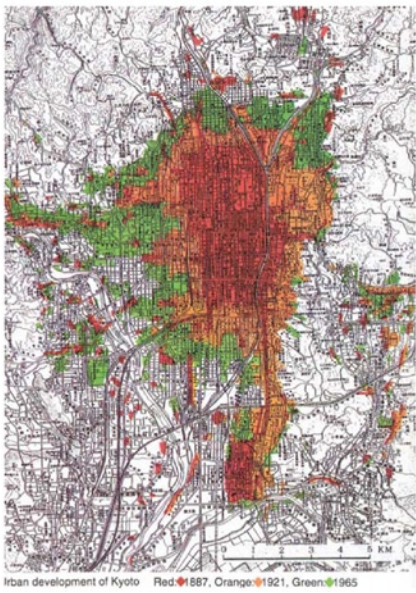
Kyoto saw its next major changes after the Pacific War (World War II) into the mid 1950's. Planning procedures were developed for the cities which had seen the worst destruction following the war and were directly applied to the historic, intact city of Kyoto. This spirit of modernization has left Kyoto with changes to much of its traditional environment, often dismissing the existing culture and environment, which had developed over the centuries. Fortunately, various traditional parts of the city have been able to survive intact in terms of their historical relevance. This fact is important because it is this environmental history which characterizes that particular area, region and nation. Masahumi Yamasaki defines this culturally impregnated environment as one in which the spiritual workings of people are given

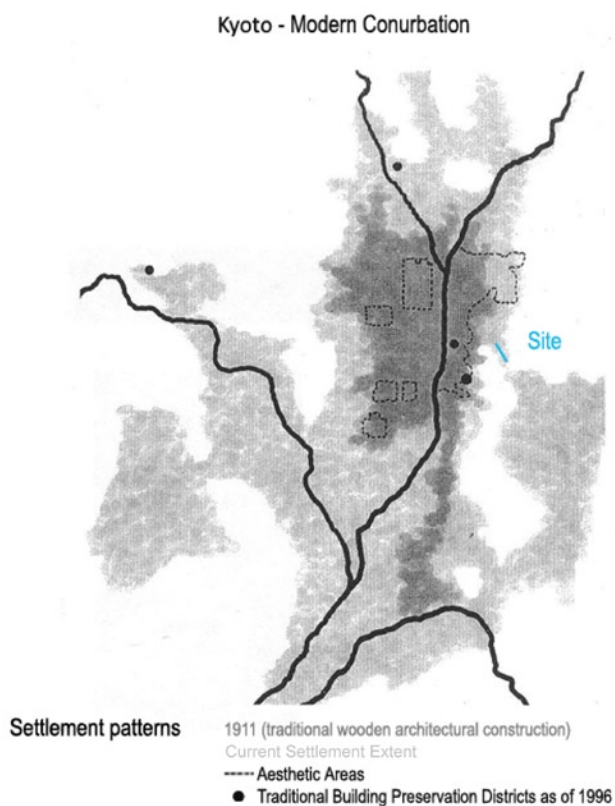
The people of Kyoto would visit places of interest and beauty in close vicinity to the city during particular seasons and special occasions. Festivals and events at temples and shrines were clearly orchestrated to provide the citizens with ample reason and opportunities to enjoy the wealth of the natural environment to be found in the area.

Kyoto's appeal to this day lies in part with its setting; where the built up area is surrounded by tracts of natural landscape. The surrounding areas offered what the city itself was often lacking due to the dense urban fabric.

“The environs of Kyoto should therefore perhaps be recognized as an environment in which nature and culture have melded and, just in the same way that a house has a garden, it would surely be reasonable to call these areas around the old capital a “city garden” of considerable scale.”⁶⁷

Kyoto and its surrounding cities have since been subject to rapid growth patterns are now all part of the expansive densely populated urban environment, *Keihanshin*.





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The mountains surrounding Kyoto reveal their white granite, when weathered and broken down to sand. This sand then gets carried into the Kyoto basin by streams and rivers. The dry landscape gardens (*Karesansui*) make use of this beautiful texture by combining it with moss, rocks, clipped flowering shrubs and trees. The raking of the white sand then reveals patterns, expressive of the flow of water or the surface of the sea. In this way the *Karesansui* are able to convey sceneries such as ravines, mountains, streams, waterfalls, coastlines seas and islands intended to be quietly appreciated from a veranda or a room indoors.



Vicinity of Ginkakuji in 1911

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Progress of urban development today
(Ginkaku-ji on the left with Karesansui)

2.3 Site analysis

The site I have chosen is an incline, nestled against the forested slopes of Kyoto's eastern hills in the Higashiya-ma district. This eastern city edge is an area of gentle hills where many of Kyoto's oldest and most famous temples and shrines are concentrated.

The sites location is approximately halfway between the UNESCO World Heritage sites of Ginkaku-ji Temple (Jisho - ji)—to the north east and Kiyomizu-dera Temple to its south-west. Kyoto's outskirts are called *rakugai* (where the city meets the mountains) and in these areas it is still possible to experience the traditional Japanese townscape feel.



Kyoto City dense urban development



Urban Edge (*rakugai*) with site



Natural Landscape Edge

Path of Philosophy (哲学の道 = Tetsugaku-no-michi path)

The site is less than a five minute walk from Nanzen-ji, a powerful temple established over 700 years ago, which was once the center of Zen culture in Kyoto and to this day remains home to the Rinzaï sect of Zen Buddhism.

The so-called path of philosophy is a pleasant walk along a small canal in the Higashiyama district of Kyoto. The path starts about five minutes from the lower end of the site, near Nanzen-ji temple (behind the Eikan-do Hall) and ends about 100m from the Ginkakuji (Silver Pavillion). The stroll along the path takes approximately 30 minutes and is very popular during the cherry blossom and autumn leaves season.

Site Panoramics



Looking East from Westin Miako Rooftop (Site spans from lower left to red brick structure seen on the right)

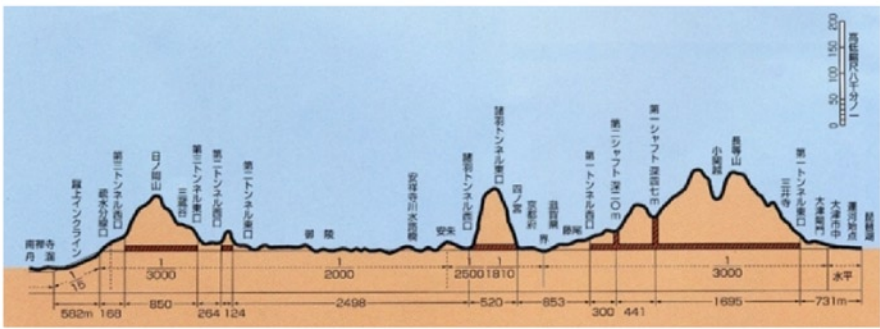




Biwako Sosui canal

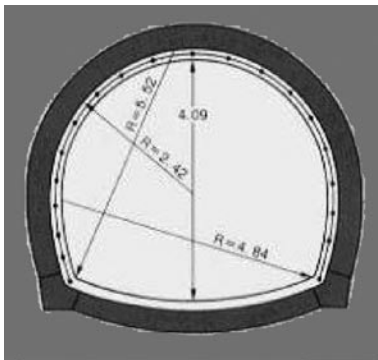
The 11.1 km Biwako Sosui canal runs from Lake Biwa, Japans largest lake to the center of Kyoto. It was conceived as a channel to supply Kyoto with drinking water, generate electricity to modernize the city's textile industry, provide water for fire fighting and irrigation, and, finally, to make transport between Lake Biwa and Kyoto easier.

Rice, the main food source for the area was transported on the canal from Shiga and Fukui Prefectures to Kyoto via flat bottomed boats. The Biwako Sosui Canal construction started in June 1885. The canal starts from Lake Biwa and ends in Higashijima, the eastern part of Kyoto. The most difficult part of the canal construction was building three tunnels through the mountains - the longest measuring 2.4 kilometers.



Biwako Canal section with tunnels indicated in dark brown. The 502 meter stretch of the Keage incline is seen on the left.

