Between Earth and Sky: Crafting an Architecture of Presence

Holly-Lynn Tedder

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between earth and sky

Crafting an Architecture of PRESENCE

by Holly-Lynn Tedder
DEDICATION

This book is dedicated to my best friend and husband, Adam. During this process you were more than my other half; you were my other two-thirds, sometimes more. This project would not exist without the love and support you provide on a daily basis. You have kept me in one piece through it all and I love you.
ACKNOWLEDGMENTS

To those who made me who I am: I would like to first give thanks to my parents. To my father, for teaching me to be a dreamer and never settle for “good enough,” and to my mother, for showing me what love and sacrifice looks like; my first hope is to always make you both proud of me.

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Finally, to Sherry Bryan, who was my first and biggest supporter in the Department of Architecture: thank you for always listening with compassion but never accepting excuses. Your attention to detail and passion for excellence has made me stronger than I could have imagined.
What is architecture? I discovered an appropriate path for my thesis research in the quest for an answer to this question. I had just begun my first year of graduate school after completing my undergraduate studies. An illness at the beginning of the term set me back a week and I was scrambling to catch up with my work. One day I arrived to class and was stunned to realize that I could not answer this question. I had just spent the last several years earning a degree in the field after all, and I was struggling to define my life’s pursuit.

I felt lost.

I chalked it up to fatigue and forged ahead, knowing I would come to the answer in time. I would get a full night’s rest and awake refreshed and inspired once more. Weeks passed and no epiphany, no answer. I began to question myself. What caused this blank spot where my certainty used to be? Why was the answer to this question just out of reach? How could I practice something I could not even define? More questions, still no answers. My awareness had been dimmed, my consciousness had been clouded. I had let the daily rigors of school and life slowly obscure my clarity while I numbed the pain and fatigue with coffee and Red Bull.

I cannot remember the exact time or circumstance that led to my search for presence. All I can say is, in retrospect, the last time I truly felt like myself was when I maintained a consistent yoga practice. Someone who has not practiced meditation or yoga will not fully understand. That is okay. The point is this: the regular practice of yoga provides awareness. Not on some mystical level, but on a practical level. Coming to the mat, sitting still, breathing, moving through a physical practice, focusing the mind on the present moment: all of these things help to train the body and the mind to stay present off the mat as well.

I began to reexamine my daily habits as I began to delve deeper into architectural research. After reading Being and Time by Martin Heidegger, I realized how much time I spent looking at my smartphone on a daily basis. During my research into the contemporary implications of what Heidegger addresses in his work, I came across numerous references and images of individuals living their lives through the screen of a smartphone. One image that stands out most vividly is a photograph of a crowded concert, full of fans watching a live performance, or rather, watching a smartphone screen on which they are recording the performance (figure 1). Instead of trying to archive the experience digitally, why can we not experience the moment physically, with our eyes and ears? What will we remember of the experience if we put the phone away and use our hands to clap and our feet to stomp, be fully immersed in the experience, creating a memory with all of our senses?

After reading Eyes of the Skin by Juhani Pallasmaa, I began to tune back into my senses, to think about all of the sights, smells and sounds, textures and experiences that would often pass me by unnoticed and unappreciated. I realized how much of my physical body had been set to tune out these things as I sped through my daily activities, just trying to keep up with the pace of my life. This is when I recognized my problem. This is when my clarity returned. This is when I returned to my mat.

I cannot make people practice yoga, but everyday people have encounters with architecture. It can have a positive or negative impact on them. I am interested in an architecture that can do for others what yoga does for me—reunite mind and body and bring them into the present moment. This goal is the focus of this thesis and will continue to be my goal throughout my life and career.
A duality exists within the experience of architecture. For many years, architects have privileged the intellectual or conceptual dimensions of design over the haptic experiences of architecture, compounding a split between mind and body within our highly technologized society. We need an architecture that brings us back to the present moment. By uniting haptic experience with intellectual understanding of place, an Architecture of Presence can create a complete human experience. Explored through the design of an ecological research field laboratory in Shelby Forest, thoughtful crafting of spatial experience using material and light, modulated by contrast, leads to increased awareness and brings the perceiving human into the present moment. The key to creating a complete architectural experience lies in the unity of mind and body. Through the unification of the perceptual modes of experiencing architecture with the conceptual basis of design, a complete understanding of architectural experience emerges.
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“Has it ever struck you that life is all memory, except for the one present moment that goes by so quick you hardly catch it going?”

Tennessee Williams

Figure 1 Life through a Screen. Demonstrates an inability for the concert goers to experience the present moment.
We are not bound by our definition of the human condition, rather we are set free by the potentialities of our existence. We cannot wrap our minds around the full reality of our presence in this world; it extends beyond the four walls of our mind. It is pre-cognitive. We do not think love or think fear. To feel love, to feel fear, we must engage nothing less than the entirety of our perceptive bodies (Figure 2). We are starving, and we do not know why. The world is at our fingertips, yet the sense of touch is denied. We cannot separate our body from our mind, though many have tried. They are irretrievably linked, and the suppression of the feeling body has led to a world in which crowd-sourcing on social media has replaced a meaningful conversation with a close friend; a world in which popularity and marketability are valued above knowledge and true understanding; a world in which reality is replaced by a two-dimensional interface through which we are told we can experience anything with the click of a button.

Yet the longing remains, and the cycle continues. This denial of our being must give way to a realization of our presence on the earth. When we accept and embrace the wholeness of our being we can begin to experience an awareness that is consciously felt and viscerally understood; we can stop seeking that which we already possess.

But how? How do we engage in this multitude of experience when, for so long, we have been caught in a rushing current, hurtling toward the final event that defines the human condition? How do we create a world of meaning in which we are able to feel deeply and think clearly?

We must change our perspective;
We must slow the current;
We must explore with senses bared;
We must linger in the moment and immerse ourselves in deep pools of thought;
We must mire ourselves in experience and seek that threshold where feeling meets understanding;
We must disinter the truth of our existence.
“The current overemphasis on the intellectual and conceptual dimensions of architecture contributes to the disappearance of its physical, sensual and embodied essence.....”

Juhani Pallasmaa

Figure 3 Don’t Belong Here illustrates a disconnection from bodily senses, others, and reality.
“Presence is like a gap in the flow of history, where all of a sudden it is not past and not future.”

Peter Zumthor

The de-sensualization of human experience has exacerbated the micro-body split of modern western philosophy, resulting in an architecture that negates the wholeness of human existence, dulling awareness (figure 3) and removing attention from the present moment. Architecture should unite haptic and intellectual understanding of place to create a complete human experience. This complete experience leads to increased awareness and promotes a state of presence within users. Through the thoughtful crafting of spatial experience using material and light, modulated by contrast, architecture has the potential to reveal itself in a way that brings the perceiving human into the present moment, uniting mind and body.

To reach the goal of an Architecture of Presence, one must first engage in critical philosophical investigation. The primary concern of this thesis is a phenomenological understanding of presence, beginning with the ramifications of mind-body dualism on western philosophy and subsequently, contemporary society. With an understanding of the elements of human bodily perception, connections must then be made to the built environment and the modes of experience that affect how humans interact with architecture.

Architectural phenomenology concerns the haptic realm of architecture (sensory perception) and how human perceptions are affected by the built environment, thus creating links between philosophical explorations of experience and architectural and spatial experience. Finally, comprehensive investigations of contemporary architectural works lead to a holistic understanding of how perceptual phenomena are employed within these built environments. This includes subjective experience of the space as well as a conceptual grounding of built form, which constitutes a complete experience of architecture.

For the purposes of this thesis, an ecological research field laboratory for the University of Memphis Department of Biological Sciences will serve as a means to explore these theories and the ultimate goal of an Architecture of Presence. To accomplish this, the design will seek to create spaces that engage the senses, and increase bodily awareness within the user. Crafted manipulations of contrast, light, and materiality will define spatial experience of users and lead to a shift in perception and increased awareness. The site chosen for the research laboratory is within Shelby Forest, adjacent to the Meeman-Shelby Forest State Park. The untouched condition of the surrounding forest provides a rich, natural environment in which to explore the idea of bringing users into the present moment (figure 4). The following section contains the realization of these explorations.

1. Pallasmaa, Eyes of the Skin.
2. Shar, Heidegger for Architects.
5. Pallasmaa, Eyes of the Skin.
7. Architectural works by Peter Zumthor, Aidlin Darling, Olson Kundig, among others.

Figure 4: Girl Standing in the Misty Forest. Stepping away from the city, as expressed in this image of a person at the edge of a forest, can facilitate a more acute focus on the present.
“The sense of increase of understanding, of a deepened intelligibility on the part of objects of nature and man, resulting from esthetic experience, has led philosophic theorists to treat art as a mode of knowledge...superior not only to that of ordinary life but to that of science itself.”

