The Sanctuary of the Mind

Pardis Moinzadeh

A thesis

submitted in partial fulfillment of the

requirements for the degree of

Master of Architecture

University of Washington

2017

Committee:

David Strauss

Susan Jones

Program Authorized to Offer Degree:

Architecture

University of Washington

Abstract

The Sanctuary of the Mind

Pardis Moinzadeh

Chair of the Supervisory Committee: Affiliate Assistant Professor, David Strauss

A contemplative environment at the University of Washington introduces a place to think, meditate, contemplate and simply be by one's self. The necessity for such an environment is felt in an academic, competitive environment, where there are high expectations, and limited time. The University of Washington understands the pressure that members of its community experience every day. In recent years, The University of Washington has started programs such as the Mindfulness Meditation Group sessions, counseling center, and mindfulness meditation at the Henry Art Gallery, to help students alleviate stress, and achieve "inner peace". However, these opportunities can only welcome a limited number of people, need appointments and often have waitlists. These limitations do not respond to the immediate needs of faculty and students, and those who need a moment of solitude.

This thesis proposes a contemplative center that welcomes the University of Washington faculty, staff and students, at any desired time. The contemplative center will be a place for people to re-gain mental balance, to think in a quiet space, to find ease and tranquility, by offering a meditative environment. The contemplative center's primary site is in the Sylvan Grove Theatre, which is a meditative environment itself. The space is a portable architecture, providing an opportunity for the contemplative space to be moved from one site to another.

This center carries the message that the quality of academic efforts, is directly associated with peacefulness of mind.

Acknowledgements

I would like to express my sincere appreciation to my adviser, David Strauss for his support, guidance and insight.

And to, Kazem, Maryam and Parya, thank you for your unconditional love and support.

The Sanctuary of the Mind

Contents

Chapter I - Introduction

In our busy modern world days, months and years pass by, leaving us focused on our daily engagements and relentless hard work to achieve our goals, while the attention to self, to think, to be silent and to breathe is forgotten. Human beings are full of thoughts. Taking the time to return to one's inner self, digging deep into thoughts, and just being, could untangle some of this complexity. This dilemma seems to be much visible in academic environments such as the University of Washington where students experience daily pressure and anxiety. The University of Washington understands the pressure that students face daily in this competitive environment. To this end, the University of Washington School of Medicine has introduced a mindfulness meditation group session since 2011. It is held at the Hall Health Center, and serves students and faculty members during the academic quarter for 8 weeks. During the course of a quarter, members of the Mindfulness Meditation Group learn how to meditate and in groups, share their meditative experiences. However, users of this group must be diagnosed with a mental problem to attend the sessions, or they need a medical referral to join the group.

The University of Washington also holds counseling sessions for those facing difficult personal and academic issues. However, this center offers a limited time service, requires appointment and counseling, and often has a waitlist. These scenarios fail to help those students in need of a moment of contemplation and solitude. This thesis proposes a contemplation center for the University of Washington faculty, staff and students, a place for relieving stress; an easy access space where people can re-gain their calmness. The main program of the space is a contemplative gallery, exhibiting paintings of Mark Tobey, a Seattle based artist who focused on meditative arts in his professional career.

.

This space acts as a personal sanctuary: the spatial quality requires special attention in this thesis. To this end, part of the focus of this thesis is the human senses. Attention to the senses links directly to the act of meditation. The relationship between the senses and meditation can be best explained in traditions such as Buddhism. Buddhist meditation trains the practitioner to observe the breath, the movement of the body, movement of the eye, texture of the surrounding environment, and how the texture feels against the skin. This practice helps achieve the focus needed for meditation. The meditator reaches a sharpness of awareness and experiences a much clearer feel of the senses. This thesis addresses the senses by paying close attention in material selection, texture and smell. It also addresses the senses by incorporating different light qualities, where light engages visual and tactile senses.[1]

The proposed site for the contemplative center is in the Sylvan Grove theatre, located in the heart of campus. The site is a treasure to the University. The University regulations does not allow permanent structures. To follow University requirements, this thesis proposes a temporary building, which travels through the campus, or the city, responding to the future needs. The contemplative center should be a calm, quiet space, where art, architecture and the senses, come together to provide an intimate space, to think and to be.

1 "Meditation & the Senses." The Art of Living Foundation- Yoga. Accessed February 09, 2017. http://www.artofliving.org/us-en/meditation-senses.

Chapter II - Theoretical Framework

This chapter will discuss the traditions of meditation in different cultures, and the effects of meditation on health and performance from a scientific point of view. This section will also address the concept of human senses and perception. It then continues by describing invisible architecture, the domain that one cannot see but feels, which includes the senses. Later on this chapter will describe the University of Washington need for a contemplative center, as well as introducing the University's attempts to address the stress issue. The design proposal for a contemplative center will display the works of art of a Seattle based artist, Mark Tobey, as part of the contemplation program.

Meditation/Contemplation

Meditation is a practice that trains the practitioner to detach one's self from everyday mental engagements and activities. It allows one to achieve peace, transformation and release[1] tension. There are numerous forms of meditation established in different cultures. One form of meditation, associated with Buddhist traditions, is concentrated on mental stillness and concentration. This concept was first established in ancient India.[2] In this tradition, one concentrates on a single object, breath, a body sensation, or a visual stimulus. In this form of meditation, one excludes all thoughts and enters a state of stillness. A recent form of meditation, called 'Mindfulness-Based Stress Reduction'[3] includes activities that help increase focus by deep attention to the present moment.

Other forms of meditation include walking and raising awareness simultaneously or exercises such as yoga.
A different form of meditation is Acem, where the meditator allows thoughts and sensations to travel freely in the mind without any effort in controlling them. The result of Acem contemplation is relaxation as the meditator accepts the thoughts and experiences.[4]

Halvor Eifring, has been concentrating on meditation in different cultures. One of his areas of concentration is how meditation is practiced in Eastern and Western Cultures. According to professor Eifring, traditions of meditation in Western countries is based on content, while Eastern traditions focus on technical forms. Traditions that are more content-based, focus on recitation of prayers while meditating.[5]

1 Halvor Eifring, *Meditation and culture: the interplay of practice and context.* (London: Bloomsbury Academic), 2015. 22.
2 Ibid.
3 Ibid., 38.

4 Halvor Eifring, *Meditation and Culture: The Interplay of Practice and Context.* (London: Bloomsbury Academic, 2015), 43.
5 University of Oslo. "East/West differences in meditation: Spirituality or technique." ScienceDaily. Accessed February 18, 2017. https://www.sciencedaily.com/releases/2014/05/140513092401.htm.

Another example in the western traditions of meditation is the practitioner visualizes a specific incident or story from sacred texts. This form of meditation has been practiced in Christianity, Judaism and Islam. The Eastern traditions of meditation also encourage the practitioner to visualize but the subject of visualization is different from that of Western cultures. In Eastern culture, the practice of meditation is accompanied by visualizing geometrical forms, or reciting sounds that do not necessarily relate to a content. In general, Western traditions emphasize the relationship between the practitioner and God. In other words, it is more religious based.

Generally speaking, meditation in traditions such as Buddhism, Hinduism and Taoism have had a longer history compared to Western traditions.[6]

The traditions of meditation have changed since 1960's. Meditation has moved away from religious content, and Asian practice of meditation has developed techniques that focus on the human mind. At the same time, this approach developed in Western traditions.

Practices such as Yoga, have become popular as forms of meditation which is emphasized on human body, breath and focus. Today, the act of meditation is not necessarily connected to one's religious beliefs which has made it easier to practice for everyone.[7]

Looking scientifically at meditation and contemplation, stress reduction and relaxation are due to changes in brain and body.[8] Measuring the heart rate, breathing, monitoring brain activity, blood pressure, and measuring the stress hormone during practice indicate the effects of meditation on body and mind, and in general, better well-being.

6 University of Oslo. "East/West differences in meditation: Spirituality or technique." ScienceDaily. Accessed February 18, 2017. https://www.sciencedaily.com/releases/2014/05/140513092401.htm.

7 Ibid.

8 Halvor Eifring, *Meditation and culture: the interplay of practice and context.* (London: Bloomsbury Academic), 2015. 37

In meditation, the context in which contemplation occurs plays a crucial role. Contemplating in a spiritual context can provide a foundation for deeper thoughts and self-exploration. For instance, the element of water in a natural context can provide health benefits. In Buddhist culture, water represents purity and serenity. Some forms of meditation use the image of water and its sound as part of the practice.[9]

However, this thesis proposes a contemplative center, from which any person, with any level of meditation knowledge, or with any religious background could benefit. It is a place where there is no requirement for any belief to participate. It is an environment to contemplate, to explore the inner self, and to breathe. One can use this space to practice meditation professionally and one can simply be and think.

For many individuals, just 'thinking' by itself is a form of meditation. This form of meditation has also been studied by philosophers such as Heidegger. He believed that thinking comprises our steps, leaps, paths as well as "human propensity for stumbling, falling and straying."[10] Later, he writes that thinking is a way to unfold our understanding of our inner capacities and potentials. David Levin quotes from Heidegger:

> "… (thinking) should be given to the body as a gift, a gift acknowledging and reciprocating the gifts which the body, receptive to the sensuous presencing of being, has passed on to it in the mode called 'givenness'. Indeed, thinking, should give itself as a gift to the body."[11]

9 EOC Institute. Accessed January 15, 2017. http://eocinstitute.org/meditation/.

10 David M. Levin, *The body's recollection of Being: Phenomenological Psychology and the Deconstruction of Nihilism,* (London, Boston, Melbourne and Henley: Routledge and Kegan paul plc, 1985), 40.

11 Ibid., 41.

Sensation and Perception

Studying environmental psychology becomes crucial when designing an environment which is intended to embrace human being and let him dig deep into his thoughts. Environmental psychology deals with the relationship between human being and the environment and how the environment is perceived through the senses.[12]

According to Juhani Pallassmaa "we are connected to the world through our senses. The senses are not merely passive receptors of stimuli, and the body is not only a point of viewing the world from a central perspective. Neither is the head the sole locus of cognitive thinking, as our senses and entire bodily being directly structure, produce and store silent existential knowledge."[13]

Pallassmaa relies heavily on the foundation Heidegger provided. He denied that human thought is merely produced in one's head. It is produced through constant interaction with the physical environment and the way it affects all our senses.[14]

Human senses have been studied in depth by both psychologists and philosophers. From a psychological point of view, gathering and interpreting environmental stimulations have been studied by recognition of two processes: sensation and perception. Sensation has been applied to the relatively straightforward activity of human sensory systems in reacting to simple stimuli. Perception, however, is applied to "a more complicated process of integration and interpretation of complex, often meaningful stimuli."[15]

12 Rivlin, Leanne G., William H. Ittelson, and Harold M. Proshansky. *Environmental psychology: people and their physical settings.* 2nd ed. (Holt McDougal, 1976.)
13 Juhani Pallasmaa, . *The thinking hand: existential and embodied wisdom in arthitecture* (Chichester: Wiley, 2011), 2.

