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Mental Sensorium

Brittany Adkins

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MENTAL SENSORIUM



Mental Sensorium

Invoking Sensorial Stimulation to Mentally Connect to Environment

This Final Project is presented to
The Faculty of the School of Architecture
by

Brittany Adkins

In partial fulfillment of the requirements for the Degree of

Bachelor of Architecture

Kennesaw State University, Marietta, Georgia
May 03, 2019

Thesis Collaborative 2018 - 2019

Request for Approval of Project Research Book

Department of Architecture
College of Architecture and Construction Management
Kennesaw State University

Brittany Adkins

Architecture for Mental Soothing:
Balancing Spatial Thresholds to Impact Mental Health

According to ADAA, nearly one-half of those diagnosed with depression are also diagnosed with an anxiety disorder. Anxiety disorders are highly treatable but only 36.9% are receiving any kind of treatment. Anxiety disorders develop based on a set of factors including genetics, brain chemistry, personality, and life events. Many do not realize but our environment, especially the built environment we inhabit everyday can have a positive or negative effect on our mental well-being. Architecture should not just focus on the physical needs of their inhabitants but the mental health needs as well.

The built environment has a considerable impact on mental well-being and how it can affect the human mind on a daily basis. Through research, it has been noted that the stimulation of the senses within the built environment can have a positive impact on our mental health. When our senses are activated in a carefully designed way, it can lead to a clearer, more positive perception of the built environment and allow for individual and unique experiences for each person.

Approved by:

Thesis Advisor
Professor Tim Frank

Thesis Coordinator
Elizabeth Martin-Malikian

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Dr. Anthony Rizzuto, PhD



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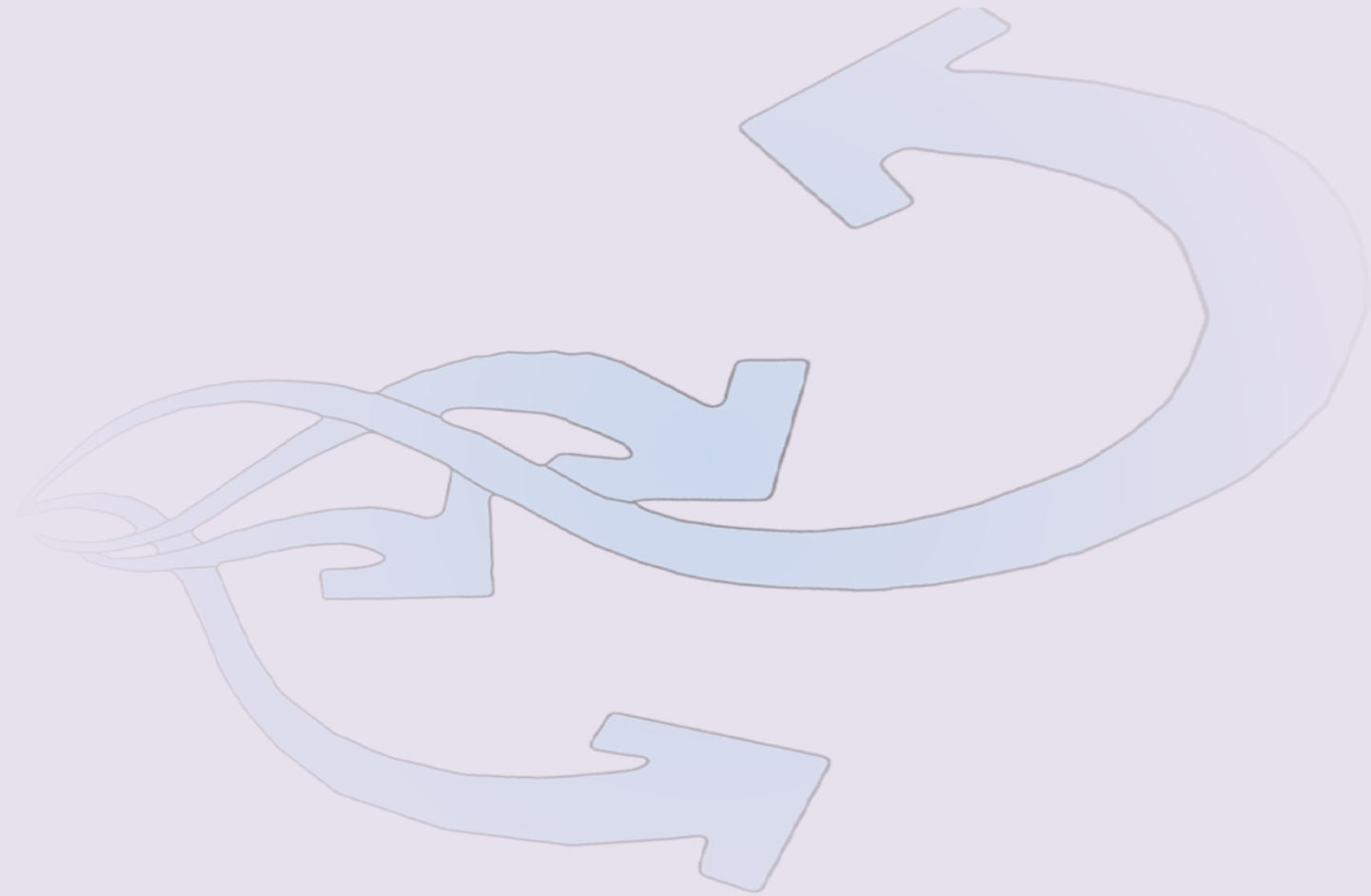
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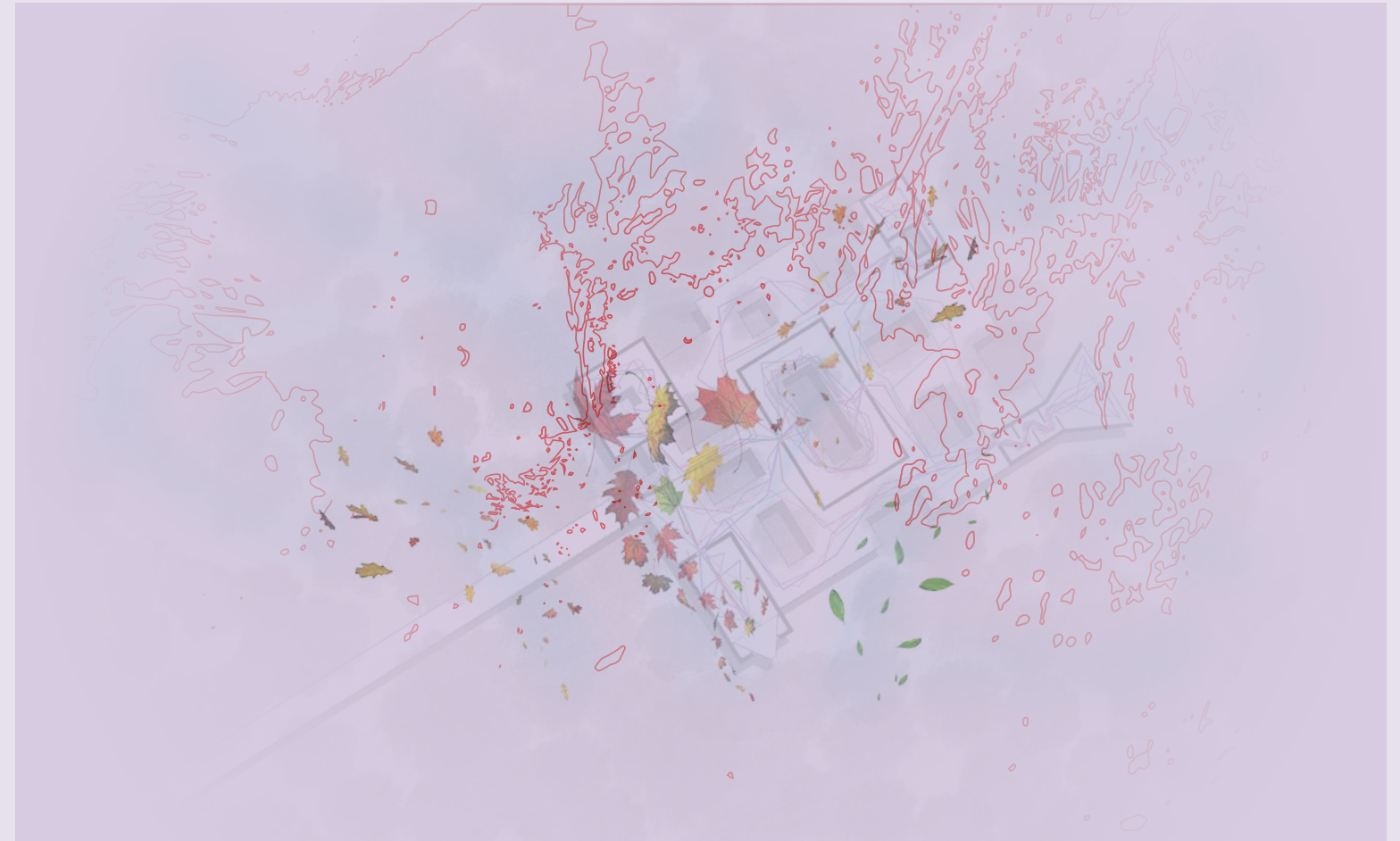
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Chapter 01: Design Theorem



1.1_Thesis Statement

This thesis seeks to bridge the mental connection of those suffering from mental disorders to the built environment through the stimulation of the senses. I plan to explore how the senses can stimulate awareness of cognitive dysfunction because of anxiety and depression.

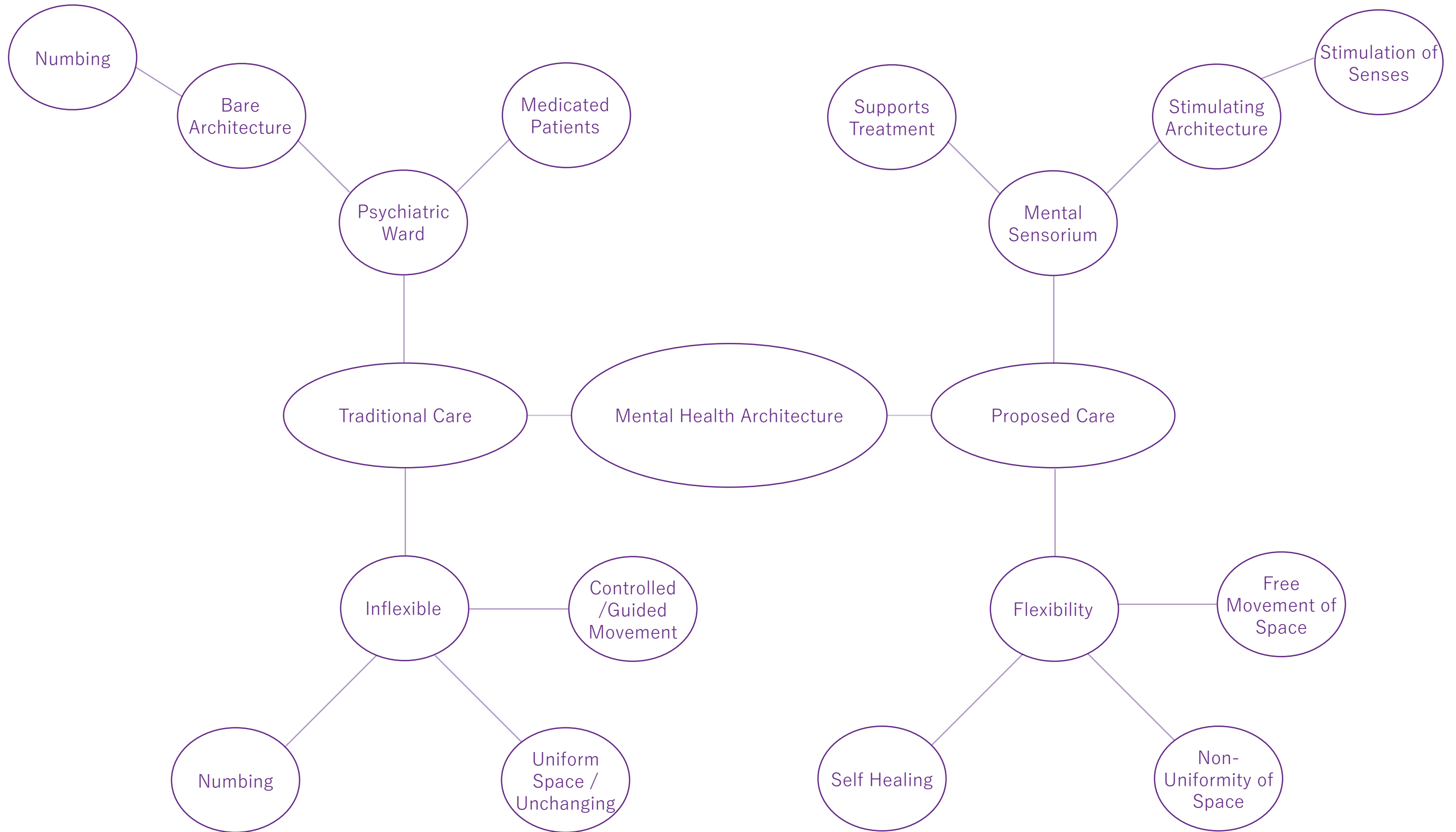
According to the Anxiety and Depression Association of America, in the U.S. alone, 6.8 million adults suffer from Generalized Anxiety Disorder, 15 million suffer from Social Anxiety Disorder, and over 16.1 million suffer from Major Depressive Disorder. Yet less than half of those people are receiving any kind of treatment for these disorders. As determined by Soderland and Newman in their article, Improving Mental Health in Prisons through Biophilic Design, an individual's surroundings are highly influential on their psychological and physiological being with potential to reinforce either the progressive or regressive pathway. This means that your surroundings can have a positive or negative effect on your mental well-being.

There should be a connection between architectural space and the human being. Boettger explains how perception of space is related to the use of our sensory organs; "In the course of movements within the space, the use of various sensory organs, which are activated in a consciously selective manner, leads to a clearer perception of the complexity of the space." Undeveloped experiential spaces can become stress inducing and soul crushing areas within the built environment, especially when you suffer from anxiety or depressive disorders. When you are seeking help for such disorders, a sterile and institutional facility can have an extremely negative effect on your mental health.

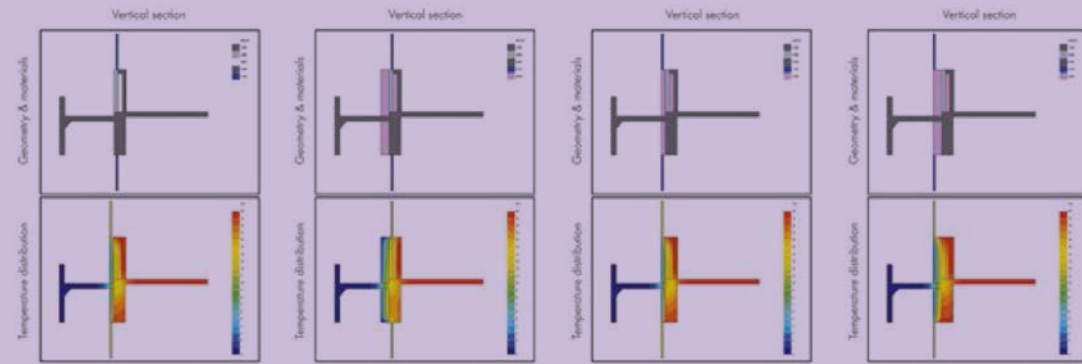
My research shows that lack of mental stimulation along with inflexible and uniform spaces cause more harm than good. For humans to perceive a healthy space, the stimulation of the senses is deeply important. This is because when our senses are activated in a carefully designed way, it can lead to a clearer and a more positive perception of the built environment and allow for individual and unique experiences for each person.

My thesis will explore the experience of patients within a mental care setting; acknowledging that patients heal in different ways. I plan to accomplish this through a series of five architectural principles specific to my thesis. These architectural principles consist of: 1) spatial non-uniformity, 2) sensorial differentiation, 3) open planning and a free range of movement, 4) experiential clarity, and 5) acute atmospheres. Through these five principles, this thesis will explore how the senses can stimulate awareness of cognitive dysfunction caused by anxiety and depression.

I will test this assertion through the design of a mental sensorium located in the north Georgia mountains with distinctive site features which will be used by healthcare systems in the Atlanta Metro to run mental health retreats for those in the region suffering from anxiety and depression. This sensorium will give back to the patients through a matrix of stimulating multi-use spaces. This therapeutic facility increases environmental awareness and promote an overall better mental well-being, giving back hope to those who feel hopeless.



Statement Diagram



Guy's Tower External Retrofit Digital Thermal Modeling Diagram, London, 2014. (Diagram courtesy of Penoyre & Prasad).



Sir Ludwig Guttman Health & Wellbeing Centre Diagram, East Village, London, 2011. (Diagram courtesy of Penoyre & Prasad).

“Holistic care is nothing new. There are well-known examples across the world and throughout history – from ancient Greece, China and India to early 20th century northern Europe – of approaches that prioritizes place-making as a facilitator for health and healing.”

“It seemed evident, then, that in trying to pursue science-based design to serve science-based medicine, healthcare designers had abandoned the conscious creation of place as a primary task of architecture in favour of the accommodation of medical processes. So much so that the hospital corridor had become the epitome of alienating, bewildering placelessness.”

“The remarkable achievements of scientifically based medicine had, by the middle of the 20th century, shifted the focus of healing entirely to the body as an assemblage of physical parts, and elevated the status of the physician to the all-knowing master of cures. The separation of body and mind in medicine was perhaps further cemented by the development of the treatment of mental illness as its own sophisticated quasi-scientific discipline.”

“It embraces systems thinking, taking into account the wider life circumstances of patients, and recognizing that social and economic conditions are strongly linked to health and wellbeing.”

Prasad, S. (2017). Regenerative agents: patient-focused architectures. *Architectural Design*, 87(2), 122–127.

Designing for the Third Age

Lorraine Farrelly

Vision

“Vision, the key ocular receptor, assimilates approximately 90 per cent of the environmental data we learn daily. With age, this ability diminishes, and ocular changes include reduced visual acuity, depth perception and sensitivity to colour/contrast, heightened sensitivity to shadow/glare, and restricted field of vision.”

Hearing

“Successful design interventions here have involved white/pink noise, noise-cancellation speaker induction loops, and new sound-absorptive fabrics and finishes.”

Touch

“Varied, contrasting and richly articulated fabrics and finishes are therefore essential in establishing legible and engaging tactile environments.”