John Dewey

Figure 5: Creation of Adam. An example of the ability of aesthetic experience to evoke intellectual understanding within individuals. Michelangelo's "Creation of Adam" is often seen as a symbol of humanity.
"When I allow the past and the future to dissolve, imaginatively, into the immediacy of the present moment, then the 'present' itself expands to become an enveloping field of presence. And this presence, vibrant and alive, spontaneously assumes the precise shape and contour of the enveloping sensory landscape..."

David Abram

Questions of Presence

What is presence? The most common definitions reduce the explanation of presence to a mere state of existence, sometimes including references to being located according to geographic vicinity or specific time and place. But what does location have to do with one's state of presence if the body and mind are truly divided between thinking matter and unthinking flesh? What meaning does physical presence hold if the conscious mind is miles away, plugged into an ephemeral world that holds no bearing relationship to one's existence in that moment? Most importantly, what role might architecture play (figure 5) in resolving this matter of mind versus body, existence versus presence?3

1. Merriam-Webster Dictionary Online defines being present as being “now existing or in progress,” while the Oxford English Dictionary Online defines the word “present” as being “in a particular place.”
2. Reference to René Descartes’ Dualism, explored further in “Presence in Circumstance” on page 32.

Figure 6: Mist on Pool. Peter Zumthor’s “Therme Vals” is an example of a complete architectural experience further explained on page 48.
Patterns of Perception. In the 1950s, phenomenologist and existentialist, Martin Heidegger, published Being and Time in which he declared a state of crisis. He believed international travel and mass media were shrinking distances, in turn, creating a state of society in which individuals suffered from diminished proximity to their own existence. He explains that the “chatter” of everyday life further compounds separation from the truth of existence, in German, “dasein.”

Many of the symptoms of this separation from an “authentic” life can be seen in today’s social interactions. With the advent of the internet, people are constantly “connected” on a global level. Being inundated with social media, increased expectations, and greater demands on their time has left many feeling an indefinable loss. This sense of loss is discussed in Desikachar’s explanation of why yoga has become so prevalent in western culture. The “chatter” that Heidegger describes can be attributed to what Desikachar calls Avidya, or “incorrect comprehension.” It is the accumulated result of our unconscious actions and ways of perceiving we carry out mechanically over a long period of time. These unconscious responses lead to a dependence on these mechanical behaviors, obscuring the clarity of consciousness, leading to dissatisfaction, or rejection of that which challenges us instead of accepting and learning. The practice of yoga decreases this “incorrect comprehension” by changing our patterns of perception (figure 7), and allowing true understanding. In the absence of this cloudiness, we can see the world clearly.

As circumstances within contemporary society continue to draw us away from the present moment, can architecture, like yoga, cause a shift in these patterns of perception to create awareness and presence?

Perception in Architectural Experience. Speaking at a lecture at the School of Architecture at Tel Aviv University, Peter Zumthor said: “Presence is like a gap in the flow of history, where all of a sudden it is not past and not future.” He goes on to describe how the experience of space and place (figure 6) has often evoked a state of presence within himself. "Every once in a while, I get this feeling of presence. Sometimes in me, but definitely in the mountains. If I look at these rocks, these stones, I get a feeling of presence, of space, of material.” Similarly, Steven Holl references the flow of time in relation to a state of consciousness and echoes the idea that qualities of space and material (figure 6) can affect one’s state of awareness. What Zumthor refers to as a “gap on the flow of history” can be recognized in Holl’s writing as “the distortion of time in the perception of architectural space... one’s perception modifies consciousness, attention is broadened, time is distorted.” Based on this, it is clear that Holl, like Zumthor, believes that the power to affect presence lies within the experience of architectural space.

If architecture can indeed cause one to experience a state of presence, as Holl and Zumthor suggest, what qualities must the architecture exhibit to set it apart as having the ability to silence the chatter of everyday life and draw users into the present moment? How can the experience of architecture cause a shift in the patterns of perception and increase awareness?

Figure 7: Yoga + Presence Diagram. Illustrating the ability of yoga to create awareness.

Figure 8: Site Phenomena Diagram. Early investigations into site conditions and perceptions of light, material and space.
presence in architectural experience

Complete Experience. Holl defines “complete perception” as “the architectural synthesis of foreground, middle ground, and distant view, together with all the subjective qualities of material and light.” This difference between mere perception and “complete perception” is as distinct as John Dewey’s explanation of the difference between simply experiencing versus having “an experience.” The former is a condition of existence, while the “completeness” of the latter—be it experience or perception—leads to a recognition of something of greater importance. It becomes distinguished as having a lasting impact on the one having the experience. The final question is thus distilled: how does one translate this “complete perception” into architectural experience to create presence?

Mind and Body in Architecture. There exists a duality in architectural experience between mind and body. Architectural phenomenologists, most notably Juhani Pallasmaa, have recognized this duality and insist that neglect of haptic modes of perception within architecture compounds the split between mind and body in the built environment. When the mind is privileged over the body as the mode of human interaction within the world, basic existential problems arise. Similarly, when architects consider the intellectual concept of a work of architecture as the ultimate goal in crafting the built environment (figure 9), basic understanding of place is left unmanifested. In recognizing this split and using the example of yoga’s ability to unite the mind and body in a state of presence, the goal of this thesis becomes the reunification of intellectual and haptic understanding in architecture. Yet, the question of “how” remains.

Fusing Site, Circumstance, and Phenomena. In his writings, Steven Holl, like many architectural phenomenologists, explores the perceptual modes of experiencing architecture; however, unlike many of his counterparts, there also expressly exists in his writings the intellectual, or conceptual basis of design woven into a complete understanding of architectural experience (figure 10). Each challenge of architecture is unique. Each has a particular site and circumstance or program; and for each, to fuse site, circumstance, and a multiplicity of phenomena, an organizing idea, a driving concept...is required. The unity of the whole emerges from the thread that runs through the variety of parts. While the use of an organizing concept is not new in architectural design, what Holl describes as a “multiplicity of phenomena” can be understood as the bodily perceptions of architecture and the organizing idea (the required design concept) is the intellectual dimension of architecture. Crucial to this idea is the word “unity.” Rather than privileging one mode of experiencing architecture over the other, the key to creating a complete architectural experience lies in the unity of mind and body. This leads to awareness, drawing the user into the present moment. In architecture, the unity of mind and body—intellectual haptic modes of experience, respectively—will lead to an Architecture of Presence, capable of creating a shift in patterns of perception, and ultimately, an increase of awareness.

12. In architecture, the dualism between mind and body can be defined in terms of the rational, intellectual discourse of architecture (mind) versus the phenomenological, haptic perception (body) further explored in Pallasmaa’s Eyes of the Skin.

Figure 9
Peter Eisenman’s “House VI.” Focusing design purely on the conceptual, Eisenman’s architecture is devoid of any reference to a concern for the physical experience of architecture.

Figure 10
Lewis Art Complex Diagram. Steven Holl’s diagram for the Lewis Arts Complex juxtaposes material and spatial experience in terms of individual experience as well as architectural concept, reflecting a concern for both intellectual and perceptual experience of architecture.
Seeking Presence

"Architecture, more fully than other art forms, engages the immediacy of our sensory perceptions. The passage of time, light, shadow and transparency, color phenomena, texture, material and detail all participate in the complete experience of architecture."

Steven Holl

While the ultimate goal of this thesis and research is to create presence, the proximate goal of the design solution becomes the fusion of site, circumstance, and phenomena through the use of an organizing concept. While each element is chosen and explored based on the ability to affect presence within users, a unifying concept must fuse these three elements together. Therefore, seeking an organizing idea became the next step toward an Architecture of Presence. To identify an organizing idea that could unite these elements, comprehensive site and program research was undertaken. Concurrently, investigations into architectural precedent (figure 11) provided examples of how the chosen concept could be expressed as a means to unite site, circumstance, and phenomena in a complete architectural experience.

Figure 11 Therme Vals Outdoor Pool. This view from a pool to the landscape shows the steam rising off the pool in direct reference to the mist hanging above the surrounding mountains.
Several factors were considered when choosing the site for this ecological research center regarding the appropriate context of such a program. To explore manifestations of presence through the perception of the built environment, a site removed from the urban context of Memphis was chosen (figures 13-14).

In his book, *The Spell of the Sensuous*, Abram describes a memorable event that took place in New York after a hurricane caused the loss of power to thousands of residents. When the loss of power led to the loss of traffic signals, residents took to foot, walking to and from work. Without the noise of car engines, residents could hear the sound of the birds in the sky and the wind through the trees. At night, without the light pollution so common in cities, thousands upon thousands of stars could be seen glittering overhead. People found a connection to their environment they never knew existed, drowned out as it had been by the noise and the speed of their daily lives. Abram goes on to describe many instances that highlight how contemporary society has created a disconnect between humans and the natural world.

Regardless of where you call home, there is an essential part of human life that takes place in relation to the natural environment (figure 12). The denial of these moments of connection with the natural world seems to only compound the loss of presence felt within contemporary society.