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Canal cross section

The construction of all the canals was finally completed in September 1894 and for the first time in the history of large-scale construction in Japan, the project had not been entrusted to foreign engineers, but was instead entirely constructed by the Japanese. The person behind the design and construction of this remarkable feat was the freshly graduated engineer Sakuro Tanabe, who was 21 years old at the time.⁷⁴

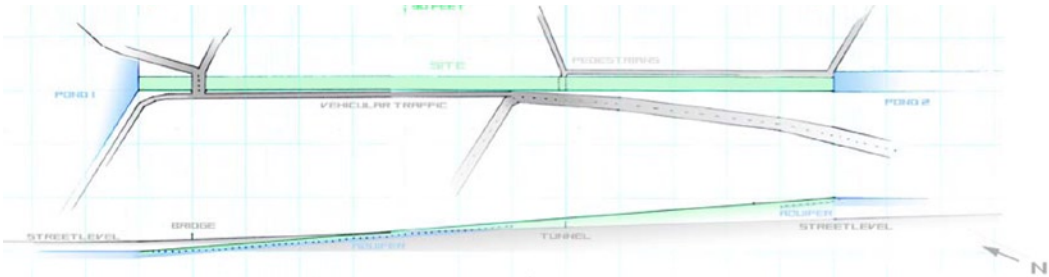
The Biwako-sosui canal was designated as a National Historical Site in 1996, representing the modern inheritance which shows the construction technology level of Japan in the Meiji era.

The canal played an important role in the rebirth of the modern Kyoto.

Lake Biwa Canal construction dates:

- 1885 June, construction start of the Lake Biwa canal under chief civil engineer Sakuro Tanabe
- 1890 Canal construction completion
- 1891 Keage Power station completion
- 1948 Incline operation halted due to the decline in waterway transportation
- 1972 formal opening of the Path of Philosophy
- 1977 restoration Keage boat lift
- 1983 Keage boat lift and Nanzenji elevated aqueduct are designated as cultural assets
- 1984 Path of Philosophy is registered as a cultural asset as a habitat for the Genji firefly (*Luciola cruciata*)
- 1989 opening of the Lake Biwa Canal Museum

- Site with: 30 feet
- Site length: 2112 ' (.4 miles)
- Elevation drop: 118 feet (36 meters)
- National Historical Site (designated in 1996)
- Historic landscape preservation district



Climate:

Spring: mild, month of rain in late
spring (approx. June 6th -July
19th)

Summer: hot and oppressively humid

Autumn: dry and warm

Winter: cold with snow but sunny

Implications to be considered in the architecture are therefore

- cross-ventilation,
- prevention against rot (rain season, humidity),
- covered walkways (rain season)
- heat source for the cold winter months



2.4 Program

Due to the cultural changes Japan is undergoing, many traditional art forms are vanishing as they can no longer provide a sufficient source of income.

"It is the introduction of the ever and all-prevailing spirit of commercialism which has done the most harm to Japanese art. When the whole population is given up to trade, it is difficult for the small voice of the art worker to be heard above the roar of the wheels of Mammon's car, as it heavily grinds along. Art patronage has ceased, and the artists and artisans find it impossible to resist the tempting offers of unscrupulous dealers who are content with the reproduction of traditional and conventional ideas, with as little invention, or even ingenuity in the matter of conception and workmanship, as might well be. And what is of special concern in this matter is the fact that the true artist, unwilling to make any concessions, finds it impossible to compete with factory work. Surely the artist, like every other workman is entitled to adequate remuneration for his labor. Under the present condition of things, the artist, forced to work as quickly and as cheaply as possible, cannot bring his individuality into play. He is obliged to comprise and transform his studio into an ordinary workshop."⁷⁵

Art, culture and nature in Japan are intimately linked.

As most Japanese today were brought up in urban environments, they are quickly losing the bond with their traditional culture. With this, their inherent connection and love for nature is at risk. It is hard for anyone to understand, value and preserve what one doesn't know. To help reverse this trend which I have observed during my time spent in Japan, I would like to provide a habitat

for artists to produce nature inspired artworks. The intent of the resulting artworks is to carry the spirit of nature into the buildings and homes of modern, urban residents to help reconnect them with nature. The Kyoto Art and Nature Habitat thus sets out to support artists to help reconnect art and culture in the context of nature.

By enhancing the features of the site, I believe that its value will increase and residents will be more inclined to preserve and protect the remaining, accessible natural areas in Kyoto's periphery.

Most of Kyoto's parks, temples and gardens have visitation opening times and charge fees for tourists as well as residents to enter. There is a need for recreational outdoor places which are free of charge and accessible throughout all hours of the day and night. This would offer residents and visitors to the city a tranquil atmosphere to counter their busy lifestyles.

As gardens were an integral part of buildings in the traditional Japanese city, Kyoto as one of Japan's few cities, not destroyed by war, appears to be the perfect setting to create a habitat, suited for the needs of artists, imbedded in the rich cultural and environmental context the city has to offer.

What the Kyoto Art in Nature Habitat ultimately sets out to do is to support the efforts of artists to produce nature inspired artwork in a natural environ-



ment. The benefit will be felt by a wider audience through the art works produced as well as through the public garden spaces, imbedded into the site. The Kyoto Art in Nature Habitat will a place for encountering various genres of art, as well as for the creation of the new culture through the revitalization of tradition developed in the city of Kyoto over its long history. This encounter should foster a cultural exchange and enrich the everyday life of citizens, to bring a real fertility to Kyoto.

Program Objectives

The Kyoto Art in Nature foundation seeks to facilitate artists to meet and inspire one another, and, also, provide local residents with opportunities to appreciate and gain further insights into the arts. The artist-in-residence program is designed to enable artists and researchers to explore innovative expressions in a cross-cultural environment. It will provide artists with support for residency, production, and presentation.

Program Activities

The Kyoto Art in Nature Artist-in-residence program will support artistic production, and offer a gallery space for the works to be exhibited.

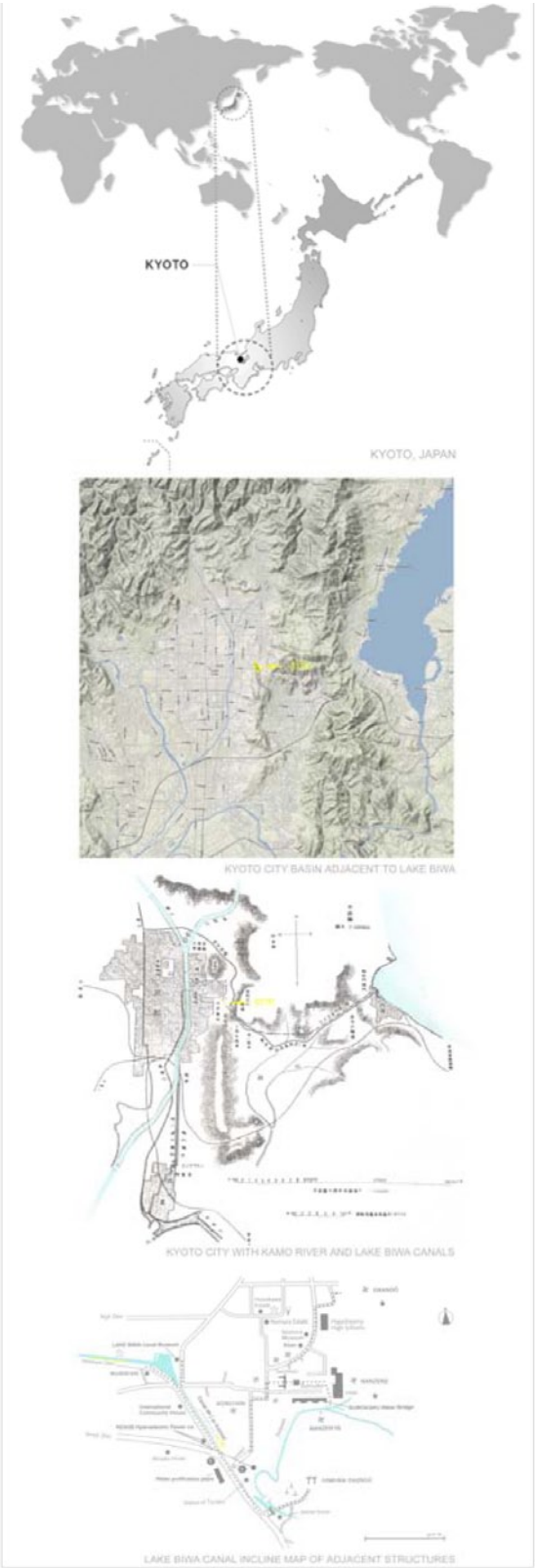
The activities of the Habitat will cover the following areas:

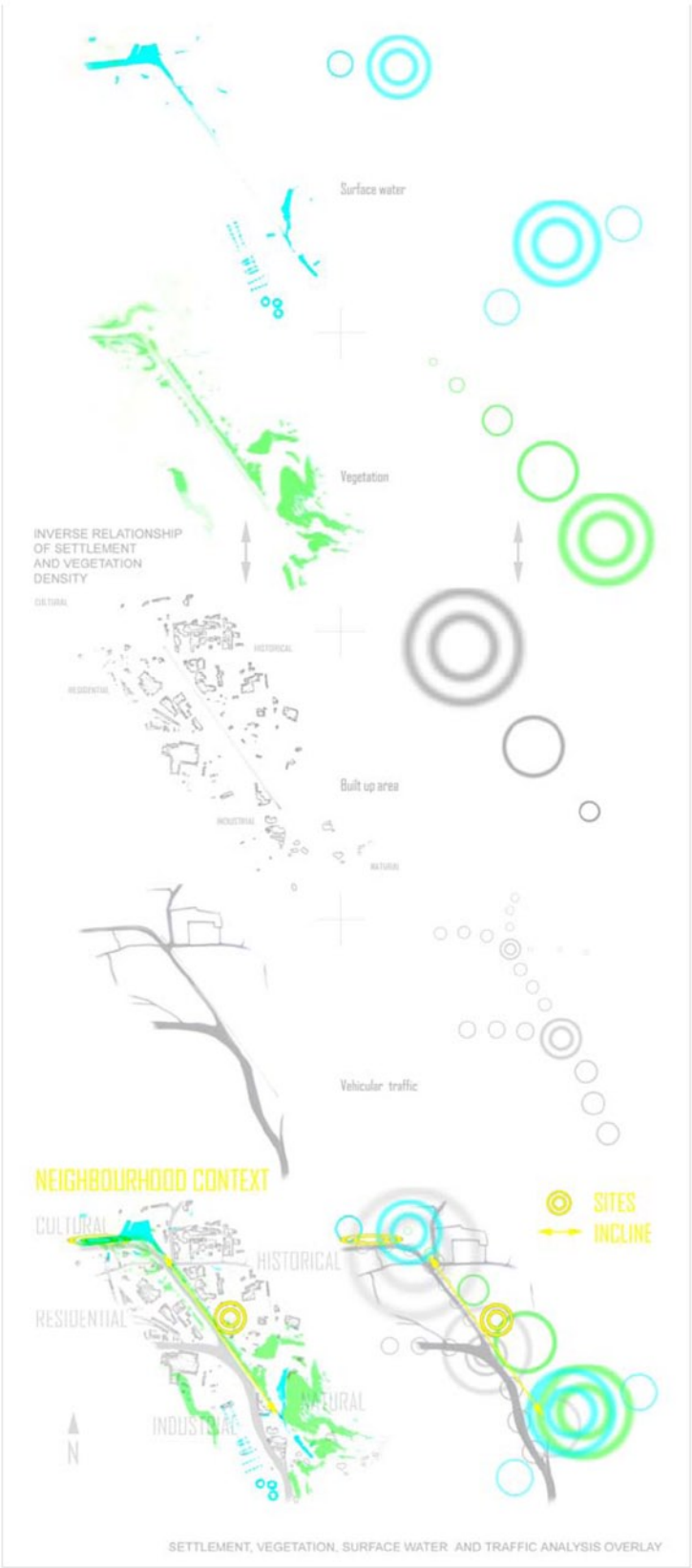
- To aid and support artists in providing an inspiring work environment in a natural setting.
- To afford the chance for communication among the artists of all nationalities and offer opportunities for communication between artists citizens.

By fulfilling these activities, the Habitat will aim to rejuvenate urban culture. The habitat will offer various "studio/living spaces" to artists who wish to undertake creative activities and seek to expand their avenues of artistic expression in Kyoto.