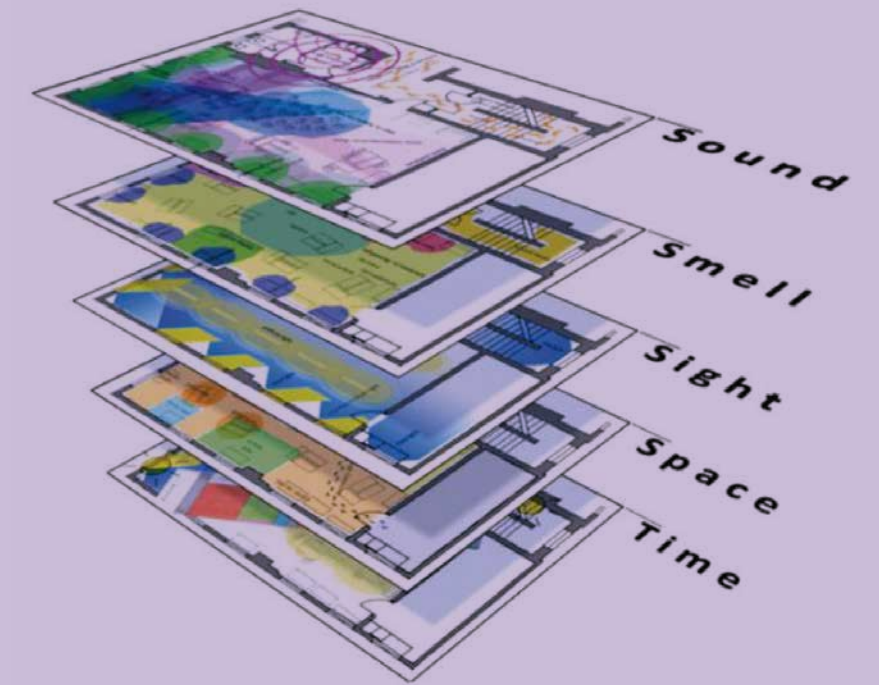
Smell

“Smart wall and ceiling finishes can have photo-catalytic effects, absorbing confounding noxious smells, and scent emitters can prompt past memories in cases of dementia.”

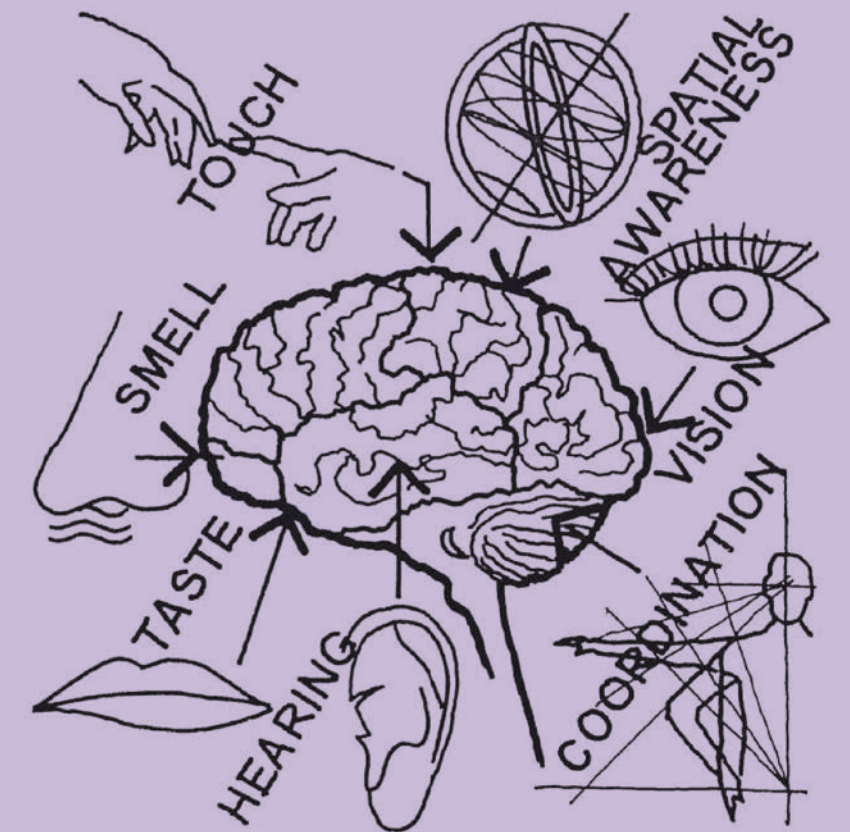
The senses have an effect on your mental health as you age. Through the stimulation the senses, mental health can be improved. Lack of stimulation causes mental health issues over time. Understanding the senses and how they affect our mental well being can help to improve the quality of design for both long term and short term situations.

The carefully executed stimulation of the senses has been studied to heal in many cases. The senses can also be used to help someone navigate through a building.

Farrelly, L. (2014). Designing for the third age : architecture redefined for a generation of “active agers.” John Wiley & Sons.



Sensory plans, (Plans courtesy of Richard Mazuch IBI/Nightingale).



Sensory sketch, (Sketch courtesy of Richard Mazuch IBI/Nightingale).

Improving Mental Health in Prisons Through Biophilic Design

Jana Söderlund and Peter Newman



Aerial Image of Halden Prison, (Database unknown).



Halden Prison, Copenhagen, Denmark, 1935 (Photograph courtesy of Erik Møller Architects).

“Expression of biophilia through biophilic design in architecture has occurred throughout history, not always consciously, or even acknowledged, conveying a subjectiveness, which testifies to its inherent quality in humans. Nature can be mimicked by using the patterning, forms, materials, symbols and spaces, which represent nature and evoke similar responses.”

“An individual’s surroundings are highly influential on his or her psychological and physiological being with the potential to reinforce either the progressive or regressive pathway.”

“Wilson utilized the term biophilia to describe his deep feelings of connection to nature during a period of exploration and immersion in the natural world. Wilson was able to provide an evolutionary biologist’s view of the biophilic connection to nature as something that humans have evolved to need.”

“Research on psychological responses to nature is increasing, with supporting physiological evidence through more sophisticated investigative technology also mounting. Positive responses are evident not only with direct exposure to nature but also where the patterns of nature, such as fractal patterns, and the spaces of nature, such as refuge and prospect, are found.”

Söderlund, J., & Newman, P. (2017). Improving Mental Health in Prisons Through Biophilic Design. *Prison Journal*, 97(6), 750.

Salutogenic and Biophilic Design as Therapeutic Approaches to Sustainable Architecture

Richard Mazuch

Biophilia

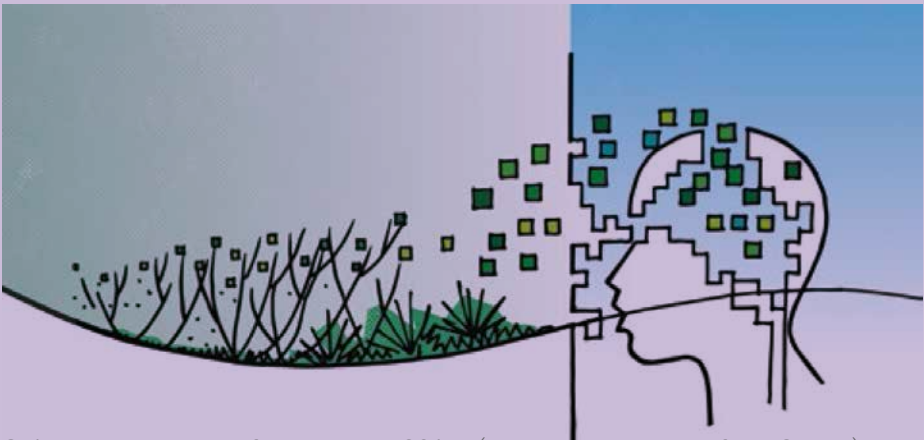
“Biophilic design is an innovative and rapidly growing method of designing the spaces within which we live, work, learn, play and heal. Edward Wilson, a Harvard biologist, first used the term in his book Biophilia in 1984, describing the genetic predisposition we have towards nature.”

“Essentially the natural world, from which we originate, falls into two categories: ‘living nature’ that encompasses varieties of fauna and flora, and non-living ‘abiotic nature’ that includes water, sunlight, temperature, soil and the oxygen we breathe.”

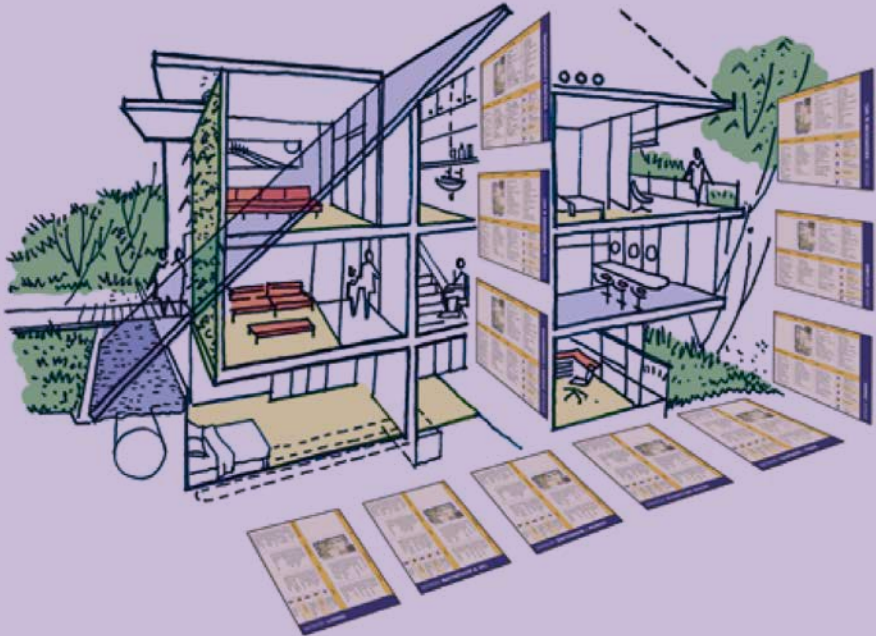
“There is an ever-increasing focus on ‘wellbeing’ and ‘wellness’ in the community and the overall public realm.”

“Natural elements such as sunlight have to navigate through liminal spaces, building skins, public to intimate spaces and finally through the sensory receptors. This exposure in turn affects our physiology, emotions, psychological disposition and ultimately our physical condition.”

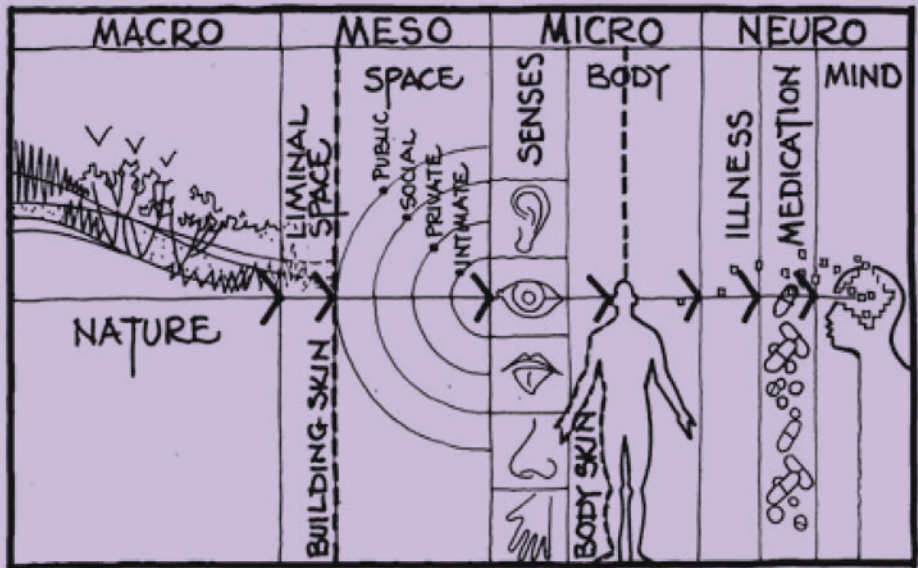
Mazuch, R. (2017). Salutogenic and biophilic design as therapeutic approaches to sustainable architecture. Architectural Design, 87(2), 42–47.



Salutogenic Home of Tomorrow, 2015, (Imagery courtesy of IBI Group).



Chalkhill Child and Adolescent Mental Health Unit, 2008, (Imagery courtesy of IBI Group).



Nature Nurtures, Macro to Neuro, 2016, (Imagery courtesy of IBI Group).

Annotated Bibliography

Söderlund, J., & Newman, P. (2017). Improving Mental Health in Prisons Through Biophilic Design. *Prison Journal*, 97(6), 750.
Abstract: Increasing nature and natural elements within a prison offers the potential to de-stress residents, improve mental health, cognitive functioning and learning; reduce recidivism and increase receptivity for behavioral change and restorative justice opportunities. Biophilic design is outlined as a set of principles, attributes and practices for cities to bring nature into urbanites’ daily life. The role of nature in restorative initiatives is traced back to the early work of innovative psychoanalyst, Eric Fromm, illustrating how his framework of human psychological pathways overlaps with biophilic design principles. Together, these approaches should provide new ways to improve the prison experience. [Abstract by Author].

Korkmaz, S., Özer, Ö., Kaya, Ş., Kazgan, A., & Atmaca, M. (2016). The correlation between color choices and impulsivity, anxiety and depression. *European Journal of General Medicine*, 13(3), 47-50.
Abstract: It is considered that, in addition to different effects of colors on mood, psychopathological processes are also a conductive factor in color preferences. Thus, the objective of the present study was to investigate whether there was a relationship between color preferences and impulsive behavior. Method: Socio-demographic information, anxiety levels, depression and impulsivity levels of 200 individuals aged 18-50, which were selected randomly, were assessed. Beck Anxiety (BAI), Beck Depression(BDI) and Barrat Impulsivity Scales(BIS) were applied to all participants. They were asked the first color that comes to mind and their favorite colors. Preferred colors were divided into three groups of cold (blue, purple, green), warm (red, yellow, pink, brown) and neutral colors (black, white, grey). Results: Study group included 87 males (43.5%), 113 females (56.5%) and their mean age was 26.9±6.2 years. (female mean age: 25.9±5.5; male mean age: 28.1±6.9). The first color that came to mind was blue (32%), followed by red (20%). Their most favorite colors were blue (33%) and black (20%). BIS total points were the highest for those who chose yellow, blue, purple and black colors, respectively. BAI was the highest in participants who preferred color black and BDI was the highest in participants who preferred color grey. Those who scored the highest points in BAI and BDI preferred neutral colors. Anxiety scores for those preferring cold, warm and neutral colors were statistically significantly different (p=0.02). Conclusion: Color preferences are closely related to impulsivity. Furthermore, anxiety and depression levels of individuals also affect their color preferences. [Abstract by Author].

Compton, M. T., American Psychiatric, P., & Shim, R. S. (2015). The Social Determinants of Mental Health. Washington, DC: American Psychiatric Publishing.
Abstract: The basic premise of this book is that society plays a prominentrole in creating and shaping poor mental health and mental illnesses. As such, society is also in a position to improve mental health and reduce risk for mental illnesses. Where an individual, a family, a community, or a society is located on the continuum from health and wellness to illness and infirmity is multi-determined. Genetic influences and biological constitution are undoubt-edly key drivers of health and wellness, but the contexts of the individual,family, community, and society are also crucial. In this book, we focus on those social and environmental contexts. At an even deeper level, we fo-cus on society, specifically, America in the twenty-first century. [Abstract by Author].

Bonfanti, A., Vigolo, V., Douglas, J., & Baccarani, C. (2017). Servicescape navigation. *TQM Journal*, 29(4), 546.
Abstract: Purpose The purpose of this paper is to profile wayfinders into homogeneous sub-groups according to their wayfinding ability, and to investigate the differences between the clusters identified and their evaluations of satisfaction. Design/methodology/ approach This study uses survey data collected in a hospital in the Northern part of Italy. The survey questionnaire assessed the participants’ self-estimation of wayfinding ability in terms of wayfinding competence, wayfinding strategy and wayfinding anxiety, as well as the wayfinder’s satisfaction. Findings The findings propose that three factors, namely, individual orientation skills, confidence in servicescape elements and anxiety control, contribute to defining wayfinding ability. Based on these factors, cluster analysis reveals three profiles of wayfinders, as follows: the Easy Goings, the Do-it-yourselfes and the Insecures. Group differentiation comes from wayfinding ability and customer satisfaction levels. Research limitations/implications The results of this study advance the segmentation literature by analyzing different types of wayfinding ability that can lead to different satisfaction levels. Practical implications These findings will help service managers improve servicescape design and help them formulate effective targeting strategies. Originality/value While previous research outlined the importance of some factors such as gender differences, familiarity with the service environment and cognitive approaches, this study recommends the examination of the profile of visitors to the service setting to allow them to find their way more effectively. [Abstract by Author].

Lawton, C. A., & Kallai, J. (2002). Gender differences in wayfinding strategies and anxiety about wayfinding: a cross-

cultural comparison. *Sex Roles: A Journal Of Research*, 389.
Abstract: Two studies examined gender and cultural differences in wayfinding strategies and anxiety about wayfinding. Men in both Hungary and the United States reported greater preference for a strategy of orienting to global reference points, whereas women reported greater preference for a strategy based on route information. A higher level of wayfinding anxiety was reported by Americans, and women in both countries reported greater wayfinding anxiety than did men. Women in the United States, but not in Hungary, reported less childhood wayfinding experience than did men; women in both countries reported feeling less safe than did men. Feeling of personal safety and wayfinding strategy preferences mediated the gender difference in wayfinding anxiety. [Abstract by Author].

Devlin, A. S. (2014). Wayfinding in Healthcare Facilities: Contributions from Environmental Psychology. *Behavioral Sciences (2076-328X)*, 4(4), 423-436.
Abstract: The ability to successfully navigate in healthcare facilities is an important goal for patients, visitors, and staff. Despite the fundamental nature of such behavior, it is not infrequent for planners to consider wayfinding only after the fact, once the building or building complex is complete. This review argues that more recognition is needed for the pivotal role of wayfinding in healthcare facilities. First, to provide context, the review presents a brief overview of the relationship between environmental psychology and healthcare facility design. Then, the core of the article covers advances in wayfinding research with an emphasis on healthcare environments, including the roles of plan configuration and manifest cues, technology, and user characteristics. Plan configuration and manifest cues, which appeared early on in wayfinding research, continue to play a role in wayfinding success and should inform design decisions. Such considerations are joined by emerging technologies (e.g., mobile applications, virtual reality, and computational models of wayfinding) as a way to both enhance our theoretical knowledge of wayfinding and advance its applications for users. Among the users discussed here are those with cognitive and/or visual challenges (e.g., Down syndrome, age-related decrements such as dementia, and limitations of vision). In addition, research on the role of cross-cultural comprehension and the effort to develop a system of universal healthcare symbols is included. The article concludes with a summary of the status of these advances and directions for future research. [Abstract by Author].