Figure 12 Nature and the Human Form. Represents human connection to the natural world.
Figure 13 Next Page, Top: Photograph of Site Access. Current access to the site is via Riverbluff Road.
Figure 14 Next Page, Bottom: Photograph of Site Looking West. Towards the Mississippi River, the clearing falls away, at the edge of a fall, framed by the forest canopy.
Site History and Research

Context
The Department of Biological Sciences at the University of Memphis occupies a field station adjacent to the Meeman-Shelby State Park, known as the Edward J. Meeman Biological Station. The context map (figure 15) shows the relationship between the existing facilities and the city of Memphis, along the Mississippi River. During the design development phase of this project the Department of Biological Sciences concurrently developed a preliminary master plan for future growth of facilities within the existing “Meeman Site” (figure 17). The proposed growth creates a slightly densified “campus,” which includes expansion of the existing dormitory facilities, a new group of single-occupancy housing units, as well as expansion of the existing laboratory facilities. To satisfy the need for laboratory expansion, this design proposes a collaborative field research laboratory that is remote from the existing facilities (figure 16) and will be the subject of the design explorations of this thesis. The choice of removing the field research station from the tower “campus” allows researchers, students, and visitors to be fully immersed within the forest site, removed from the chatter of everyday life. This immersion into nature thus creates opportunities to experience presence in the union between the natural and the man-made.

Figure 15 Top: Context Map
Figure 16 Bottom: Area Map. Riverbluff Road leads to site, to the north of existing facilities.
Figure 17 Next Page: M.B.S. Conceptual Master Plan. Developed by the University of Memphis with landscape architect, Andy Hayes.
Existing Facilities

The Edward J. Meeman Biological Station was named for the man who was not only instrumental in the establishment of the Meeman-Shelby Forest State Park—a 12,039-acre hardwood bottomland area bordering the Mississippi River 13 miles north of Memphis— but also the benefactor of the station itself, bequeathing the 623 acres of land to the University of Memphis with the goal of continued studies into river and wetland ecology. "This site is in the narrow transition zone between the Mississippi River Valley and West Tennessee Coastal Plain physiographic regions. The Station and surrounding areas are characterized by low plains and fertile valleys which are drained by the Mississippi River and several tributaries." Development of the existing facilities began in 1937 with the construction of the Meeman Estate home (figures 18-19). After the University of Memphis took ownership, a research station was built to accommodate ecological research of the surrounding landscape (figures 20-21) and later, a dormitory for visiting researchers (figures 22-23).

[Figures and references are included here, but not transcribed as they are not necessary for the natural text representation.]
The Bluffs

The existing facilities and the site are both located on what is known as the Third Chickasaw Bluff. The Four Chickasaw Bluffs are areas of high ground ranging 50-200 feet above the Mississippi River floodplain (figure 27). The bluffs consist of very steep valleys, rising to nearly vertical cliffs along the western edges facing the river or alluvial plains.17

The Mississippi River watershed had a direct impact on the formation of the bluffs as well as the site’s current topography and soil content (figures 25-26). During the Pliocene epoch, fluvial deposits from glacial runoff accumulated along the lower Mississippi River Valley. Aeolian processes caused Pleistocene loess—wind-blown silt—accumulation on top of fluvial deposits (figure 24), forming the bluffs.

Due to the history of the site’s formation, the existing site soil is of the Memphis Silt Loam Series, denoted as types MeG (30-65% slope) and MeB (2-5% slopes). A finely divided silty material, it consists of nearly 80% silt and 15-20% clay, with small amounts of course material and fine sand particles (2-12 inches silt loam).18

17. "Chickasaw Bluff."
Figure 27: Section through Third Chickasaw Bluff. Representation not to scale.
Water Erosion and the Bluffs

The bluffs do not form a continuous band, as they are split by river valleys such as the Hatchie River, Loosahatchie River, and Wolf River (Figure 28). It is believed they may have been a continuous land form before erosion split them into four distinct bluffs. Located south of the site, Memphis is situated on the Fourth Bluff (Figure 28). The topography of Fourth Bluff was once characteristic of the other bluffs, steeply rising from the flood plain; however, over time the edges of the floodplains and bluffs have been smoothed in the downtown area to accommodate the needs of metropolitan life.

19. “Chickasaw Bluff.”

Figure 28: Top: Wood Carving. Depicts the Fourth Chickasaw Bluff at Memphis (Boston 1871).

Figure 29: Next Page: Map of the Four Chickasaw Bluffs.
Site Conditions and Development

Satellite imagery from 1940 (figure 30) shows the site as having been cleared for agricultural use while the property was still owned by the Meeman Estate. The high-elevation and soil conditions made this site ideal for agricultural production. After the land was bequeathed to the University of Memphis upon Meeman’s death, pine trees were planted in an attempt to return the site to a natural condition.

Although the pine trees are not native to this particular region of the bluff, over the years the lines between the virgin forest and the previously cleared site have begun to blur (figures 31-35). The forest/field condition of the site provides a rich ecosystem in which local animals live and the university scientists might observe and study.

Site Photograph Looking East. The view to Riverbluff Road is screened by pine trees and undergrowth.

Satellite imagery from 1990 (figure 32) shows pine trees planted on once-cleared farming land, now owned by the University of Memphis.

Photograph of Site Looking North. The clearing is dotted by pine trees, with a denser deciduous canopy beyond.

Figure 36: 1940 Satellite Image of Site. A flat clearing with rich soil provided ideal conditions for farming when the site was a part of the Meeman Estate.

Figure 37: 1990 Satellite Image of Site. Pine trees are planted on cleared farming land, now owned by the University of Memphis.

Figure 38: 2010 Satellite Image of Site. Erosion is slowed by dense forest on slopes. Land is used for ecological research.

Figure 39: Photograph of Site looking South. Heavy vegetation provides shade in summer months.
When we delve deeper into the idea of the dualism (figure 36) of humankind proliferated through western philosophy, we see further ripples of the effects on society as well as the very planet we inhabit. When humans are set apart from other living beings as having a “thinking mind” while other lifeforms are purely made up of animate matter, this creates a hierarchy in which all actions by humans on “lower” life forms are warranted.

Indeed, a greater awareness is needed in recognizing humankind’s place within the built environment; however, we cannot recognize that place without also understanding the human’s place within the wider ecology of the planet. In contrast to Descartes’ dualism, Heidegger believed that we all exist briefly against the backdrop of nothingness. When we have moments of clarity about our place in the world, moments of insight, we recognize what Heidegger calls the “mystery of existence.” In this shared state of mortality, we recognize our kinship with all living things.

Much of the separation from the “authentic” life Heidegger references can be seen in today’s social interactions. As mentioned previously, we find in the practice of yoga a conscious effort to clear away the cloudiness of perception caused by societal conditions. “When we see something correctly there is a profound peace in us—we feel no tension, no unrest, no agitation.” The practice of yoga is a conscious step taken, not once, but consistently over time. It is as much a physical practice as it is a mental one and leads to a unification of body and mind in awareness.

As yoga seeks to understand the connection between the mind and body towards a greater awareness of self, ecological research seeks to locate humans within the wider ecology of the planet, to recognize our effects on it. The design of an ecological research center thus provides the opportunity to explore manifestations of presence not only of the individual in the present moment—through perception of the built environment—but also in a broader sense of humankind’s presence within the natural environment and on the earth. This goal closely aligns with the mission of the Edward J. Meeman Biological Station, which seeks to foster “a more informed understanding of the biocomplexity of ecological and evolutionary phenomena.” Toward this end, the station hosts students from grade school through graduate school, as well as providing facilities for researchers to study within their respective fields, while contributing to a multidisciplinary base of knowledge. This dual approach to research and education has the potential to increase “ecological literacy” and results in a greater awareness of how humans affect the environment.

