Sensorial Architecture: Design for Well-Being

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Sensorial Architecture: Design for Well-Being

Philip Sanders
Kennesaw State University
Department of Architecture - Spring 2019
Sensorial Architecture: Design for Well Being

This Final Project is presented to the Faculty of the Department of Architecture by

Philip Sanders

In Partial Fulfillment of the Requirements of the Degree

Bachelor of Architecture

Kennesaw State University, Marietta, Georgia
May 3, 2019

Student’s Full Name: Philip Sanders
Thesis Summary: My thesis aims to interrogate the relationship between phenomenology and architecture. Through this project, I will investigate how to create a sense of well-being, particularly in response to the condition of depression in its various forms. Architectural design, with an emphasis on mood and atmosphere, will take a central role through the design of a series of retreats. Through manipulation of: natural light, smell, texture, materiality, and the like, I intend to create a multi-sensorial space in which the present moment is the central focus. I will examine the current building typologies being used to address depression, as well as, developing research. Through my thesis, my goal is to demonstrate that architecture can be part of the solution in the treatment of depression through the design of a multi-sensorial space that sheds light in the midst of darkness.

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Department Chair: Dr. Anthony Rizuto, PhD
Thesis Project Title: Sensorial Architecture: Design for Well Being
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Chapter 1.0

The Design Theorem
It is commonly noted that everyone around us has different experiences, values, knowledge, and most importantly, their own story; however, often times within this story are things that one will never share: a darker and more painful section of a broken narrative where one’s lost self, aspirations, attitude, and self-worth reside. Around the world, over 300 million people suffer from depression and anxiety. This mental illness has had a huge impact on my life as I have suffered from depression my entire life and have firsthand experienced its detrimental impacts. We typically just think of depression and related mental illnesses as only a short spurt that occurs every now and then; however, society often fails to realize that many people truly suffer from a legitimate illness. People feel as though they have nothing, no one, or no purpose regardless of whether they have them or not. This often surreal illness goes unnoticed by many who interact with us on a daily basis. The effects of depression and social anxiety are far too often concealed within the person’s outer protective layer that they’ve created over numerous years of suffering. Our family and friends remain unaware of their loved one’s pain, thus leaving the person wondering in search of relief that does not exist. Medicine and counseling only go so far in regards to asserting positivity and relief to suffering from depression. With this in mind, imagine architecture taking on a role, not only physically, but mentally in order to provide relief in this never ending conflict within one’s self.

My thesis aims to interrogate the relationship between phenomenology and architecture. Through this project, I will investigate how to create a sense of well-being, particularly in response to the condition of depression in its various forms. Architectural design, with an emphasis on mood and atmosphere, will take a central role through the design of a series of retreats. Through manipulation of: natural light, smell, texture, materiality, and the like, I intend to create a multi-sensorial space in which the present moment is the central focus. Through manipulation of: natural light, smell, texture, materiality, and the like, I intend to create a multi-sensorial space in which the present moment is the central focus. Through manipulation of: natural light, smell, texture, materiality, and the like, I intend to create a multi-sensorial space in which the present moment is the central focus. Through manipulation of: natural light, smell, texture, materiality, and the like, I intend to create a multi-sensorial space in which the present moment is the central focus.
Depression & Anxiety: Statistics

Over 300 Million people suffer from depression across the world. Approximately 40 Million of these people live in the United States.

The Population of the United States is around 327.2 million and around 40 million (18.1%) of the population suffers from the mental illness of depression. This data is most recent from the year 2018.

Percentage of adults suffering from depression in the United States: 18.1%
Percentage of adults in the United States seeking help for their depression: 36.9%
Percentage of adults who have experienced a major depressive episode in the past year: 6.7%

Architecture Students Relation to Mental Health

THE ARCHITECTS’ JOURNAL STUDENT SURVEY
UNITED KINGDOM - 2016
450 STUDENTS SURVEYED

25% say that they are suffering from mental health issues.
Another 26% stated that they are or have been treated for mental health related issues throughout their time within the architecture program.
Another 26% said that they believe that they will need to be treated for mental health related issues in the future.
The vast majority of the students stated that the overwhelming work load is the primary cause of their mental health issues while being in school.
An outstanding 60% of the students surveyed stated that their studies went too long and that it is far too much work compared to other students which further contributed to their low mental health.

It is abundantly clear that the mental health problems of architecture students has become increasingly more prominent based on these studies and thus raises the question of what can the role of an architect

Contributions to Positive Well-Being

Forest Bathing
University of East Anglia
Study: 290 Million Participants
Over 20 Different Countries

Researchers, from the University of East Anglia, looked back at data from a numerous prior studies (103) and observational studies and 40 interventional studies. Forest bathing or the equivalent in an urban space was the primary focus.