Vandenberg, A. E., Hunter, R. H., Anderson, L. A., Bryant, L. L., Hooker, S. P., & Satariano, W. A. (2016). Walking and Walkability: Is Wayfinding a Missing Link? Implications for Public Health Practice. *Journal Of Physical Activity & Health*, 13(2), 189-197.
Abstract: Research on walking and walkability has yet to focus on wayfinding, the interactive, problem-solving process by which people use environmental information to locate themselves and navigate through various settings. Methods: We reviewed the literature on outdoor pedestrian-oriented wayfinding to examine its relationship to walking and walkability, 2 areas of importance to physical activity promotion. Results: Our findings document that wayfinding is cognitively demanding and can compete with other functions, including walking itself. Moreover, features of the environment can either facilitate or impede wayfinding, just as environmental features can influence walking. Conclusions: Although there is still much to be learned about wayfinding and walking behaviors, our review helps frame the issues and lays out the importance of this area of research and practice. [Abstract by Author].

Brown, J. (2015). Minnesota Mental Health Center for Children Lets in Natural Light. *Behavioral Healthcare*, 35(1), 33-35.
Abstract: Layout In addition to the spacious, naturally-lit lobby, Smith says the first floor features intake rooms as well as day treatment classrooms, where staff can address a continuum of needs for children with intense challenges who have likely been removed from school or day care settings. Additionally, there’s a small gym or “gross motor area,” with padded walls for safety and high clerestory windows, where children can exercise with therapists and learn to play in healthy ways. [Abstract by Author].

Kumar, A., & Patil, D. (2017). Light and Ventilation Analysis for Infrastructure in an Urban Region- A Case Study. *Environmentasia*, 10(2), 118.
Abstract: Pressure on infrastructure due to over population has deteriorated the indoor environment causing various health issues. It has also contributed to the sick building syndrome making huge monetary burden to economy. Public health department of the country has taken many actions to mitigate these issues however; design of the building was not taken into consideration. Optimum quantities of light and proper ventilation express the quality of indoor environment. Also, the use of natural light and ventilation is definitely an advantage with the raising concerns regarding the cost and environmental impact of energy use. Natural light and ventilation can reduce building construction and operation costs and reduce the energy consumption. Moreover it would also ensure safe, healthy and comfortable living conditions. Therefore, it is very important to assess indoor environment before implementing

new construction or building. This provides theoretical guidelines and basic calculations for understanding a green infrastructures and the factors related to it. In this paper, a building has been studied in an urban city of India where the percentage area of light and ventilation were analyzed. Analysis showed the percentage of light is thrice and ventilation is twice the prescribed limits by Indian Green Building Council (IGBC). It has been found that building under study fulfills the given criteria by IGBC. This analysis can be useful while constructing a new infrastructure to improve the standard of living as 90% time is spent indoors. [Abstract by Author].

Amorim, R., Carlos Lopez, J., Pena-Garcia, A., & Molina-Moreno, V. (n.d). Use of Natural Light vs. Cold LED Lighting in Installations for the Recovery of Victims of Gender Violence: Impact on Energy Consumption and Victims’ Recovery. Sustainability, 9(4), 562.

Abstract: The efficiency of lighting installations is a major challenge concerning Governments, productive sectors and individuals. However, the importance of accurate lighting in some areas, especially those related to Health and Wellbeing is so critical that the constraints of energy efficiency and sustainability are not always a priority. This situation has become more critical with the current boom in the application of non-visual effects of light to these areas. In this study, the effects of two different kinds of lighting on female victims of gender violence are compared and analyzed in terms of positive results and impact on energy consumption and sustainability. The lighting technologies used are integrated in facilities where these women carry out different activities aimed at their integration into daily life after their traumatic experiences. The results are expected to become a tool for professionals working with these collectives and for installation designers. In spite of the well-known effects of cold light, especially for tasks involving arousal, sleepiness and other critical variables, it is demonstrated that daylight, which is obviously cheaper from productive and environmental perspectives, is better for this application. [Abstract by Author].

Brown, M. J., & Jacobs, D. E. (2011). Residential Light and Risk for Depression and Falls: Results from the LARES Study of Eight European Cities. Public Health Reports, 126(1), 131-140.

Abstract: We examined the relationship between self-reported inadequate residential natural light and risk for depression or falls among adults aged 18 years or older. Methods. Generalized estimating equations were used to calculate the odds of depression or falls in participants with self-reported inadequate natural residential light vs. those reporting adequate light (n = 6,017) using data from the World Health Organization’s Large Analysis and Review of European Housing and Health Survey, a large cross-sectional study of housing and health in representative populations from eight European cities. Results. Participants reporting inadequate natural light in their dwellings were 1.4 times (95% confidence interval [CI] 1.2,1.7) as likely to report depression and 1.5 times (95% CI 1.2, 1.9) as likely to report a fall compared with those satisfied with their dwelling’s light. After adjustment for major confounder, the likelihood of depression changed slightly, while the likelihood of a fall increased to 2.5 (95% CI 1.5, 4.2). Conclusion. Self-reported inadequate light in housing is independently associated with depression and falls. Increasing light in housing, a relatively inexpensive intervention, may improve two distinct health conditions. [Abstract by Author].

Kay, C. L., Carmichael, D. A., Ruffell, H. E., & Simner, J. (2015). Colour fluctuations in grapheme-colour synaesthesia: The effect of clinical and non-clinical mood changes. British Journal Of Psychology, 106(3), 487-504.

Abstract: Synaesthesia is a condition that gives rise to unusual secondary sensations (e.g., colours are perceived when listening to music). These unusual sensations tend to be reported as being stable throughout adulthood (e.g., Simner & Logie, 2007, Neurocase, 13, 358) and the consistency of these experiences over time is taken as the behavioural hallmark of genuineness. Our study looked at the influence of mood states on synaesthetic colours. In Experiment 1, we recruited grapheme-colour synaesthetes (who experience colours from letters/digits) and elicited their synaesthetic colours, as well as their mood and depression states, in two different testing sessions. In each session, participants completed the PANAS-X (Watson & Clark, 1999) and the BDI- II (Beck, Steer, & Brown, 1996, Manual for Beck Depression Inventory-II), and chose their synaesthetic colours for letters A-Z from an interactive colour palette. We found that negative mood significantly decreased the luminance of synaesthetic colours. In Experiment 2, we showed that synaesthetic colours were also less luminant for synaesthetes with anxiety disorder, versus those without. Additional evidence suggests that colour saturation, too, may inversely correlate with depressive symptoms. These results show that fluctuations in mood within both a normal and clinical range influence synaesthetic colours over time. This has implications for our understanding about the longitudinal stability of synaesthetic experiences, and of how mood may interact with the visual (imagery) systems. [Abstract by Author].

Kalantari, S., & Snell, R. (n.d). Post-Occupancy Evaluation of a Mental Healthcare Facility Based on Staff Perceptions of Design Innovations. Herd-Health Environments Research & Design Journal, 10(4), 121-135.

Abstract: This study was a post-occupancy evaluation (POE) to examine the effectiveness of three specific design innovations in a mental healthcare facility. In addition to collecting data about the impact of these specific designs, the study provides a model for the broader implementation of POE approaches in the mental healthcare context. Background: POEs in general healthcare settings have been shown to lead to better work environments and better outcomes for patients. Despite growing evidence of the value provided by POE studies, the industry has been somewhat slow to adopt their regular use, in part due to unfamiliarity with the POE process. This is particularly true in mental healthcare contexts, where POE studies remain virtually nonexistent. Method: In-depth interviews and a widely distributed, anonymous survey were used to collect hospital staff perceptions and feedback regarding the impact of specific design features. Results: The hospital staff were quite enthusiastic about two of the design innovations studied here (a new wayfinding strategy and the use of vibrant colors in specific areas of the facility). The third innovation, open-style communication centers, elicited more mixed evaluations. The results include extensive hypothesis testing about the effects of each innovation as well as narrative discussions of their pros and cons. Conclusions: The study generated new knowledge about three specific mental healthcare design innovations and provides a model for the practical implementation of a POE approach in mental healthcare contexts. The results are particularly relevant for designers who are considering innovative strategies in future mental healthcare facilities. [Abstract by Author].

Albers, J. (1963). Interaction of Color. New Haven, CT: Yale University Press. (book)

Explains the complex color theories and their principles. The visual perception of color is never as seen as it really is. In order to use color effectively it is necessary to recognize that color deceives continually. To this end, the beginning is not a study of color systems. [Paraphrased].

Prasad, S. (2017). Regenerative agents: patient-focused architectures. Architectural Design, 87(2), 122–127.

Holistic care is nothing new. There are well-known examples across the world and throughout history -- from ancient Greece, China and India to early 20th-century northern Europe -- of approaches that prioritize placemaking as a facilitator for health and healing. Inspired by such precedents, London-based architects Penoyre & Prasad produce buildings that engage with nature and help put patients back in control of their recovery process. Sunand Prasad, one of the firm’s co-founders, explains. [Abstract by Author].

Mazuch, R. (2017). Salutogenic and biophilic design as therapeutic approaches to sustainable architecture. Architectural Design, 87(2), 42–47.

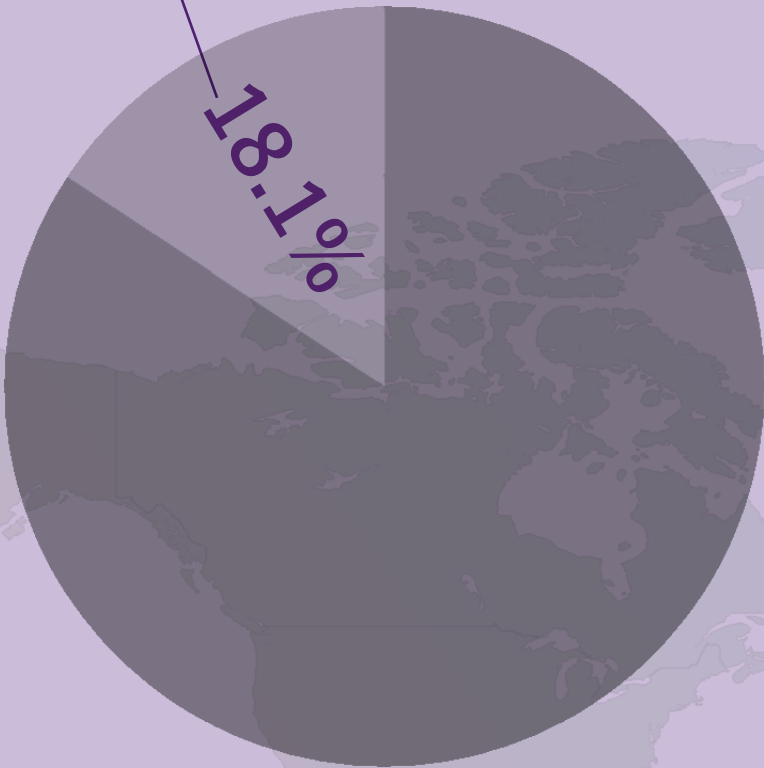
Salutogenic design is all about encouraging active health rather than merely treating illness. Biophilic design is all about engaging with nature to help in the healing process. Here, Richard Mazuch, a healthcare specialist at global design and technology firm IBI Group, presents several of their recent projects around the UK that illustrate these concepts in practice. [Abstract by Author].

Farrelly, L. (2014). Designing for the third age : architecture redefined for a generation of “active agers.” John Wiley & Sons.

A demographic revolution is underway. Across the world, the number of people aged over 65 is increasing: whereas the over 65s in the US make up 13 per cent of the population, this figure will double to 88.5 million by 2050; China’s current ratio of 16 elderly people per 100 workers is set to double by 2025, then double again to 61 by 2050. Urban design, housing and other built provision all require rethinking and redeveloping to accommodate this ever expanding aging population. The design of our urban centers will also need to be transformed to accommodate a more integrated way of living. Suburbia will need to be reshaped - retrofitting, in order to redefine a new type of interstitial space. Accommodating a range of different age groups is about adapting places and spaces to their needs as much as adapting the city for different cultural groups. Can visionary architectural solutions play a key part in the provision by creating sustainable cities for the changing profile of the population, reducing models of dependency for care and transport, and offering opportunities for recreation, leisure and work? This issue of AD reflects on the forthcoming challenges that are to be posed globally in Europe, Australia, North America and Asia, while seeking out innovative responses to the problems at both practical and speculative levels. It includes international built case studies and competition-winning entries by practitioners and students. [Abstract by Author].

1.3_Thesis Situated

Anxiety in the U.S.



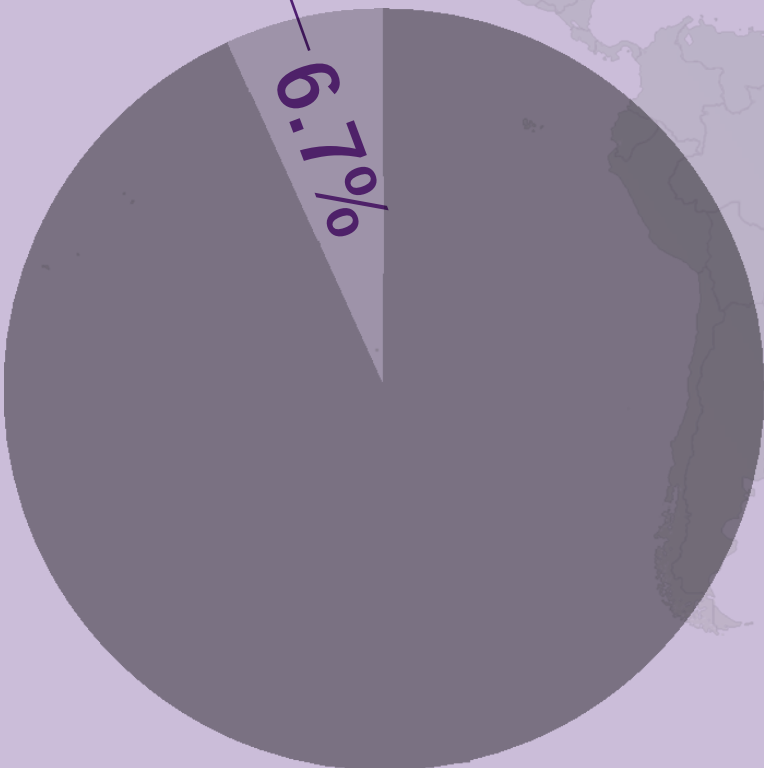
About **264 million** people world wide suffer from **Anxiety**.

About **40 million** or **18.1%** of adults in the United States suffer from an Anxiety Disorder every year.

According to **ADAA**, nearly **one-half** of those diagnosed with depression are also diagnosed with an anxiety disorder. Anxiety disorders are highly treatable but only **36.9%** are receiving any kind of treatment. Anxiety disorders develop based on a set of factors including **genetics, brain chemistry, personality, and life events**. Many do not realize but our environment, especially the built environment we inhabit everyday can have a positive or negative affect on our mental well-being.

Architecture should not just focus on the physical needs of their inhabitants but the **mental** health needs as well.

Depression in the U.S.



About **322 million** people world wide suffer from **Depression**.

About **16.1 million** or **6.7%** of adults in the United States suffer from Major Depressive Disorder every year.

Built Environment: Mental Health



There should be a connection between architectural space and the human being. My research shows that lack of mental stimulation along with inflexible and uniform spaces cause more harm than good. For humans to perceive a healthy space, the stimulation of the senses is deeply important. This is because when our senses are activated in a carefully designed way, it can lead to a clearer, more positive perception of the built environment and allow for individual and unique experiences for each person.

The issues that pertain to the built environment that harm mental health:

- +Uniformity
- +Sterility
- +Inflexibility
- +Controlled Movements
- +Weak Thresholds

Therme Vals, 1996, (photo courtesy of ArchDaily).

Hospital Hallway 2 MAX White 3D model, (Image courtesy of cgtrader).

My thesis will explore the experience of patients within a mental care setting; acknowledging that patients heal in different ways. I plan to accomplish this through a series of five architectural principles specific to my thesis. These architectural principles consist of: 1) spatial non-uniformity, 2) sensorial differentiation, 3) open planning and free range of movement, 4) experiential clarity, and 5) acute atmospheres. Through these five principles, this thesis will explore how the senses can stimulate awareness for cognitive dysfunction caused by anxiety and depression.



Mount Rainer, (photo courtesy of George and Monserrate Schwartz).

Door to Dark Room with Bright Light, 2015, (Photo courtesy of sNorrisPhoto).

Asylum/Mental Health Facility Characteristics

Many connections to positive or negative mental well-being have been linked to the built environment and how we design and layout spaces people interact in on a daily basis. An increasing number of people have experienced some kind of mental illness. The built environment affects mental health directly through the human senses: auditory, visual, olfactory, and neurological systems. The built environment also affects mental health through cohesion and sense of community. An individual's surroundings are highly influential on their mental well-being with either a positive or negative effect.

Mental health facilities tend to have a lack of stimulation for the inhabitants of the spaces. Many of the spaces tend to be very uniform in how the spaces are experienced. The experience of the space is very numbing because of the lack of variety and stimulation within the space. Many of these facilities rely only on medicine and therapy. But what role does the building have when dealing with these conditions?



<https://www.kbia.org/post/nixon-defends-bond-issue-plan-mental-health-facility#stream/0>



<http://bernarch.com/healthcare-design-behavioral-health/>



<https://doregon.org/for-30-years-weve-fought-for-people-with-mental-illness/>

The typical portrayal of a mental hospital/facility is very negative. Although the design of such facilities have improved, they still have a sterile and uniform feel. The built environment has an immense affect on someones mental health. Through research I have learned that access to nature and the stimulation of the senses can improve the mental well-being for those who suffer from anxiety and depression. Stimulation of the senses through the use of nature and natural elements is shown in the precedent below.