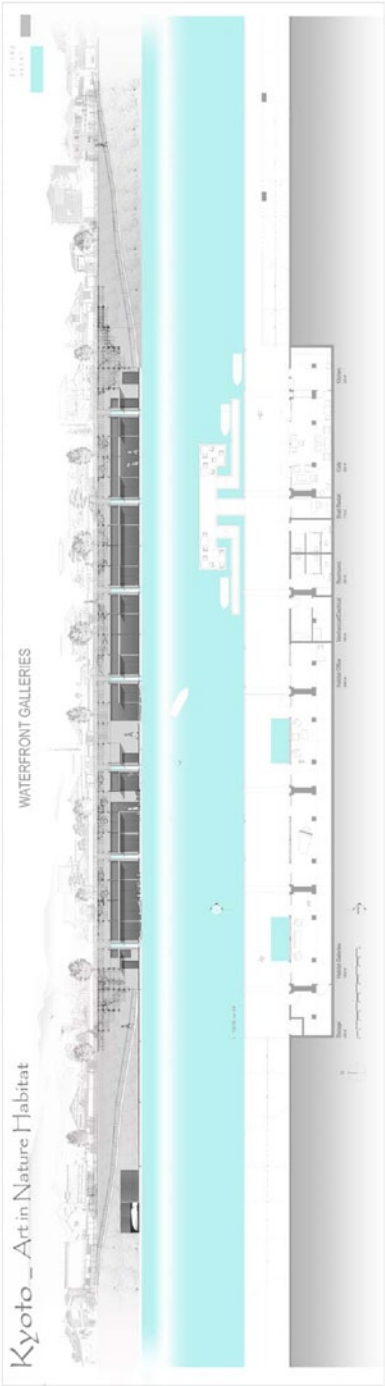


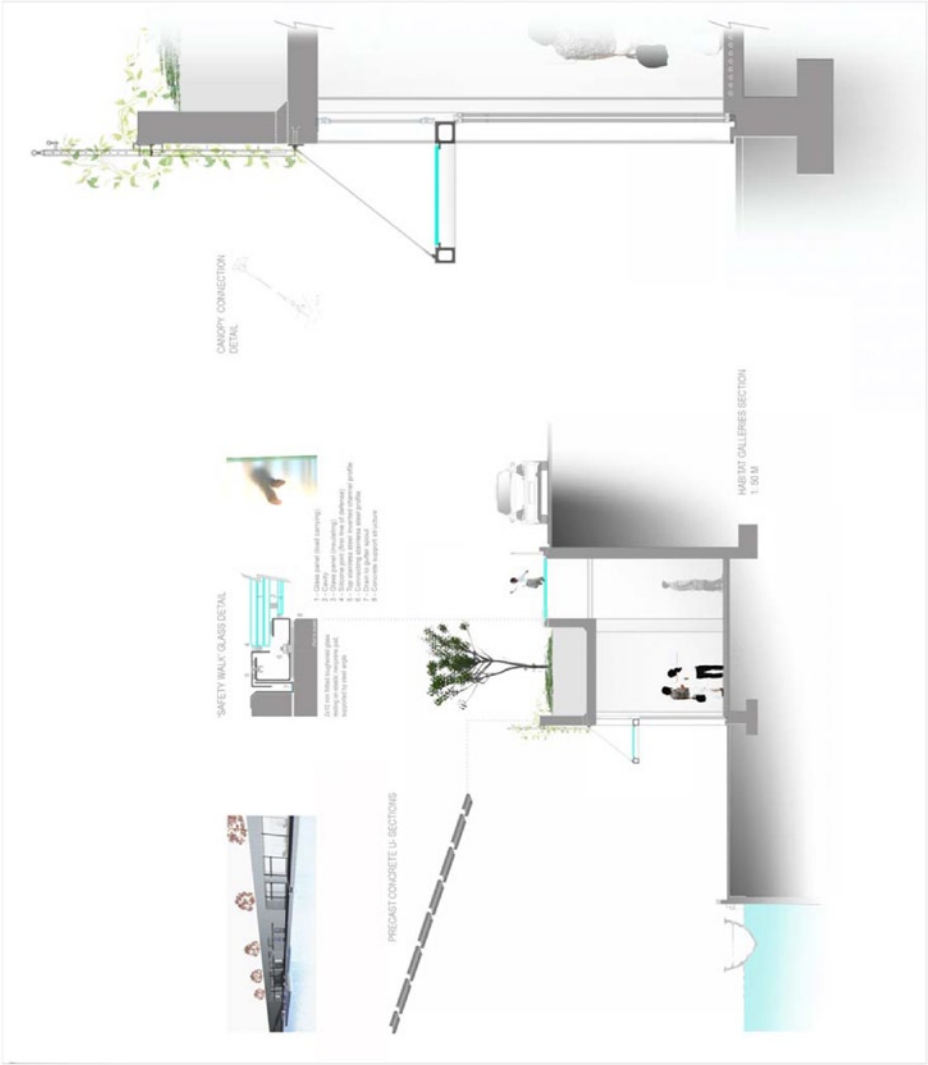
Site Analysis



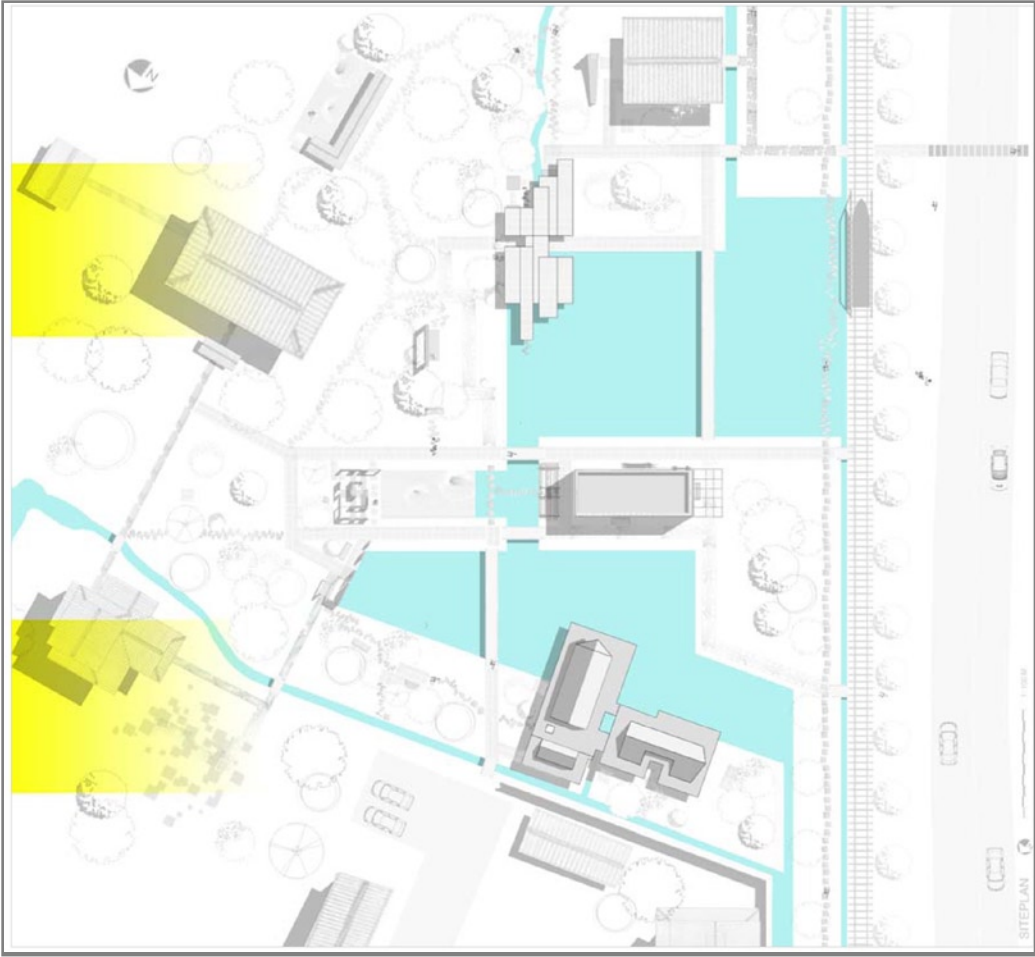


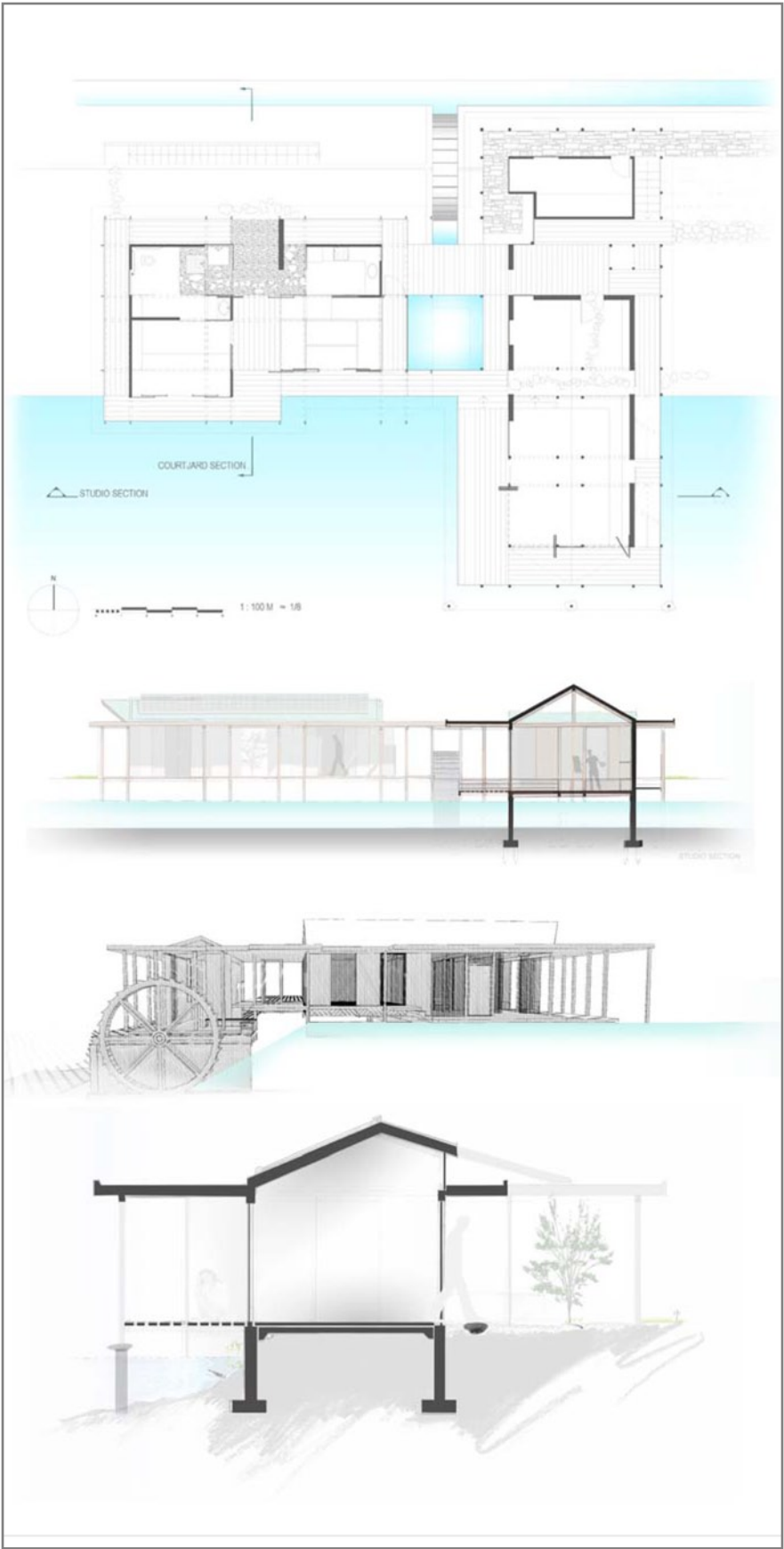