Green spaces promote physical activity, social interaction, exposure to sunlight, and reduced pollution, which all boost health in various ways.

Warm Colors
Health Magazine
Study from the Vrije Universiteit in Amsterdam

Adults came back & reported that being exposed to the colors of yellow and green on walls made them generally happier and more positive.

Information & data taken from:
Glossary of Words (Author’s Interpretation)

**Well-Being** - mental state of a satisfactory or positive emotions characterized by mental health and prosperity.

**Depression** - a mental illness that traps one within their own mind and dictates self-anguish, loathing, exhaustion, lack of motivation, etc.

**Phenomenology** - the philosophical position of perception and how we experience the world around us. Does not prioritize the visual, but how we interact with the built environment.

**Neuroscience** - a branch of the life sciences that deals with the anatomy, physiology, biochemistry, or molecular biology of nerves and nervous tissue and especially with their relation to behavior, learning, and perception.

**Social Anxiety** - intense anxiety or fear of being judged, negatively evaluated, or rejected in a social or performance situation.

**Melancholy** - a feeling of sadness, typically with no obvious cause accompanied with no foreseeable end.

**Atmosphere** - the mood or tone in a space or situation that generates a feeling amongst those experiencing it.

**Attunement** - the product of numerous characteristics of our surrounding environment working together to formulate a sense of synthesis of emotions.
Alberto Perez-Gomez discusses how specific things make us feel within the built environment. He argues that it is a synergy between numerous specific characteristics that make us feel better and allow us to engage in specific emotions.

We become less attuned with our surrounding environment as this synergy seems to be lacking within our built environment. Perception becomes distorted without being able to properly perceive what is going on around us.

We typically feel to either: the nature of our activities, to their actual factual and objective character, or to our own subjective brain chemistry. While this is partially true – our feelings co-emerge with the rest of our bodily consciousness in perception.

"Feelings are not merely secondary aspects of consciousness, annoying or pleasurable sensations that act as obstacles to our proper lucid functioning." (1)

Feelings are important because, they affect us emotionally and they actually enable our intellectual understanding. Perez-Gomez argues that the environment matters in the way in we may not have fully fathomed. It matters not only as a material ecology that must obviously be kept alive for the survival of our species, but also because it is nothing less than a constituent part of our consciousness.

Our homes are always where we feel more comfortable while architects never had much of an impact in that area. We turn our homes, no matter the type, into a place where we feel comfortable. The goal of the architect is to design the city and buildings to feel like home.

Often times we feel alienated in cities. The public realm has become a space of transit, or one where we go for voyeuristic thrills, and particularly to consume. When we believe negotiating through our needs the internet is not possible or desirable. Regardless, the public realm is inevitably the space where we appear for others as embodied consciousness...

Modern cities disregard the importance of walking, as do modern city dwellers, for whom it is merely an inefficient mode of transit. Yet walking is emblematic as a primary mode of perception, not only because it provides a space of recollection and meditation, but also because it represents our universal human journey.

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A study was done at the University of London in 2003 that featured ten college student subjects and ranked three hundred paintings on a 1-10 scale based on whether or not they found them beautiful or ugly. The study was not to determine anything related to beauty; however, to see if decisions on beauty or ugly left a distinct neurological footprint. The experiment showcased an interesting result. The paintings that were designated ugly by the students, compared to those that were picked to be beautiful, activated bilateral areas of the motor cortex that had been previously been associated with fear-inducing visual stimuli, such as ugly or fearful faces. By contrast, the paintings that the students declared as beautiful, compared with paintings judged as neutral, showed enhanced activity in the medial orbitofrontal cortex, the adjacent anterior cingulate cortex and an area of the left parietal lobe.

“The OFC, which lies at the base of the prefrontal cortex, just behind and slightly above the eyes, is involved with sensory integration, and - as we know - it is an important component of the hedonic or pleasure circuit involving the ACC, insula, and subcortical areas of the brain. The OFC is also an area of the brain that has since been shown to be active with such things as romantic and material love, sexually arousing pictures, the perception of attractive faces, pleasurable music, gustatory and olfactory delights, and social acceptance. If ugliness, it seems somehow prompts the viewer to grimace or want to take flight, beauty, like a youthful proffered flirtation or the smell of a particular food, encourages us to stay and indulge our fancy.” (2)
“The purpose of our buildings is too often understood solely in terms of functional performance, physical comfort, economy, symbolic representation and aesthetic values. However, the task of architecture extends beyond its material, functional, and measurable properties - and even beyond aesthetics - into the mental and existential sphere of life.” (3)

Buildings are not meant to only provide physical shelter of house activities. In addition, they must also house our minds, memories, desires, and dreams.