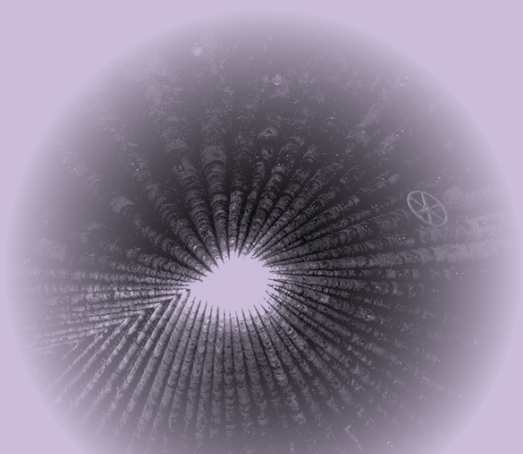
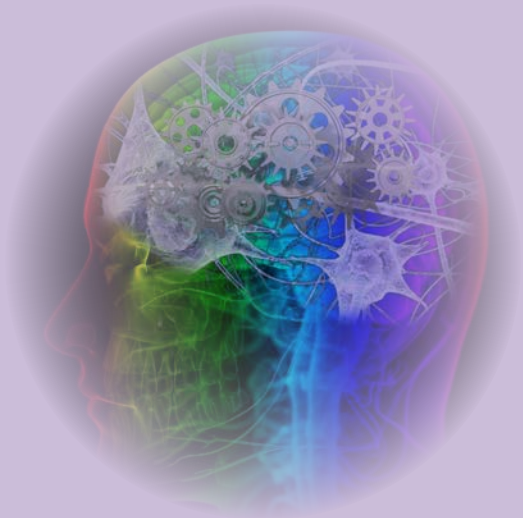
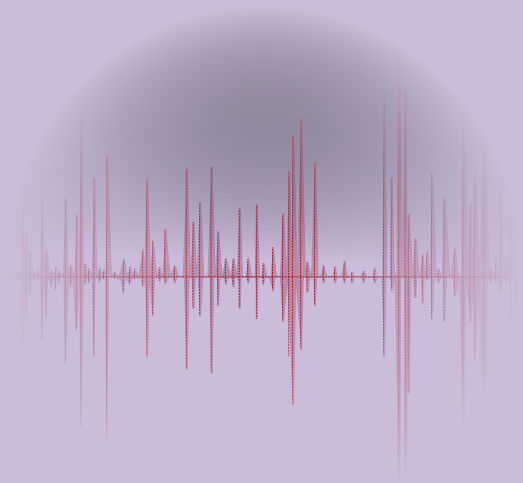


The Therme Vals, 1996 - Peter Zumthor

<https://www.archdaily.com/13358/the-therme-vals>

The Therme Vals, 1996 - Peter Zumthor

1.4_Underlying Principles



Peter Zumthor - Bruder Klaus Field Chapel - 2007

+Non-Uniformity

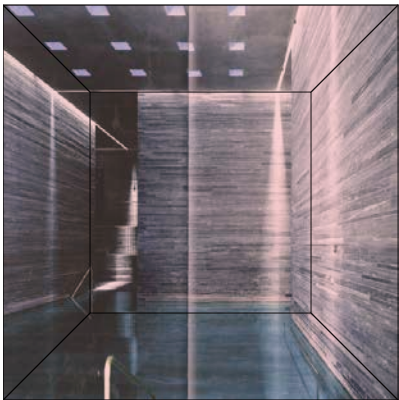
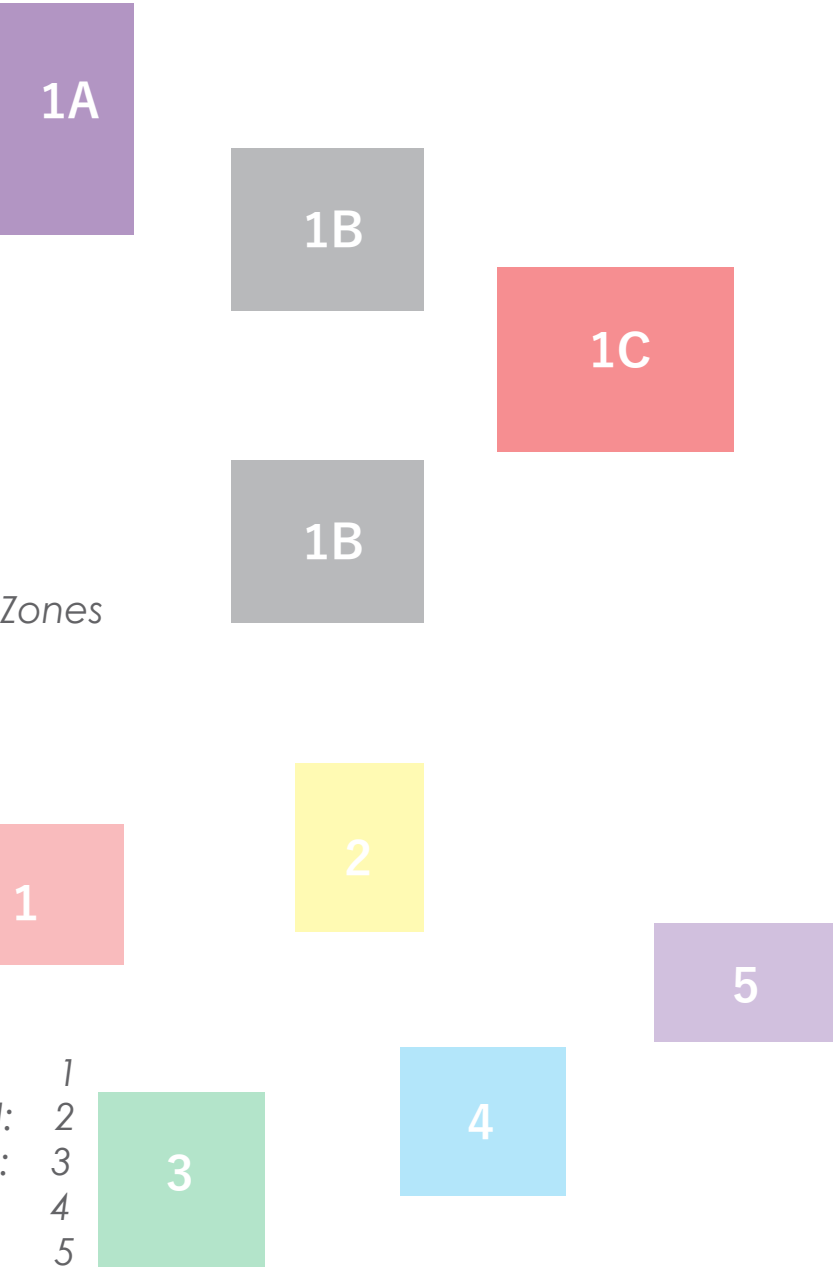
-Uniformity causes the mind to zone out of the physical space and in turn create negative impacts on the brain. This principle approaches how physical variation in architectural spaces can positively affect those afflicted with anxiety and depression and create an understanding of one's surroundings.

+Experiential Clarity

-The separation of the senses into different spaces triggers cognitive and experiential clarity with the experience of each space. The spaces will focus on each sense to create mental focus at varying levels and enhance the overall experience of space. In total the connection of the human being and architectural space is constantly being created and recreated.

+Acute Atmospheres

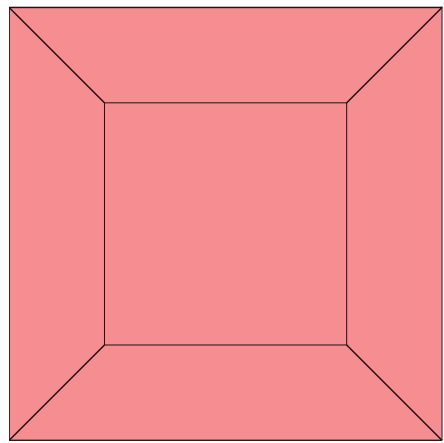
-The experiential atmospheres are intensely stimulating each human sense allowing the occupant to deeply immerse themselves within each experience.



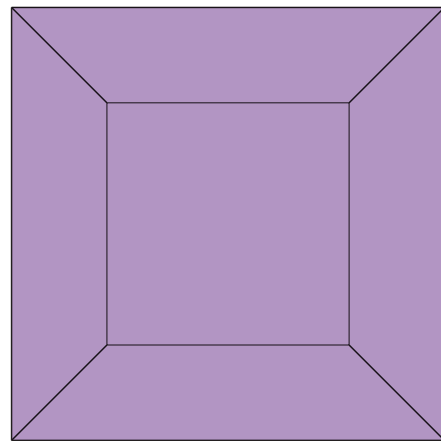
Atmospheric



Not Atmospheric



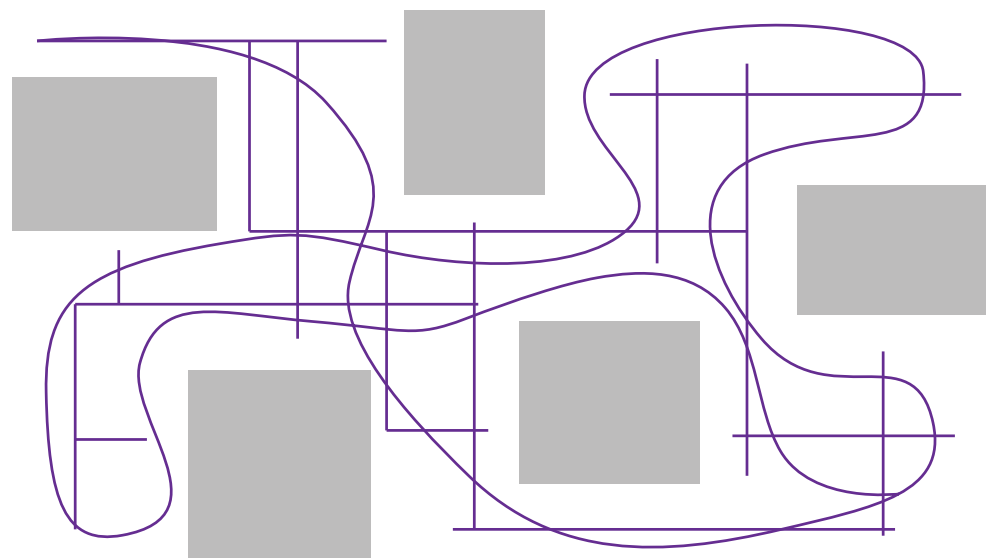
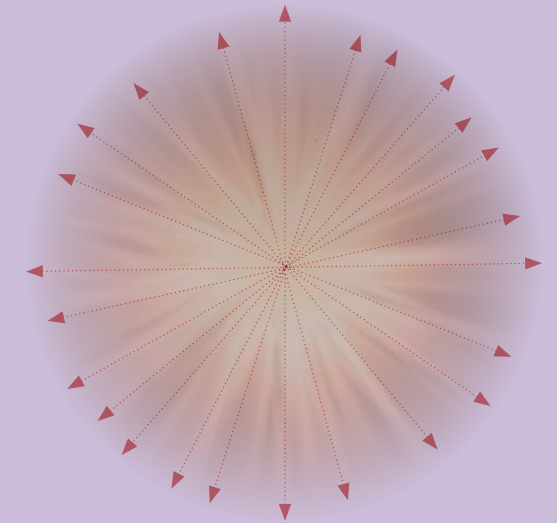
Room 1



Room 2

+Sensorial Differentiation

-The differentiation of sensorial stimulation through transitioning from space to space helps to mentally reconnect the occupant to the built environment.



Paths/Wander

+Wander/Creation of Multitude of Paths

-The creation of bounteous and diversified paths throughout the built environment allow for individual and unique experiences for each person. The freedom of wader gives back to the occupants.

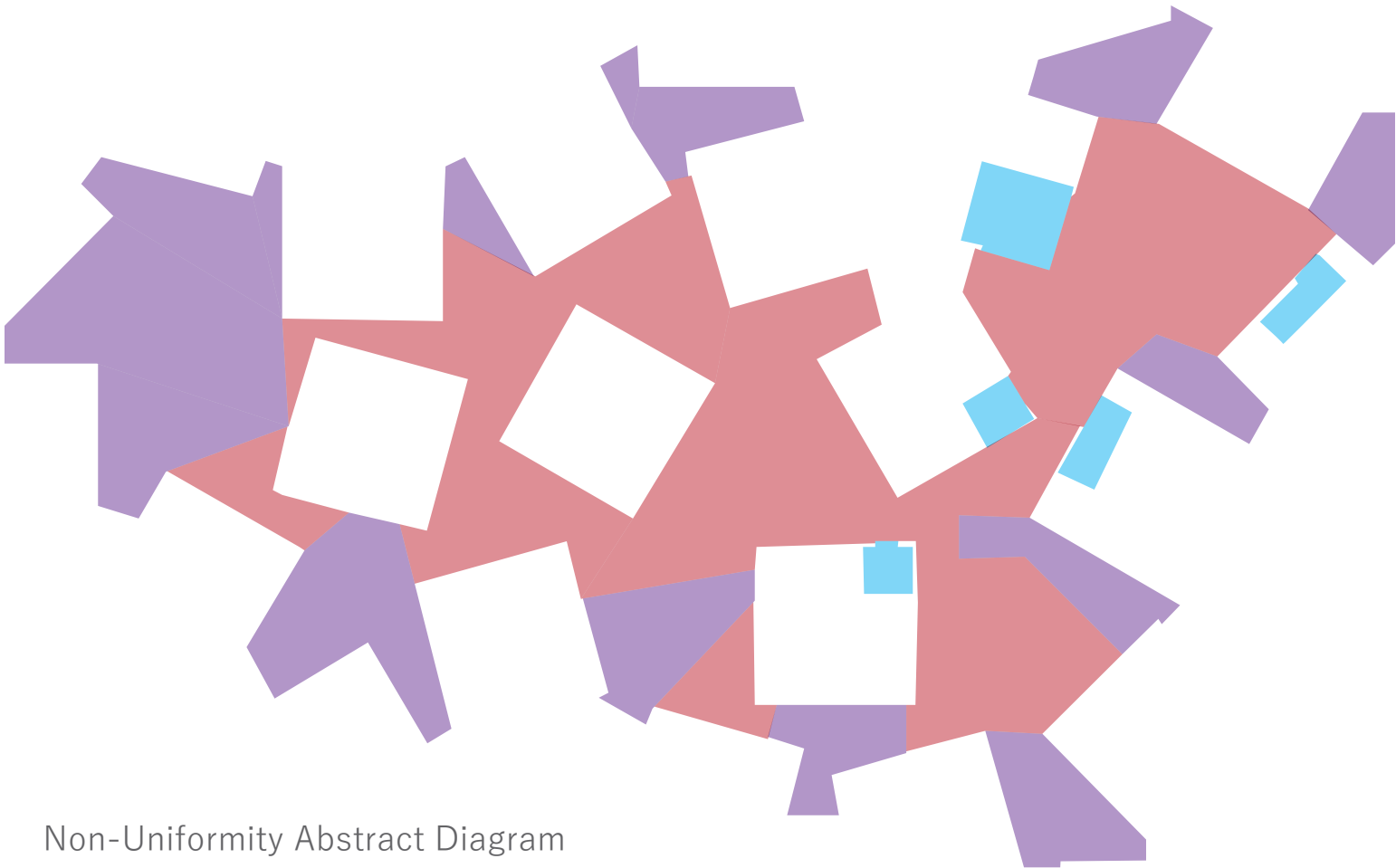




Shades of Light

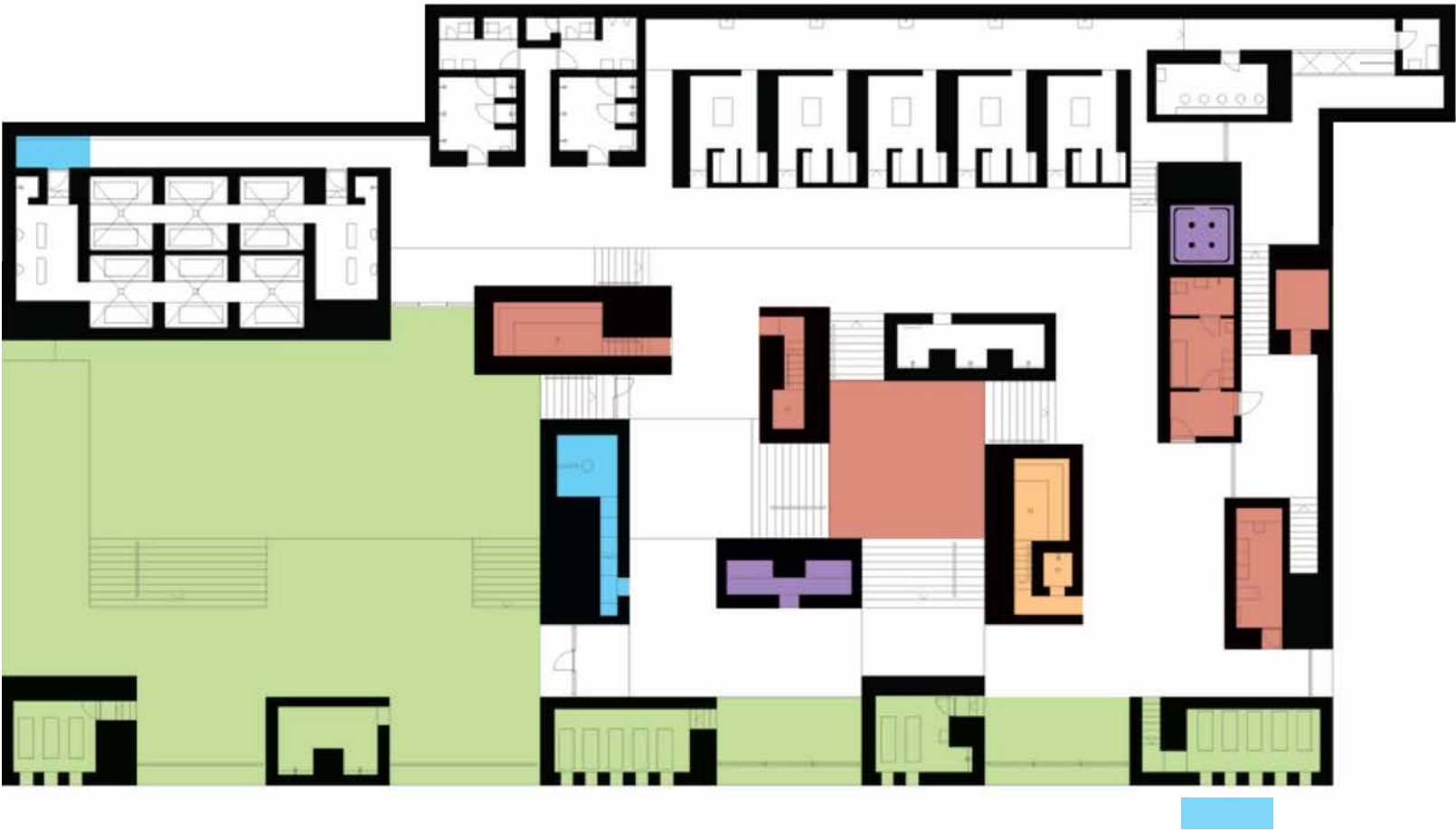
- +Light
- +Medium
- +Dark

The spaces created between are an example of non-uniformity of space. Architect Fujimoto, intentionally creates this variation of space for the patients to explore and navigate through the spaces in a unique way.



Non-Uniformity Abstract Diagram

Experiential Clarity
The Therme Vals



Each space has its own unique experience. The spaces stimulate multiple senses but some spaces stimulate one sense more than others giving experiential clarity from one space to another.