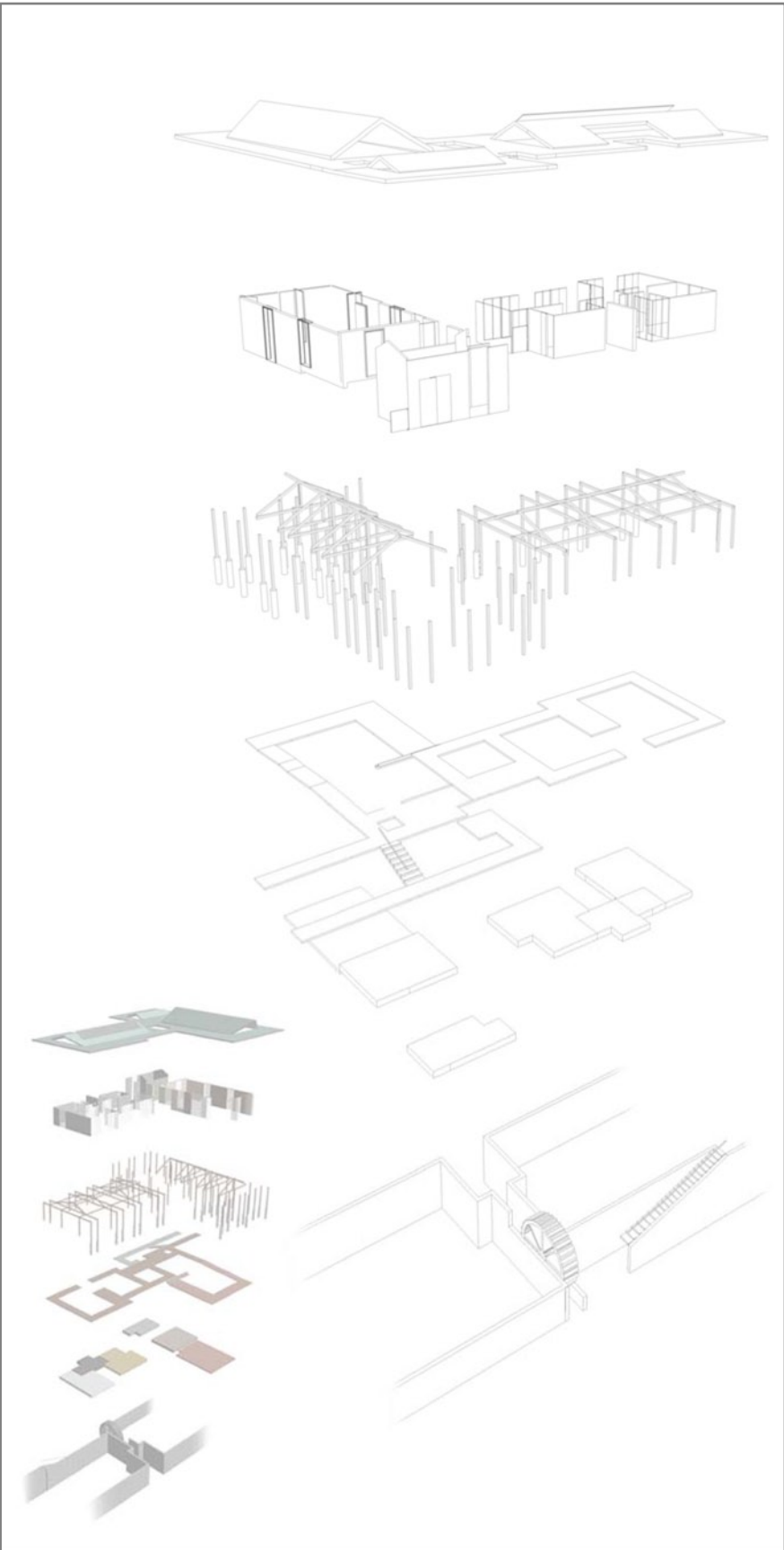


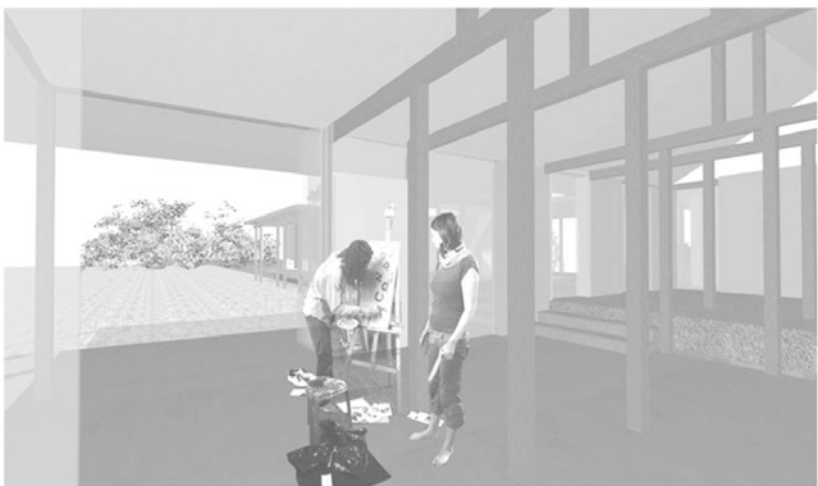
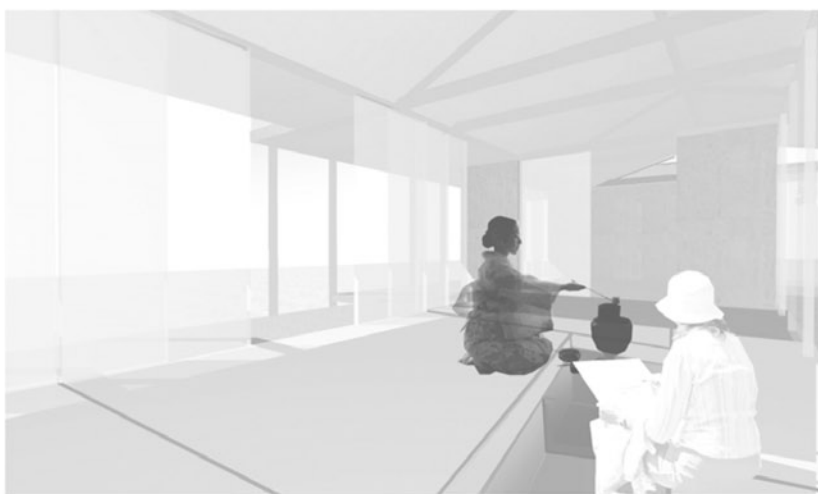


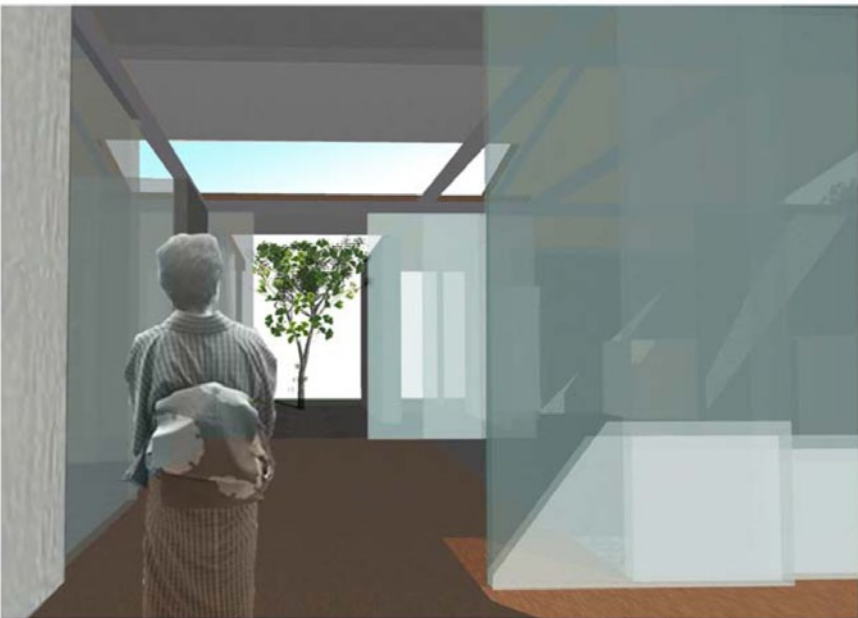
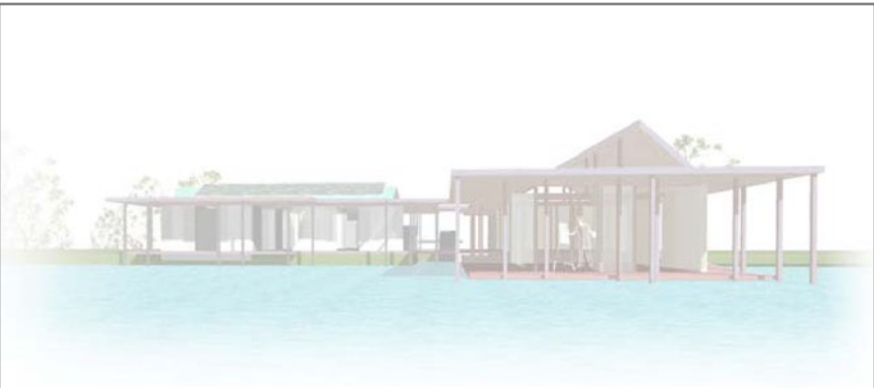