What Holl calls “circumstance” refers to the programmatic needs of a project. When defining the program of a field laboratory, the example of this dual approach helps to identify the primary elements: a collaborative laboratory for biologists to study within close proximity to the flora and fauna that is the subject of their research, as well as educational spaces that provide users the ability to interpret the site and surrounding landscape.
Marine Laboratory as Precedent

Overview
Project: Duke University Marine Laboratory
Program: Marine Biology Education and Research Lab
Architects: GLUCK+
Location: Pivers Island, Beaufort, North Carolina
Area: 14,000 s.f.
Project Year: 2014
Context: College Campus

Analysis
While the context of this project is dissimilar to that of this thesis, the programmatic elements are much the same. As a program precedent, this project was analyzed for program division, space adjacencies, and internal/external spatial relationships. In this example, the bulk of space is dedicated to research and the mechanical support of lab equipment (figure 39). The upper level consists of a large collaborative laboratory, with support spaces directly below (figure 40). In addition to the mechanical space, the lower level also contains educational areas consisting of a teaching lab and conference room. The educational space is linked to other programmatic elements—office space and a PhD bullpen—through the central public area, the "collision commons." This public space creates a central axis of activity on the lower level, while providing vertical connection to the laboratory on the upper level by means of a double-height space containing a stair. On the lower level, spaces are oriented in relationship to exterior views, while on the upper level, researchers are given focused views to the exterior (figure 38).24

24 "Duke University Marine Laboratory."
Passive House as Precedent

Overview
Project: Warren Woods Passive House
Program: Forest Ecology Education and Laboratory
Architects: GO Logic
Location: Berrien County, Michigan
Area: 2,200 s.f.
Project Year: 2014
Context: Remote Forested Site

Analysis
Another program precedent, the Warren Woods Passive house, was also examined for program division, space adjacencies, and internal/external spatial relationships. A small research outpost, the majority of space is dedicated to that research (figure 42). On the lower level, the laboratory has a strong connection to the site through an exterior prep space that allows researchers to sort and prepare samples collected in the field before taking them into the lab for analysis. Adjacent to the laboratory, a large common space allows for flexible meeting space, used for both research and educational discussions. Small educational lecture spaces are located on both the lower and upper levels.25

With a similar context to the thesis, extra attention was paid to internal/external spatial relationships. Windows in the laboratory provide focused views to the outdoors (figure 41), while glass partitions provide visibility from the laboratory, through the public space, and into the surrounding landscape (figures 43-44).

El Humedal as Precedent

Overview
Project: El Humedal Wetlands Research Center
Architects: Taller de Arquitectura de Alto Rendimiento
Program: Urban Wetlands Research Laboratory
Location: Valle de Bravo, Mexico
Area: 8,515 sq ft
Project Year: 2013
Context: Urban

Analysis
The focus of this program analysis was on the materials and internal/external spatial relationships. Throughout the interior spaces of this project there exists a constant connection to the exterior. The program is divided into two levels (figure 46), arranged in an L-shape around the wetland environments created on the site. The majority of the lower level is dedicated to the mechanical systems that support the research and is bisected by a body of water that weaves its way across the site. The upper level consists of research and common spaces that are connected by a covered walkway, bridging the building over the water below. Floor-to-ceiling windows in the laboratory (figure 45), as well as sliding glass doors in common areas (figure 47), function to extend the interior spaces and connect back to the landscape. The materials are natural and locally sourced or salvaged. The use of a natural palette of materials strengthens the building’s connection to the site as well as increases the sustainability of the project.26


Figure 45 El Humedal Laboratory Space

Figure 46 El Humedal Floor Plan

Figure 47 El Humedal Kitchen Space
While the site and program vary in each work of architecture, the constants remain the physical qualities—the perceptual phenomena—that constitute an architectural experience. For many decades, these qualities have been overlooked, in favor of the intellectual and conceptual dimensions of architectural inquiry. This has given rise to an architecture that “is not grounded in our shared existential reality,” and a change in our sensory and perceptual experience of the world. Recently, however, architects have been returning to a school of thought that places increased importance on the haptic experience of architecture.

Returning to Holl’s definition of a “complete experience” of architecture, he makes reference to the perceptual phenomena that form an architectural experience. “Foreground, middle ground, and distant view” can be understood as the spatial qualities and composition of architecture. “The subjective qualities of material and light” references the bodily perception of material and light based on a phenomenological understanding of these elements. In other words, spatial composition, light, and materiality are the key components that constitute an experience of architecture. The way in which these elements manifest within architecture determines the experience of the user. “When the materiality of the details forming an architectural space become evident [figures 48-49], the haptic realm is opened up. Sensory experience is intensified; psychological dimensions are engaged.”

27. Pallasmaa, Eyes of the Skin.
28. Ibid., 35.
30. Ibid., 91.

Figure 48 Top: Alvar Aalto Door Handle. Leather wraps this brass door handle, giving it a haptic presence.
Figure 49 Next Page: Stone in Croatia. This image shows an architectural detail that suggests movement and fluidity in the normally solid stone.
Contemplative Center as Precedent

Overview
Project: Windhover Contemplative Center
Program: Art Gallery, Contemplative Garden
Architects: Aidlin Darling Design
Location: Stanford, California
Area: 4,000 s.f.
Project Year: 2014
Context: College Campus

Analysis
Meant to be a refuge for students on campus, the Windhover Contemplative Center uses spatial layering to create a strong connection between architecture and nature (Figure 50).

Spatial Composition: Although the building is situated within a college campus, filtered views give glimpses of the landscaping beyond, obscuring the urban character of the campus. This is accomplished with perforated walls and landscaping elements around the reflecting pool (Figure 52), wood screening elements along the southern facade, and frosted glass on the north. From the interior, layered volumes of space create a connection to the outdoors (Figure 51). Additionally, layered materials blur the boundaries between interior and exterior (Figure 53).  

Figure 50   Contemplative Center Spatial Composition
Figure 52   Contemplative Center Exterior. Dappled light reflects off the pool and the rammed earth wall before entering the space.
Figure 53   Contemplative Center Detail

Figure 51   Contemplative Center Interior. View from the gallery to the reflecting pool.
Figure 54   Longbranch Spatial Composition

Figure 55   Longbranch View to Exterior. Showing natural materials and a framed view to the exterior.

Figure 56   Longbranch Sitting Room. Interior space merges with the exterior.

Longbranch as Precedent

Overview
Project: Cabin at Longbranch
Program: Private Residence
Architects: Olson Kundig
Location: Longbranch, WA
Area: 5,000 ft²
Context: Remote Forested Site

Analysis
This project is a residence that was developed over several decades. Natural materials pair with nature-framing views to blur the lines between indoor and outdoor. The house is situated within the forest overlooking Puget Sound. Quality of materials and internal/external relationships are examined in this project as well as spatial composition.

Spatial Composition
The primary focus of this analysis focused on the long axes of view created throughout the floor plan (figure 54), allowing the user to remain connected to the site from every point within the interior. The effect of the porosity between interior and exterior also allows the building to become a frame to the surrounding landscape (figure 55).

Materials
The natural, unfinished materials of the residence strengthen the connection between natural and man-made, giving the impression that the building itself grew from the site (figure 56).32

32.   “Cabin at Longbranch.”
Life House as Precedent

Overview
Project: Life House
Program: Residential Retreat
Architects: John Pawson
Location: Wales, United Kingdom
Project Year: 2016
Context: Rolling Hills

Analysis
The Life House is a residential retreat designed to provide respite from urban life. Drawing inspiration from Henry David Thoreau’s novel *Walden*, “communal and private quarters are shaped by the idea of supporting and enriching specific rituals and activities.”

Spatial Composition. In an arrangement reminiscent of a monastic cloister, the house’s interior spaces are organized along two corridors which meet at a right angle (figure 57). The two distinct corridors contrast in materials and in vistas (figure 60). While the light-filled corridor of light brick creates a long axis through the building to the surrounding landscape, the shadowed corridor of dark brick points to an internal vista—a meditation room—punctuated by light from rooms that open along its length.

Materials. The materials used in the Life House is a direct reference to its context. The dark bricks of the exterior reflect the blackened gorse in the surrounding heathland (figure 58), while the rough moor grass provides a reference for the lighter bricks used on the interior, where similarly toned wood sets a serene tone (figure 59).

34. “Life House.”
Therme Vals as Precedent

Overview
Project: Therme Vals
Program: Hotel and Spa
Architects: Peter Zumthor
Location: Graubünden, Switzerland
Project Year: 1996
Context: Mountain

Analysis
While each of the previous precedents highlight one or more of the qualities that constitute a complete experience of architecture, a single project stands out as the epitome of an Architecture of Presence. The Therme Vals, designed by Peter Zumthor, not only contains the qualities of spatial composition, material, and light which comprise “complete perception” in architectural experience, but through the use of an organizing idea, the architect fuses site and program with the phenomenal properties which manifest within the project. (See figure 11 on page 16 and figure 6 on page 10.)

Concept. Mountain, stone, water (figure 61)—building in the stone, building with the stone, into the mountain, building out of the mountain, being inside the mountain. These words by the architect express the central theme used throughout the design of the Therme Vals. Meant to evoke a cave-like environment, the building’s spatial composition, materiality, and lighting combine to give the visitor a sensory experience that leads to an awareness of the architecture in relationship to the surrounding mountainside.

Spatial Composition. Organized around two large pools—one interior, one exterior—the building is embedded into a hillside, creating interior spaces of varying light quality and openness to the exterior. Interior spaces are organized to control perspectives, leading users along paths, while also providing opportunity for discovery. From the exterior, the building acts as a frame to the surrounding landscape (figure 61).

Material. Materiality that relates to the context was the key factor that led to the use of stone within this project. Layers of locally quarried Valser Quarzite slabs are the unifying element. Surrounded by stone, visitors get the impression of being in or below the earth as they move through the building.

