ENVIRONMENT AND ARCHITECTURE: 
VOICES OF INSPIRATION

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Architectural Thesis
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Friends and Family
boundless support and guidance
INTRODUCTION
overview of the larger ideas behind the project

FOUNDATIONS
issues and positions on which the project is based
description of the thesis project itself
basic space program
description of the site

RESEARCH
initial inspiration
the work of glenn murcutt and james cutler
site photography and writing

MATERIALIZATION
center for environmental arts and learning

REFLECTION
concluding thoughts about the thesis project

BIBLIOGRAPHY
sources for information, images, and inspiration
INTRODUCTION
ENVIRONMENT AND ARCHITECTURE: VOICES OF INSPIRATION

The Earth is a grand entity that has, for countless centuries, provided us as humans with the resources needed to survive. We have used these resources to bring ourselves to the current state of being, but some of the ways in which we have done so have been rather irresponsible. The concept of balance is something that the natural world seeks to achieve, but our human desires have upset the balance that once existed. Because can begin to live within our means and responsibly utilize the components that Nature has been providing for us since day one.

The idea of being sensitive toward the land on which we live is something that has supposedly been embodied in the art of architecture. If that is the case, then why do we have the problems that currently exist within our environment? One of the most striking and identifying features of the human landscape is the built environment in which we live and work. Up to this point, a majority of these buildings and structures has been created with little regard for the Earth’s resources. “Since most of us spend our lives in cities and consume goods imported from all over the world, we tend to experience nature merely as a collection of commodities or a place for recreation, rather than the very source of our lives and well-being” (Wackernagel, 7). The buildings that surround us have, however, been able to present the various thoughts of the architects that designed them. If that is indeed the case, one could logically deduce that architects have the power to change how people think about their living and working environments. By respectfully utilizing the power of the Earth’s resources, in conjunction with the technology that man has developed, architects have the opportu-
nity (and responsibility) to propose ecologically responsible changes in these environments. These statements can help society redefine its priorities and work in harmony with the natural environment.

In addition, not only are our natural surroundings a physical entity, but they are also a source from which we can draw spiritual energy. Within the confines of our daily routines, we are commonly surrounded by features that have little impact on our spiritual selves. The technical hand of man has created those necessities to which we have grown accustomed, but generally we are missing elements that propel our thoughts into deeper meaning. If we momentarily retreat from our current positions and look to the natural environment, we may find inspiration that has the capability to help us do so. In turn, we can also embody these ideas in this architecture that has been inspired by Nature. And those who utilize this inspired architecture can find themselves being inspired as well. Unless mankind ceases to retain its uniqueness and diversity on an individual scale, we will always be learning about ourselves and our experiences and why certain places have such an inspirational effect on us. Our goal must simply be to find ourselves open to the inspiration that surrounds us, and let ourselves learn from all that the natural environment is trying to tell us.

“The survival of modern civilization hinges on the reintegration of the Earth’s laws into our private and public lives. It may well have been necessary for Gaia to be suppressed for the last 2500 years so that...human culture could evolve to a point of technological mastery sufficient to send representatives into space...” "...it is now time to listen to these voices and to allow their wisdom back into our scientific ways.”

—Fredric Lehrman, *The Sacred Landscape*
ISSUES AND POSITIONS
The early beginnings of this thesis commenced at the start of the World 2000 travel-study tour in January 2000. The research that I undertook during the travel was an exploration of the natural and the built environment, and the goal of this research was to draw several conclusions about the spirit embodied within both fields. While being very broad in its intent, this exploration allowed for a certain informality that made the sensing of many things possible. Through various independent mini-journeys and the keeping of a detailed journal, among other more formal assignments, I was able to reflect on the things that I had seen and experienced. As the thesis project began, I found myself at a point where it was time to develop these conclusions, both conscious and subconscious, into the final thesis project. The following list is a summary of the main issues that have become integral parts of this exploration:

—The general term “environmental design” must be clarified or defined.

—Architecture created must work with the natural environment as opposed to being a force attempting to dominate it.