“Buildings mediate between the world and our consciousness through internalizing the world and externalizing the mind. Structuring and articulating lived existential space and situations of life, architecture constitutes our most important system of externalized order, hierarchy, and memory.” (3)

Instead of thinking of the senses as isolated systems, we should become more interested in and knowledgeable about their essential interactions and crossovers. Merleau-Ponty discusses the vital unity and interaction of the senses: “My perception is ... not a sum of visual, tactile, and auditory givens: I perceive in a total way with my whole being. I grasp a unique structure of the thing, a unique way of being, which speaks to all my senses at once.” (3)

This flexibility and dynamic of our interaction with the world is one of the important things that neuroscience can illuminate for us. The craft of architecture is deeply embedded in this human sensory and mental complexity.

The imagination can definitely be argued as the most human of a person’s capacities. While human imagination is often associated with the act of daydreaming, our most normal activities, such as perceiving and memorizing places, situations and events, need the use of our imagination. Our experiencing and memorizing are embodied acts, which evoke imaginative realities with detailed meanings.

“The existence of our ethical sensibility alone calls for imaginative skills, as we could not evaluate our alternative behavioral choices without the ability to imagine their consequences.” (3)

“Recent studies have revealed that the acts of perceiving and imagining take place in the same areas of the brain; consequently, these acts are closely related.” (4)

3 Robinson, Sarah. MIND IN ARCHITECTURE. (MIT Press, 2017), pg. 52.
4 Robinson, Sarah. MIND IN ARCHITECTURE. (MIT Press, 2017), pg. 68.
“We perceive atmosphere through our emotional sensibility – a form of perception that works incredibly quickly, and which we humans evidently need to help us survive. Not every situation grants us time to make up our minds on whether or not we like something or whether indeed we might be better heading off in the opposite direction.” (4)

Something inside us tells us an enormous amount straight away. We are capable of immediate appreciation, of a spontaneous emotional response, of rejecting things in a flash. That is very difficult from linear thought, which we are equally capable of: thinking our way through things from A to B in a mentally organized fashion.

The Body of Architecture: The material presence of things in a piece of architecture. Architecture allows for the collecting of different things in the world, different materials, and combines them in various ways in order to form and create spaces.

Material Compatibility: Materials react with one another and have their radiance, so that the material composition gives rise to something unique. Material is endless.

“Take a stone: you can saw it, grind it, drill into it, split it, or polish it – it will become a different thing each time. Then take tin amounts of the same stone, or huge amounts, and it will turn into something else again. Then hold it up to the light - different again. There are a thousand different possibilities in one material alone.” (4)

The Sound of a Space: Interiors are similar to a heavy instrument; they collect sound, then they amplify it, and thus transmitting it everywhere. This has much to do with the shape particular to each room or space and with the surfaces of the materials they contain, and the way in which these materials are applied.

The Temperature of a Space: Every building has a certain temperature. Buildings constructed with wood and or lumber will generate a hot space similar to that of a forest and upon being cool outside, the structure will be warmer inside.

“It is well known that materials more or less extract the warmth from our bodies. Steel for instance, is cool and drags the temperature down.” (6)

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"The primary cause of unhappiness is never the situation but your thoughts about it."

- Eckhart Tolle

Eckhart Tolle - The Power of Now

"All negativity is caused by an accumulation of physiological time and denial of the present. Unease, anxiety, tension, stress, worry - all forms of fear - are caused by too much future and not enough presence. Guilt, regret, resentment, grievances, sadness, bitterness, and all forms of non-forgiveness are caused by too much past and not enough presence." [7]

Spiritual teacher Eckhart Tolle describes the notion of having essentially two essences of us. One being everything in the physical element. This includes our skin, body parts, and everything that which physically makes up a human being and the second being our mind. We are so imbedded in our physical life and thus become controlled by our so called egoic mind. This type of ego that which attempts to control our thoughts without us examining them. Unexamined thoughts are extremely dangerous as are always the cause of depression as we become lost as we believe our egoic mind. Tolle teaches on to begin to examine our thoughts carefully in order to begin understanding things as they really are. We can begin to stop believing these false narratives that fill our minds with depression. This is what Tolle refers to as living in the now. Once we learn to examine our thoughts and begin to live in the current moment, we will be at inner peace.