14 David M. Levin, *The body's recollection of Being: Phenomenological Psychology and the Deconstruction of Nihilism,* (London, Boston, Melbourne and Henley: Routledge and Kegan paul plc, 1985), 45.
15 Paul A. Bell et al., *Environmental Psychology,* 5th ed. (New York: Psychology Press, 2005), 57.

The philosophical approach to the subject of sensation and perception is through studying the concept of 'phenomenology', where sensation is linked to the knowledge of self.

Heidegger states:

> "Phenomenology means…Letting be seen...That which shows itself, just as it shows itself from itself."[16]

It is important to point out that in the context of a contemplative environment, the phenomena would be the human itself that needs exploration. Where human explores inner self, digs deep within thoughts to achieve a better understanding of self. Turning to self and think, helps untangle human complications. Further, Levin states "Phenomenology, then, is a process of articulation, a process of reflection which brings out the hidden logos implicit in the phenomenon by letting the phenomenon show itself."[17]

16 David M. Levin, *The body's recollection of Being: Phenomenological Psychology and the Deconstruction of Nihilism,* (London, Boston, Melbourne and Henley: Routledge and Kegan paul plc, 1985), 13.
17 Ibid.

Architecture of the Senses

Of all the arts, architecture has the capacity to inspire both the mind and engage the body in a unique life-enhancing experience. But too often, built forms focus on the visual appearance and fail to engage the user at a deeper level. Juhani Pallasmaa has formulated the idea of an "architecture of the senses"[18] that is intended to be inhabited and experienced in a way that captures all the senses. He argues that the design of built form needs to go beyond the visual to embrace all the human senses such as touch, smell, taste and hearing. Pallasmaa has argued that the current focus on technology in architecture has resulted in buildings that "lack a spiritual and emotional content."[19] As a result, cities today are pervaded by a "sense of emptiness, distance and rejection."[20]

The role of the five senses in the perception of space has become even more important in our increasingly hectic urban lives. The practice of meditation enables people to turn their attention away from the outside world in order to get in touch with their intimate physical sensations.[21] The act of controlling one's thoughts for therapeutic benefit engages the entire mind and body and affects our experience of space. This thesis proposes the design of a contemplative center that can provide a means to explore an architecture of the senses. As Pallasmaa notes, "our bodies and movements are in constant interaction with the environment, the world and self." The proposed meditation center will provide a peaceful place for the University of Washington students, faculty and staff to reconnect the mind and body, and to include meditation in everyday life.

18 Juhani Pallasmaa, *The Eyes of the Skin; Architecture and the senses*, (Wiley-Academy: 2005).
19 Juhani Pallasmaa and Peter B. MacKeith. *Encounters: architectural essays*. (Helsinki, Finland: Rakennustieto Oy, 2005), 70.
20 Ibid.

21 Ian Gawler and Paul Bedson, *Meditation: An In-depth Guide*, (New York: Penguin, 2011) ,169-170.

Nature is a critical element in the exploration of architecture of the senses. Pallasmaa observes: "Architecture is essentially an extension of nature into the man-made realm, providing the ground for perception and the horizon to experience it."[22] This thesis will thus examine the interaction between light and space in a meditation center situated in a natural setting. Design methods will be based both on the empirical data of case studies of daylighting and on psychological studies on the impact of natural light on human senses.

Architects, Anna Barbara and Anthony Perliss have taken the concept of an invisible architecture to a more specific level of research. In their book, 'Invisible Architecture: Experiencing Place through the Sense of Smell', they have studied the sense of smell and its impact on the experience of architecture.[23] Barbara and Perliss argue that scents can be associated with places, strongly identifying a particular environment. The smell of wood or water, for example, can stimulate the human mind to pay attention to the current environment. But similar smells can also trigger powerful memories of past spaces that people have inhabited and even the emotions they have experienced.

The potential of an invisible architecture that integrates the senses is evident in the Hannover expo structure designed by Peter Zumthor (See Figure 1). Built in 2000, this temporary pavilion provided a place for exposition visitors to rest and relax. The structure was constructed from unseasoned wood boards connected without fasteners, held in place only by steel cables (See Figure 2). The smell, sound and texture of the wood strongly define the experience of space, creating an invisible architecture that affects all the senses.[24]

22 Juhani Pallasmaa, *The Eyes of the Skin; Architecture and the senses,* (Wiley-Academy: 2005), 28.
23 Anna Barbara and Anthony Perliss. *Invisible Architecture: Experiencing Places through the Sense of Smell.* (Milano: Skira, 2006).
24 "Exemplary Project- Swiss Pavilion 'Sound Box' Designed by Peter Zumthor- Folio. Accessed April 02, 2016. https://folio.brighton.ac.uk/user/mg237/exemplary-project-swiss-pavilion-sound-box-designed-by-peter-zumthor.

Fig 1 -2000 Expo, Hannover, Germany
Peter Zumthor

Fig 2 -2000 Expo, Hannover, Germany
Peter Zumthor

Nature, Water

According to Paul Bell, places that human beings occupy, affect moods and feelings. As he put it, "Places might be best understood in terms of transactions between physical settings and people acting in them."[25] Thus, it is central to this thesis to look at the environment that the contemplative center is placed in, and the role it plays in complementing the center as a meditative environment.

According to Kaplan, natural settings are sources of fascination and require no effort to draw attention. Bell describes some natural objects as 'soft fascinations' such as movement of leaves, clouds and water. In his book, Environmental Psychology, Paul Bell describes the importance of interaction with nature. He writes that interaction with natural settings restore our ability not only to concentrate but to refresh one's mind.[26]

This seems even more necessary in a modern world with busy lifestyles, where attention to self is sacrificed. This thesis strives to integrate natural elements into the design. The proposed site, the Sylvan Grove, is protected by tall trees on all sides. The project incorporates natural elements such as water as sources of fascination into the design of the contemplative center.

Water

Water's perception involves all the senses: the sense of hearing, is experienced by its sound, feeling its coolness and humidity involves the sense of touch, observing its flow and purity comprises the sense of sight, and finally, by drinking, the senses of taste and smell are encompassed.

25 Paul A. Bell et al., "Nature and Human Nature," In *Environmental Psychology,* 52. 5th ed. (New York: Psychology Press, 2005), 52.
26 Ibid., 49-50.

The sound of water can be a source of fascination in a setting that creates a sense of place. Schafer, in his book, "Our Sonic Environment and the Soundscape: tuning of the world" was the one who used the word "soundscape". As he points out, the tie between music and sound of nature, is the most effective part of the 20th century music. As he points out, the word soundscape can be implemented alongside the word 'landscape' to depict the quality of perception in city planning and landscaping.[27]

As Gaston Bachlard in his book, "Poetic of space" writes, the sound water is the onset of the fluid language, a language without any obstacle and barrier. A language that gives a unified sound to different rhythms. When he refers to the sound of river says: A river is creator of many beautiful words, words that are driven from voices of nature, as it moves through main stream. Further he states:

> "This artifice sufficed to humanize for me a world that was dishearteningly dry, reconciling me…with its silence, its solitude, its sheet of sun gold hanging from the sky. Even my weariness was lessened by it. I dreamed that my bodily weight reposed to this water."[28]

Contact with Nature, Through the Lens of Science

Scientific studies confirm that the experience of natural elements can provide a means to connect the mind and the body. Research into the therapeutic benefits of nature shows that what we experience through the senses, affects our mood as well as our health.[29]

27 Raymond M. Schafer, *Our sonic environment and the soundscape: the tuning of the world.* (Rochester, Verm.: Destiny Books, 1994), 163.

28 Gaston Bachelard, *The Poetics of Space.* (Boston: Beacon Press, 1964), 207.

29 "How Does Nature Impact Our Wellbeing? | Taking Charge of Your Health & Wellbeing." Accessed May 22, 2016. http://www.takingcharge.csh.umn.edu/enhance-your-wellbeing/environment/nature-and-us/how-does-nature-impact-our-wellbeing.

In recent studies conducted at the University of Minnesota, researchers learned that most people turn to natural settings when experiencing negative feelings. Comparisons where subjects were exposed to urban versus landscape scenes showed that the latter were more "wakefully relaxed."[30] This research also indicated that exposure to natural scenes can positively affect our ability to focus. This unique restful quality of nature is crucial in allowing people to take a break from their overactive lives.

In his book, 'Architecture: Nature', Philip Jodidio has collected case studies of projects that illustrate the importance of the relationship between nature and architecture.[31] One of the examples is the Temple de I'Amour II (See Figure 3). The architectural emphasizes the landscape by framing a generous view of the landscape.[32]

The Windhover Contemplative Center at Stanford University is an example where landscape and architecture come together to create a peaceful place (See Figure 4). The architects, Joshua Aidlin, David Darling and Roslyn Cole and Andrea Cochran landscape architecture, worked together to integrate the built complex with its natural surroundings. The building is surrounded by trees and vegetation in the campus setting, providing multiple views to the outside. Courtyards bring natural light and air into the heart of the interior. Water is used as a meditative element as pools and fountains provide a visual and auditory focus. (See Figure 4)

30 "Healing Gardens." : Landscaping : University of Minnesota Extension. Accessed April 10, 2016. http://www.extension.umn.edu/garden/landscaping/design/healinggardens.html