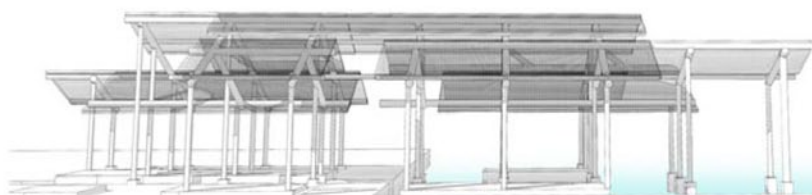
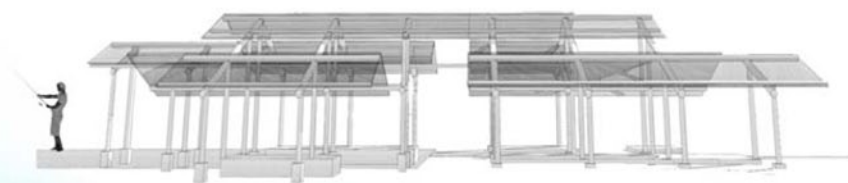
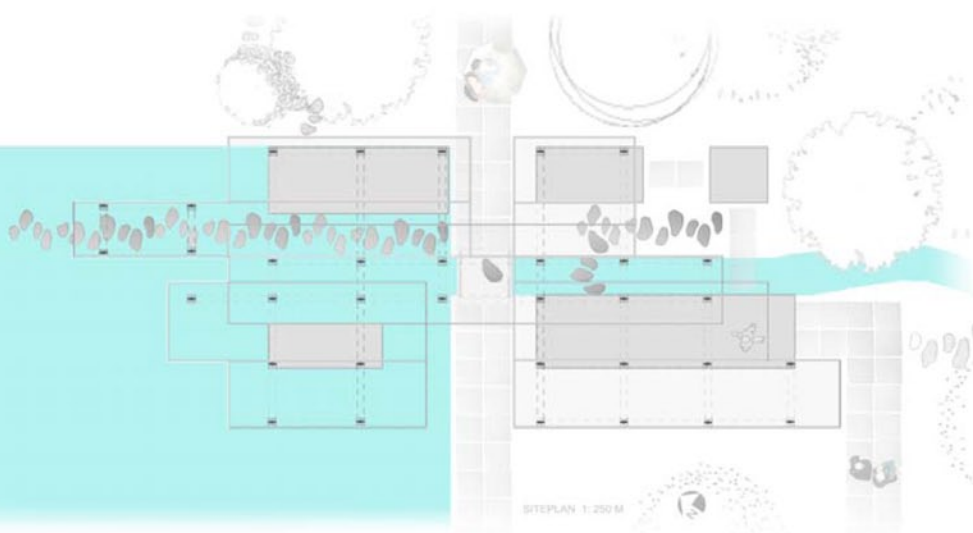
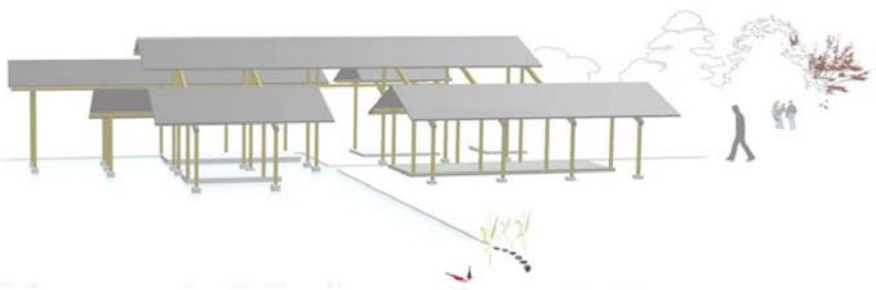








WESTERN VIEW







4.1 Conclusion

Inspired by Japanese building culture my quest has lead me full circle to Biophilic design principles which I believe lie at the core of classic Japanese architectural design.

The resulting design considerations, which I concluded emphasize aspects of the different biophilic functions, are by no means complete but can serve as means to a holistic biophilic design approach.

As with every project, site specifics should determine appropriate strategies and a transdisciplinary design process is crucial to truly successful biophilic design.

The research has lead me to believe that human identity and personal fulfillment are as Wilson and Kellert say dependent on our relationship to nature.

E. O. Wilson goes on to paint a vivid picture what will happen if we don't change in time.

The one process now going on that will take millions of years to correct is the loss of genetic and species diversity by the destruction of natural habitats. This is the folly our descendants are least likely to forgive us.⁷⁷

Biophilia may help us to understand how to create fundamentally better places, where Architecture is a reflection of our deep-seated respect for nature.

Biophilic Design recognizes that the line between indoors and outdoors must be rethought; that indoor rooms must communicate with outdoor rooms; that windows must become doors.⁷⁸

Nature holds the key to our aesthetic, intellectual, cognitive and even spiritual satisfaction.⁷⁶





After 11000 years of building to protect ourselves from the environment,
the delicate environment must now be protected from us.⁷⁹





Works Cited:

Ando, Tadao, and Richard Pare. *The Colours of Light*. Oxford Oxfordshire: Phaidon, 1996.

Brown, David et.al. *Sustainable Architecture White Papers*. New York: Earth Pledge Foundation, 2000.

Crowe, Norman. *Nature and the Idea of a Man-Made World*. Cambridge: MIT Press, 1995.

International Research Center for Japanese Studies, *Nature and Human-kind in the Age of Environmental Crisis, Ith, Symposium 6 1992*. Ith Research Center for Japanese Studies, Kyoto Japan, (The Biophilia Hypothesis, Aristotelian Echoes of the 'Good Life', Stephen R. Kellert. p 201-221)

Juniper, Andrew. *Wabi Sabi*. Boston: Tuttle Pub, 2003.

Kassler, Elizabeth. *Modern Gardens and the Landscape*. New York: Museum of Modern Art, 1984.

Kellert, Stephen et.al. *Biophilic Design*. City: US Green Building Council, 2008.

Louv, Richard. *Last Child in the Woods*. Chapel Hill: Algonquin Books, 2006.

Low, Nicholas. *The Green City*. New York: Routledge, 2005.

Maddex, Diane. *Alden B. Dow*. New York: W. W. Norton, 2007.

Nakashima, Mira. *Nature, Form & Spirit*. New York: H.N. Abrams, 2003.

Nakashima, George. *The Soul of a Tree*. Tokyo: Kodansha International, 1981.

Wilson, Edward. *Biophilia*. Cambridge: Harvard University Press, 1986.

Wilson, Edward. *Nature Revealed*. Baltimore: Johns Hopkins University Press, 2006.