- Senses
- +touch
 - +sight
 - +sound
 - +smell
 - +taste



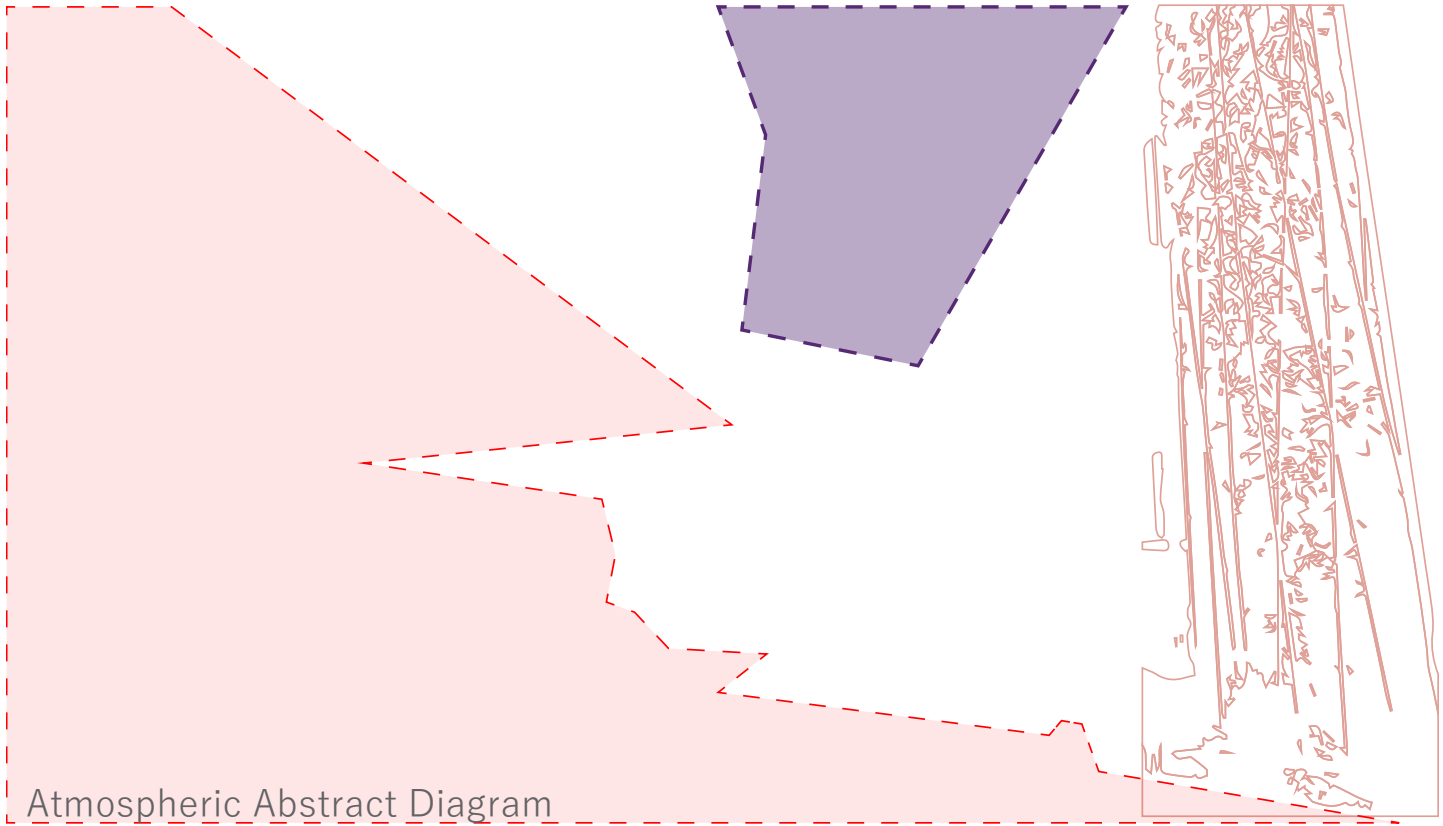
Experiential Abstract Diagram



This interior courtyard allows for multiple spatial atmospheres. Each atmosphere shows a clear understanding of the space through the stimulation of a human sense. The inhabitant of the space can have a deeper understanding of the space because of the acute atmospheres.

Spatial

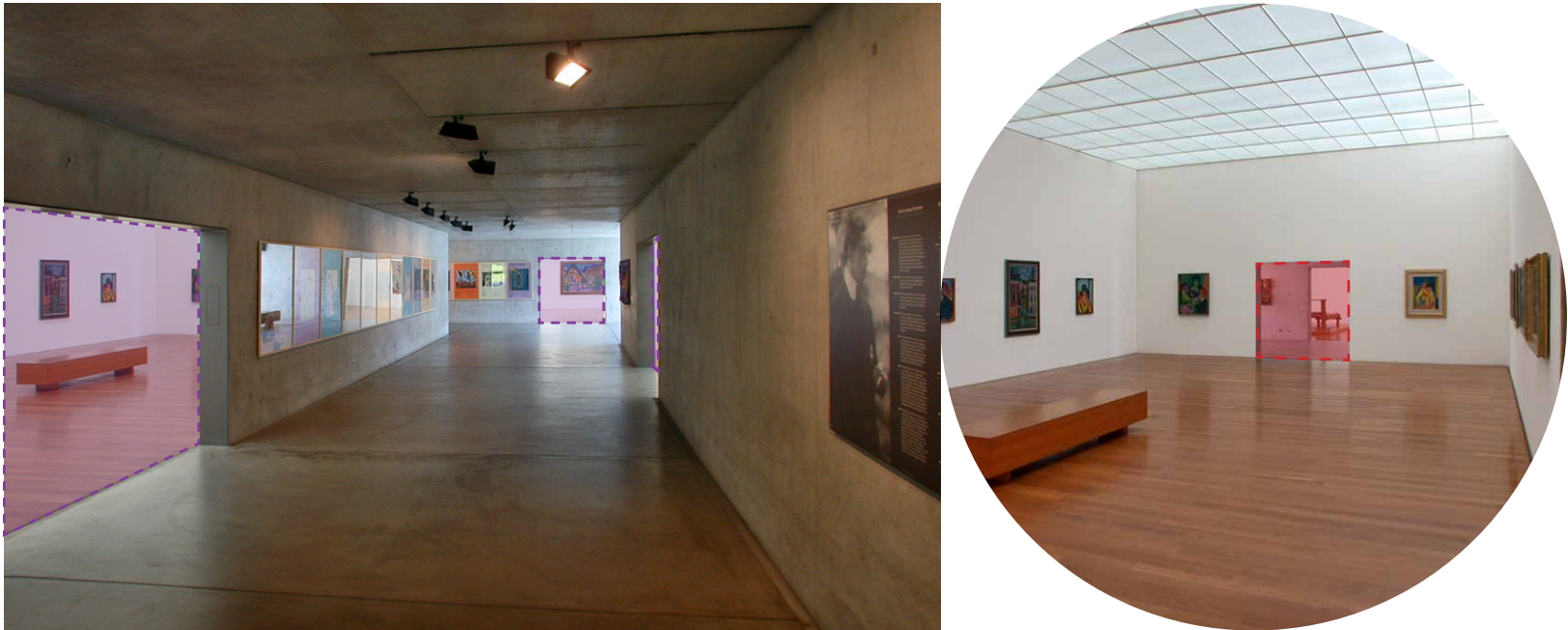
- +dark spaces
- +texture
- +framed view



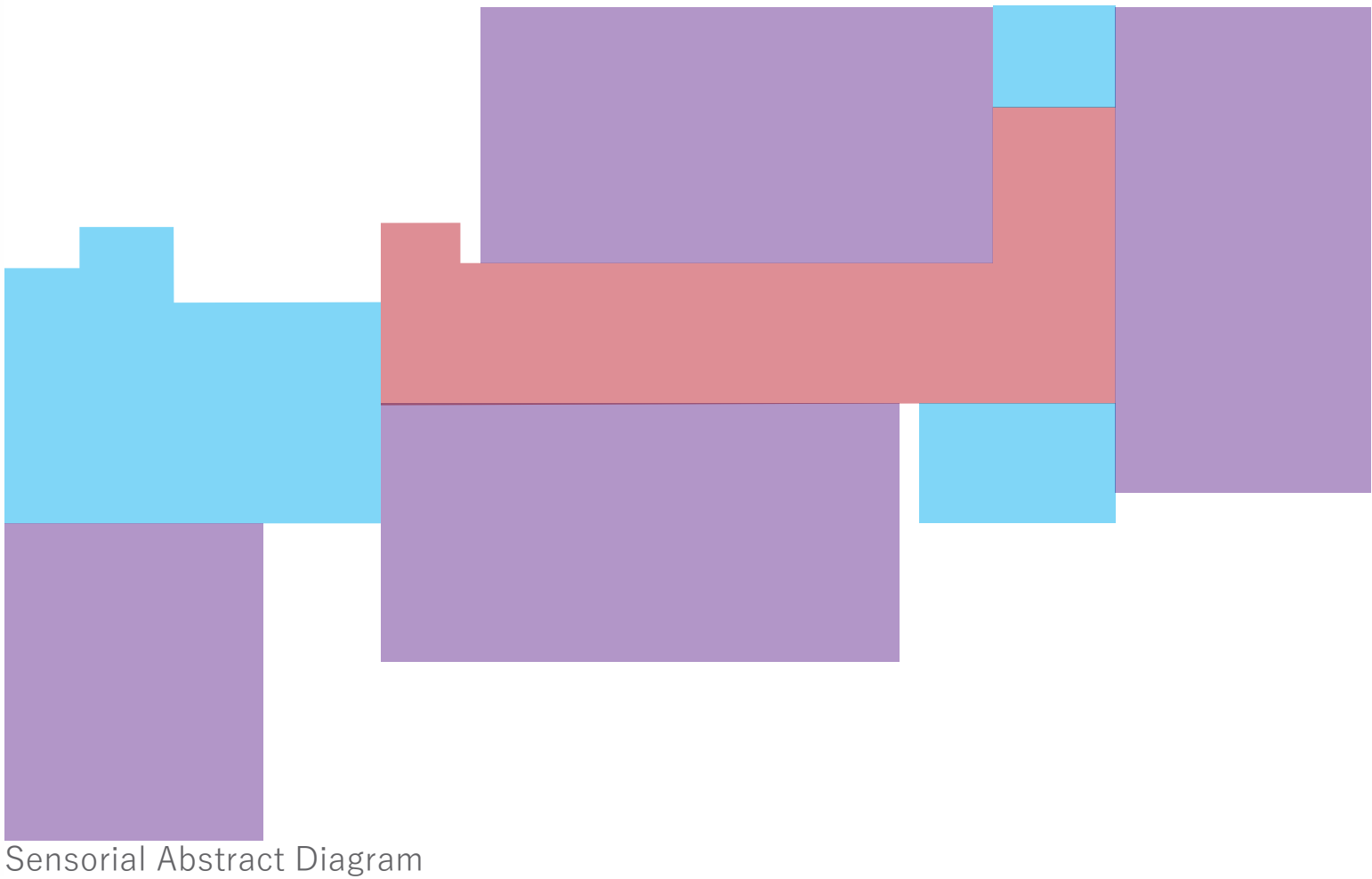
Atmospheric Abstract Diagram

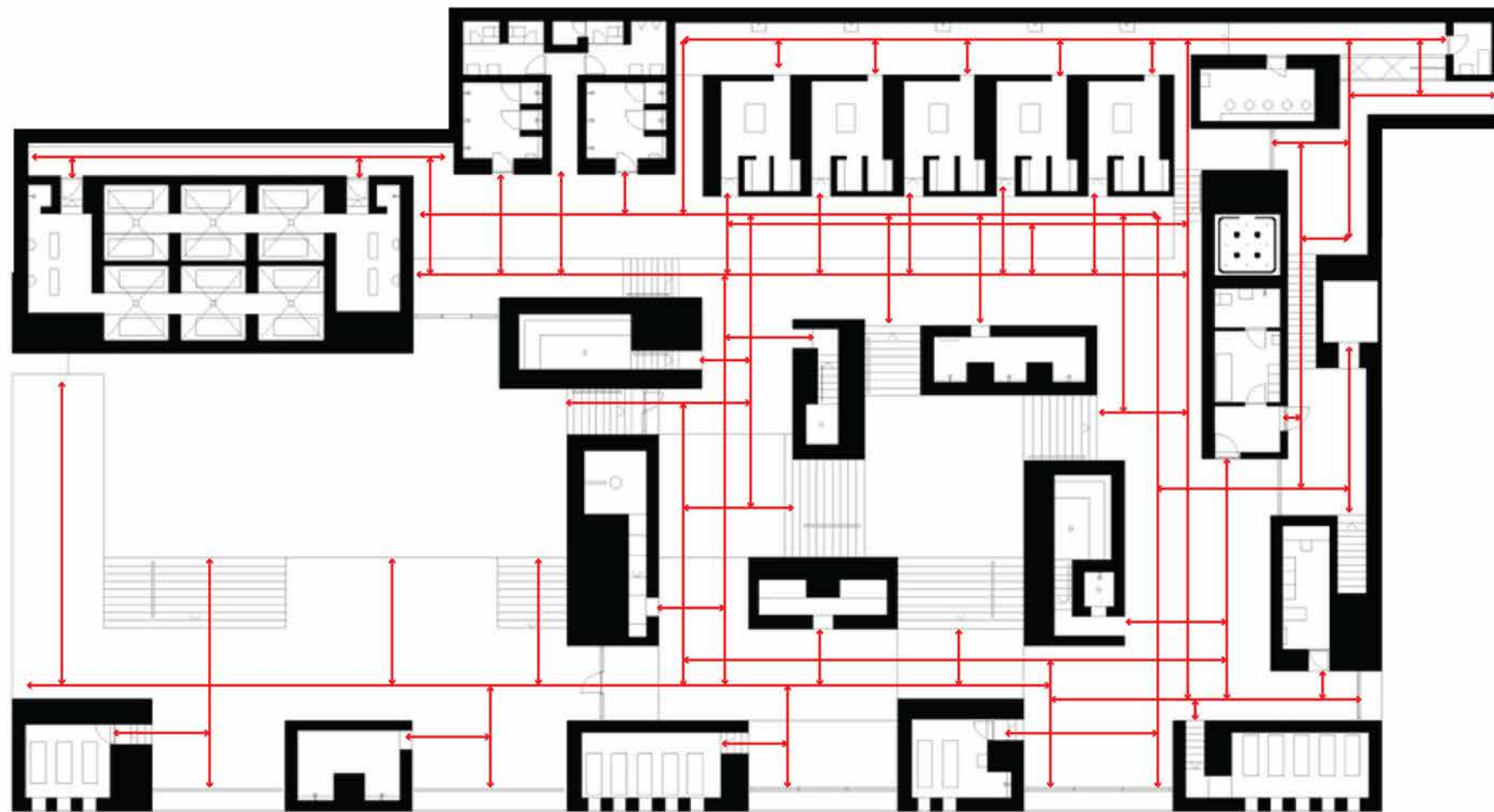
Sensorial Differentiation
Kirchner Museum

The gallery spaces are sensorially different from the hallway and entrances of the space. The thresholds blend the experiences of the spaces together allowing for a slight understanding of the space before entering. The difference of sensorial stimulation allows for a completely unique experience in each allocated space. It also creates an imp cognitive understanding of the space.



Kirchner Museum, 2002, (Photo courtesy of Petr Šmídek).

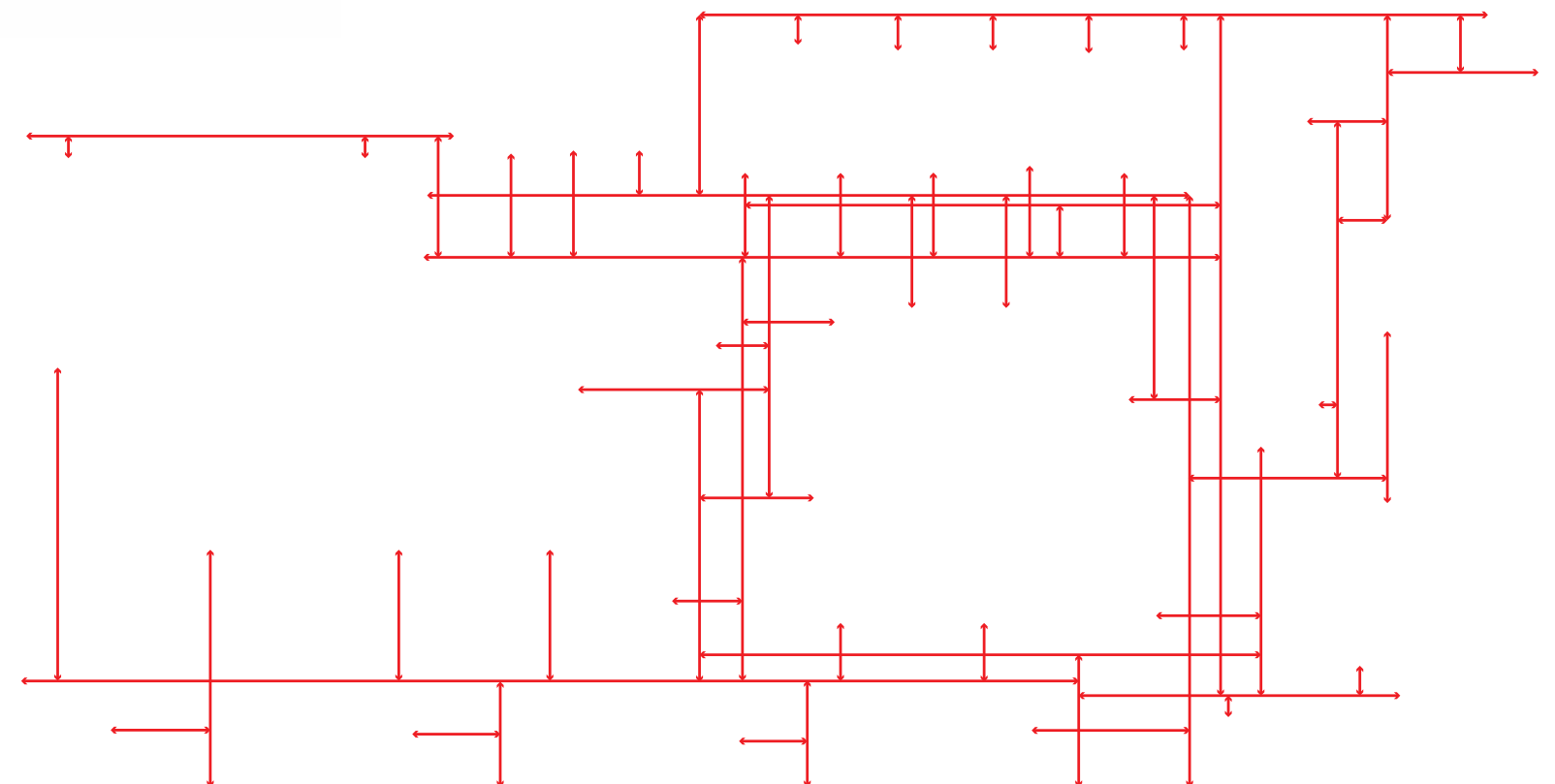




Plan Layout

↔ paths

The layout of the plan allows for the inhabitant to wander through the space as they please. This gives the inhabitant the ability to experience the spaces they choose at any given time. The multitude of paths gives freedom to the inhabitant to wander as they please.