31 Philip Jodidio, *Architecture: Nature*. (Munich: Prestel, 2006), 158.

32 Philip Jodidio, *Architecture: Nature*. (Munich: Prestel, 2006), 158-159.

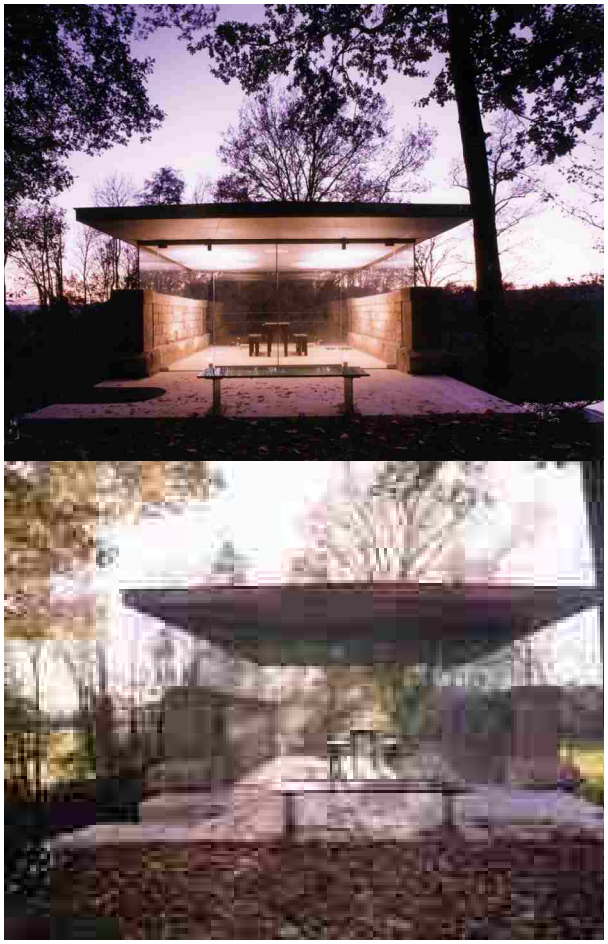


Fig 3 - Temple de I'Amour II, 2000, France
Dirk Jan Postel

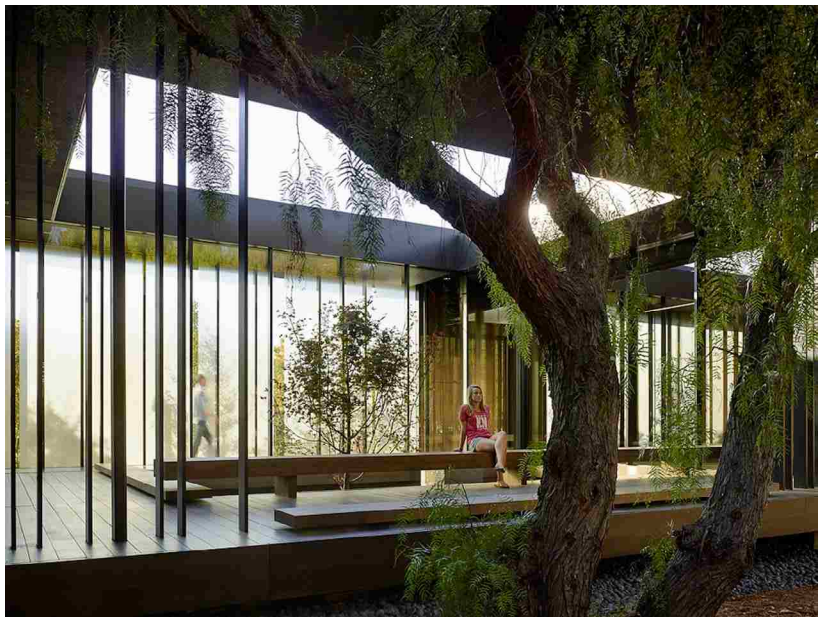


Fig 4 - Windhover Contemplative Center, 2014,
Stanford University
Aidlin Darling Design

Sensing Spaces

The exhibition "Sensing Spaces" at the Royal Academy of Arts in London invited seven architects to explore the impact of space on people's senses and emotions. The installation by Grafton Architects specifically examined the experiential qualities of light. Two different structures showing the passage of light through a void in a roof were constructed side by side, one emphasizing lightness and the other, mass. The designers sought to "make as much nothing as possible,"[33] using only variations in light. The exhibit demonstrates the powerful role light plays in the experience of space[34] (See figure 5).

Fig 5 - Sensing Spaces Exhibition, 2014, Royal Academy, London, Grafton Architects

33 "Sensitive Learning Spaces: What Architects Can Teach Us". 2014. Accessed May 1, 2016. https://jennymackness.wordpress.com/2014/04/05/sensitive-learning-spaces-what-architects-can-teach-us/.

34 "Sensing Spaces | Exhibition | Royal Academy of Arts." Accessed April 2, 2016. https://www.royalacademy.org.uk/exhibition/sensing-spaces.

The experience of light is not simply visual but impacts all the senses as well as our mood. Research conducted by the Center for Healthcare Building Research at Chalmers University of Technology confirms the direct impact that natural light has on our mood. Lead researcher Dr. Roger Ulrich concluded that engagement with natural light actually reduces the time needed for healing, both physically and mentally. Moreover, day lit environments were found to positively affect people's productivity as well as their mental comfort.[35]

35 "Why Light Matters: Designing with Circadian Health in MindMetropolis." 2016. Accessed April 20, 2016. http://www.metropolismag.com/Point-of-View/June-2016/6-Principles-for-Designing-Spaces-That-Support-Circadian-Health/

Physical Environment and Human Behaviour

Human behavior -feelings and sense of well-being- is directly influenced by the physical environment.[36] In built environments, properties such as noise and sound, level of light, privacy and crowd, affect wellbeing and mental health.[37] The subject of privacy becomes crucial to study in the design of an environment where individuals go to think and experience moments of solitude. If a private space is developed in a built environment, then individuals are able to control their social interactions. In other words, they have control in the environment that they occupy.[38] The notion of control is not just limited to social interactions. Generally, when people are capable of adjusting their surrounding environments, they experience freedom and have control over the occupied space. Here, the concept of privacy comes into play where it can be achieved by flexibility of spatial arrangements. Thus, personal boundary, territory and vista can be desirable. This thesis makes use of the concept of control in environment by incorporating flexible and movable separators. Environmental psychologist, Robert Sommer, states that if environmental elements are unchangeable, the user's control over the environment drops drastically.[39] According to Paul Bell, presence of control in occupied spaces is beneficial to people's health and wellbeing.[40] This thesis addresses the concept of privacy by introducing flexible corners, intended to be occupied by only one person. Gaston Bachelard states:

"When we recall the hours we have spent in our corners, we remember above all silence, the silence of our thoughts."[41] Later, he calls 'corners' as figures of haven:

36 Albert Mehrabian, and James A. Russell, *An approach to environmental psychology.* (Cambridge, MA: M.I.T. Press, 1976).
37 Evans, G. W. "The Built Environment and Mental Health." *Journal of Urban Health: Bulletin of the New York Academy of Medicine* 80, no. 4 (2003): 536-555.
38 Evans, Gary W., and Janetta Mitchell Mccoy. "When Buildings Don'T Work: The Role Of Architecture In Human Health." Journal of Environmental Psychology 18, no. 1 (1998): 85-94.
39 Robert Sommer, *Personal Space: The behavioral basis of design.* (Englewood Cliffs, NJ: Prentice-Hall, 1969).
40 Paul A. Bell et al., "Theories of Environment-Behavior Relationships," In *Environmental Psychology,* 52. 5th ed. (New York: Psychology Press, 2005), 114.
41 Gaston Bachelard, *The Poetics of Space.* (Boston: Beacon Press, 1964), 136-137.

"Every angle in a room, every inch of secluded space in which we like to hide, or withdraw into ourselves, is a symbol of solitude for imagination…The corner is a haven that ensures us one of the things we prize most highly -immobility. It is the sure place, the place next to immobility… so we have to designate the space of our immobility by making it the space of our being."[42]

42 Gaston Bachelard, *The Poetics of Space*. (Boston: Beacon Press, 1964), 136-137.

Built Examples of Contemplative Spaces

Windhover Contemplative Center

The Windhover Ccontemplative Center is designed to provide a place to escape from daily stress and pressure. This center is designed for the Stanford University faculty and students to take a break from the competitive academic environment. Windhover Contemplative Center is a host to Stanford art professor, Nathan Oliveira's series of paintings called *Windhover*.[43] Design of the contemplative center was more focused on the spiritual quality of the space and to avoid the sort of design that is reminiscent of a museum.[44] Part of the beauty of the project is the materiality. Aidlin Darling Design's use of rammed earth, creates a textured and warm environment, which stimulates the olfactory experience.

Fig 6 - Windhover Contemplative Center, 2014, Main Gallery
Stanford University
Aidlin Darling Design

Fig 7 - Windhover Contemplative Center, 2014
Stanford University
Aidlin Darling Design

43 "Contemplative Center Breaks Ground At Stanford." Architectural Record RSS. Accessed January 21, 2017. http://www.architecturalrecord.com/articles/2955-contemplative-center-breaks-ground-at-stanford.
44 Ibid.

Meditation Pavilion & Garden

The Meditation Pavilion and Garden blends within a private park in Geneva, Switzerland, by GMAA Architects. The meditation pavilion design is placed over a large surface of water. The wood in the entire pavilion creates a smooth transition from the vegetation around to the meditation pavilion. The main space in the pavilion is a central void, which hosts benches, facing the park and the pool. The pavilion is lit through skylights during the day. At night, the spotlights and indirect lighting design boost the effect of timber cladding (See figures 8 and 9).[45]

Fig 8 - Meditation Pavilion and Garden, 2013, GMMA

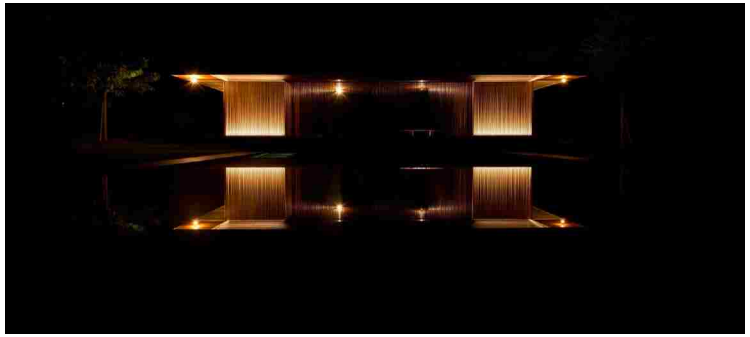


Fig 9 - Meditation Pavilion and Garden, 2013, GMMA

45 "Meditation Pavilion & Garden / GMAA." ArchDaily. September 27, 2016. Accessed January 21, 2017. http://www.archdaily.com/795978/meditation-pavilion-and-garden-gmaa.

Meditative Spaces

In his book, *Meditative Spaces*, Michael Freeman states that the right physical conditions must be created in order to calm the mind.[46] However, he argues there is no exact formula for the design of meditative spaces.

He groups meditative spaces into four categories: those where emptiness is the dominant feature, those which create changes in the surrounding environment, those which help one focus and finally those which embody a natural energy.[47] The following case studies show how these categories can be used to define meditative environments.