Light. Contrasting quality of light signals location in relationship to the landscape. While some areas are filled with light, pouring through large openings to the exterior (figure 62), spaces embedded deeper into the hillside rely on artificial light, creating a different quality of light (figure 63). Gaps between walls and the roof allow light to filter down into spaces below ground. Additionally, light quality changes throughout the day, as the majority of light at night comes from the water itself.

Figure 61 Mountain Stone Water. View from an outdoor pool at the Therme Vals.

Figure 62 Top: Out of the Mountain. Large windows look out over the surrounding countryside and let light pour into the interior space.

Figure 63 Bottom: Into the Mountain. Embedded into the hillside, this subterranean pool gives the user the sense of being below ground as light filters down from above.
Between Earth and Sky. Having researched the desired site, chosen the key elements of the program, and identified the architectural phenomena that will be expressed through the design, the next step was to "fuse site, circumstance, and phenomena" with a unifying concept.

Concept Informed by Site

Within the larger site context there is an intersection of two distinctive landscapes: a clearing once used for agriculture and a densely-forested bluff formed by the erosive conditions of the Mississippi Watershed (figure 65). This condition of clearing and bluff—earth and sky—becomes the concept around which the design of this project is organized (figure 64), representing an intellectual understanding of the site condition and history. The positioning of the building site at this intersection allows this project to explore the Earth|Sky dialectic revealed by the erosion at the bluff. Expressions of earth and sky are explored, not only through experiencing the site, but also through program dialectic and phenomenological experience of the building. In this way, the project fuses site, circumstance, and phenomena, and creates a "complete architectural experience."

Figure 64 Top: Concept Informed by Site. This diagram represents the intersection at the edge of the bluff, where erosion has revealed a dialectic between earth and sky.

Figure 65 Next Page: Site Analysis. Existing conditions of the site pertaining to solar orientation, site access, topography, and vegetation.

Residential flora reduces erosion on steep slopes.

Building site is positioned on the intersection of clearing and bluff.

Mississippi River watershed carves into topography toward the west.

River bluff runs north to south along the eastern edge of the site, providing access to the site on the southeast corner of the property.

Sun Path: Winter Solstice

Sun Path: Summer Solstice

Pine trees scattered throughout the clearing.
Figure 66

Concept Explored through Phenomena

The establishment of a concept based on an intellectual understanding of the site conditions and history (Earth|Sky dialectic) was the first step toward the goal of a complete architectural experience. Having fused that concept with the programmatic dialectic between research and education, the final step in complete architectural experience becomes the phenomenological—haptic—experience of that concept within the site and building.

It must be remembered that complete perception cannot be understood as merely a bodily experience. While bodily senses play an important role, a complete experience of architecture relies on the unification of the intellectual with the haptic modes of architectural experience. This occurs when the details forming a work of architecture are in dialogue with the intellectual dimensions of its conception. “When the materiality of the details forming an architectural space become evident, the haptic realm is opened up. Sensory experience is intensified; psychological dimensions are engaged.”

The goal of this project becomes fusing the intellectual concept of the Earth|Sky dialectic with perceptual experience of the datum (Figure 67), through phenomenological manifestations of material, spatial composition and light, modulated by contrast. This unity leads to complete perception of architectural space.

“The architectural synthesis of foreground, middle ground, and distant view, together with all the subjective qualities of material and light, form the basis of ‘complete perception.’ The expression of the originating ‘idea’ is a fusion of the subjective and objective.”

Steven Holl

Philosophical and theoretical research of presence, site history and context research, together with architectural precedent research focusing on the phenomenological experience of architecture, culminates in the design of the thesis. This field research laboratory designed for the University of Memphis addresses the site in such a way as to allow visitors to interpret the surrounding landscape (Figure 68), while providing the necessary program to create an educational experience that orients both visitors and researchers to a new perspective from which to view the forest site. Additionally, the architectural space engages the senses, and increases bodily awareness within users. Throughout the experience of the building, there is a unification between the intellectual dimensions of the organizing concept and the physical perception of the built form, creating a complete experience of architecture, which ultimately leads to a shift in perception and increased awareness.

Figure 68 Site Section. Shewing the building in context, this site section shows the density and scale of the building in the surrounding forest, as well as the slope of the bluff on which the building is sited.
generating building form

Establishing the Datum. The building site connects the relatively flat clearing to the erosive condition of the river's watershed (figure 69). At this point of intersection, a line is drawn at the elevation of the clearing establishing a datum between earth and sky (figure 70). This datum becomes the line at which experiences of the Earth/Sky dialectic will be explored.

Above and Below. The building volume is expressed above and below the established datum (figure 71), allowing the program to occupy both earth and sky. The program recognizes a distinction between education and research. By separating the two and allowing education to occupy the level below grade, visitors and students become fully immersed in the site before rising to the upper level where scientists conduct their research (figure 72).
Bringing Outside In. Separating above and below, research and education, creates a need for vertical circulation. Interior lightwells on the north allow diffuse light into the lower level and create a stronger connection between building and site (figure 73). A large central courtyard creates vertical connection between levels and provides solar access to the lower level throughout the day (figure 74).

Figure 73 Top: Bringing Outside In Axon Figure 74 Bottom: Bringing Outside In Section

Connect and Express. To create circulation between the site and the entry to the building below grade, a transluscent walkway projects from the edge of the bluff, gently sloping out and back below the earth. From the clearing, it leads visitors into the forest canopy before they descend into the earth, connecting above and below (figure 75) and allowing users to experience the transition between earth and sky. From here, a pool is carved along the length of the building, projecting toward the Mississippi River. This pool acts not only as a symbolic connection between the building and the Mississippi River, but also as an internal horizontal connection from east to west between the building’s volumes (figure 76).

Figure 75 Top: Connect and Express Axon Figure 76 Bottom: Connect and Express Section
**Contrast.** To allow visitors to experience the datum line as they move through the building, materials and construction methods are chosen that reflect the Earth|Sky dialectic. The building is rendered as a massive lower structure of cement-stabilized rammed earth walls, contrasting with a delicate upper structure of steel and glass (figure 77). The heavy earthen walls, made from soil excavated from the site, connect the building to the landscape and reinforce the experience of being in the earth. The transparency and structure of the upper level creates a pavilion-like experience, with a strong visual connection to the landscape, drawing the eye along the horizon and into the sky (figure 78).

**Lift and Collect.** The roof is pitched (figure 79) to allow the bulk of rainwater to shed into the courtyard, heightening the experience of watershed from within the building. From the courtyard the rainwater can be collected and then diverted into the pool (figure 80).
Managing Stormwater. As the site research shows, water erosion played a major role in the formation of the site’s topography, inspiring the concept around which the project is organized. Thus, the conditions of water erosion play a key role in the experience of the building. As the site slopes from east to west, stormwater follows the slope of the land. This condition gave rise to a need for stormwater management strategies that not only direct water around the building, but also reduce and even prevent the erosion of soil on the site (figure 81).

The reflecting pool that is carved through the building is the first step toward accomplishing stormwater management within the project. While the roof pitch, courtyard, and pool allow for a heightened experience of storm events from within the building, they also allow the collection and dispersion of water into a catchment system or back into the earth (figure 82), slowing the speed of runoff and preventing further erosion.

Water that flows across site is directed to courtyard and into pool.

Green roofs reduce stormwater runoff.

Tiered raingardens filter and slow water movement along southern edge of building, reducing erosion.

Gravel bed filters and slows water before it is dispersed into the ground.

Water runoff from roof is directed into courtyard, where runnels direct overflow to pool catchment.

Pool catches stormwater and directs it to catchment system; infinity edge allows overflow to be distributed into gravel bed below.

Water from roof flows across site and into fountain and into pool.