Paths Abstract Diagram

1.5_Precedent Analysis

Many connections to positive or negative mental well-being have been linked to the built environment and how we design and layout spaces people interact in on a daily basis. According to The Anxiety and Depression Association of America, in the U.S. alone, 6.8 million adults suffer from Generalized Anxiety Disorder, 15 million suffer from Social anxiety Disorder, and over 16.1 million suffer from Major Depressive Disorder. Yet less than half are receiving any kind of treatment for these disorders. These disorders develop based on factors such as genetics, brain chemistry, personality, and life events.

An increasing number of people have experienced some kind of mental illness. The built environment affects mental health directly through the human senses: auditory, visual, olfactory, and neurological systems. The built environment also affects mental health through cohesion and sense of community. An individual's surroundings are highly influential on their mental well-being with either a positive or negative effect.

Maggie's Cancer Centre | Foster + Partners



Maggie's Cancer Centre, 2016, (Photographs courtesy of Nigel Young / Foster + Partners).

Manchester, Manchester - 2016

This Maggie's Center is designed as a 'home away from home' where people affected with cancer can heal in a nurturing environment. They can find emotional and practical support here. Surrounded by nature, in a garden setting, scenic views can be seen within and outside of the Maggie center for cancer care. It is designed with a home like feel to provide a more comfortable experience.



SIDE ELEVATION



FRONT ELEVATION



GROUND FLOOR PLAN

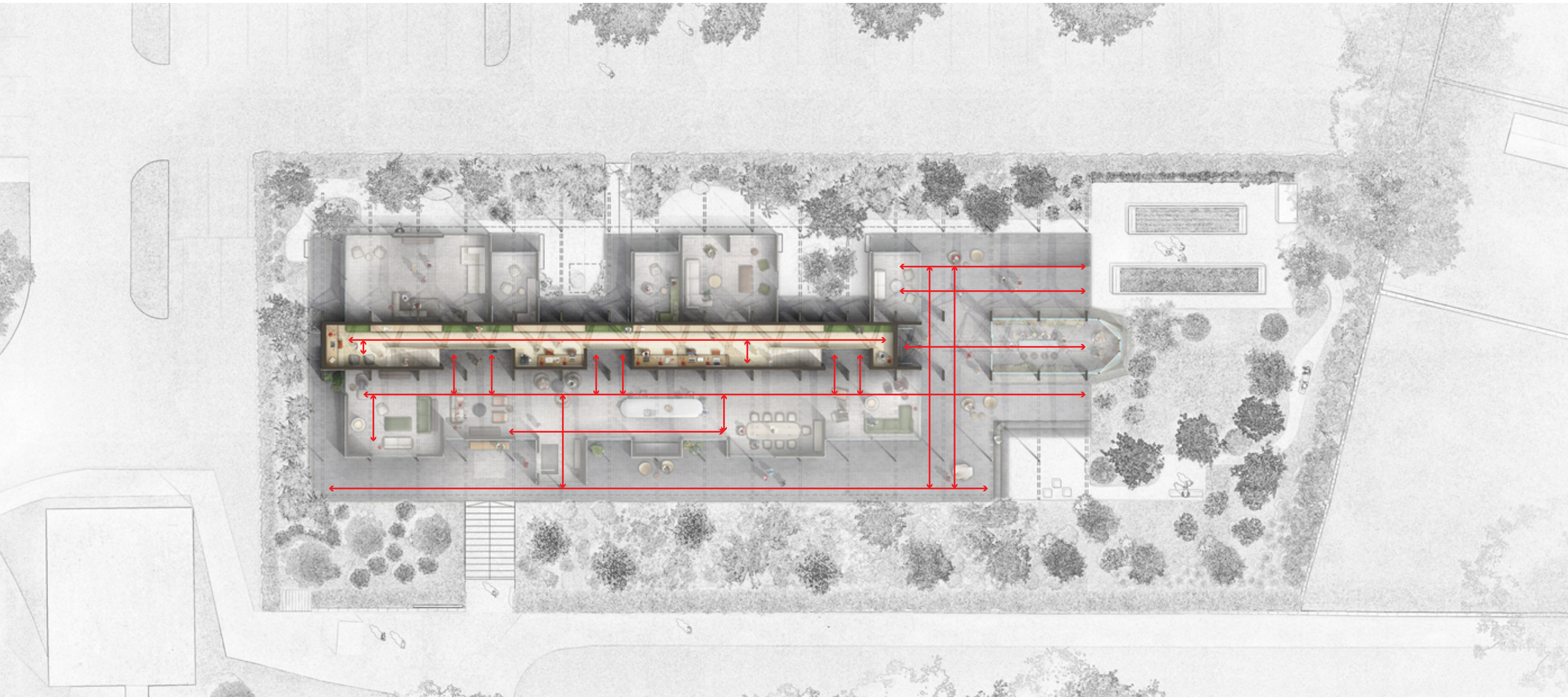
Spatial Movement

+CONSISTENT CONNECTION WITH NATURE THROUGHOUT BUILDING.

+BLENDS INTO THE SURROUNDING OF NATURE.

↔ +MORE UNIFORMITY OF SPACE FROM THE RECTANGULAR SHAPE OF BUILDING FOOTPRINT.

+EXPERIENCE IS MORE CONTINUOUS THROUGHOUT BUILDING WITH NO SENSE OF WANDER AND LITTLE SENSORIAL DIFFERENTIATION.



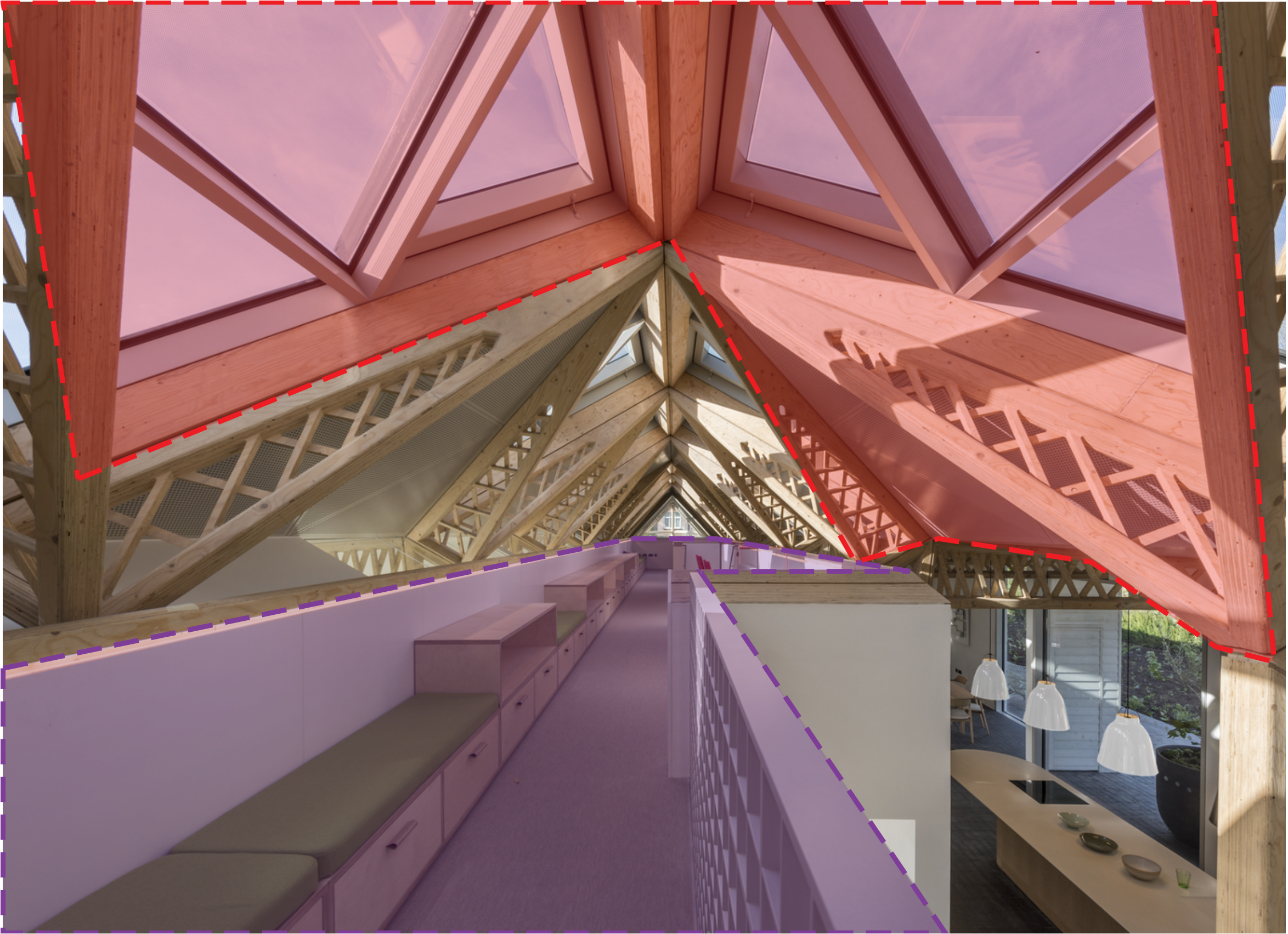
Exterior Form

- +BLENDS INTO NATURE.
- +USES LIGHT TO AMPLIFY EXPERIENCE.
- +AT NIGHT LIGHT IS ALSO EXPRESSED EXITING THE BUILDING TO INTERACT WITH NATURE.
- +EXTERIOR SHAPE IS NON-UNIFORM COMPARED TO INTERIOR MOVEMENT.



Maggie's Cancer Centre, 2016, (Photographs courtesy of Nigel Young / Foster + Partners).

Interior Form



- +NON-UNIFORMITY IS CREATED ON THE INSIDE FROM THE TRIANGULAR DESIGN OF THE WOODEN TRUSSES.
- +THERE IS AMPLE AMOUNTS OF LIGHT ENTERING THE BUILDING.
- +LONG RECTANGULAR WALKWAYS SHOW A FORM OF UNIFORMITY.

Maggie's Cancer Centre, 2016, (Photographs courtesy of Nigel Young / Foster + Partners).



Biophilic Characteristics

- +NATURE IS INCORPORATED WITHIN THE BUILDING AS WELL UNDOING THE BARRIER OF INTERIOR AND EXTERIOR.
- +SENSORIAL STIMULATION FROM THE NATURAL LIGHT AND NATURE FLOWING INTO THE BUILDING.



Maggie's Cancer Centre, 2016, (Photographs courtesy of Nigel Young / Foster + Partners).

- +NATURAL LIGHT ENTERS THE SPACE AND SPREADS EVENLY THROUGH THE HALLWAYS.
- +OPEN SPACES WHERE NATURE CAN BE EXPERIENCE BUT CONTROLLED.

A photograph of a modern, white, multi-story building with a minimalist design. The building features large windows and a flat roof, situated on a grassy hill under a blue sky with scattered clouds. The architecture is composed of several interconnected rectangular volumes of varying heights, creating a dynamic silhouette. The windows are dark-framed and vary in size and placement, some appearing as simple rectangular openings. The building is set against a backdrop of a bright blue sky with soft, white clouds. The foreground consists of a grassy slope with some low-lying vegetation.

Hokkaido Prefecture, Japan - 2006
Treatment center for mentally unwell children to help them regain their mental health. It has the intimacy of a house with variable effects in light. The children have the option to sit in a well lit area or completely shaded area with an option to sit in an in-between light area. It has a scattered and random block plan with a flexible floor plan.



Spatial Experience

+LIGHT REFLECTS OFF SPACE STIMULATING THE SENSE OF SIGHT.

+LACK OF COLOR/WHITE WALLS DOES NOT STIMULATE THE SENSES WELL.



Children's Center for Psychiatric Rehabilitation, 2006, (Photographs courtesy of Daici Ano).

+THIS BUILDING MOSTLY FOCUSES ON THE STIMULATION OF SIGHT WITH VARIATIONS OF LIGHT.

+THE VARYING SPATIAL EXPERIENCE FROM LIGHTER TO DARKER AREAS STIMULATES THE SENSE OF SIGHT.

Exterior Form

- +TRANSITION OF SPACES IS TRANSFERED FROM ONE EXPERIENCE TO ANOTHER INSTEAD OF JUST DIFFERENT ROOMS.
- +PERCEIVE EXPERIENCE OF SPACE BEFORE ACTUALLY EXPERIENCING THE SPACE.
- +THE EXTERIOR HAS A NON-UNIFORM SHAPE.



Children's Center for Psychiatric Rehabilitation, 2006, (Photographs courtesy of Daici Ano).

- +DARKER SPACES WITHIN A WELL LIT BUILDING ALLOW FOR CHILDREN TO DIVULGE INTO DIFFERENT SENSORIAL EXPERIENCE FOR THOSE WHO CHOOSE TO STAY WITHIN THE WELL LIT AREAS.
- +IN BETWEEN SPACES THAT CREATE A HYBRID OF DARK AND LIGHT SPACES.

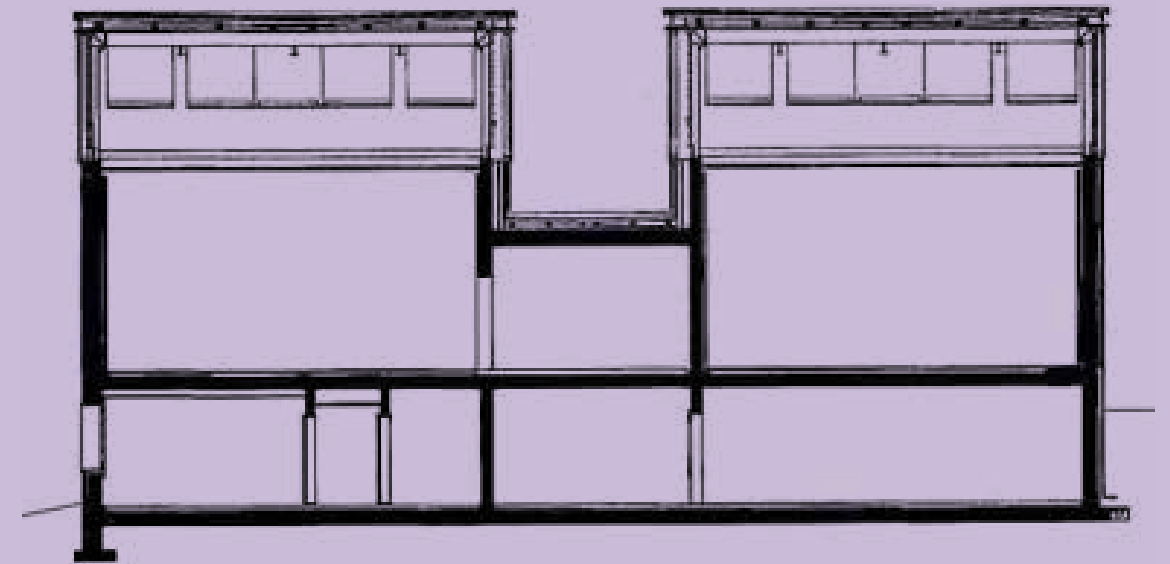




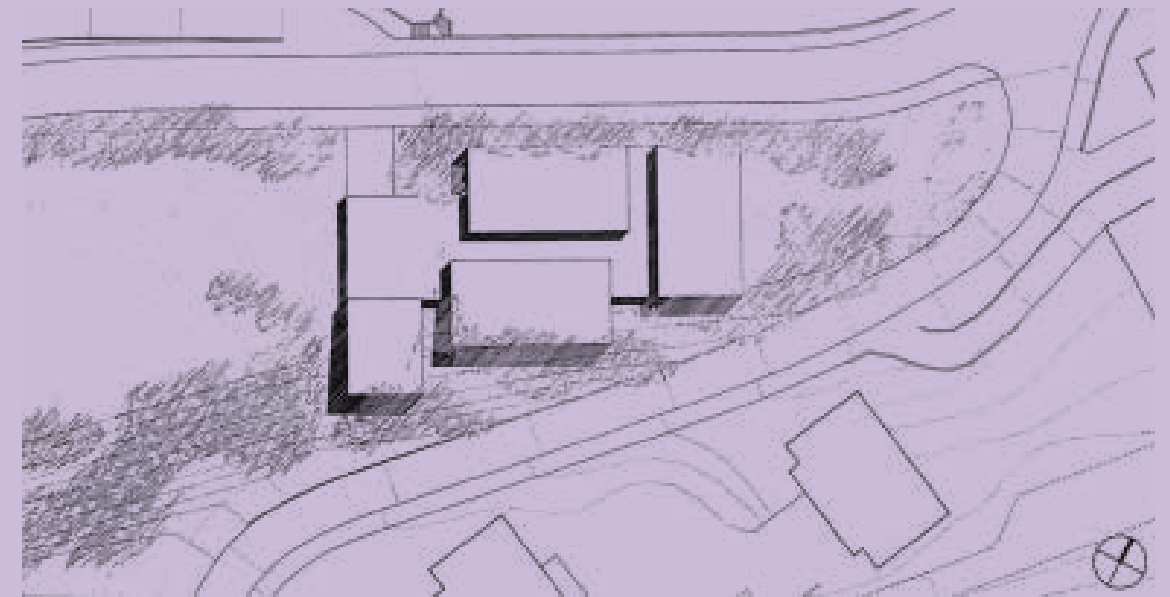
Kirchner Museum, 2002, (Photo courtesy of Petr Šmídek).

Davos, Switzerland - 1992

The design emphasizes the gallery spaces with well lit areas for the art work. Variable spaces throughout the building including the gallery space, naturally low lit hallways, and view spaces out to nature.