—Thoughtful consideration should be given to the building materials, construction processes, environmental systems, and potential costs proposed by the design.

—Actions that are taken during the design process are to be simple and effective; changes to the sensitive environment are to maximize efficiency while yielding effective outcomes.

“IT has become clear that we cannot possibly win a contest with nature—nor should we wish to... [no one] more so than those who design the man-made environment, who if they use imagination responsibly, will begin to evolve new architectures and forms of planning which will draw on ancient wisdom and modern technology alike to help humanity live in harmony with nature.”

—Peter Davey “Who’s Responsible?”
This project strives to redefine and give new meaning to the general term "environmental design". For clarification, the natural environment that is so highly regarded in this thesis can be defined as a context that has not been created by the hand of man. Working with the environment through design is a concept based upon the implementation of sustainable measures and might, to some, be described as "green" architecture. These two terms have been used interchangeably, and their meanings have even been modified from time to time. "Now it simply means minimizing the ecological impact of a building" (Talarico, 149). When a sustainable, or green, structure is created, it works with the resources that the natural environment can already provide. And it does so with minimal amount of impact to the Earth.

There is a certain spirituality that becomes apparent when dealing with such issues. What existed on the Earth before man is to be respected and revered. These entities are not to be dominated by the occurrences that man creates and participates in to survive. Although this philosophy sounds as if it could take the stance of not agreeing with progress for mankind, it does not mean such a thing. Working with the environment means utilizing our resources and the technologies that have been created by progress to maximize our potential existence responsibly and return a balance to the Earth. Realistically speaking, "as long as Earth is humanity's only home, sustainability requires that we live within the productive capacity of nature" (Wackernagel, 36). By being progressive toward this goal, architects can further develop current technologies and integrate them into their designs. In addition, incorporation of such design methods on a larger scale has the potential to increase the demand for future environmental efforts.

In order to make the implementation of these environmentally responsible methods a little easier to understand, the issues and components that make up the final building can be categorized into four parts—the materials of which the building is made, the process of construction used to create the building, the environmental systems that make the interior of the building comfortable/habitable, and the potential cost of these components. Because there are so many products currently being offered, and with each product claiming to satisfy a certain requirement, the claims can be confusing. "High recycled content" for one product may be nowhere near the standard for another. Some products, such as insulation composed of polystyrene, can be difficult to comprehend and are quite controversial. The component systems of the building, namely architectural, structural, and environmental, can be very complex, but they need to be evaluated in order to make the most environmentally responsible decisions.

All of these issues have been woven into this thesis project with the final result being a Center for Environmental Arts and Learning. This facility is to be located within the boundaries of Pokagon State Park in northeast Indiana, and will welcome all peoples. The design of the Center will allow visitors to fulfill their creative and spiritual connections with the natural environment while at the Park. The key to this design's ability to be modest toward Nature lies in its simplicity. A goal of quality and not quantity, established at the beginning of the project, has assured that the building can come together as a cohesive whole and be effective experientially.
PROJECT DESCRIPTION

The Center for Environmental Arts and Learning will provide its services to the general public and act as a location where people can experience and learn about the natural environment. This facility will serve as both a replacement and an upgrade for the Nature Center that exists currently. The goal is not to become a formal school. Rather, observing, creating, and learning at the Center is to be informal and beneficial spiritually for those who participate. There will be an accommodation of people ranging from regular visitors to the park to school children to private professional groups looking for an inspirational and unique place to hold a conference or retreat.

The Center is meant to maintain its own identity and can be contemporary in design as long as it retains a material connection between the natural environment and the localized site. The overall scale of the building must also be related and sensitive to the natural surroundings. Daylighting is the preferred method of lighting, but direct sunlight must be controlled to avoid damage to work that may be on display. The use of daylighting will also promote another goal of the building—reduced energy consumption. This project is to set a positive example for new building in the rest of the region.