Works Consulted:

- Menin, Sarah, and Flora Samuel. *Nature and Space*. New York: Routledge, 2002.
- David, Vera, and Heike Strelow. *Aesthetics of Ecology: Art in Environmental Design*. Boston: Birkhauser Boston, 2004.
- Jodidio, Philip. *Tadao Ando at Naoshima*. New York: Rizzoli, 2006.
- Jodidio, Philip. *Architecture: Nature*. City: Prestel Publishing, 2006.
- Jodidio, Philip. *Architecture: Art*. City: Prestel Publishing, 2005.
- Dougill, John. *Kyoto*. Oxford Oxfordshire: Oxford University Press, 2006.
- Fiévé, Nicolas, and Paul Waley. *Japanese Capitals in Historical Perspective*. London: RoutledgeCurzon, 2003.
- Heisig, James. *Philosophers of Nothingness*. Honolulu: University of Hawai'i Press, 2001.
- Isozaki, Arata, and Yasuhiro Ishimoto. *Katsura Villa*. New York: Rizzoli, 1987.
- Gebhard, David, and R. Schindler. *Schindler*. San Francisco: W. Stout Publishers, 1997.
- Goldsworthy, Andy et.al. *Andy Goldsworthy*. New York: Harry N. Abrams, Inc, 1990.
- Beltramini, Guido et.al. *Carlo Scarpa*. New York: Rizzoli, 2007.
- Scarpa, Carlo et.al. *Carlo Scarpa*. New York: Electa/Rizzoli, 1985.
- Heidegger, Martin et.al. *Mindfulness*. London: Continuum International Pub, 2006.
- Kellein, Thomas et.al. *Hiroshi Sugimoto: Time Exposed*. London: Thames and Hudson, 1995.
- Staff, Princeton. *Peter Zumthor Thinking Architect*Op**. City: Lars Muller, 1998.
- Zumthor, Peter. *Atmospheres*. City: Birkhauser (Princeton Architectural Press), 2006.
- Koschatzky, Walter et.al. *Friedensreich Hundertwasser*. New York: Rizzoli, 1986.
- Bader, Joerg et.al. *Architecture Without Shadow*. Barcelona: Polígrafa, 2001.
- Barkley, James. *Eames House*. City: Amer Vessel, 2001.
- Alexander, Christopher. *A New Theory of Urban Design*. Oxford Oxfordshire: Oxford University Press, 1987.
- Futagawa, Yukio, and Teiji Itoh. *The Elegant Japanese House*. City: New York, 1969.
- Reed, Peter. *Groundswell*. New York: Museum of Modern Art, 2005.
- Cline, Ann. *A Hut of One's Own*. Cambridge: MIT Press, 1997.



Scully, Vincent. *Architecture*. City: St Martins Pr, 1993.

Crowe, Norman, and Paul Laseau. *Visual Notes for Architects and Designers*. New York: Van Nostrand Reinhold, 1984.

Ando, Tadao et.al. *The Chichu Art Museum*. Ostfildern-Ruit: Hatje Cantz Publishers, 2005.

Hersey, Bob, and Claude Monet. *Monet's House at Giverny*. New York: Universe, 1999.

Clements, Jonathan. *The Moon in the Pines*. New York: Viking Studio, 2000.

Mascetti, Manuela. *A Box of Zen*. New York: Hyperion Books, 1996.

Zolbrod, Leon. *Haiku Painting*. Tokyo: Kodansha International, 1982.

Okakura, Kakuzo. *The Book of Tea*. City: Nuvision Publications, 2007.

Tanizaki, Junichiro et.al. *In Praise of Shadows*. New Haven: Leete's Island Books, 1977.

Erhard, Nancie. *Moral Habitat*. Albany: State University of New York Press, 2007.

S. Golany, Gideon. *Earth-Sheltered Habitat*. New York: Van Nostrand Reinhold, 1983.

72

Mcharg, Ian. *Design with Nature*. London: J. Wiley, 1995.

Kazuo, and. *What Is Japanese Architecture?*. City: Kodansha International (JPN), 1996.

Moore, Charles et.al. *The Poetics of Gardens*. Cambridge: MIT Press, 1988.

Odate, Toshio. *Making Shoji*. City: Linden Publishing, 2000.

Blaser, Werner et.al. *West Meets East*. Boston: Birkhauser, 1996.

Abram, David. *The Spell of the Sensuous*. New York: Pantheon Books, 1996.

Takei, Jiro, and Marc P. Keane. *Sakuteiki, Visions of the Japanese Garden*. Boston: Tuttle Pub, 2001.

Bring, Mitchell, and Josse Wayembergh. *Japanese Gardens*. New York: McGraw-Hill, 1981.

Blaser, Werner. *Japan: Dwelling Houses*. City: Verlag Niggili, Switzerland, 2005.

Alexander, Christopher. *The Timeless Way of Building*. Oxford Oxfordshire: Oxford University Press, 1979.

Buntrock, Dana. *Japanese Architecture as a Collaborative Process*. London: Spon Press, 2001.

Ishimoto, Yasuhiro, and Kenzo Tange. *Katsura; Tradition and Creation in Japanese Architecture*. New Haven: Yale University Press, 1972.



Futagawa, Yukio, and Teiji Ito. *The Classic Tradition in Japanese Architecture*. New York: Weatherhill, 1972.

Isozaki, Arata. *The Island Nation Aesthetic*. London: Academy Editions, 1996.

Blaser, Werne. *The Temple and the Teahouse in Japan*. City: Birkhauser (Architectural), 1988.

Alexander, Christopher et.al. *A Pattern Language*. Oxford Oxfordshire: Oxford University Press, 1977.

Ueda, Atsushi. *The Inner Harmony of the Japanese House*. City: Kodansha International (JPN), 1998.

Brown, Azby, and Joseph Cali. *The Japanese Dream House*. City: Kodansha International (JPN), 2001.

Mcquaid, Matilda. *Shigeru Ban*. Oxford Oxfordshire: Phaidon, 2003.

Ando, Tadao et.al. *Tadao Ando*. New York: Rizzoli, 1989.

Van, Arsdale, and Jeffrey Westman. *Shoji*. Tokyo: Kodansha International, 1988.

Peter, H.. *The Human Relationship with Nature*. Cambridge: The MIT Press, 2001.

Kahn, Peter, and Stephen Kellert. *Children and Nature*. Cambridge: MIT Press, 2002.

Morse, Edward. *Japanese Homes and Their Surroundings*. Rutland: C. E. Tuttle Co, 1972.

73

Stoller, Ezra. *Frank Lloyd Wright's Fallingwater*. New York: Princeton Architectural Press, 2000.

Konya, Allan. *Design Primer for Hot Climates*. London: Architectural Press, 1980.

Jr, Robert. *Fay Jones*. City: McGraw-Hill Professional, 2001.

Benyus, Janine. *Biomimicry*. New York: Morrow, 1998.

Engel, Heino. *Measure and Construction of the Japanese House*. Boston: C.E. Tuttle Co, 1985.

Brummett, William, and Alec Johnson. *Building Code Quick Reference Guide*. Belmont: Professional Publications, 1993.

Meech-Pekarik, Julia, and Julia Meech. *Frank Lloyd Wright and the Art of Japan*. New York: Harry N. Abrams, 2001.

Nippan, Books, and Process Architecture Editorial. *Shodo Suzuki: Landscape and Natural Harmony*. City: Books Nippan, 1997.

Fowler, Penny, and Frank Wright. *Frank Lloyd Wright*. Rohnert Park: Pomegranate, 2002.

Quetglas, Josep. *Der Gläserne Schrecken: Mies Van Der Rohes Pavillon in Barcelona*. Boston: Birkhauser, 2001.



Endnotes

¹<http://www.flickr.com/explore/>

² Low, Nicholas. *The Green City*. New York: Routledge, 2005, p 16-17

<http://www.prb.org/Articles/2007/UrbanPopToBecomeMajority.aspx>

³ Kassler, Elizabeth. *Modern Gardens and the Landscape*. New York: Museum of Modern Art, 1984.

⁴<http://www.flickr.com/photos/21054200@N07/2227571931/>

⁵ Crowe, Norman. *Nature and the Idea of a Man-Made World*. Cambridge: MIT Press, 1995. p 54.

⁶<http://www.rehau.com.sg/files/0000D00E.jpg>

⁷<http://www.flickr.com/explore/>

⁸http://en.wikipedia.org/wiki/Maslow's_hierarchy_of_needs

⁹ <http://aura0.gaia.com/photos/29/283926/large/Maslow.jpg>

¹⁰ International Research Center for Japanese Studies, *Nature and Humankind in the Age of Environmental Crisis, Itl, Symposium 6 1992*. Itl Research Center for Japanese Studies, Kyoto Japan, (The Biophilia Hypothesis, Aristotelian Echoes of the 'Good Life', Stephen R. Kellert) p 215.