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Figure 82: Longitudinal Sectional Perspective. Showing a section through the pool, the drawing highlights the points where water is collected and distributed as water moves across the site from East to West (right to left).
Site Circulation Diagram

Primary Pedestrian Circulation
Secondary Pedestrian Circulation
Vehicular Circulation
Access to Trails
Edge between Clearing and Bluff

Crossing the Datum: On the site, vehicular circulation is limited to the east. Once visitors park and gather at the visitor drop-off, a straight stone-paved path marks the primary pedestrian circulation across the site to the edge of the clearing (figure 84). Here, the flat ground transitions to the steep slope carved by erosion. Visitors experience this transition as the stone path becomes a perforated metal walkway that slopes down below the established datum. The sloped walkway turns back toward the building as it continues to descend below the elevation of the clearing. Once more, crossing the line between clearing and bluff, the walkway returns to solid ground. Here, visitors enter the building below the datum (figure 83).
Revealing the Datum: Experience of the Earth/Sky dialectic changes from different perspectives around the site. On approach from the east (figure 85), the building appears to be a single story, framed by the forest canopy at the edge of a clearing. From the south, the earth falls away, revealing something more beyond the edge of the clearing (figure 87). From the west, the building is revealed to occupy both earth and sky, as the structure that seemed to rest at the edge of a clearing, in fact embedded into the edge of a bluff (figure 86). From the north (figure 88), the gentle slope of the earth reveals the relationship between the site and the building, at the edge of earth and sky.
Below the Datum. The level below the datum contains educational spaces connected by public areas (figure 89). The architecture is characterized by heavy materials of rammed earth walls and concrete floors reflecting the concept of being below the "earth". The windows and openings (figure 90) are fitted with minimal mullions that are embedded into the walls, making the glass seem a part of the wall itself. Below the earth, primary light sources in the form of extruded volumes provide contrast to the deep shadows. Interior spaces are organized around these "exterior spaces" in a composition of solid and void (figure 91), heightening the experience of each space along the journey.
Above the Datum. In contrast to the level below, the upper level is characterized by a delicate structure of steel columns and glass. The high visibility (figure 93) between interior and exterior creates a pavilion-like structure that rests on top of the massive lower volume. Roof overhangs and wood screens provide sun protection along the southern facade. Offices, public space, and research spaces (figure 92) are all visually connected to the pool that carves through the building; while the roof sheds water directly into the pool and the central courtyard, heightening the experience of storm events (figure 94).
At the center of the building, the interior atrium space, together with the exterior courtyard, creates moments of connection and transition between earth and sky (above and below the datum) as well as between the edge of the clearing and the bluff. The stair provides connection between the educational spaces below and the research spaces above. The courtyard creates a central visual connection between the spaces arranged around it (figure 95). The glass wall connecting interior to exterior provides views as well as the ability to draw light and air through the space, strengthening the connection to the site. The northern facade represents the merging of above and below as rammed earth merges with glass from above. This can be experienced from the interior stair as well as the exterior earthen stair that follows the slope as the land falls toward the Mississippi River watershed.

The surrounding forest contains deciduous trees that range in height from 30’ to 80’. Awning windows placed above lower level hopper windows induce convective air currents, allowing warmed air to escape. Awning windows at the upper level allow warmed air to escape by cross-ventilation. Along the northern facade, the rammed earth merges with the glazing of the upper level as the earth slopes toward the west. Rammed earth walls act as thermal walls, absorbing heat during the day from winter sunlight filtering through the bare branches of deciduous trees and releasing it as the temperature drops overnight. Sunlight is filtered through trees during spring months, allowing limited heat to absorb into concrete floors. Minimal solar penetration during summer months.
phenomena

Arrival. Crowded by trees, entry to the site is a meandering gravel drive. You park among the towering pines and the sound of gravel underfoot merge with the sounds of insects and birds, rising with the sun. From here you see a place to gather in a clearing near a low wall where the natural landscape begins to merge with the man-made (figure 96). Two low structures rest at the edge of the clearing, and just beyond, the dense canopy of trees frames a wide view into the distant sky (figure 97).

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Figure 98 Looking toward the Horizon. The pavilion and research center frame the view to the horizon as it opens toward the Mississippi River.
Between Earth and Sky. A wide stone path leads you between the two low structures and points you toward the open horizon (figures 98 and 101). As the path begins to slope down, you come to a point where the earth falls away and the solid path gives way to one of translucence (figures 99 and 100). Footsteps now reverberate on the perforated metal. As you feel each step out into the delicate structure, you are projected into the forest canopy where you are suspended between earth and sky.

Reaching the path’s terminus, the vista opens west toward the Mississippi River and the gently sloping path becomes a tiered stair (figure 103), a place to gather or take rest. Turning around, the path turns back on itself, and what seemed to be a low building huddled at the edge of a forest clearing is revealed to be a more expansive one, occupying the edge of the bluff as it opens toward the horizon. Water spills leisurely over the edge of a pool, its sound mingling with the chirp of birds and the wind rustling through the trees (figure 102).

Continuing, the suspended walkway returns to solid ground and you pass below the earth. To the left you begin to see glimpses of an open space before you reach a heavy door.

Figure 98 Top: Section L1
Figure 99 Bottom: Between Earth and Sky
Figure 100 Next Page: Top: Section L1
Figure 101 Next Page: Bottom: View to Entry
Figure 102 Section Detail at Tiered Stair
Figure 104: View from Entry. Showing the entry during a rainstorm, water from above ground collects and streams down the wall into the pool.
You enter the building between heavy walls of earth (figure 104). The same earthen walls frame the view through a gallery and an unseen light source illuminates the wall at the far end, drawing you forward (figure 105). To the left, the wall is carved with a figure of the United States, showing the many branches of the Mississippi River Watershed (figure 109). The same pool you passed on arrival reflects the sun through a low window below. Another space is carved into the earthen walls. It holds an interactive exhibit, allowing visitors to engage with the site by learning about the properties of the soils that make up the surrounding land (figure 104). Finally, reaching the far wall and looking up reveals the branches of the trees you passed on your arrival (figure 106).

Returning to the entry, your gaze is drawn through the building and a rhythm of thick walls frames a view toward the open-air garden (figures 107 and 110). Shadows gather in the corners while light passes through a large portal separating the entry and the distant garden (figure 108). Glimpses of water and an open space beyond the walls give a hint of what lies around the distant corridor. Stepping into the light, your gaze is drawn to the left as the pool projects out into the open horizon, the sky overhead and earth of the walls meeting in the water’s reflection (figure 111).
Figure 111: First view toward the Mississippi River
Nexus. Moving beyond the framed view of the pool, you enter a darkened gallery space. This gallery contains information about Edward Meeman and the biological sciences and ecological research that occurs on site and in the surrounding areas. In this space there are no openings that hint at what lies beyond, only the open-air garden at the end of the corridor illuminated by a muted glow of light from above (figure 110). As you reach the end of the corridor and turn, the space opens to a large atrium, a double-height space that is only interrupted by a translucent walkway connecting the spaces of the upper floor (figure 112). A large sculptural light fixture is suspended below a skylight at the center of the light-filled room. As the breeze passes through, the tiny glittering and glowing “leaves” of the sculpture spin, mimicking the falling leaves of a tree. The light sculpture is encircled by a thin folded concrete stair. Behind the atrium, a rammed earth wall begins to erode, merging with the glazing of the upper level. Grass is visible at the bottom of the glass, hinting at the relationship between building and site. Looking across the courtyard, the small openings of the entryway are visible, creating a connection across the space. The boundary between the interior and exterior all but dissolves, existing only in the form of a transparent glass wall. The stone pavers of the courtyard seem not to notice this boundary as they move past it and into the space (figure 113).

Here, layering of space, materials, and light meet to create a connection between above and below and between the building and the surrounding landscape.
Focused Views. From the atrium (figure 114), a tall window at the end of a long axis gives a clear view through the building and into the surrounding forest. Continuing to circulate around the courtyard space, the openness of the atrium is then compressed as you continue straight into a classroom. To the left, a low window focuses your view to the edge of the reflecting pool (figure 115). Sunlight reflects the water’s movement as it bounces off the pool and spreads across the adjacent wall. On the opposite side of the room, a large wall of glass provides an expansive view of the sloped ground as it falls away toward the river (figure 116). Around the corner from the classroom, the smaller space of the reading room gives a new perspective on the courtyard. The low window aligns with a shelving and seating element, allowing for a moment of connection between the interior and exterior space (figure 117). A view through the corridor and out of the mudroom reconnects you to the surrounding landscape (figure 118). The mudroom serves as a gateway to the surrounding landscape as well as a place to clean your shoes of the dirt picked up along the way, and to prepare the samples collected in the field (figure 119).
Emerge Above. From the lower level there are two paths leading to the level above the datum. After exiting the building on the lower level and passing through the mudroom (figure 122), visitors and scientists alike travel up the thin concrete steps embedded into the sloping land, rising alongside the building (figure 126). You see glimpses of the interior atrium space as the rammed earth wall of the lower level merges with the glass above.

Inside the atrium, the stair that leads to the second floor also rises beside the eroded wall, allowing you to experience the vertical connection from a different perspective, as the interior stair crosses paths with the one outside (figure 114).

As you continue upward, the line between above and below is marked by the line between rammed earth and glass walls (figure 127). Emerging above the datum, the experience of the site becomes focused. Every point of the interior is connected to a view outside. Instead of darkly shadowed corners and bright slices of sunlight, a more diffuse light permeates the upper level, bouncing off the polished terrazzo floors and a handful of white walls that give privacy to the interior spaces (figures 121 and 124). Framed views through the building (figure 123) draw you toward the laboratory where tables and shelves serve not only function, but also act as frames to the surrounding forest (figure 125).
Figure 126: Eroded Wall. The line at which the land begins to fall away marks the placement of the central atrium here. The datum line begins to blur as the massive walls below fade and merge with the glazing above.
Departure. From the upper level, you look out onto the tree you sat beneath in the courtyard, from here seeing the tops of its branches (figure 128). As you leave, the door frames a view toward a pavilion, with covered seating and a fireplace (figures 129 and 131). Moving toward this “outdoor room” you once again pass the pool that carves a path toward the Mississippi River, this time from a new perspective (figures 130 and 132). This final view signals the complete experience of architecture.
"For my body is at home, in this open present, with its mind. And this is no mere illusion, no hallucination, this eternity—there is something too persistent, too stable, too unshakeable about this experience for it to be merely a mirage..."