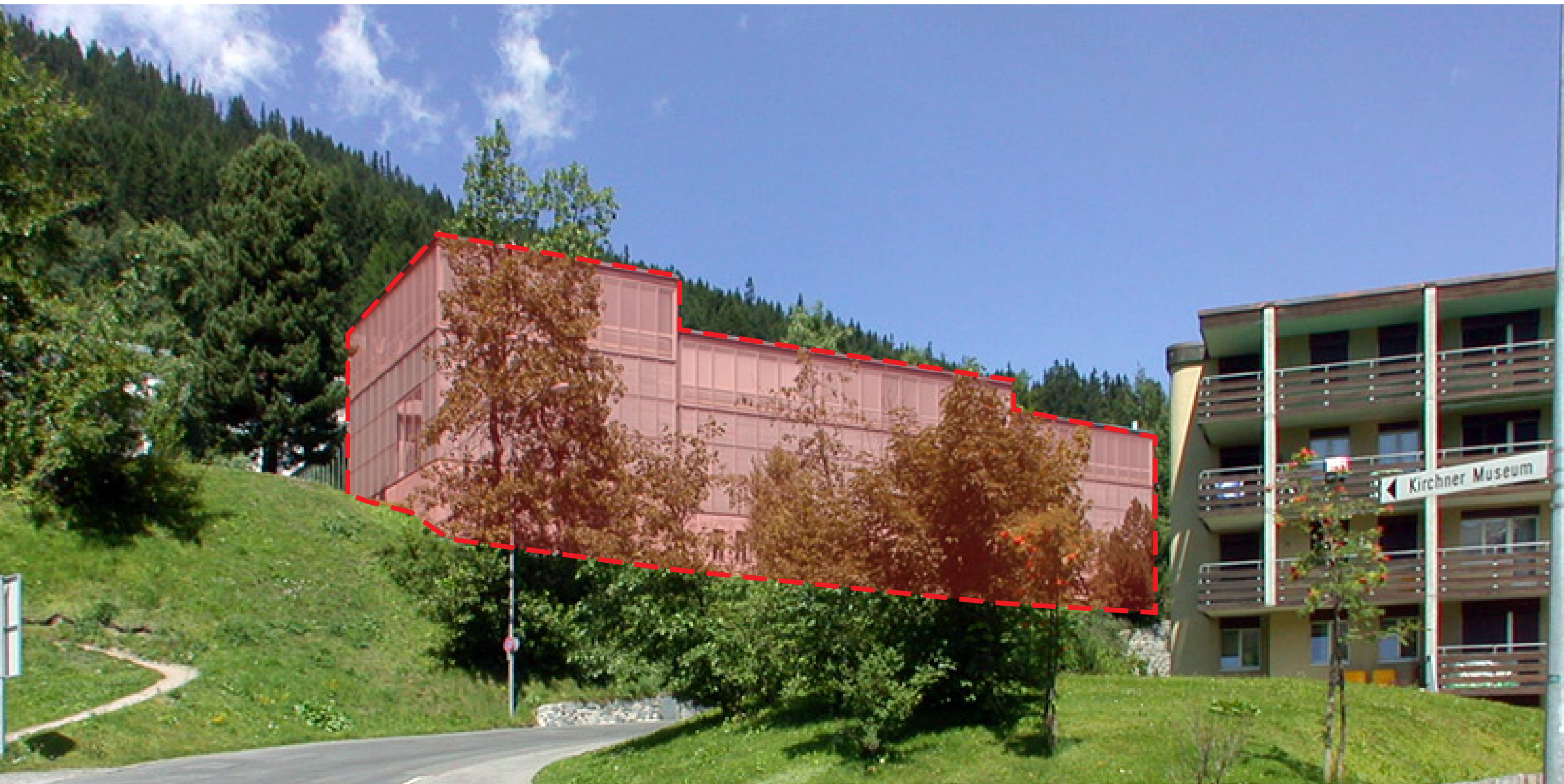
SECTION



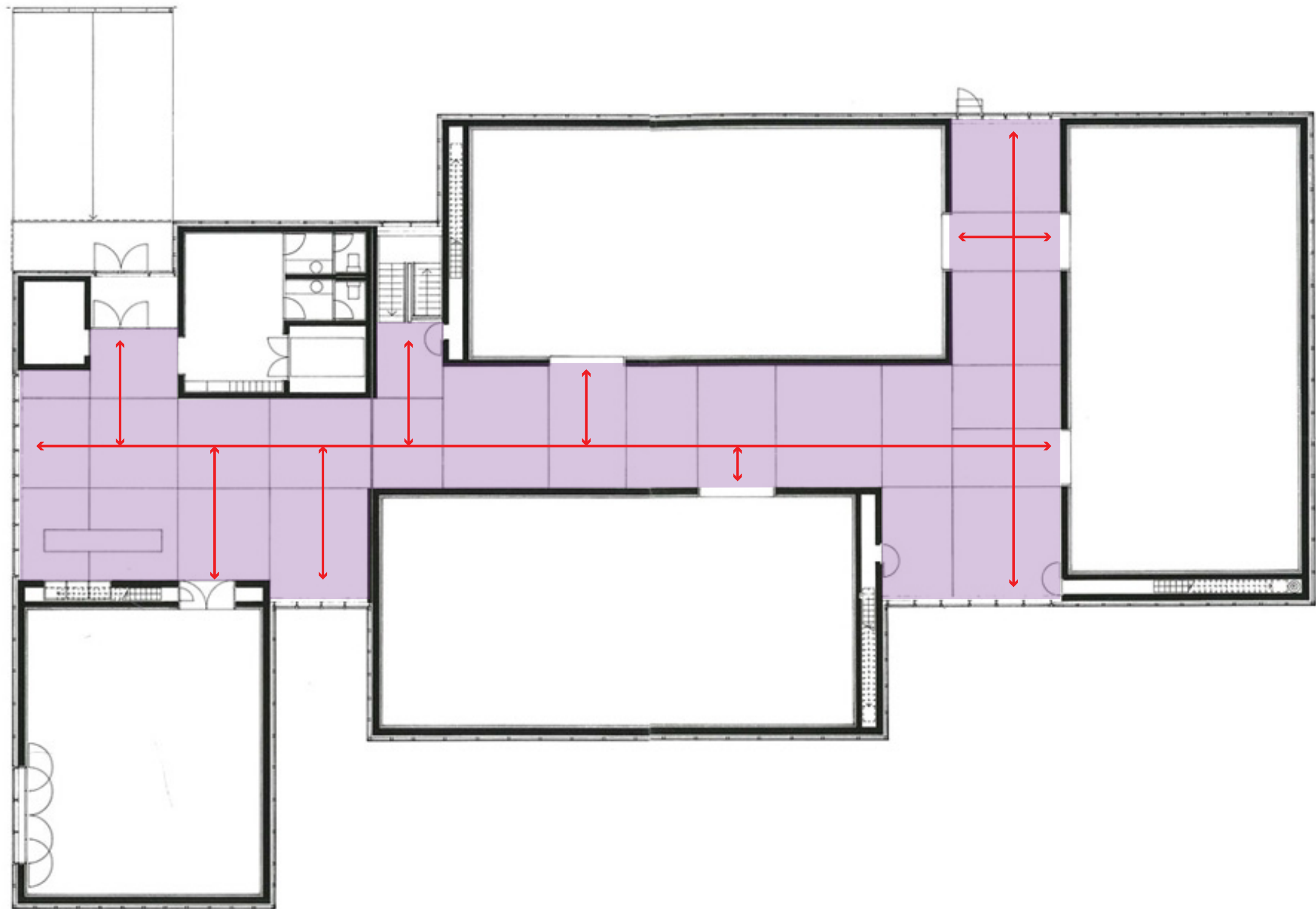
SITE PLAN



- +THE BUILDING IS INCORPORATED INTO THE HILLS.
- +THE EXTERIOR HAS A UNIFORM SHAPE.



Kirchner Museum, 2002, (Photo courtesy of Petr Šmídek).



↔ +THIS FORM IS VERY UNIFORM AND SHOW VERY LITTLE VARIETY.
+RESET SPACE BETWEEN EXHIBITS
+LIT BY NATURAL LIGHT
+LIGHT FROM EXHIBIT SPACE BLEEDS INTO HALLWAY

Kirchner Museum, 2002, (Plan courtesy of Gigin & Guyer).

Sensorial Differential Spaces

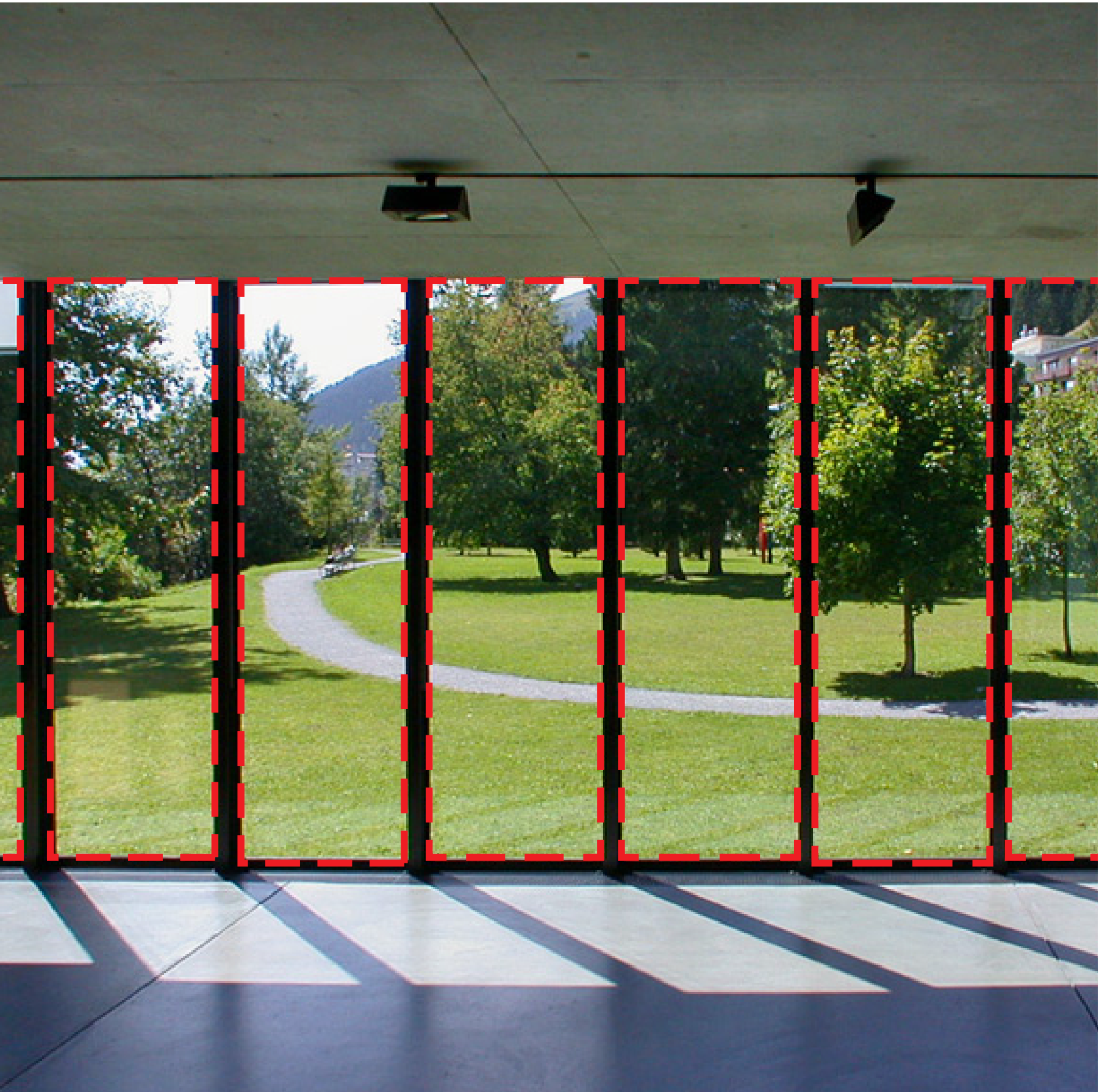
+DARKER SPACES WITHIN A WELL LIT BUILDING ALLOW FOR OCCUPANTS TO DIVULGE INTO A DIFFERENT SENSORIAL EXPERIENCE THAT THOSE WHO CHOOSE TO STAY WITHIN THE WELL LIT AREAS.

+SPACES START TO BLEED INTO EACH OTHER.

+MUSEUM SPACES ARE LIGHTER AND SHOW SENSORIAL DIFFERENTIATION.



Framing Views



Kirchner Museum, 2002, (Photo courtesy of Petr Šmídek).



- +CONNECTION TO NATURE THROUGH FRAMED VIEWS
- +REFLECTING LIGHT AND NATURE STIMULATES THE SENSES.
- +FRAMES VIEWS TO NATURE FOCUSING ON THE SENSE OF SIGHT.



Kirchner Museum, 2002, (Photo courtesy of Petr Šmídek).

- +THIS BUILDING MOSTLY FOCUSES ON THE STIMULATION OF SIGHT WITH VARIATIONS OF LIGHT.
- +THE VARYING SPATIAL EXPERIENCE FROM LIGHTER TO DARKER AREAS STIMULATES THE SENSE OF SIGHT.

Nepean Mental Health Centre | Woods Bagot



Nepean Mental Health Centre, 2014, (Photos courtesy of Trevor Mein, Ethan Rohloff).

Kingswood, Australia - 2014

This mental health center was designed to create a more regenerative and healing environment for those with decreasing mental health due to the growing and aging population. It is part of the hospitals adjacent to it. The focus of the design was to have a non-institutional feel. There are interior courtyards with considerable amount of sunlight to go along with the healing process. This also creates a sense of humanity and ownership.



EXTERIOR SIDE VIEW



EXTERIOR FRONT VIEW

Nepean Mental Health Centre, 2014, (Photos courtesy of Trevor Mein, Ethan Rohloff).

Non-Uniformity

- +LARGE AMOUNTS OF NATURAL LIGHT ENTER INTO THE COURTYARD SPACES.
- +INTERIOR COURTYARDS ARE SEPARATE FROM THE GENERAL PUBLIC AND ALLOWS FOR INDIVIDUAL EXPERIENCE.
- +VARIATION OF EXTERIOR SPACE/COURTYARD SPACE.



Nepean Mental Health Centre, 2014, (Photos courtesy of Trevor Mein, Ethan Rohloff).

Spatial Movement

+CONTINUITY OF COLOR PATTERN OF INTERIOR AND EXTERIOR CREATING A CONNECTION.

+WHAT CREATES A SENSORIAL DIFFERENTIATION IS THE PHYSICAL SEPARATION OF NATURE AND INTERIOR.

↔ +THERE ARE A MULTITUDE OF PATHS WITHIN THE BUILDING BUT MANY ARE RESTRICTED OR NOT AS EASILY ACCESSIBLE.



Nepean Mental Health Centre, 2014, (Plan courtesy of Woods Bagot).

A



EXTERIOR MATERIAL DETAIL

Nepean Mental Health Centre, 2014, (Photos courtesy of Trevor Mein, Ethan Rohloff).



+INTERIOR IS MORE UNIFORM BUT
WITH HAS PEAKS OF THE NON-
UNIFORMITY OF THE EXTERIOR.



+INTERIOR ATMOSPHERE HAS A MORE
INSTITUTIONAL FEEL WITH TYPICAL
WHITE WALLS.



+POCKETS OF COURTYARDS CREATE AN INTIMATE FEEL AND ALSO HOLD SECTIONS OF STIMULATION OF THE SENSE OF SIGHT WITH COLORS FROM NATURE AND NATURAL LIGHT.
+EXTERIOR DISPLAYS A NON-UNIFORM SHAPE.

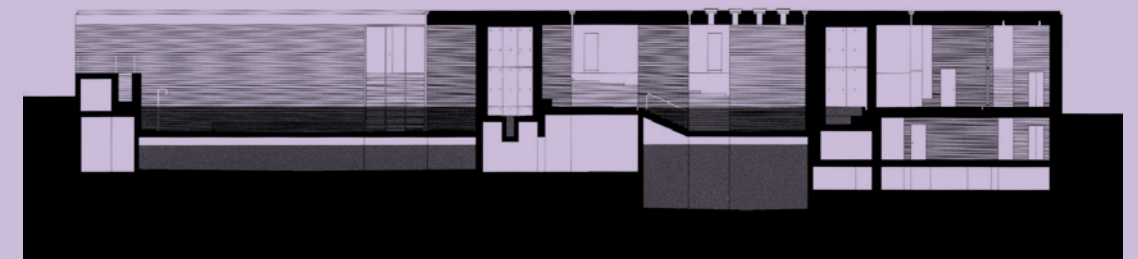
The Therme Vals | Peter Zumthor



Therme Vals, 1996, (Photos courtesy of ArchDaily).

Graubünden, Switzerland - 1996

This spa is incorporated into the natural landscape partially buried in the hillside. It is made with natural quarried stone from the local mountains. The spaces have varied spatial experiences such as variations water temperature, flower scented spa room, sound space, and view spaces.



LONG SECTION



SHORT SECTION



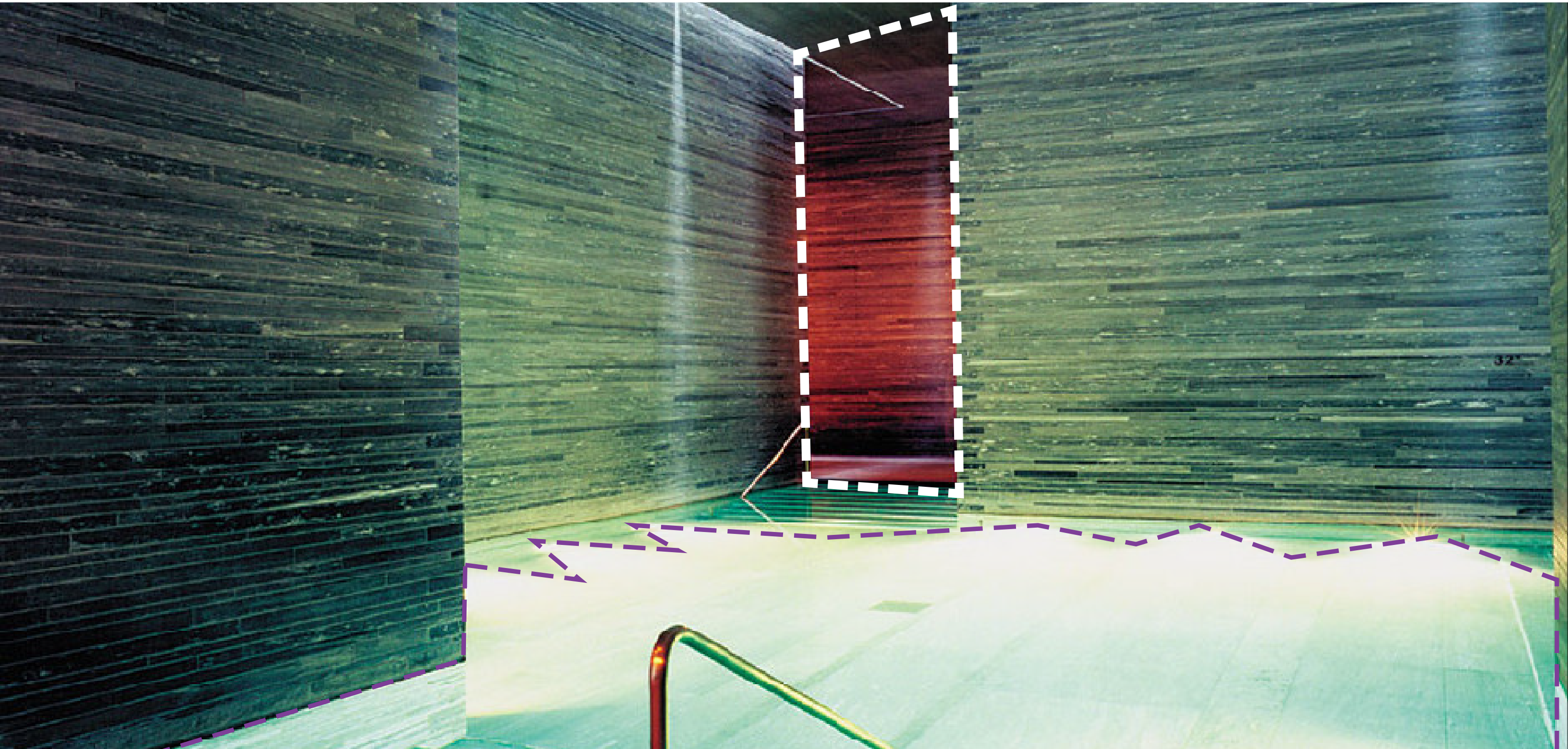
EXTERIOR VIEW

Therme Vals, 1996, (Orthros courtesy of Peter Zumthor).