The simple program of this facility consists of temporary and permanent exhibit spaces along with learning and multimedia components. The temporary exhibit space is reserved primarily for professional and artistic exhibits that travel to different locations. These exhibits have the potential to display the creations and ideas of everything from sustainable design practices to environmental photography. The goal of this space is to bring in outside influences and promote progressive ideas and interaction between people. Permanent exhibit space will house the exhibits that are currently part of the existing Nature Center and provide more space for them. The Learning Room that is to be provided will create the opportunity for a multitude of experiences. This space should be as multipurpose as possible so that it can be used for workshop activities, conferences, arts and crafts, and/or simply reading a magazine from the resource library. The Presentation Hall should seat approximately 100 people and have multimedia capabilities. This space will be used for both public and private presentations and lectures.

BASIC SPACE PROGRAM

<table>
<thead>
<tr>
<th>Area</th>
<th>Sq. Ft.</th>
</tr>
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<tbody>
<tr>
<td>Entry</td>
<td>500</td>
</tr>
<tr>
<td>Reception Desk</td>
<td>500</td>
</tr>
<tr>
<td>Director’s Office</td>
<td>200</td>
</tr>
<tr>
<td>Exhibit Coordinator’s Office</td>
<td>200</td>
</tr>
<tr>
<td>Temporary Exhibit</td>
<td>1,700</td>
</tr>
<tr>
<td>Permanent Exhibit</td>
<td>1,500</td>
</tr>
<tr>
<td>Resource Room/Library</td>
<td>500</td>
</tr>
<tr>
<td>Multi-Purpose Learning Room</td>
<td>600</td>
</tr>
<tr>
<td>Presentation Hall</td>
<td>1,500</td>
</tr>
<tr>
<td>Projection Room</td>
<td>70</td>
</tr>
<tr>
<td>Sitting Area</td>
<td>300</td>
</tr>
<tr>
<td>Women’s Restroom</td>
<td>225</td>
</tr>
<tr>
<td>Men’s Restroom</td>
<td>225</td>
</tr>
<tr>
<td>Mechanical Provision</td>
<td>900</td>
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<tr>
<td>Exhibit Storage</td>
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<tr>
<td>Coat Room</td>
<td>125</td>
</tr>
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</table>

TOTAL SQ. FT. (not incl. circulation) 10,845
DESCRIPTION OF THE SITE

Pokagon State Park is located in Steuben County in northeast Indiana, near Angola. The park consists of roughly 1,200 acres of land bordered by Snow Lake to the northwest and the three basins of Lake James to the west, southwest, and south. Pokagon was founded in 1925 and was named as a tribute to a chief of the Potowatomi Indian tribe who ruled the area for many years. Because of its natural setting and location, the park has become a popular gathering place for many people not only from Indiana but from Michigan, Ohio, and Illinois as well. The site is well known for its plentiful opportunities for recreation and discovery. Visitors during the warmer months participate in activities ranging from boating, swimming, and fishing to camping and hiking. The winter months are just as popular because Pokagon is home to a 1,780 foot long toboggan slide. The slide is refrigerated and can be used starting as early as November. Various types of skiing are also popular sports during cold and snowy weather.

The landscape that currently makes up this state park was originally formed during the Ice Age as glaciers moved across the Midwest. What we see today is a collection of naturally shaped bogs, hills, and lakes that were left after the masses of ice had melted away. Various plant and animal species now call the park home and can easily be seen by visitors while hiking or participating in other recreational activities. All types of people, ranging from rural dwellers to urbanites, can be found at the park on any given day. The location of Pokagon makes the park quite attractive in several ways: a) the presence of the lake basins beside a contoured landscape, b) accessibility from cities such as Chicago, Detroit, Toledo, and Indianapolis, and c) a location that is not completely isolated from civilization and necessities, but far enough removed to provide a sense of escape from daily routines.

The park is able to accommodate preferred events and activities that will satisfy almost all visitors. Those who are not attracted to water sports can enjoy their time on the hiking trails or just sitting on the beach enjoying the water in their own way. People who are not interested in camping can find themselves more comfortable in the newly-renovated and expanded Potawatomi Lodge. The facilities that exist at the present time are adequate for traditional modes of thinking within the boundaries of a state park, but this thesis strives to propel a place like Pokagon to the next level through the addition of the environmental arts center.
Numerous works of architecture and design have been inspirational toward this thesis. Although not every observance can be documented, or even remembered, the following examples have been more significant toward the project’s development. Some have been directly integrated in ways such as contributing inspiration for design details while others have simply presented an experience of place that is to be remembered. Another way in which thesis ideas initially began to develop came through experiences with site photography and writing. The photography attempts to capture seasonal changes around Pokagon State Park while the writing expresses qualities that cannot be communicated through the photos alone.