David Abram
At the beginning of this thesis, the intention was to create an architecture of presence; an architecture that leads visitors to greater awareness through the unification of mind and body. After extensive research into presence, perception, and architectural experience, it became the goal of this project to unite haptic and intellectual perception of architecture through an organizing concept. This concept seeks to fuse an understanding of the site with the circumstantial needs of the program by means of phenomenological experiences of light, material, and spatial composition. Through the crafting of this complete experience of architecture, visitors experience a shift in perspective (figure 132), increased understanding, and ultimately achieve presence.

This project accomplishes its goal of uniting site, circumstance, and phenomena. On the largest scale, the history of the site provides the overall organizing idea that drives the project, a dialectic between earth and sky that is made manifest in the erosive conditions on the site. This allows explorations of the concept throughout the project on all scales. The selection of the program further reinforces the concept in its inherent connection to the site through the primary objective of ecological research and education. Finally, the phenomenological manifestation of light, material, and spatial composition are developed in such a way that they tie directly back to the site and surrounding landscape through their contrast. Small details, such as the pool carving through the building and the atrium wall that merges “above” and “below,” can all be linked directly back to that driving concept.

While the overall goal of the project is successful, certain details could have been explored further. This includes the perforated metal of the interior walkway in the atrium that connects the upper level (figure 133). The primary goal in material selection being transparency, practical concerns lead to a need for a greater level of opacity. This could include a semi-translucent layer being added, or a smaller perforation in the metal itself. Additionally, while the roof overhangs and wood screens, together with the filtering effects of the surrounding forest, provide a large amount of solar protection, there is a concern about the amount of direct light that enters the building during the overheated months of summer. Without making large alterations to the facade of the building, fritted or triple-glazed windows could be an alternative option to decrease cooling loads and increase comfort of the building’s occupants.
In the first chapter of this work of ecological philosophy, the author forms a definition of a “more-than-human world” and seeks to elucidate what it means to be a participant in such a world. In chapter two, Abram discusses the philosophies of phenomenologists Edmund Husserl and Maurice Merleau-Ponty and how their work calls into question the acceptance of a mathematically determinate world propagated in Western society. An American philosopher and cultural ecologist, David Abram is best known for his work bridging the philosophical tradition of phenomenology with environmental and ecological issues. Receiving his doctorate in philosophy from the State University of New York, Abram has had a great influence on the environmental movement in North America, beginning with the publishing of The Spell of the Sensuous in 1996 and subsequently Becoming Animal in 2010. Within this text, the author illustrates examples of non-human phenomena and its effect on human sensorial experience. He highlights the shortcomings of Rene Descartes' philosophy of separating the thinking mind from the material world and how the sciences consistently overlook the subjective experiences of everyday life in an effort to rationalize and codify human existence. He goes on to explore how an understanding of phenomenology can help attune the perceptive body to the broader ecology of the planet, opening the world to an awareness previously unavailable in an objective world. The way in which the author explains and links the phenomenological ideas of Husserl and Merleau-Ponty to the study of non-human life on the planet has direct implications to this proposed design thesis, including an understanding of what makes up human perception and how that can shape participation within the natural world. Connections to these phenomenological investigations are also seen within the work of the philosopher Martin Heidegger, as well as architectural theorists Juhani Pallasmaa and Steven Holl. The semantic link between humans and the natural world is key in the investigation of this thesis. Within the design of an ecological research center, the connection to natural phenomena informs not only design decisions, but also helps to shape strategies toward a greater understanding of programmatic goals. Paramount to these goals is the reconnection of mind and body toward greater awareness. The author’s central argument is in direct support of this goal and an understanding of the philosophical ideas within this text leads to a firm foundation for many decisions within my thesis, including the choosing of the building typology as well as the building site.

Ando, Tadao. “Writings by Tadao Ando.” In Tadao Ando: Complete Works, edited by Francesco Dal Co, 443-481. London: Phaidon, 1995. This text is a compendium of Tadao Ando’s works, including not only records and descriptions of the architect’s built work, but also a selection of Ando’s writings on architecture and a critical anthology of writings by other architects and critics regarding Ando’s architecture. The essays included in this text are sequenced chronologically, giving a sense of Ando’s evolution as both an architect and architectural theorist. Francesco Dal Co is an Italian historian of architecture. Graduating from the University of Venice in 1970, he has been director of the Department of History of Architecture since 1994. He has taught the history of architecture at the Yale School of Architecture, and the Accademia di Architettura of the Università della Svizzera Italiana. From 1988 to 1991 he was the director of the Architectural Section at the Biennale di Venezia and curator of
existential bodily awareness that informs such experience. When of Ando’s writings can be seen an extensive understanding of Ando is unique in his understanding due to his Japanese heritage of these elements can be explored within architectural space, together to create meaningful places for human habitation. While elements shape architectural space, as well as how they come within them a holistic understanding of how these individual spatial composition, materiality, and light), Ando’s writings hold within architecture for the purposes of this thesis (specifically further writings. When investigating manifestations of presence in architecture for the purposes of this thesis (specifically spatial composition, materiality, and light)). Ando writes about the perceptual phenomena of light and wind, inside and out, he does so in relation to the human experience of nature and humanity’s place within the world. This suggests a more ephemeral link to the world, reinforcing the notion of an architecture of presence.


This article on the Memphis soil, which is a series of soils in its own right, was included in a book on soils of the eastern United States, which was part of a larger compendium of books that covered soils across the United States and is now part of the National Agricultural Library. Information from this article was utilized as site research for this thesis, specifically the properties and uses for the soil on the project’s site.


ArchDaily is a website that publishes architectural news, projects, products, events, interviews and competitions, as well as opinion pieces, among others. The content is curated for those interested in design and specifically catering to architects and designers. This article provides background information about the Cabinet at Longbranch, a residence designed by Olson Kundig. This project explores the strong connection between the building and nature, and how the project visually connects the interior to the surrounding site. This information was specifically utilized as a precedent for the thesis project to use of spatial composition and material choice.


This article contains information about the location, geology, and human history of the Chokasawa-Bluff formation, as well as the sources referenced in the article. These sources include The Geology of Tennessee (1889) by James Sanft and John The New Blackford Faults Piedmont (1885) by Rob Ayre, among others. The information used specifically in this thesis applies to the geological formation of the bluff during prehistoric times and how that relates to more current geological processes occurring on the site at present.


Within this comprehensive text, John Dewey explores ways in which humans come in contact with, experience, and react to art. Within this comprehensive text, John Dewey explores ways in which humans come in contact with, experience, and react to art. This book outlines a step-by-step approach to understanding and developing a complete yoga practice, according to the school of Viniyoga, a form of yoga developed by the author to be adapted to each student’s specific physical and mental condition, there exists an understanding of an existential bodily awareness that informs such experience.

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This text, the author explains common reasons individuals seek the practice of yoga and how as well as how yoga can change one's perception through repetitive practice. For the purposes of this thesis, an understanding of how presence and perception can create increased awareness within individuals is utilized toward the goal of creating presence within architecture experience.


This article provides background information about El Humedal, a wetlands research laboratory designed by TAAR. This information was used in this thesis for program division, space adjacencies, internal/external spatial relationships, and how public space acts as a connection between programmed space.


This website contains information about the University of Memphis, the university attended while undertaking this thesis project. On this site there is information about the facilities currently owned and operated by the University of Memphis used for ecological research, as well as the mission and goals of the Biological Sciences program. This information was used as part of site and program history and research.

“Perception: Phenomenology of Architecture, Holl, Steven.” In Questions of Perception. The author's explanation of how individuals perceive architecture is broken down into categories based on both the individual "physical" senses, such as touch, sound, and sight, as well as less tangible understandings, or "mental phenomena," such as passage of time, scale, and proportion. Steven Holl graduated from the University of Washington, is the principal of STEVEN HOLL ARCHITECTS in New York City, and received his PhD in English from Fordham University. He co-founded the online publication Guernica/ A Magazine of Arts and Politics and is a prolific contributor to Open Culture. In this article, Jones gives an overview of the video essay by School of Life founder, Alain De Botton, "Life House / John Pawson." For seven years she worked for Team Zou Atelier Mobile in Japan before opening a practice in the United States. She is an associate professor in the College of Architecture + Planning at the University of Utah. In addition to Zen Gardens, Locher also authored Super Potato Design (2012). This book is a monograph of the work of Japan’s leading garden designer, landscape architect Shunmyo Masuno. Within the text can be found both a well-documented analysis of the designer’s works as well as information regarding traditional and modern Japanese design tenets. Mirja Locher is an architect who received a Master of Architecture from the University of Pennsylvania. In addition to Zen Gardens, Locher also authored Super Potato Design (2008) and Traditional Japanese Architecture (2012). In the section on Traditional Zen Gardens, in the 21st Century the author describes Japanese culture as more placing importance on the invisible qualities of a thing rather than its physical form.