Emptiness in Meditative Spaces:

Freeman observes that the first category of meditative spaces reflects the key concept of emptiness in Buddhism. He observes that "a first step towards emptying the mind is emptying the space."[48] This act of removal is similar to the first stage in the act of meditation. This approach is illustrated in the simple form of the Meditative Space for Masahiro Hasui in Japan, designed by Tetsuo Goto (See Figure 10). This space is free of any objects, and only provides seats for the practitioners. This room is designed in a way that the user can change the light to any desired level. The artificial light in the room is created by placing florescent tubes between the translucent paper of the screens and the walls[49] (See figure 11). Small windows also located between the walls allow the penetration of diffused natural light.

46 Freeman, Michael. *Meditative Spaces.* (New York: Universe Publishing, 2005). 6.
47 Ibid.
48 Ibid. 9.

49 Freeman, Michael. *Meditative Spaces.* (New York: Universe Publishing, 2005), 16.

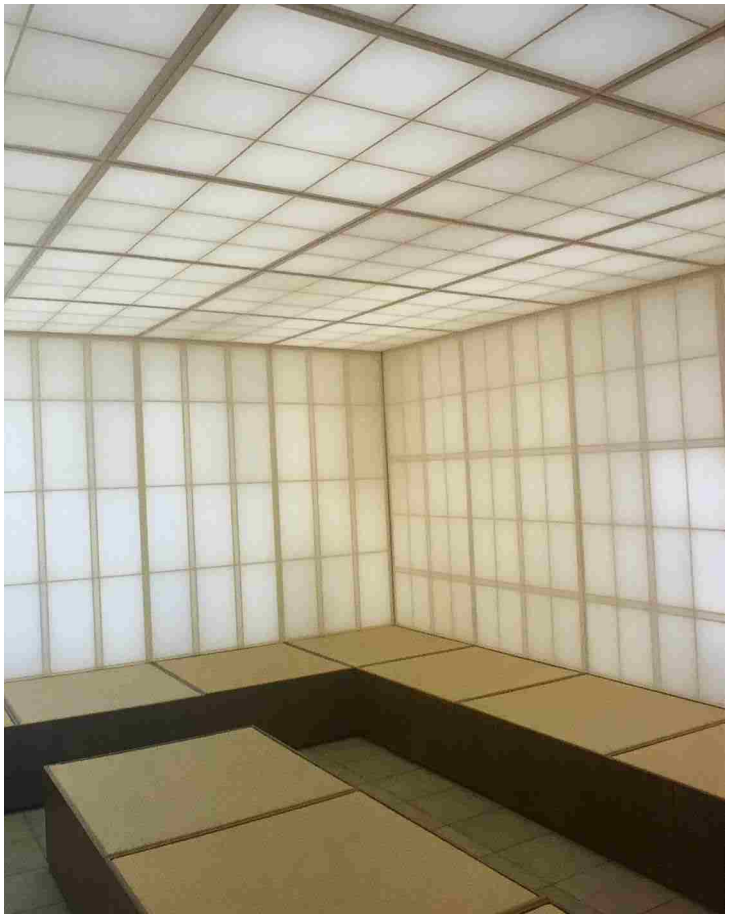


Fig 10 - Meditative Space for Masahiro Hasui, Japan
Tetsuo Goto

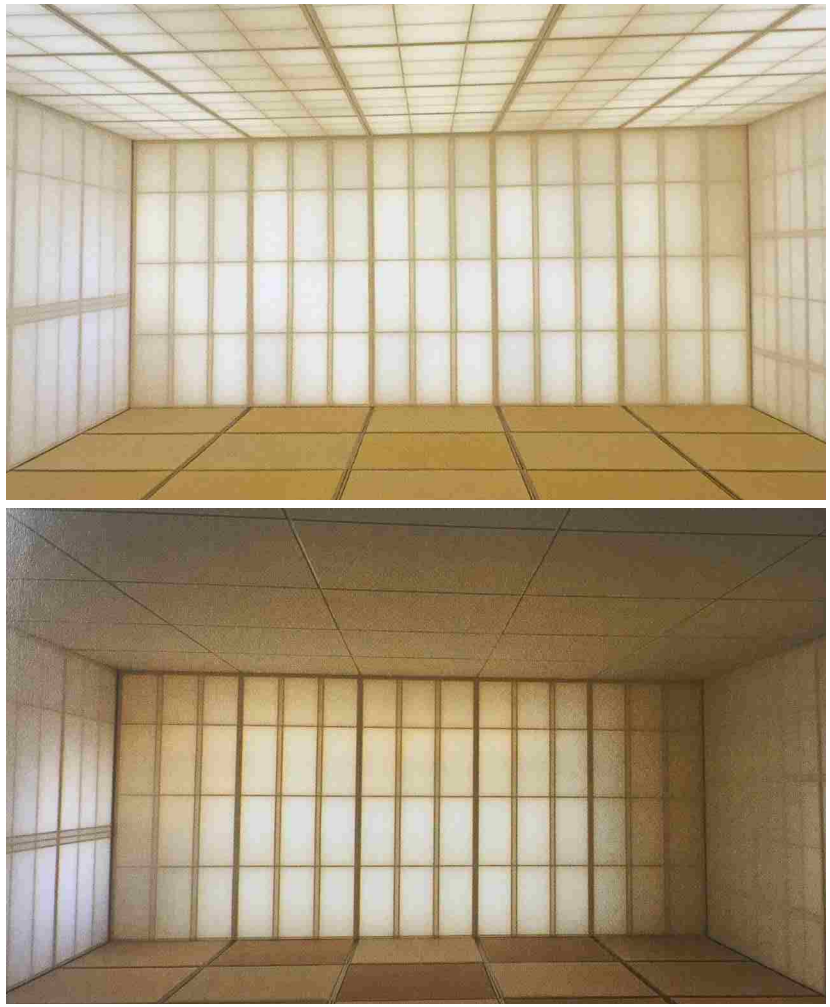


Fig 11

Meditative Spaces within Everyday Environments

The second category of meditative spaces identified by Michael Freeman is located within our everyday environment. But the space is then altered to become a unique haven for the user, a place of solitude and retreat. This type of space is illustrated by a house in Japan designed by Michimasa Kawaguchi for a family whose youngest son desired his own personal meditative space. The architect has created a semi-circular room with sliding partitions that open to a small courtyard (See Figure 12). This flexible design accommodates both moments of solitude for the young client, as well as gatherings with the family[50] (See Figure 13).

A similar approach to carving out a very small space of solitude with minimal means is evident in the project designed by Yuko Minamide. Her ladder chair allows one to escape the ground level by moving vertically rather than horizontally. By climbing the ladder and resting in the seat at the top the user finds a moment of solitude above the rest of the world[51] (See figure 14).

Fig 12- A semi-circular tatami platform inside a Japanese house, *Michimasa Kawaguchi*

50 Freeman, Michael. *Meditative Spaces*. (New York: Universe Publishing, 2005), 84.

51 Ibid.

Fig 13

Fig 14- Ladder for Moments of Solitude,
Yuko Minamide

Meditative Spaces of Attention

The third stage of meditation involves strong concentration and focus on the part of the individual. This process can also be achieved in space when the design gives the eye and mind a focal point, something that directs their attention. An example of this third category of meditative space is the private Priest garden of the Gion Ji Temple in Japan. The landscaped area is surrounded by simple white walls, the entrance framed by bamboo trees. Located at the center of the garden is a large upright stone, dramatically lit by artificial light[52] (See figure 15). This natural feature draws the visitors' attention by giving their eyes and minds a strong focal point.

Meditative Spaces of Mindful Energy

The experience of nature is also essential to the final category of meditative space. Freeman describes this type as being associated with an energy linked to its location. As with the final stage of meditation, the mind of the occupant enters a state where it experiences a space that is boundless. With no boundaries between inside and out, the occupant can gather energy from the experience of the entire surroundings.
An example of this space of total awareness of the mind is the weekend house in the Karjat Hills in Mumbai, India. Architect Samira Rathod has designed the house to provide expansive views to the surrounding natural setting including a lake surrounded by trees. The balcony overlooking the lake is separated from the main living space by sliding glass doors. The tree species on the site were even referred to as the "trees of enlightenment," reinforcing the connection to meditative space.[53] (See figure 16).

52 Freeman, Michael. *Meditative Spaces*. (New York: Universe Publishing, 2005),132.

53 Freeman, Michael. *Meditative Spaces*. (New York: Universe Publishing, 2005), 192.

Fig 15 - Private Priest garden at Gion-Ji Temple, Japan
Shunmyo Masuno

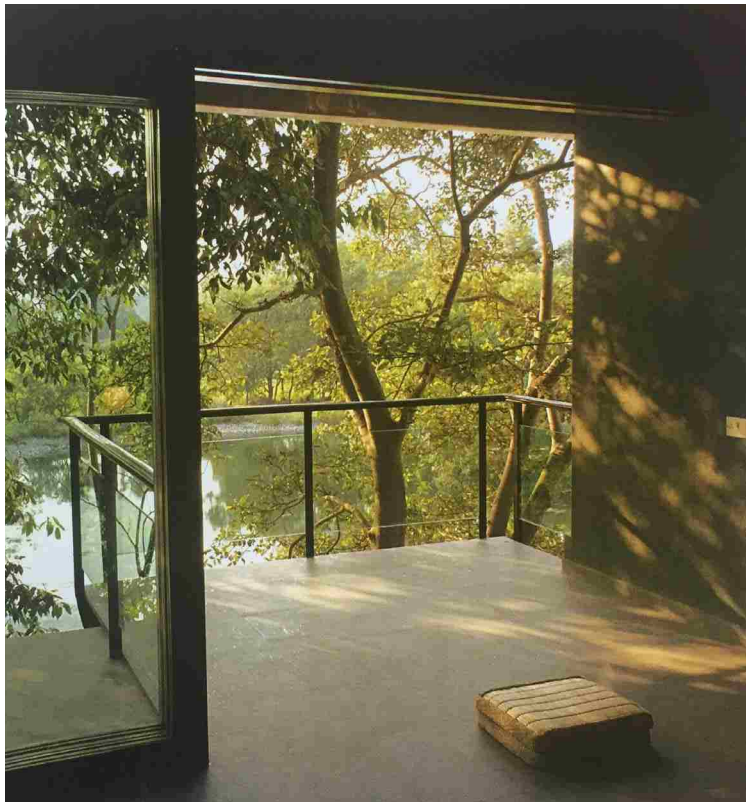


Fig 16 - Weekend House,Mumbai, India,
Samira Rathod

UW's awarenenss of the Stress Problem

The University of Washington has recently initiated a few programs to help students and faculty members cope with difficult moments more effectively. In 2011, Hall Health Center initiated the Mindfulness Meditation Group. This program is designed for those who have trouble concentrating, have negative thoughts, suffer from depression, or for those who have difficulties managing their emotions. This group program helps direct the attention to the present, and generates a more open attitude over time. It is designed as an 8-week course, where basics of meditation are taught.[54]

The content of the meditation sessions is based on 'Mindfulness-based Stress Reduction or MBSR'. The concept of MBSR was first introduced by Professor Kabat Zinn from the University of Massachusetts in the 1970's and uses yoga and mindfulness meditation to treat certain conditions.[55]

The University of Washington now uses the same concept to help members overcome their problems. However, for members to use this program, they must be diagnosed with a mental problem, or at least show anxiety symptoms. Upon diagnosis, users are billed for the service and are obligated to participate in all sessions. This program is a great one for those who suffer from mental illnesses. However, it does not respond to the immediate needs of individuals for a 'moment' of contemplation or solitude.