The Blur Building—This unbuilt project, designed by architects who wondered what it would be like to design a cloud, is intriguing because of its surrealistic rethinking of the building’s image and form. All of the inner workings of the building are enveloped in a hazy outer shell that serves to unify the components through the use of an artificially generated yet natural aesthetic.

Hong Kong Convention Center—Interest was found in this building’s use of daylighting and the use of a transparent skin. Daylight floods the vast entrance hall through a glass shell that wraps the building. To keep the glass facades from being broken up by columns, the structure has been located on the inside of the skin.

Machu Picchu—This ancient work serves as inspiration due to its creation of a personal world in a way that is tremendously sensitive to the untouched and somewhat isolated natural environment. The materials that were implemented came directly from the site and were used in simple yet effective ways. The resulting built form blends into the natural site and looks like it belongs there. Those who have had the opportunity to visit this place fondly recall their experience and refer to the work as being mystical and possessing a positive natural energy.
"The Aborigines...have a saying, 'to touch-this-earth-lightly', which admonishes man to avoid disturbing nature any more than is absolutely necessary."

—Philip Drew, Leaves of Iron

The work of Glenn Murcutt, an Australian architect, shows an obvious reverence for Nature and regional surroundings. Since his childhood, Murcutt has been inspired by the traditions that are inherent in Australian culture, from Aborigine methods of building to regional literature. His built forms strive to create a communication bond between the Land, the Sky, and Elements while maintaining very simple and modest qualities. Many of the residential projects that Murcutt has designed have been simplified to the point of being linear. The purity and modesty of these designs allow certain elements, such as daylight, to be effective without excessive manipulation.

The residential architecture of James Cutler demonstrates a sensitivity toward Nature through an expert knowledge of materials and environmental technology. His use of wood as a building material transcends that ordinary and makes use of the material's most innate properties. Cutler allows his material palette to express its properties in very pure ways, from the way concrete is formed to the way connections are made between components and to the Earth itself.

"[Architecture can be] a narrative of our relationship to the environment."

—James Cutler, Architect
SITE VISIT 01
FALL SEASON
NOVEMBER 4, 2000

Arrived in the middle of the afternoon, the sun was fully visible and unobstructed by cloud formations behind trees and casting long shadows. Entry side of lodge was in cool shadow while lake side was of brilliant hue. Strolled down the great yard to the lake. Its water sparkled in the low sunlight and became momentarily blinding light. Breeze calmly moving the cool air, walked through the woods with a friend as remaining leaves fell alongside our soft steps. Sounds of children playing on swingset became faint as the path began to wind into the trees. Upward glances yielded nearly empty branches against a pastel blue sky composition of blue, orange, brown, and green. Intricate shadows projected on the leaf-covered path. The greenish-blue lake was incrementally visible between tree trunks. Cirled existing Nature Center emerged from the woods and continued on a paved roadway beside an open field. Stopped under a tree and talked for a few minutes. Continued back toward the Lodge on the pavement. Once again drawn toward the waterfront. Air began to take on a crisp but refreshing quality. Sun had moved lower in the sky during our long walk. Blue sky became lighter. Enjoyment of spaces in the Lodge with views over the waterfront. Fulfilling conversation before leaving. Colder air, the sun disappeared but the ambient glow still remained. END
SITE VISIT 02
WINTER SEASON
JANUARY 4, 2001