Chapter 2.0

Depression & Well-Being: Photographic Essay
Our thoughts flow flawlessly through our mind without any examination thus leaving us trapped in the future and past and all of the worry and pain that which they contain. The light of the present becomes encompassed in the darkness and danger of the future and present thoughts. Moment image is symbolic of this vicious cycle of the mind.

“All negativity is caused by an accumulation of physiological time and denial of the present. Unease, anxiety, tension, stress, worry - all forms of fear - are caused by too much future and not enough presence. Guilt, regret, resentment, grievances, sadness, bitterness, and all forms of non-forgiveness are caused by too much past and not enough presence” [8]
Far too often the victim of depression is lost in seeing the reality of the world around them. They are stuck in a realm of only seeing a false negative of themselves and the world they live in. It feels as though everything is happening around the individual as they are not a part of it. Image depicts the one suffering being trapped in their own depressed world and bleak world around them.

“Nothing is what it seems to be. The world that you create and see through the egoic mind may seem a very imperfect place, even a vale of tears. But whatever you perceive in only a kind of symbol, like an image in a dream” (9)
The Egoic Mind

The image is symbolic of the egoic mind and our dark unexamined thoughts that focus on wearing down the one suffering from depression with constant brutal painful thoughts. It lurks and follows them everywhere they go.

“When consciousness frees itself from its identification with physical and mental forms, it becomes what we may call pure or enlightened consciousness, or presence. This has already happened in a few individuals, and it seems destined to happen soon on a much larger scale, although there is no absolute guarantee that it will happen. Most humans are still in the grip of the egoic mode of consciousness: identified with their mind and run by their mind. If they do not free themselves from their mind in time, they will be destroyed by it. They will experience increasing confusion, conflict, violence, illness, despair, madness. Egoic mind has become like a sinking ship. If you don’t get off, you will go down with it.” (10)

Perceiving Our Surroundings

How we perceive our world around us plays a huge role in depression as the world around us feels immensely bleak and practically not a part of our lives as we suffer. The image depicts a bleak and dull environment around us as we stay stuck battling our egoic mind.

“... emphasizing particularly that in order to understand consciousness in humans and animals we must look not inward, but rather to the ways in which a whole animal goes on living in and responds to their world. Noe’s work allows us to understand how the tradition view of perception as primarily synesthetic is vindicated by the recent understanding of the senses as modalities that cross over their functional determinations; for example, the now demonstrated capacity of human consciousness to have visual perceptions through touch...” (11)

“... interpretation or information conveyed to a brain: interpretation comes after we have the world in hand, and in this way architecture affects us along the full range of awareness, from pre-reflective to reflective.” (11)

Chapter 3.0

Precedent Studies

Chapter Intro Image - The Weather Project in the Turbine Hall, Tate Modern 16

- Olafur Eliasson
St. Ignatius - Steven Holl

St. Ignatius by Steven Holl emphasizes the usage of light in order to create a moment of worship. We see a system of panels placed in front of the window and open spaces that which fosters a glow of light to seep into the space around the edges of the panel. The building also utilizes a series of oculus type systems to filter both direct and natural light into the space. These two systems along with many carefully placed perforations formulate a true moment of peace and tranquility.
The Ex of In House focuses on the implementation of light and how it enters and flows in the space. There is a primary shaft that allows light to enter and thus illuminate the central space. There is also a circular dome shaped room that bounces light off the curved wall, thus forming unique light and shadows.

The residence is an open loft style with the bedroom space being at the top of the stairs and is exposed to this natural light that floods into the space. The residence gives off a warm yet cozy feel and thus making it a great structure to examine.
Meditation Installation Pods - Headspace

Designed to mimic the organic nature of wood in order to create a comfortable position for the user to sit in while using the installation. This interior form also limits views outside of the installation thus allowing full engagement between the user and installation.

The Installation utilizes a screen placed at eye level in front of the user with a pair of headphones. The device intuitively walks the user through a session of meditation that which relieves them from current feelings of anxiety and sadness.
Chapter 4.0
Experimentation
This object model takes much of the research and methods from my precedence and incorporates it into a physical model to begin to understand how these can be further implemented. The object features a central shaft that which guides a beam of light to the center of the space during the winter solstice. There are also various panels placed in front of the openings in order to create a glow that which illuminates the space in the yellow and orange colors that which are painted on them.
The object also features a white gesso texture to formulate the feel of a bright space on the inside and moss texture as well to incorporate the feel and touch of nature. Numerous peep-holes are imbedded into the walls to allow the viewer to peek inside and begin to experience these effects in a playful manner as one can turn the object in all directions and sides in the sun and create many different light features.