The University of Washington also offers a counseling service. This program offers the help of professionals, psychologists and mental health counselors to all UW students. However, this program requires appointments, and has a waitlist of two to three weeks. Once again, this program cannot respond to those who need moments of solitude.

54 "Beginning Mindfulness Meditation Group." Hall Health Center. September 18, 2015. Accessed January 15, 2017. http://depts.washington.edu/hhpccweb/mindfulness-meditation-group/.

55 "History of MBSR." University of Massachusetts Medical School. June 24, 2014. Accessed January 15, 2017. http://www.umassmed.edu/cfm/stress-reduction/history-of-mbsr/.

Mindfulness Meditation is also practiced in the Sky Space in The Henry Art Gallery. This meditation series is held the second Thursday of each month from 12:30 to 1:30 (See Figure 17). The Sky Space, designed by James Turrell, is an example of a space for one to spend a moment of solitude, however, the access is limited to certain hours.

This thesis proposes a contemplative space, designed for University of Washington students, faculty and staff, wanting a place to contemplate, meditate, or just to be alone. This center is accessible all the time and is protected with a University affiliation card reader.

Fig 17- Sky Space, James Turrell
Image from: Mindful Meditation at Henry Art Gallery, The Seattle Times

Mark Tobey

The contemplative center at the University of Washington is intended to display two meditative paintings by Mark Tobey, a Seattle-based artist. Mark Tobey's journey of making contemplative art started when he first met Juliet Thompson, a portrait artist. She was a follower of the Bahai Faith and introduced it to Mark Tobey.[56] Mark Tobey accepted Bahai faith, and undertook learning its concepts and started reflecting its spiritual contents into his paintings.[57] In 1922, he moved to Seattle from New York. The new city offered him a different life from New York; a slower pace and natural beauty. He was also offered a position at Cornish College of the Arts, which was a starting point of a meaningful part of his career for the next thirty years.[58] In 1923, Tobey met Teng Kuei, who was a University of Washington student interested in Chinese art.[59]

'Canticle' is one of Tobey's art works that will be displayed in the University of Washington Contemplative Center. This painting was inspired both from his learnings from the Bahai faith and Chinese calligraphy. One of the Bahai Faith's central beliefs is 'the oneness of humankind'. This concept is reflected in the detailed pattern of white dots on the canvas[60] (See figure 18).

The other work of art by Tobey is 'White Journey, 1956'. In Tobey's meditative series, the canvas becomes a meditative space filled with brushstrokes drawn freely in all directions. This painting was also inspired by Chinese calligraphy and free brush strokes.[61] (See Figure 19)

56 L. Dahl, *Mark Tobey, art and belief* (Oxford: G. Ronald, 1984), 2.
57 Ibid., 4.
58 Ibid.
59 Ibid., 5.

60 "Search Collections." Canticle by Mark Tobey / American Art. Accessed January 15, 2017. http://americanart.si.edu/collections/search/artwork/?id=24126.
61 Ibid.

Fig 18 - Mark Tobey, Canticle, 1954

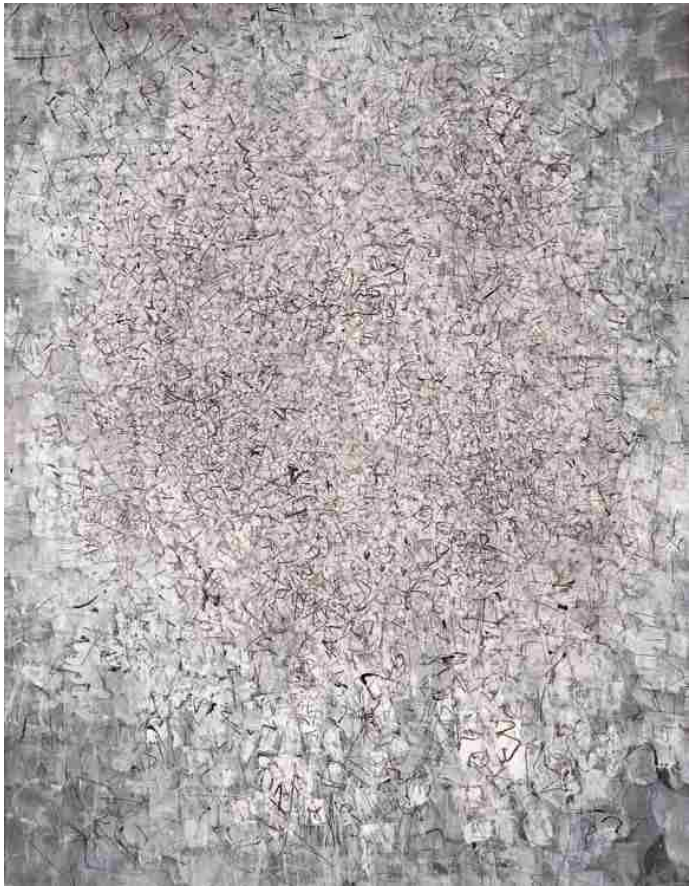


Fig 19- Mark Tobey, White Journey, 1956

Chapter III: Design Methods

In the busy campus of the University of Washington, students and faculty are so focused on daily engagements, that the need to think, to be alone and to contemplate is neglected. This thesis proposes a contemplative center at the University of Washington campus, close to all educational facilities. The purpose of the design is to provide a space for individuals to connect with their inner selves, to think and to meditate. The design method is based on relationship of the center to its external natural setting, and to its interior qualities of light. The integration of nature and light are crucial to this thesis investigation in terms of their impact on the mind and body connection. The site of the contemplative center is the Sylvan Grove, an open space, protected by tall trees.

This chapter will first describe the criteria for the location of the contemplative center followed by the proposed site and the surrounding context. It then will introduce the program of spaces within the contemplative center.

Site Selection

In an effort to serve the student and faculty population, the proposed contemplative center is dependent on a site that allows easy accessibility. In other words, members of the community should feel comfortable to access the center within a few minutes. Moreover, as mentioned before, proximity to a natural setting is crucial to this thesis, as it affects the mood directly. Therefore, the site selection criteria were: 1-easy access from educational facilities, 2-proximity to a natural setting. Existing meditative environments, close to the University of Washington campus, are at least 20 minutes away from the campus by foot and 10 minutes by personal vehicle. This distance make it hard to access, especially for users such as students, who usually deal with limited amount of time (see figure 20).

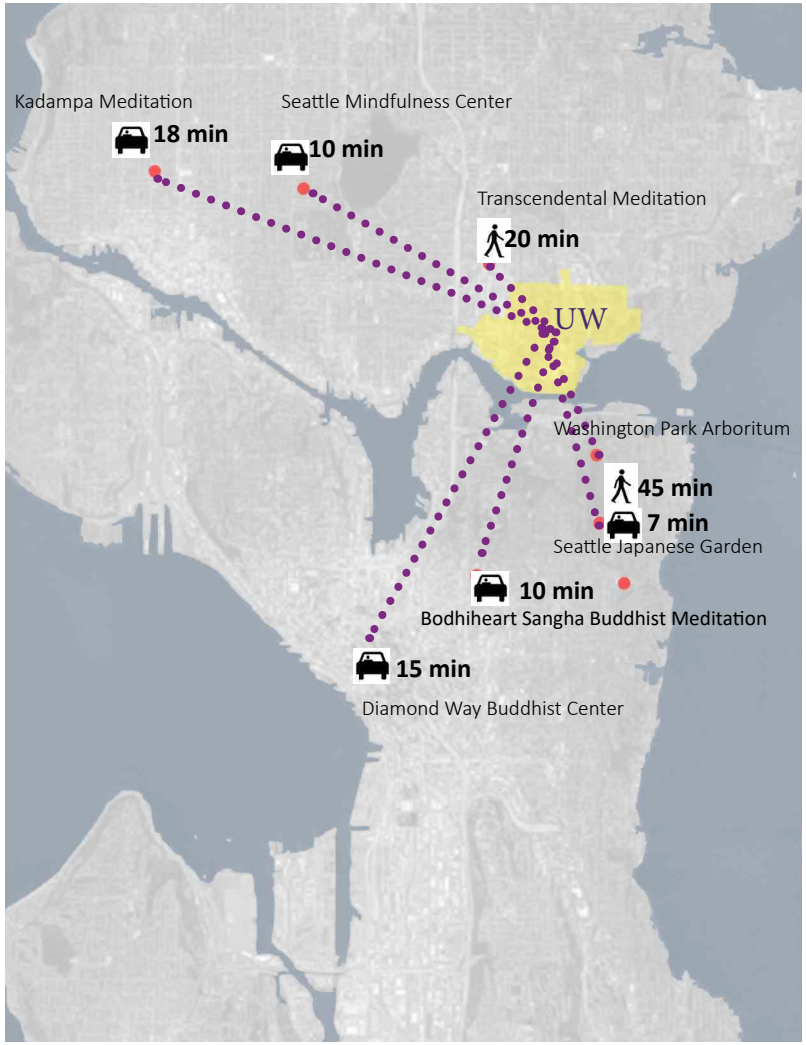


Fig 20- Distance from the campus to closeby meditative environments

Based on the site selection criteria, the selected site is located at the Sylvan Grove, at the heart of the campus. This site is only 5 minutes away from the campus center, Red Square, and 10 minutes walking distance from the farthest educational facility (See figure 21).