¹¹ International Research Center for Japanese Studies, *Nature and Humankind in the Age of Environmental Crisis, Itl, Symposium 6 1992*. Itl Research Center for Japanese Studies, Kyoto Japan, (The Biophilia Hypothesis, Aristotelian Echoes of the 'Good Life', Stephen R. Kellert) p 215.

¹²http://images.google.de/imgres?imgurl=http://www.officialconcretejunglewear.com/images/concrete_jungle2_nua5.jpg&imgrefurl=http://www.officialconcretejunglewear.com/About_Us.html&h=423&w=640&sz=44&hl=de&start=11&usq=zrgXVhbG2jqGxddtjWnkTEObPlc=&tbnid=xC2i2U-NwzjrQM:&tbnh=91&tbnw=137&prev=/images%3Fq%3Dconcrete%2Bcity%2Bjungle%26gbv%3D2%26hl%3Dde%26sa%3DG

¹³ International Research Center for Japanese Studies, *Nature and Humankind in the Age of Environmental Crisis, Itl, Symposium 6 1992*. Itl Research Center for Japanese Studies, Kyoto Japan, (The Biophilia Hypothesis, Aristotelian Echoes of the 'Good Life', Stephen R. Kellert), p 215.

¹⁴ International Research Center for Japanese Studies, *Nature and Humankind in the Age of Environmental Crisis, Itl, Symposium 6 1992*. Itl Research Center for Japanese Studies, Kyoto Japan, (The Biophilia Hypothesis, Aristotelian Echoes of the 'Good Life', Stephen R. Kellert) p 215.

¹⁵ International Research Center for Japanese Studies, *Nature and Humankind in the Age of Environmental Crisis, Itl, Symposium 6 1992*. Itl Research Center for Japanese Studies, Kyoto Japan, (The Biophilia Hypothesis, Aristotelian Echoes of the 'Good Life', Stephen R. Kellert), p 218.

¹⁶ See <http://www.nwf.org/nationalwildlife/article.cfm?issueID=107&articleID=1338>

¹⁷ Louv, Richard. *Last Child in the Woods*. Chapel Hill: Algonquin Books, 2006. p 11

¹⁸ Louv, Richard. *Last Child in the Woods*. Chapel Hill: Algonquin Books, 2006. p 34

¹⁹ http://www.usnews.com/dbimages/master/3595/FE_DA_080225nature_kids.jpg

²⁰ <http://islandwood.org/videos/schoolinwoods>

²¹ http://findarticles.com/p/articles/mi_qa3614/is_200707/ai_n19431819/pg_3

²² <http://www.nyfolklore.org/images6/play1.jpg>

²³ <http://www.transalt.org/files/newsroom/magazine/043Summer/images/09blockparty2.jpg>

²⁴ <http://www.flickr.com/explore/>

²⁵ http://www.edcmag.com/CDA/Archives/18f9f635d8697010VgnVCM100000f932a8c0_____

²⁶ Michael Dzieszinski <http://towakudai.blogs.com/Hikikomori.Research.Survey.pdf>

<http://www.unc.edu/~skpatter/whenaman/withdrawl.jpg> P 34.

²⁷ <http://www.greenroofs.org/resources/kellert-2004.pdf>

²⁸ Edward O. Wilson, *Nature Revealed*, John Hopkins University Press, p170

²⁹ <http://www.flickr.com/explore/>

³⁰ http://en.wikipedia.org/wiki/E._O._Wilson

³¹ Edward O. Wilson, *Nature Revealed*, John Hopkins University Press, p645

- ³²Edward O. Wilson, *Nature Revealed*, John Hopkins University Press, p170
- ³³Edward O. Wilson , *Biophilia*, 1984, P108
- ³⁴<http://images.mooseyscountrygarden.com/garden-benches-seats/english-country-pub-garden.jpg>
- ³⁵<http://gardenfine.com/uploads/Image/gardening.jpg>
- ³⁶Edward O. Wilson , *Biophilia*, 1984, P111
- ³⁷Edward O. Wilson, *Nature Revealed*, John Hopkins University Press, p665
- ³⁸Edward O. Wilson, *Nature Revealed*, John Hopkins University Press, p665
- ³⁹Edward O. Wilson, *Nature Revealed*, John Hopkins University Press, p649
- ⁴⁰<http://www.flickr.com/explore/>
- ⁴¹International Research Center for Japanese Studies, *Nature and Humankind in the Age of Environmental Crisis, Itl, Symposium 6 1992*. Itl Research Center for Japanese Studies, Kyoto Japan, (The Biophilia Hypothesis, Aristotelian Echoes of the 'Good Life', Stephen R. Kellert), p 213, Table 1
- ⁴²Wabi Sabi, The Japanese Art of impermanence, p 1
- ⁴³International Research Center for Japanese Studies, *Nature and Humankind in the Age of Environmental Crisis, Itl, Symposium 6 1992*. Itl Research Center for Japanese Studies, Kyoto Japan, (The Biophilia Hypothesis, Aristotelian Echoes of the 'Good Life', Stephen R. Kellert) p 210.
- ⁴⁴http://www.phac-aspc.gc.ca/publicat/cdic-mcc/17-3/d_e.html
- ⁴⁵<http://www.flickr.com/explore/>
- ⁴⁶<http://www.flickr.com/explore/>
- ⁴⁷Stephen R. Kellert, J. Heerwagen, M. Mador, *Biophilic Design*, p 329,330
- ⁴⁸Judith Heerwagen, Ph.D., and Betty Hase, IIDA, *ASID Building Biophilia: Connecting People to Nature in Building Design*, in *Environmental Design + Construction March 8, 2001*
- ⁴⁹<http://www.edcmag.com/CDA/Archives/18f9f635d8697010VgnVCM100000f932a8c0>
- ⁵⁰http://farm1.static.flickr.com/50/143170054_dc8c8a9397.jpg?v=0
- ⁵¹The Boedel Reserve, Summer/Fall 2007, Volume 19 Issue 2, p. 3
- ⁵²The Boedel Reserve, Summer/Fall 2007, Volume 19 Issue 2, p. 2
- ⁵³www.wingardhs.se
- ⁵⁴George Nakashima
- ⁵⁵Alden Dow,
- ⁵⁶Tadao Ando, *The Colors of Light*, 1996, p 18
- ⁵⁷<http://www.visitingdc.com/images/hover-dam-directions.jpg>
- ⁵⁸<http://www.flickr.com/explore/>
- ⁵⁹<http://www.flickr.com/explore/>
- ⁶⁰http://www.itps.se/Archive/Documents/Swedish/Publikationer/Rapporter/PM-serien/2008/PM2008_006.pdf
- ⁷⁰http://en.wikipedia.org/wiki/Metropolitan_area
- ⁷¹<http://www.flickr.com/explore/>
- ⁷²Masahumi Yamasaki, *Kyoto: Its Cityscape Traditions and Heritage*
- ⁷³*Process: Architecture*, Kyoto, p 141
- ⁷⁴*Process: Architecture*, edition 116, *Kyoto- Its Cityscape Traditions and Heritage*, p. 36
- ⁷⁵*Process: Architecture*, edition 116, *Kyoto- Its Cityscape Traditions and Heritage*, p 14
- ⁷⁶*Process: Architecture*, edition 116, *Kyoto- Its Cityscape Traditions and Heritage*, p 147
- ⁷⁷Anthony M. Tung, *Preserving the World's great Cities*, p 379
- ⁷⁸*Process: Architecture*, edition 116, *Kyoto- Its Cityscape Traditions and Heritage*, Murakami Kagaku painting, p 32
- ⁷⁹http://www.khulsey.com/travel/kyoto_ginkakuji_4.jpeg
- ⁸⁰Maplandia.com
- ⁸¹E.O Wilson
- ⁸²E.O Wilson
- ⁸³Kellert, Stephen et. Vivian Loftness with Megan Snyder *Biophilic Design*. City: US
- ⁸⁴Green Building Council, 2008.p 119
- ⁸⁵Brown, David et.al. *Sustainable Architecture White Papers*. New York: Earth
- ⁸⁶Pledge Foundation, 2000. p 203