**Experiment One**

The object also features a white gesso texture to formulate the feel of a bright space on the inside and moss texture as well to incorporate the feel and touch of nature. Numerous peep-holes are imbedded into the walls to allow the viewer to peek inside and begin to experience these effects in a playful manner as one can turn the object in all directions and sides in the sun and create many different light features.

**Project Elements:**

**Natural Light** - Painted color panels allow for natural light to reflect onto the interior walls.

**Texture/Materiality** - White gesso applied to wall creating a smooth calming texture along the walls of the object.

**Color** - White colored walls define a sense of brightness. Colored panels add bright colors to further formulate a peaceful and holistic setting.

**Smell** - Grass elements add the sense of being in nature through smell. The model is to also be coated in a lavender scent to further a sense of peace.

**Sound** - Projected location for the model is in a forest environment thus allowing the sounds of nature to flow into the structure through the various perforations.
Experiment Two - Light & Texture Studies

Light Studies:
Light box constructed of laser cut plywood. Some images use mirrored Mylar ADH sheet for a reflective effect.

Texture Studies:
Texture 1: Gesso applied to wood using a small brush. Gesso was set to dry for 12 hours. Satin Lagoon colored spray paint was applied as a finish. Casted shadow from natural sunlight.

Chapter 5.0
Crafting A Moment
Chapter 5 - Crafting A Moment

Perspectives:

Winter Solstice 32 Deg.
Fall/Spring Equinox 56 Deg.
Summer Solstice 80 Deg.

Section Drawings

Floor Plans

House of Water

House of Reflectivity

House of Moss
Deviating from the pathway, I see a dark box like object sitting in the forest. Upon getting closer, it can be seen that the exterior is covered in charred wooden planks and I can see a slight indent about the width a door that runs up to the top of the structure. I begin to feel around the indented portion of the wall, finding a small handle where I begin to pull towards my right and the door begins to open.

Walking through the door and entering the space, there are stairs with a slight gap between them and the wall to the left. Staring down the gap I can see mostly darkness but can also barely make out the movement of water underneath the slab. There is light gleaming in from a ground level window that runs across the width of the space letting light filter in. The entirety of the space is crafted using raw concrete with wood formwork.

I proceed to walk down the stairs into the open space and upon turning to my right I see a warm yellow with a ray of light bouncing off of a reflection pool at the opposite end of where I’m standing. Once approaching the pool of water I look upward and see a shaft where the sunlight is entering. I suddenly feel a sense of ease and begin to feel present in the moment.
Chapter 5 - Crafting A Moment

SUMMER SOLSTICE

80 DEGREES

WINDING STAIRCASES

WINDOW DETAIL
Room of Reflectivity

Upon entering the door, I become quickly encompassed in darkness with the sound of air bristling against a metal structure. Directly to my right is what appears to be a path seen through light seeping through the bottom of the wall into the space. This light reveals enough to allow me to walk slowly down this apparent hallway. While walking down this dimly lit path a bright light catches my eye and causes me to look to my left and reveals a bright light shining through from above and reflecting off of a large curvature constructed of reflective metal panels directing the light to bounce throughout the space. This ray of light is entering through a shaft that is protruding into the space from above; it seamlessly guides the sunlight onto the curved surface. Moving to my left and entering this newly visible space, I notice a bench to my right that which I proceed to take a seat. Looking around the space, I continue to notice several small circular perforations in the wall to my now right side allowing some natural light to enter the space as well.
Room of Moss

Walking up to the structure through the forest, I see that it is clearly elevated above the ground by four steel columns protruding into the ground. Underneath the structure is a narrow staircase with elongated risers. I begin to approach the stairs and I start to look up to what appears to be a door in the floor. I slowly begin to walk up the stairs and reach my arm out to push open the latch above me. I use my right arm to push it up and to the right and continue up into the space.

Directly in front of me is a wall of moss that which grabs my immediate attention as it takes up the entirety of the wall in front of me. There is a small gap in walls, floor, and ceiling, thus making the moss wall appear as though it’s floating. The upper and lower portion of the walls reach out like a beam and are connected to the main structure. Light is filtering in through the ceiling and casting itself upon the moss and into the space from several slits in the roof. These slits look to be about four inches wide and located around the edges of the roof. Looking around, the space consist of light colored plywood that which covers the interior of the space generating a warm feeling within the space.

Once fully in the space, I turn around and see a large panel protruding into the space. This panel features a small hole cut into it thus creating a small dot of light on the ground to where I begin to take a seat. The sunlight is reflecting off of the other side of the panel as it is colored in a bright yellow paint thus illuminating the color into the space.
Chapter 5 - Crafting A Moment
Bibliography