Began during the mid-afternoon hours the sun was not hidden by winter clouds, but the air was not warmed by it. A cloudless, deep blue sky visible to the north and a stark white sky to the south surrounding the sun—one of the coldest days of the winter. Icy wind and mercilessly low temperatures surround all who pass. Walked down the great yard from the Lodge to the water’s edge. Its crystalline sheet of ice blended with the thick blanket of snow on the ground. The yard’s covering was not broken but showed signs of previous visitors. Activities hiking trails were no longer visible. Snow up over my shoes. Too cold to melt. Attached itself and then fell off as if it was a dry powder. No longer necessary to squint once I had entered the long and playful shadows found in the woods. Impossible to decipher which trees were casting specific shadows, and no reason to do so. Breath appears frozen in midair as it moves through the intricate patterns of sunlight and shadow. An environment so intensely cold yet so embracing in its presence. The blue hues of the winter months began to come alive once the lost some of its intensity. The color palette of the natural environment has been simplified and unified by the presence of the snow continued on the trails and emerged from the woods into the yards by the Nature Center. An untouched layer of white sparkled in the sunlight. Snow on evergreen branches clings and makes the delicate limbs appear heavy. So incredibly cold but so serene. END
The Center for Environmental Arts and Learning has been defined by three central design concepts: a) the building utilizes a linear organization that minimizes itself in order to pass between the trees, b) the building is composed of layers represented by the structural, environmental, and daylighting systems, and c) the building makes use of the Earth’s properties to conceal pieces of the building that could otherwise be obstructive.

The project strives to be inspired by the natural environment and to demonstrate a determination to keep its forms as simple as possible to avoid competing with Nature. Four schematic components (shown on the next page) further define the body of the project.
Base—Concrete walls on the lower level allow the building to settle into the Earth. The massive qualities of the concrete are softened and/or hidden by the Earth so the two-story building can appear to be less bulky.

Core—The upper level is composed of a central core surrounded by a mostly transparent skin. In addition to being organized in a linear pattern, the functional spaces of the building pull themselves toward the center so that views to the outside from the main circulation spaces will be left unobstructed.

Skin—The design of the skin itself takes on a minimalistic quality that strives to become invisible while retaining necessary thermal properties. This allows the visitor’s attention to focus on the natural surroundings as if he or she were on an outdoor walkway.

Roof—Components find themselves unified under the inverted butterfly roof. This roof serves not only to make the building cohesive but also to create the simple image of the Center with which visitors can identify.
While the lower level is encased in concrete, the **structural system** on the main level of the Center utilizes a modified framing system of wood members. The frame is composed mostly of dimension lumber (including box beams) to make the construction process more efficient and less invasive to the site. Many components can even be fabricated off-site if necessary.
1 ENTRY
2 RECEPTION
3 DIRECTOR
4 EXHIBIT COORDINATOR
5 COAT GALLEY
6 WOMEN'S RESTROOM
7 MEN'S RESTROOM
8 TEMPORARY EXHIBIT
9 RESOURCE/LEARNING ROOM
10 SITTING AREA
11 MECHANICAL ROOM
12 EXHIBIT STORAGE
13 HYDRAULIC ROOM
14 PERMANENT EXHIBIT
15 PROJECTION ROOM
16 PRESENTATION HALL
The experience of the building’s circulation spaces has been inspired by the ways in which light passes through the tree canopy to the Earth below. Long expanses of transparency along the north and south facades become playful in their attempts to frame views and filter daylight.
The following criteria, or mission statements, have become the basis for the functional spirit of the project:

— The Center is to provide an outlet for people to learn about and discover their connection with the natural environment.

— The Center is to act as a think-tank for the recognition and perhaps the solving of environmental problems.

— The Center is to be a collective experience of learning from Nature and from each other.

The images on this page show a few of the spaces that allow for the desired connection to the natural environment. The east end of the building provides several spaces that maintain this goal. The Sitting Area lets visitors enjoy panoramic views of the area while the Presentation Hall directly below uses the surroundings as a pleasant backdrop for lectures and other events. The exterior deck extends out over the hill and gives visitors the feeling of being suspended in the trees.
SECTION THROUGH STAIRWAY

SOUTH CORRIDOR
With regard to the materials and methods used to construct the building, the following guidelines have been proposed:

—All wood and timber products are to be gathered from sustainable plantations, from recycled building material stockpiles, and/or from the site itself.