The Sylvan Grove Theatre

The Sylvan Grove Theatre is an open space, covered with green lawn and protected with tall trees from all sides. The surrounding trees create a separation from the educational facilities and facilitate the site a contemplative quality. The Sylvan Grove is a treasure to the University of Washington mainly because of the presence of four monumental columns (See figure 22). The four columns belong to the University's first building constructed in 1861. The grand entrance of the building featured the four columns (See figure 23). In 1908, when the site

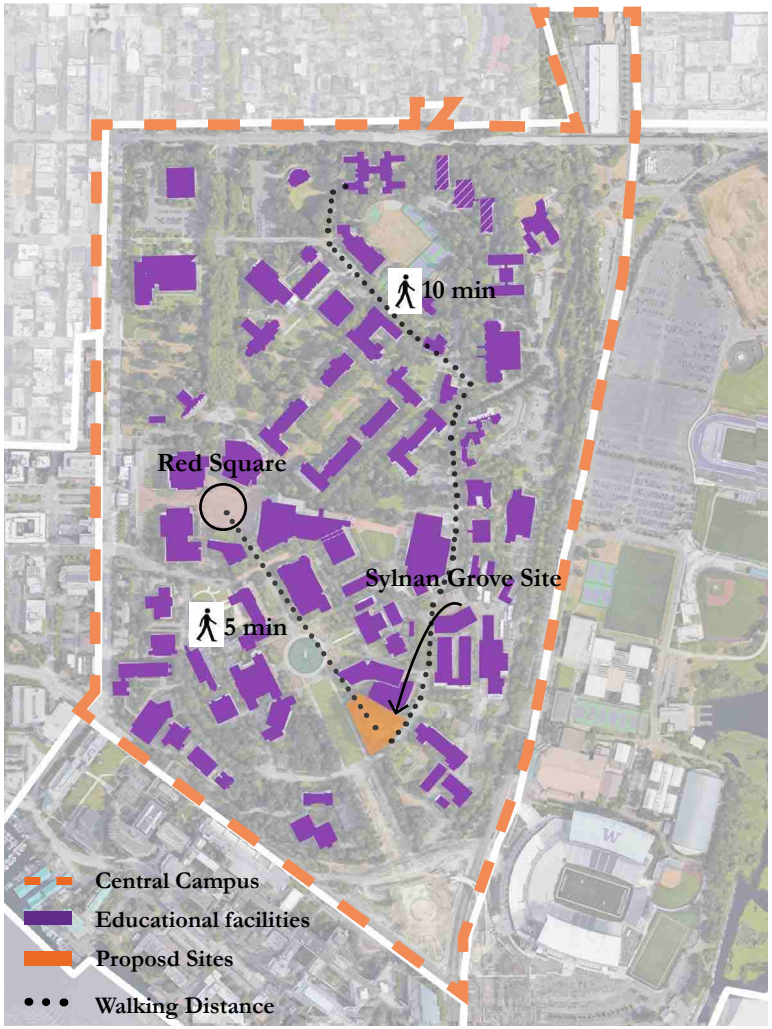


Fig 21- Site location on Campus and its proximity to UW facilities

housing the first building was about to be destroyed, the History department sought to save the building. However, only the four columns survived. The columns were erected in 1911 in the arts Quad. However, by 1920, the University design enforced Gothic Architecture for campus facilities. Consequently, the Iconic columns did not fit within the new context. The head of the Department of Architecture, Carl Gould, arranged a competition among students, for relocation of the columns. In 1921 the four columns were placed in the Sylvan Grove.[62]

Fig 22- Sylvan Grove monumental columns

Fig 23- The University of Washington first building

62 "The Four Columns." Office of Ceremonies. Accessed February 19, 2017. http://www.washington.edu/ceremony/tradition/symbols-meanings/four-columns/.

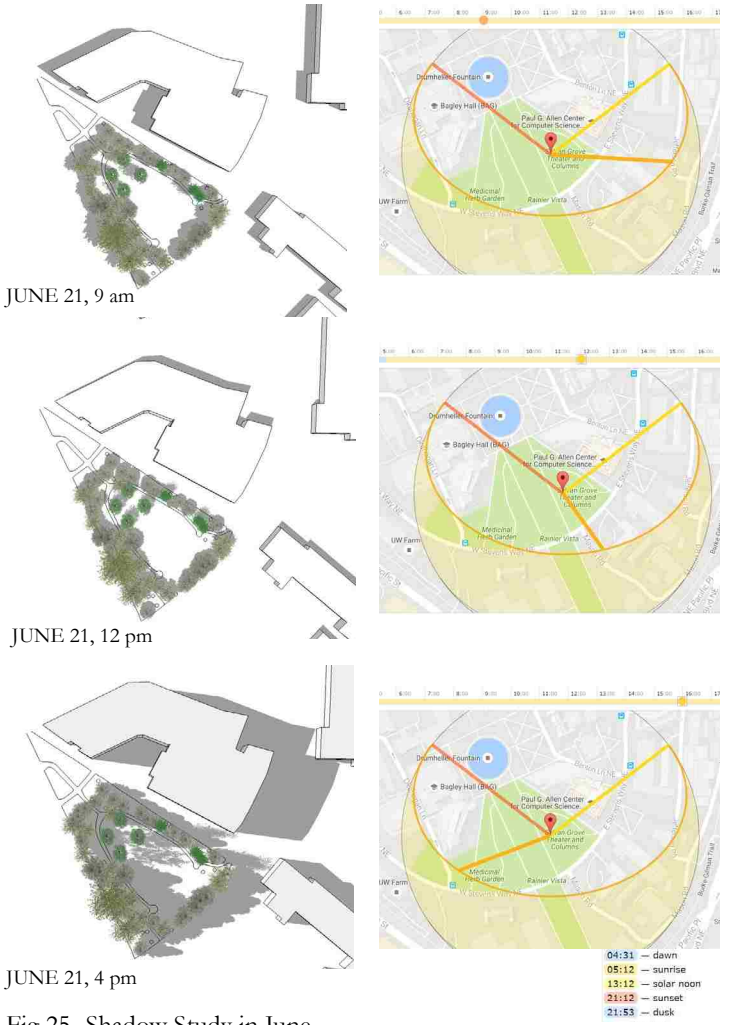
Site Analysis

Almost forty percent of the University of Washington's students and faculty arrive by public transit.[63] The proximity of the Sylvan Grove to East Stevens Way, as one of the major transit routes, provides the easy accessibility to the contemplative center (See figure 24). However, one might argue that the noise level could be disturbing for a contemplative space. To address this issue, noise level was measured on site, at 12 pm, 3 pm and 5 pm on a single day (See figure 25). According to these measurements, the noise level varied from 61 dB to 62 dB, which is as high as a normal conversation. This observation suggests that the site is relatively quiet and appropriate for such environment. Also, the existing trees on the site acts as a noise barrier.

Fig 24- The University of Washington Transit Network
Image from: http://depts.washington.edu/myplaces/experiments/results_public.php

63 "My Places | University of Washington Landscape Survey Results Map." My Places | University of Washington Landscape Survey Results Map. Accessed February 19, 2017. http://depts.washington.edu/myplaces/experiments/results_public.php.

One of the main investigations in this proposal is how light travels through the space. To this end, it was necessary to study the shadows within the site. The sun studies were done in June, September and December, 3 times per day. According to this study, the site is not affected by the presence of shadows until later in the day where the site is covered with the shadows of surrounding trees (See figure 25, 26 and 27). However, shadows on the site will be used to the benefit of the project: the contemplative center is intended to benefit from controlled, low levels of natural light.