Heidegger’s views on authenticity and awareness, as well as the relation to the architect’s goal of creating optimized and functional spaces that are not impacted by the invisible qualities of a thing rather than its physical form. Holl’s critique of modern industrial and commercial building practices that disparage the essence of architecture is achieved in the writings of Pallasmaa, who stresses the detrimental effects of a technological world on our bodily senses.

In “Questions of Perception” Holl states the differences in conceptual and mental phenomena is one of experience versus intention. Experience in architecture is one of haptic engagement while intention in architecture speaks to the conceptual, or intellectual understanding of space. This thesis seeks to unite within the user a sense of both the physical and mental phenomena of architectural spaces to provide a complete experience. This in-depth look at how phenomena are perceived provides a basis from which these ideas can be viewed and tested.


This article provides background information about Duke University Marine Laboratory by GLUCK+. This information was used in this thesis for program division, space adjacencies, internal/external spatial relationships, and how public space acts as a connection between programmed space.


This article provides a connection between Heidegger’s “chatter” and what Desikachar describes in the video essay by School of Life founder, Alain De Botton, “Life House / John Pawson.” This information was used as a precedent for the thesis project’s use of spatial composition and material choice.


Josh Jones, a writer and editor based in Durham, North Carolina, received his PhD in English from Fordham University. He co-founded the online publication Guernica/ A Magazine of Arts and Politics and is a prolific contributor to Open Culture. In this article, Jones gives an overview of the video essay by School of Life founder, Alain De Botton, “Life House / John Pawson.” The video, as Jones explains, is an introduction to the philosophy of Martin Heidegger that attempts to explain the key tenets behind Heidegger’s thinking, including the meaning of phrases such as “dasein” and “dasnichts,” among others. Heidegger’s views on authenticity and awareness, as well as the connection between Heidegger’s “chaos” and What Deadheart describes in the Heart of Yoga as the patterns and habits on which people become dependent, are key principles from this article impacting this thesis.


This article provides background information about Life House, a project by John Pawson. This article addresses meaning, orientation, materials and context as it relates to the architect’s goal of creating optimized and functional spaces that are not impacted by the invisible qualities of a thing rather than its physical form.
These qualities often consist of "beauty, elegant simplicity and rusticity" (24). This is deeply rooted in Japanese aesthetics and the "feeling" you get from these qualities is the goal of many Japanese arts, and the aim of Louise when creating Zen gardens. Traditionally, gardens are designed to connect the visitor with nature. In doing so, they provide tranquility and the opportunity for deep reflection. In this sense, there exists the ability of this type of design to create awareness, that in turn, bring visitors into the present moment. In the section about Modern Zen Gardens, the author introduces the idea of "empty space" in Zen thought and Japanese garden design. Empty space. In Zen teachings, represents silence, and is understood as "the concentration of all void in spatial composition" (114) in muteness. This silence, or emptiness, is represented in the space between elements, such as rocks or trees. Emptiness represents a contrast to occupied space, or object. This contrast is what gives the empty space its meaning. The layering of these spaces within architecture can also be seen in the works and settings of Tadao Ando as well as many western architects, such as John Pearson. The representation of emptiness, or silence, is of particular importance in the investigation of this thesis as it demonstrates the importance in the investigations of this thesis as it demonstrates the importance of "presence in Architecture-Seven Personal Observations." This thesis concerns how Peter Zumthor defines presence and how architecture can create presence in users.

Nuanced understandings of human psychological response to the built environment play a significant role in the design of spaces for human habitation. In other words, he does not call for a rejection of the sense of sight from phenomenological considerations, but rather a reintegration of this crucial sense into the wider index of human perception. The impact of multi-sensory experience of architecture is the root of this thesis exploration. This theme carries through many of Pallasmaa's writings, as well as the writings of his contemporaries in phenomenological thought, such as Steven Holl. While lacking direct reference to design specifics, the architect's prescience is given so as to make clear the author's intention. Reasoned understandings of human psychological response to the built environment lay the groundwork for exploration into an architecture of the senses, explored in this thesis toward the larger goal of presence, referred to by Pallasmaa as "experience."


In this text, the author seeks to place Heidegger's "being in the world.


In this text, the author seeks to place Heidegger's "being in the world."


Heidegger's suggestion that the experience of place goes beyond mathematical definition supports the argument of this thesis. Additionally, how humans interact with and are influenced by architecture is a key investigation in the exploration of "presence" within architecture.
This article provides background information about the Therme Vals, designed by Peter Zumthor. The article was written by Eduardo Souza, an architect and urbanist who graduated from the Federal University of Santa Catarina. Souza has been collaborating with ArchDaily Brasil since 2012 and is currently Editor of Architecture Classics and Articles. This article specifically addresses the multi-sensory experience of the building, including the atmospheric phenomena addressed within the research for this thesis. The article also addresses the architect’s use of material, light, and spatial composition and how these work to reinforce the project’s concept. This precedent provides an example of “complete perception” in architectural experience.


“Windhover Contemplative Center / Aidlin Darling Design.” ArchDaily. 18 March 2015. Accessed 29 April 2019. https://www.archdaily.com/608268/windhover-contemplative-center-aidlin-darling-design. This article provides background information about the Windhover Contemplative Center by Aidlin Darling Design. This article addresses the goal of creating meditative spaces for users and how this is accomplished through spatial composition and the connection to natural elements throughout the project. This information was specifically utilized as a precedent for the thesis project’s use of spatial layering and how natural elements, such as water, create the opportunity for moments of contemplation.
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Unless otherwise noted, figures are by author.

APPENDICES
Appendix 1: Presentation Boards

Figures 134-144 are the final presentation materials used at the time of the thesis defense. Figure 145 contains photographs taken at the presentation. Figure 146 is a research summary board presented at the 2018-2019 Student Research Forum at the University of Memphis in March of 2019.
Erosive conditions on the site revealed a dialectic between earth and sky. As the earth falls away, the gaze is drawn to the distant horizon; into the sky.

The building site is in a clearing perched on the edge of a densely forested bluff that drops off toward the Mississippi River.

Mississippi River watershed carves into topography toward the west

Deciduous forest reduces erosion on steep slopes

RiverBluff Road runs north to south along the western edge of the site

Pine trees scattered throughout the clearing

Once the program is defined, a dialectic between research and education becomes evident.

The goal of this project becomes fusing the intellectual concept of the Earth | Sky dialectic with perceptual experience of that datum, through phenomenological manifestations of material, spatial composition and light, modulated by contrast. This unity leads to complete perception of architectural space.

The roof is pitched to allow the bulk of rainwater to shed into the courtyard, heightening the experience of watershed from within the building.

From the datum, the building is rendered as a massive lower structure of rammed earth walls, contrasting with a delicate upper structure.

An extended ramp projects from grade over the bluff's edge, gently sloping out and back below the earth. Along the length of the building, a pool is carved to create a connection from east to west, toward the Mississippi.

Interior lightwells on the north allow diffuse light into the lower level and creates a stronger connection between building and site. A large central courtyard creates vertical connection between levels and provides solar access to the lower level throughout the day.

The building volume is expressed above and below the established datum, allowing the program to occupy both earth and sky.

The site connects the relatively flat clearing to the erosive condition of the river's watershed, establishing a datum between earth and sky.
contemporary society.3 With an understanding of the fluvial deposits from glacial runoff steep valleys and have higher gradient streams than areas to the Bluffs are areas of high ground rising 50-200 feet above the the Mississipp River Bottomlands Bluff. The existing facilities and the site are both located on the bluffs. The existing Facilities and the site are both located on the bluffs. The primary concern of this thesis is using material and light, modulated by contrast, experience leads to increased awareness and spatiality materiality light contrast

Appendix 2: Process Piece
“dasein” illustrates the complete human experience Initial research into uniting mind and body in architecture led to questions of expression. Phenomenological experience of architecture is an abstract idea most easily expressed through words. This process piece is an investigation into the visual communication of the abstract concepts explained during the thesis process and the goal of uniting mind and body into a complete human experience.

Intellectual Perception. An attempt to rationalize and mathematically define the human body; Leonardo da Vinci’s “Vitruvian Man” (figure 147) is used in this process piece to represent intellectual perception.

Sensory Perception. Figure 146 evokes a sense of ephemeral phenomena one might identify with haptic, or sensorial information. In this process piece it represents sensory experience.

Unification. The final step in the process piece (figure 2) is to unite the intellectual with perceptual experience, representing mind-body unity which then leads to a complete human experience in the present moment.