—All concrete is to contain recycled fly ash in its composition.

—All wood and metal treatments are to be nontoxic and biodegradable to prevent contaminated runoff.
Due to the simple form of the Center, environmental systems have been able to be integrated quite efficiently. Air circulation systems have been concealed so that they do not distract from the natural surroundings. The thickened walls of the Temporary Exhibit space show one way in which both the supply and return ducts have been layered into the design.
One of the most profound things that took place over the course of this project happened to be the way in which the design materialized. The general process through hand-modeling that has been so appropriate for the last few years did not seem to be providing the necessary information. Instead, a reliance on virtual modeling technologies began to make more sense. By utilizing even a portion of the potential power of these technologies, the thesis project was given the opportunity to materialize much faster than it would have otherwise. So many additional design aspects of the project were realized because of the time saved by creating the virtual model. Among many other ways, this time was used to continue researching topics that pertain to the issues being explored. The rapid visualization of spaces and the overall design allowed corrections to be made much earlier in the project, and the accuracy of object placement became invaluable. After beginning with a few virtual study models on the computer, it was difficult to justify creating elaborate models by hand. Although virtual modeling may not necessarily be appropriate for every project, the capabilities of doing so proved to be invaluable to the process and refinement of this thesis.

Once the project was set on the correct path, design and visualization began to come together and make sense. However, the beginning of this exploration as a whole was not as efficient. Sorting through vast amounts of information and finding the key to the spirit of the project was difficult. The natural environment is an extremely complex entity to try to decipher. There are so many elements in our environment that are deserving of high levels of respect and sensitivity, but trying to understand all of them can become overwhelming. Being sensitive to certain elements of Nature will usually require the designer to give equal attention to several other components, and the cycle will continue indefinitely. Getting to the heart of a solution means simplifying the thoughts and ideas in question. The idea of maintaining quality
and not quantity becomes crucial to the development of the concept. Completing a manageable number of objectives well, and learning from them, will probably be more beneficial than trying to take all possibilities into account and completing none. One is not expected to know everything all at once, and that is why the learning process becomes so incredibly important. Learning from ourselves and from each other can be an invaluable resource. The ways in which we deal with environmental issues are no different.

The current world is faced with a number of problems that have been accentuated by the actions of human society. The good news is that these problems are not totally irreversible. The progress of man and technology has brought us to this point, and it is now time to utilize our knowledge to begin to lighten our impression upon the Earth. The first important step is to recognize that these problems are deserving enough of a massive effort by the general population in order to make changes occur. The design and construction industry is one niche that needs to seek these changes, and this thesis was a beginning for that discovery process. The way we live and the places in which we reside, work, and learn can become much more efficient in their usage of the Earth's resources.

Within the design and build community, architects can find themselves in positions of potential influence. As a communicator and educator, the architect has the ability to both express and learn from all that surrounds him or her. This includes learning from other architects as well as from the knowledge provided by builders, developers, and others within the construction field. Within that vast body of knowledge, there can be a common thread that maintains the environment as a priority. Architects have the capability to communicate with both sides of the design process—through the client and through the construction team. Together, they can make the effort to create a true version of environmental design that focuses on showing sensitivity toward the natural environment. Although not everyone involved in the design process may be educated in these progressive techniques and methods, the architect should view this as an opportunity to educate and share the knowledge that is constantly being learned, refined, and expanded.

As a society, we depend on the built environment to keep us comfortable and productive. At the same time, architects should put forth an effort to make the built environment begin to return us to a state of balance with the natural environment. Improvements made to the quality of true environmental design can also produce improvements in the quality of life for those who partake of the results. Architects making a difference on a small scale, one building at a time, have the potential to also affect the overall outlook of man's relationship to the Earth. When buildings are created, they should make a statement about the progress that man has achieved while, at the same time, making a statement about man's reverence for the ground on which they are built.
Books


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Periodicals


Other

Greenworks TV Online Video: "Home Products Get a Second Life" (http://www.greenworks.tv/tvshow/ind_families/home_green_e.htm)