JUNE 21, 9 am

JUNE 21, 12 pm

JUNE 21, 4 pm

Fig 25- Shadow Study in June

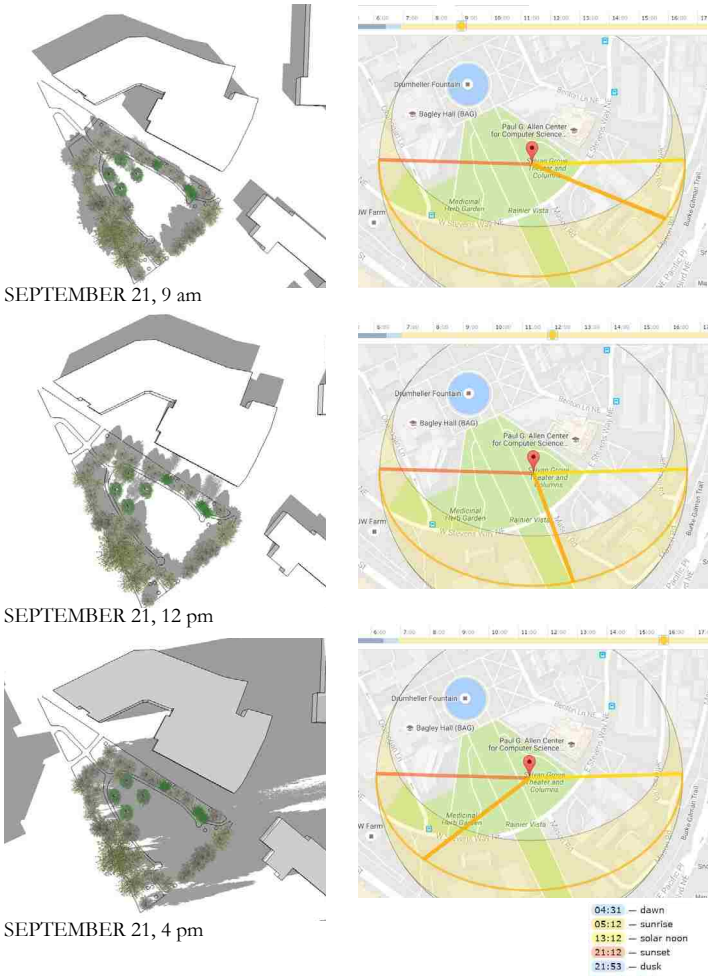


Fig 26- Shadow Study in September

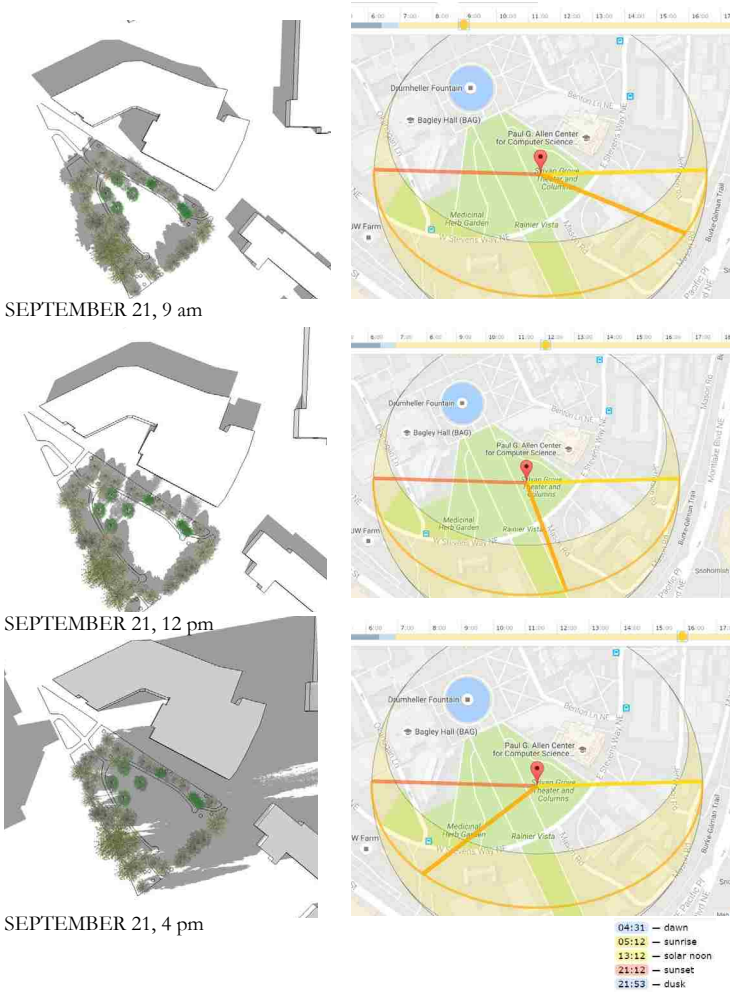


Fig 27- Shadow Study in December

Fig 28- Panoramic View of the Sylvan Grove Theatre

Program of Spaces

As a contemplative center, the proposed facility works to provide the University of Washington population, a quiet, calm and meditative environment; an environment where individuals feel comfortable to think and achieve inner peace. In order to accomplish this, it is crucial that the program of spaces, create a series of experiences that embody peaceful expression. The facility will provide multiple views to the surrounding trees, contemplative pools and the grove. The program of spaces are divided into five major spaces:

- The exterior pool, which provides seatings for individuals who seek silence and peace. The exterior pool engages the auditory sense, as it amplifies the sound of dripping water.
- The meditative courtyard, which displays a single tree, and a small fountain. The courtyard hosts multiple seating areas, for viewing the tree. The courtyard is also viewed from the interior side of the contemplative center.
- The Gallery, the largest area of the contemplative center displays the paintings of Mark Tobey. The gallery is still, the movement of the users is minimal, as the users sit silently and contemplate the paintings.
- Contemplation rooms are the most private. They intended to be free of distraction. The daylight in the contemplation rooms are controlled, and each displays a different light quality.

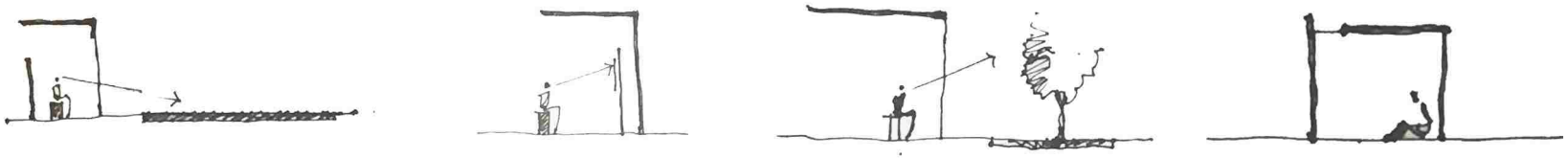


Fig 29- Diagram of the Program of Spaces. From Left: Contemplative Pool, Contemplative Gallery, Meditative Courtyard, Individual Contemplation Rooms

One displays a large circular skylight, that provides a view to the sky. This room has a different light and shadow condition from the rest of the center. It is a place where one can contemplate the change of light in the room. The second contemplation room provides a small, low window, that frames the trees in the Sylvan Grove. The third room, has a more playful light quality, where smaller, circular skylights provide a variety of dots that move throughout the day, as the day passes by.

- The interior pool is a space for individuals to enjoy the sound, smell and reflection of water, or just to sit still and enjoy the effect of light, coming from the side window, on the pool and the surrounding walls.

Chapter IV: Design

As a contemplation center, this design addresses a very basic need: attention to self and to think. This need seems to be undermined in our ever-increasing hectic lives. This proposal addresses this issue by providing a center where University of Washington students and faculty can re-gain mental balance, tranquility and inner peace. The design of the contemplative environment is comprised of quiet spaces where users sit, enjoy a view of a water, of a tree, or a painting. This design is a temporary building, as the designated site cannot host a permanent structure. However, this thesis suggests that the proposed temporary building can serve as long as it is needed. If the future needs of the University of Washington required the removal of the center, it can be placed into another location. This scenario suggests a more sustainable approach, where the building can perform for years and serve different users.

The Portable Building and Material

The building is organized programmatically around the concept of silence and calmness. The program is comprised of a series of experiences, where visitors can sit and enjoy calming views. The experience begins with the contemplative pool, situated close to the building entry. The contemplative pool is both accessible from the outside and inside of the building. Multiple seating areas are provided for users to enjoy the view of the reflective pool. The notion of privacy is central to this thesis. Therefore, every environment is designed in a way that respects the privacy of visitors. The seating areas by the reflective pool are veiled from the interior users looking at the contemplative pool. By the entrance, the user observes the art of Mark Tobey, framed by rays of natural light. As one proceeds through the space, the presence of the courtyard draws attention. The courtyard holds a single tree and a small fountain which engages the sense of hearing with fountain's soft sound, the visual sense, and the sense of smell, with the smell of fresh vegetation. Again, just like the meditative pool, the courtyard provides seating areas outside and inside. As the procession continues, one realizes light of sun in the interior space, which is the result of series of circular skylights. These skylights are placed to illuminate relatively darker areas in the center. The most private areas in the center are the solitude rooms which are intended to be quiet spaces. The solitude rooms are spaces with close to no distraction, where there is little interaction with the outside world. The only connection with the world is through the skylights. The skylights provide the opportunity for the visitors to watch the change in the shadows, as the day travels by. Finally, the center provides an interior meditative pool, with seating spaces, where individuals meditate over the pool. This space benefits from a large window by the pool which creates variety of shadows in the room during the day.

The smallest scale of personal space in the center provided by individual seats: 'corners' for people to be alone. These corners are movable pieces of furniture, that allow people to have control over what they see and don't see, by moving them around. Privacy is considered the design of these corners. As these corners of solitude get occupied, light fixtures underneath the seating light up.

The building design is organized around the concept of portability. As mentioned before, the University of Washington does not allow building permanent structures on the Sylvan Grove site. This thesis proposes a temporary building that is easy to move from one site to another. This is achieved by working with modules that are intended to be prefabricated, brought to the site and assembled. In order to achieve this goal, the modules follow the dimensions of a truck 53'x13'6".

Here, the materiality plays a crucial role. This thesis proposes use of cross laminated timber (CLT), as the material. One of the CLT manufacturers that serves the Seattle area, is D.R. Johnson in Riddle, Oregon. The maximum dimensions they provide and carry is 10'x40'[64] (See figure 30). This design uses the same dimensions for panels, as it is also compatible with the truck size. CLT is an appropriate material solution, that can be used as both structure and finish. Moreover, CLT is significantly lighter than other building materials[65], which makes it a viable option for a temporary, movable building.

Moreover, CLT proves to perform best for spaces where sound control is crucial. In other words, they provide great acoustic insulation. According to the CLT handbook, this goal is achievable through proper use of sealants, and avoiding rigid contact between materials.[66]

64 "Cross-laminated Timbers." Oregon CLT. Accessed February 20, 2017. http://oregonclt.com/.

65 "Cross Laminated Timber | CLT Panels | CrossLam Timber Beams." Structurlam. Accessed February 20, 2017. http://www.structurlam.com/construction/products/cross-laminated-timber-clt/.

66 Karacabeyli, Erol, and Brad Douglas. "Sound Insulation of Cross-laminated Timber Assemblies." In *CLT handbook, Cross-Laminated Timber.*

In short, CLT offers benefits such as light weight, energy efficiency, easy and rapid installation, it is environmentally friendly, and cost effective. Moreover, CLTs is compatible with the intents of this project: it stimulates the sense of touch with its texture, stimulates the sense of smell, and is able to reflect light and create multiple shadow effects on the finish.

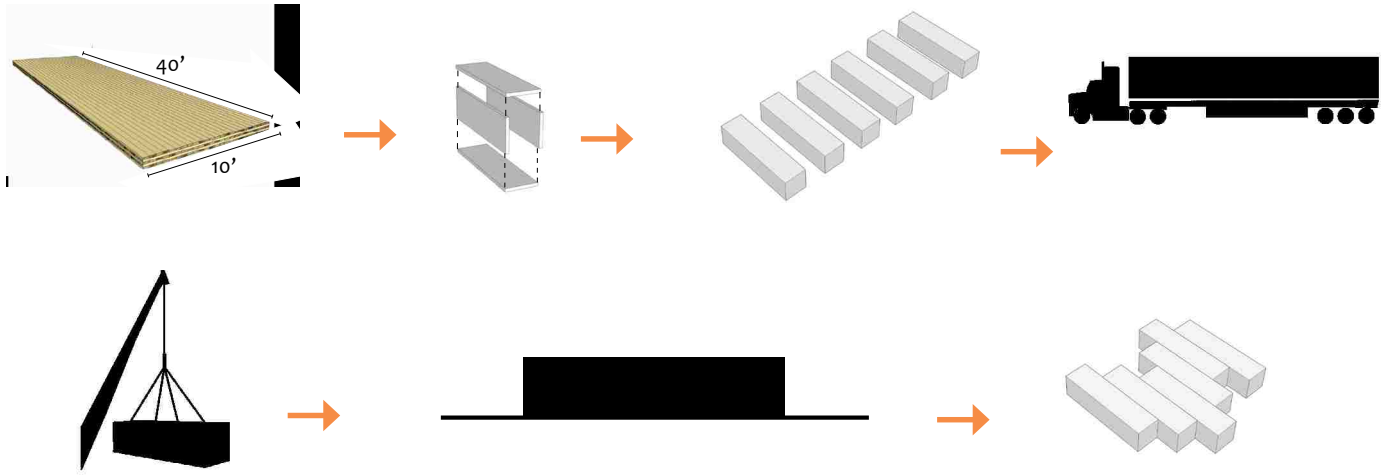


Fig 30- Material and Assembly Diagram

Fig 31- Sylvan Grove Site and the proposed Contemplative Center

Fig 32- Left: Entrance. Right: Contemplative Galley

Fig 33- Left: Central Solitude Room, looking from the Gallery. Right: Solitude Room

Fig 34- View to the Sylvan Grove

Fig 35- Second Gallery

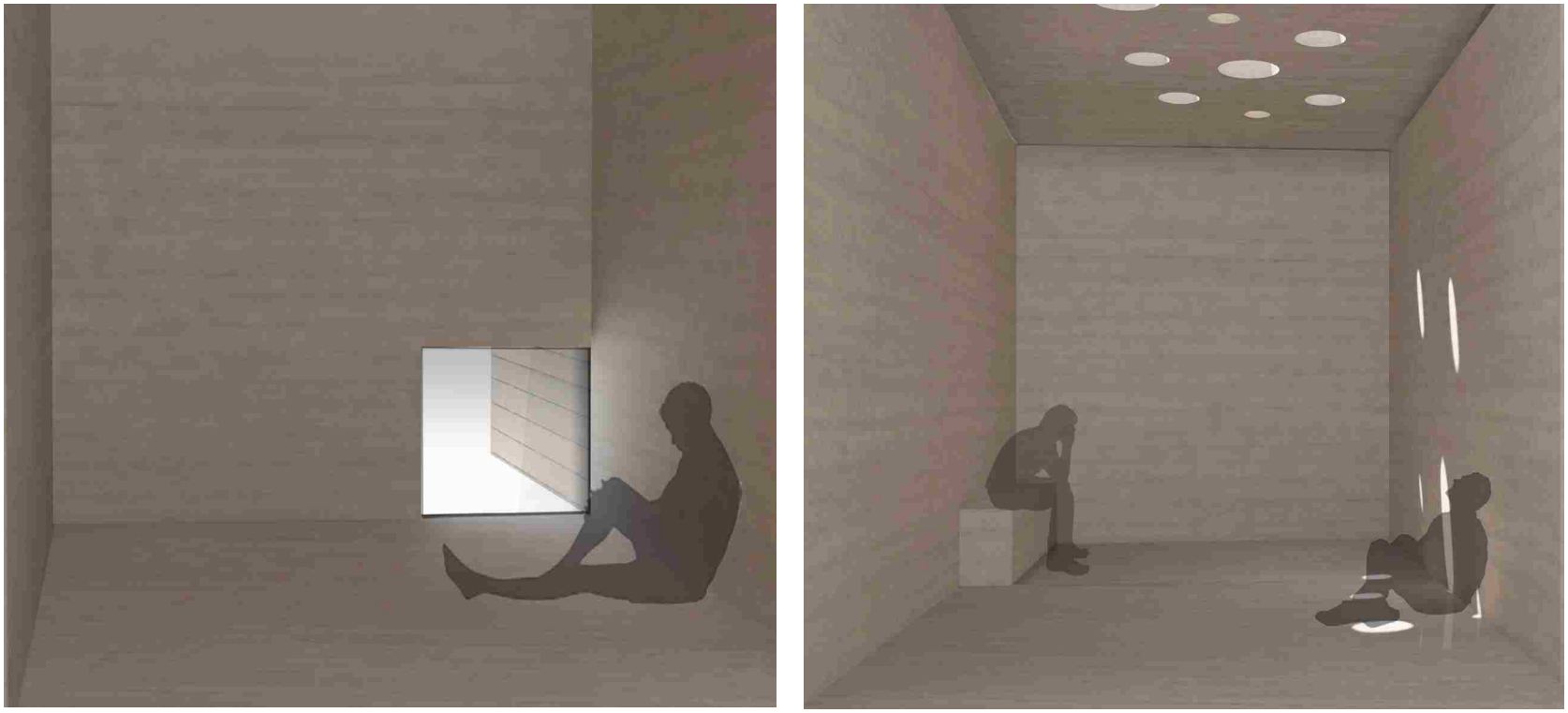


Fig 36- Solutude Rooms

Fig 37- Interior Contemplative Pool

Chapter V: Conclusion

The contemplative center at the University of Washington is intended to serve the University population, a quiet place for individuals to be alone with thoughts, to meditate and contemplate. The design introduces moments for people to be alone by themselves, or be alone while being surrounded by others. It also introduces moments, where people choose to view and exterior scene or just view the sky, and shadows.

The proposed site on the University campus is the Sylvan Grove. It is an open space where no permanent structure is allowed to be built on. This project follows the University regulations by proposing a temporary building. It uses Cross Laminated Timber as the material, that allows a prefabricated design. To this end, modules of 10'x10'x40' are built, brought to the site and assembled.

The center embodies the message that, the quality of intellectual endeavor connected to the fulfillment of emotional needs. The hope is that the environment contributes to overall well-being.

Bibliography

Albert Mehrabian, and James A. Russell, *An approach to environmental psychology*. (Cambridge, MA: M.I.T. Press, 1976).

Anna Barbara and Anthony Perliss. *Invisible Architecture: Experiencing Places through the Sense of Smell.* (Milano: Skira, 2006).

"Beginning Mindfulness Meditation Group." Hall Health Center. September 18, 2015. Accessed January 15, 2017. http://depts.washington.edu/hhpc-cweb/mindfulness-meditation-group/.

"Contemplative Center Breaks Ground At Stanford." Architectural Record RSS. Accessed January 21, 2017. http://www.architecturalrecord.com/articles/2955-contemplative-center-breaks-ground-at-stanford.

"Cross Laminated Timber | CLT Panels | CrossLam Timber Beams." Structurlam. Accessed February 20, 2017. http://www.structurlam.com/construction/products/cross-laminated-timber-clt/.

"Cross-laminated Timbers." Oregon CLT. Accessed February 20, 2017. http://oregonclt.com/.

David M. Levin, *The body's recollection of Being: Phenomenological Psychology and the Deconstruction of Nihilism,* (London, Boston, Melbourne and Henley: Routledge and Kegan paul plc, 1985).

EOC Institute. Accessed January 15, 2017. http://eocinstitute.org/meditation/

Evans, Gary W., and Janetta Mitchell Mccoy. "When Buildings Don'T Work: The Role Of Architecture In Human Health." *Journal of Environmental Psychology* 18, no. 1 (1998): 85-94.

Evans, G. W. "The Built Environment and Mental Health." *Journal of Urban Health: Bulletin of the New York Academy of Medicine* 80, no. 4 (2003): 536-555.

"Exemplary Project - Swiss Pavilion 'Sound Box' Designed by Peter Zumthor - Folio. Accessed April 02, 2016. https://folio.brighton.ac.uk/user/mg237/exemplary-project-swiss-pavilion-sound-box-designed-by-peter-zumthor.

Gaston Bachelard, *The Poetics of Space.* (Boston: Beacon Press, 1964).
Halvor Eifring, *Meditation and culture: the interplay of practice and context.* (London: Bloomsbury Academic), 2015.

"Healing Gardens." : Landscaping : University of Minnesota Extension. Accessed April 10, 2016. http://www.extension.umn.edu/garden/landscaping/design/healinggardens.html

"History of MBSR." University of Massachusetts Medical School. June 24, 2014. Accessed January 15, 2017. http://www.umassmed.edu/cfm/stress-reduction/history-of-mbsr/.

"How Does Nature Impact Our Wellbeing? | Taking Charge of Your Health & Wellbeing." Accessed May 22, 2016. http://www.takingcharge.csh.umn.edu/enhance-your-wellbeing/environment/nature-and-us/how-does-nature-impact-our-wellbeing.

Ian Gawler and Paul Bedson, *Meditation: An In-depth Guide*, (New York: Penguin, 2011).

Juhani Pallasmaa and Peter B. MacKeith. *Encounters: architectural essays.* (Helsinki, Finland: Rakennustieto Oy, 2005).

Juhani Pallasmaa, *The Eyes of the Skin; Architecture and the senses*, (Wiley-Academy: 2005).

Juhani Pallasmaa, *The thinking hand: existential and embodied wisdom in arthitecture* (Chichester: Wiley, 2011).

Karacabeyli, Erol, and Brad Douglas. "Sound Insulation of Cross-laminated Timber Assemblies." In *CLT handbook, Cross-Laminated Timber.*

Mark Tobey, and Arthur L. Dahl. *Mark Tobey, art and belief* (Oxford: G. Ronald, 1984).

"Meditation & the Senses." The Art of Living Foundation - Yoga. Accessed February 09, 2017. http://www.artofliving.org/us-en/meditation-senses.

Michael Freeman, *Meditative spaces.* (New York: Universe Publishing, 2005).

"Meditation Pavilion & Garden / GMAA." ArchDaily. September 27, 2016. Accessed January 21, 2017. http://www.archdaily.com/795978/meditation-pavilion-and-garden-gmaa.

"My Places | University of Washington Landscape Survey Results Map." My Places | University of Washington Landscape Survey Results Map. Accessed February 19, 2017. http://depts.washington.edu/myplaces/experiments/results_public.php.

Paul A. Bell, Thomas C. Greene, Jeffery D. Fisher, and Andrew Baum, "Nature and Human Nature," In *Environmental Psychology,* 5th ed. (New York: Psychology Press, 2005).

Philip Jodidio, *Architecture: Nature.* (Munich: Prestel, 2006).

Raymond M. Schafer, *Our sonic environment and the soundscape: the tuning of the world.* (Rochester, Verm.: Destiny Books, 1994).
Robert Kronenburg, *Portable architecture: design and technology.* (Basel: Birkhäuser, 2008).

Rivlin, Leanne G., William H. Ittelson, and Harold M. Proshansky. *Environmental psychology: people and their physical settings.* 2nd ed. (Holt McDougal, 1976).

Robert Sommer, *Personal Space: The behavioral basis of design.* (Englewood Cliffs, NJ: Prentice-Hall, 1969).

"Sensing Spaces | Exhibition | Royal Academy of Arts." Accessed April 2, 2016. https://www.royalacademy.org.uk/exhibition/sensing-spaces.

"Sensitive Learning Spaces: What Architects Can Teach Us". 2014. Accessed May 1, 2016. https://jennymackness.wordpress.com/2014/04/05/sensitive-learning-spaces-what-architects-can-teach-us/.

"The Four Columns." Office of Ceremonies. Accessed February 19, 2017. http://www.washington.edu/ceremony/tradition/symbols-meanings/four-columns/.

University of Oslo. "East/West differences in meditation: Spirituality or technique." ScienceDaily. Accessed February 18, 2017. https://www.sciencedaily.com/releases/2014/05/140513092401.htm.

"Why Light Matters: Designing with Circadian Health in MindMetropolis." 2016.
Accessed April 20, 2016. http://www.metropolismag.com/Point-of-View/June-2016/6-Principles-for-Designing-Spaces-That-Support-Circadian-Health/