- +TRANSITION OF SPACES FROM ONE EXPERIENCE TO ANOTHER.
- +RED LIGHT SHOWS TRANSITION INTO NEW SPACE AND EXPERIENCE.
- +STARTS TO BLEND INTO EACH OTHER.
- +PERCEIVE EXPERIENCE OF SPACE BEFORE ENTERING THE SPACE.
- +SENSORIAL DIFFERENTIATION FROM SPACE TO SPACE.



- +VARIATION WITHIN THE SPACE
- +REFLECTION OF LIGHTS UNDER WATER AND ON THE WALLS
- +SPATIAL VARIATION





+NEGATIVE SPACE THAT ALSO ACTS AS A TRANSITION INTO DIFFERENT EXPERIENCES.

+LIGHTS LOW TO GROUND/ UNDERWATER CREATES A UNIQUE EXPERIENCE FROM A PREVIOUS WELL LIT ROOM.

+THIS NEGATIVE SPACE IS A GOOD EXAMPLE OF AN ACUTE ATMOSPHERE, IN THAT THE SENSE OF SOUND IS HEIGHTENED WITH LOW LIGHTING AND THIN AND TALL ENCLOSURE. THE WATER ACTS AS THE STIMULATION OF THE AUDITORY SENSE.

+THE LIGHTS AND SHADOWS UNDER THE WATER SHOW VARIATION

Atmospheric Experiences

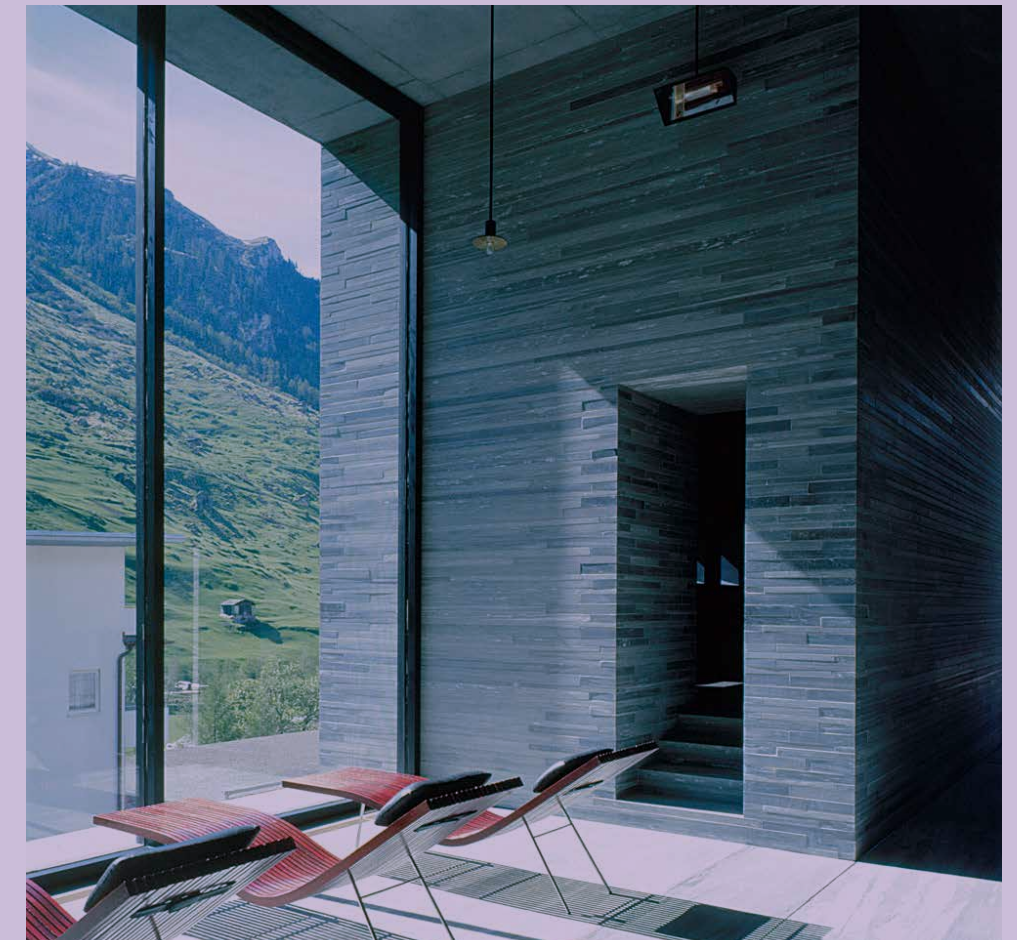
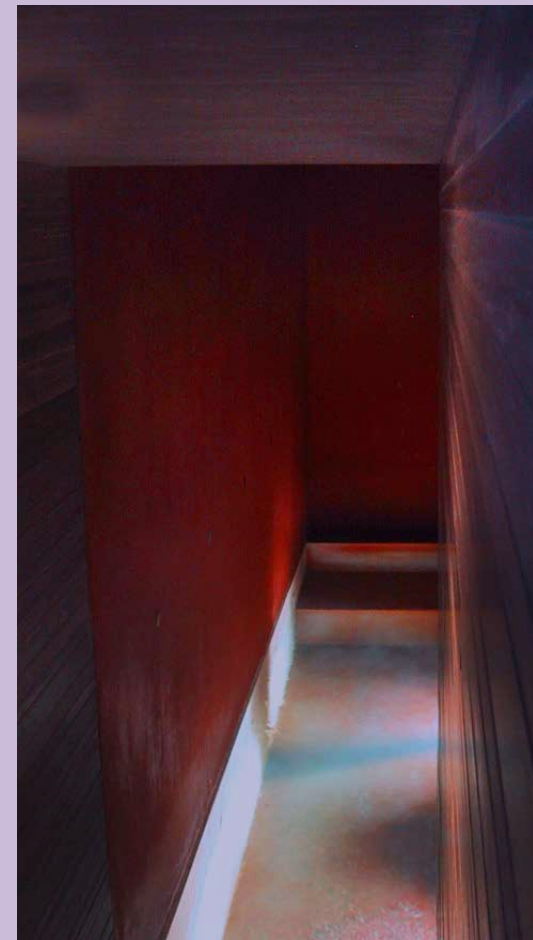
+LOCAL MATERIAL VALSER QUARTZITE ARE CUT INTO SLABS AND LAYERED CREATES A CONNECTION TO NATURE.

+THE NATURAL COLOR OF STRUCTURE ALSO CONNECTS TO THE NATURAL LANDSCAPE OF THE MOUNTAINS.

+OPEN AIR EXPERIENCE STIMULATES THE SENSES.



Therme Vals, 1996, (Photos courtesy of ArchDaily).



+EACH OF THE EXPERIENCES WITHIN AND OUTSIDE OF THIS BUILDING STIMULATES THE SENSES.

+THE SENSE OF TOUCH IS ENCOUNTERED WHEN TOUCHING THE TEXTURE OF THE WALLS AND FLOORS. IT IS ALSO EXPERIENCED WHEN COLLIDING WITH WATER.

+SENSE OF SIGHT IS ENCOUNTERED WITH THE SHIFTING OF LIGHTING FROM SPACE TO SPACE AND FROM INTERIOR TO EXTERIOR.

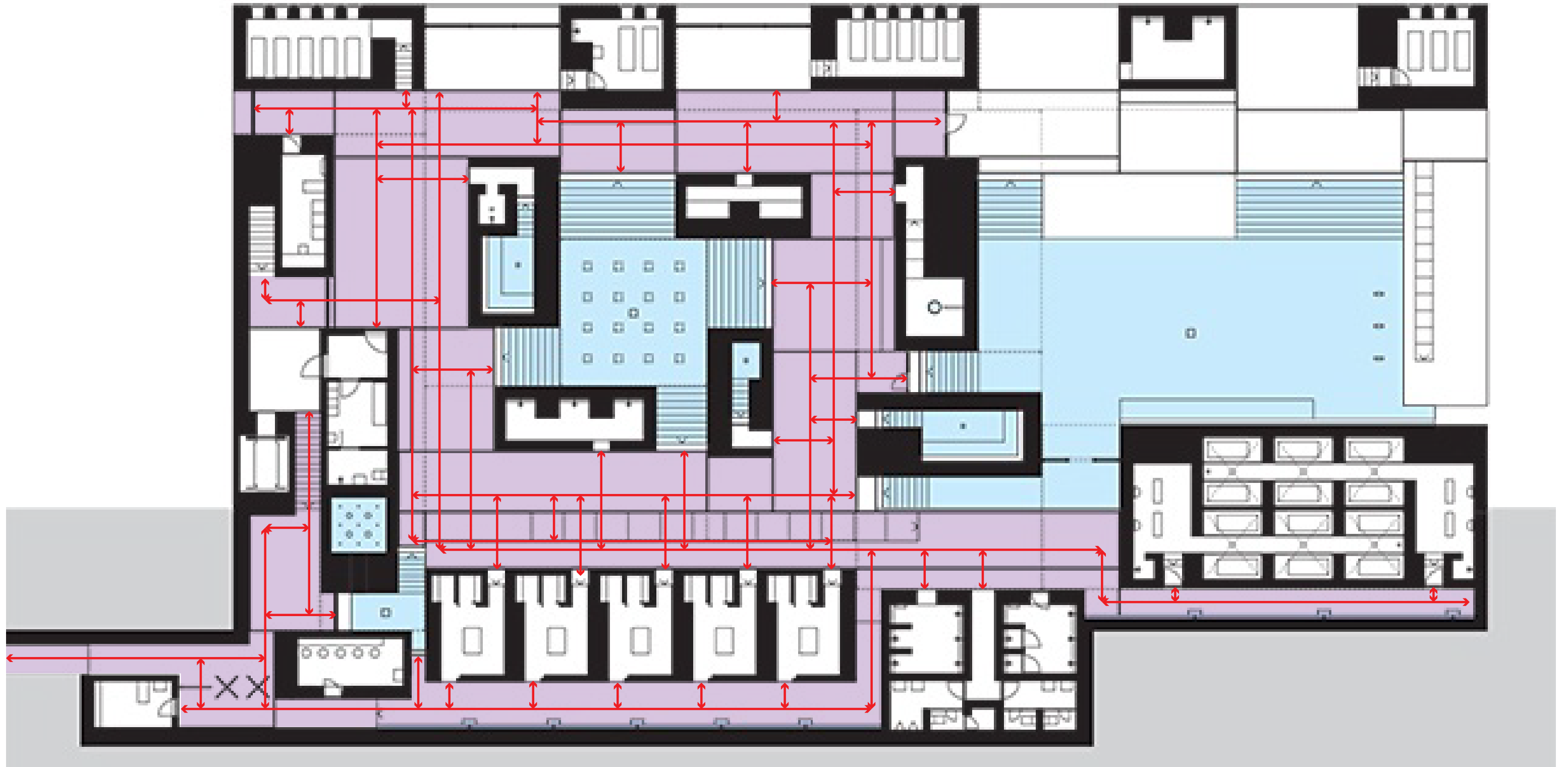
+SENSE OF SMELL COMES FROM THE ENCOUNTERS OF WATER AS WELL AS THE BATHS LOCATED OUTSIDE WITH THE SMELL OF NATURE.

+THE AUDITORY SENSE IS TRIGGERED WITH THE SOUND OF WATER AS WELL AS THE PEOPLE AROUND. SOUNDS OF FOOT STEPS, CHATting, MIGRATING THROUGH THE WATER AND WANDERING AROUND THE BUILDING.

+THE VARYING SPATIAL EXPERIENCE FROM ROOM TO ROOM CREATES A NON-UNIFORMITY THROUGHOUT THE BUILDING.

Spatial Movement

- +NEGATIVE SPACE THAT CONNECTS EVERYTHING THROUGH THE ENTIRE BUILDING.
- +MULTITUDE OF PATHS THAT ALLOWS THE OCCUPANT TO FIND A NEW PATH WITH A NEW EXPERIENCE.



Therme Vals, 1996, (Orthros courtesy of Peter Zumthor).



Blue Ridge Mountains, (Photo courtesy of Georgia's Blue Ridge).

Chapter 02: Design Analysis

2.1 Site and Program Selection Criteria

Mental Health

Mental health is important to consider when working in the field of architecture. If a building is designed without proper consideration for the affects on mental health, it can cause issues for the inhabitants daily mood or long term mental health.

Many factors should be considered for designing with better mental health in mind:

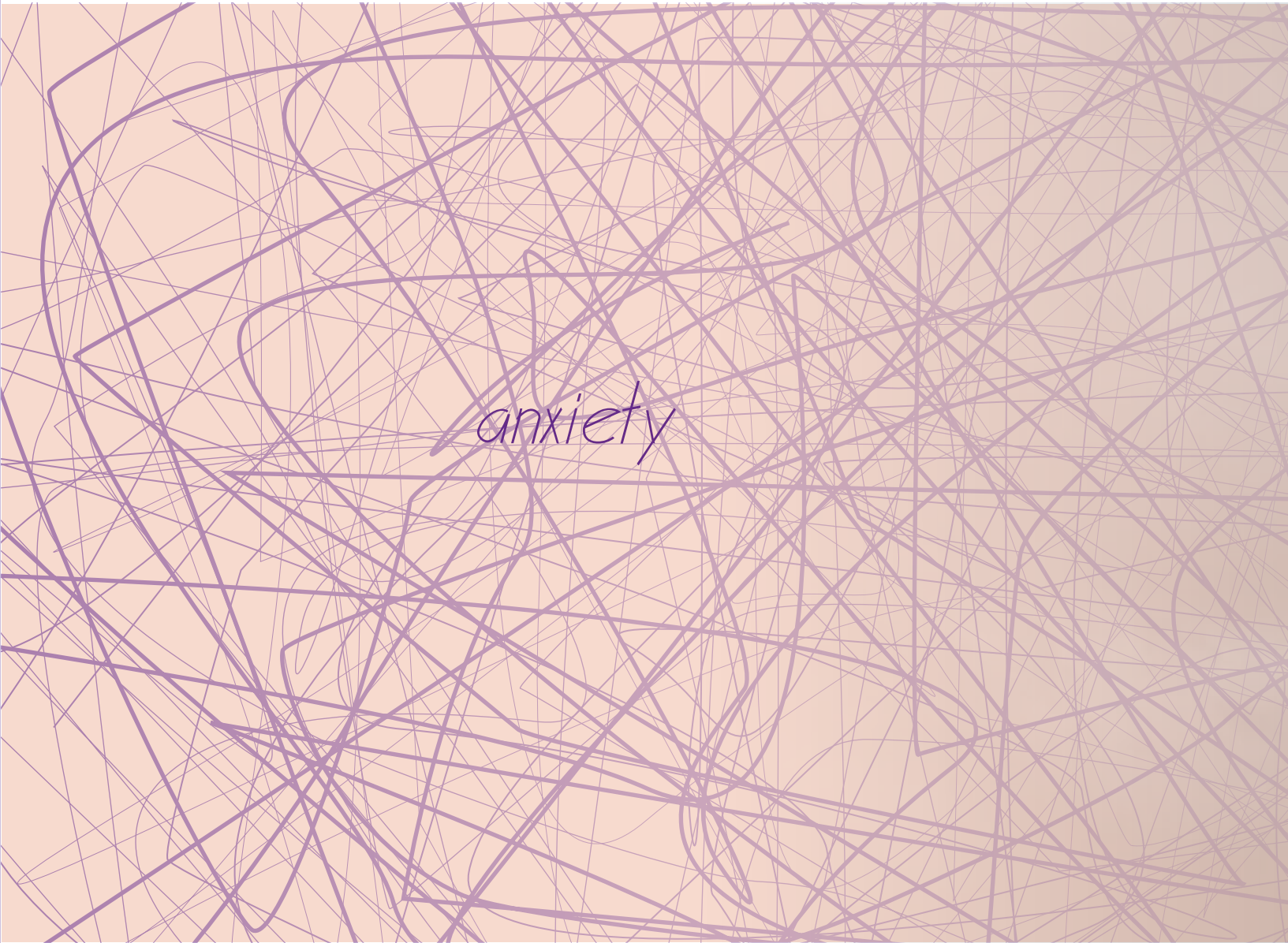
- +Access to nature
- +Natural light
- +Color selection
- +Ventilation
- +Etc...

The proposed design site should be located with these characteristics in mind, allowing the occupant to get the most out of their experience.

Anxiety

Anxiety is a huge problem among many Americans today. In fact it is the most common mental illness in the United States. Although it is highly treatable, less than half receive the treatment they need. Anxiety can also lead to health issues. This links the care of our mental health to our physical health.

Treatment can make a significant difference. Those who receive treatment, usually experience an improvement of their mental well-being. Based on the type of anxiety or stress the patient suffers and because everyone heals differently, treatment can vary from person to person.



Depression

Depression can largely impact how you feel, mostly causing feelings of sadness or lack of interest in activities. Depression is often not recognized and many do not seek help because of this. Symptoms of depression can range from persistent sadness and feelings of hopelessness and decreased energy, difficulty concentrating.

Depression is the leading cause of disability in the United States. Cognitive ability is impaired when dealing with depression. Treatments are typically based on therapy.



Site Characteristics

The design of this mental sensorium retreat will be located in the north Georgia mountains with distinctive site features which will be used by healthcare systems in the Atlanta Metro to run mental health retreats for those in the region suffering from anxiety and depression.

Site requirements include a remote location with bountiful access to nature to create a natural and soothing environment for those who inhabit the space. Natural elements are important because they are known for their calming and healing effects on the human mind. A water element for a natural access to water and on-site natural drainage.

The location would need to be within a reasonable distance from Atlanta but far enough to get away.



2.2_Site Analysis

Location: Blue Ridge Mountains, Georgia

Blue Ridge Mountains are located in North Georgia with all the required site characteristics including:

- +Access to nature
- +Natural elements
- +Water element
- +Remote location
- +Natural ventilation
- +Scenic views

Blue Ridge Mountains are about an hour or so drive from the Atlanta area. They are apart of the Chattahoochee National Forest. Water elements within the Blue Ridge Mountain range include waterfalls, lakes, and rivers.



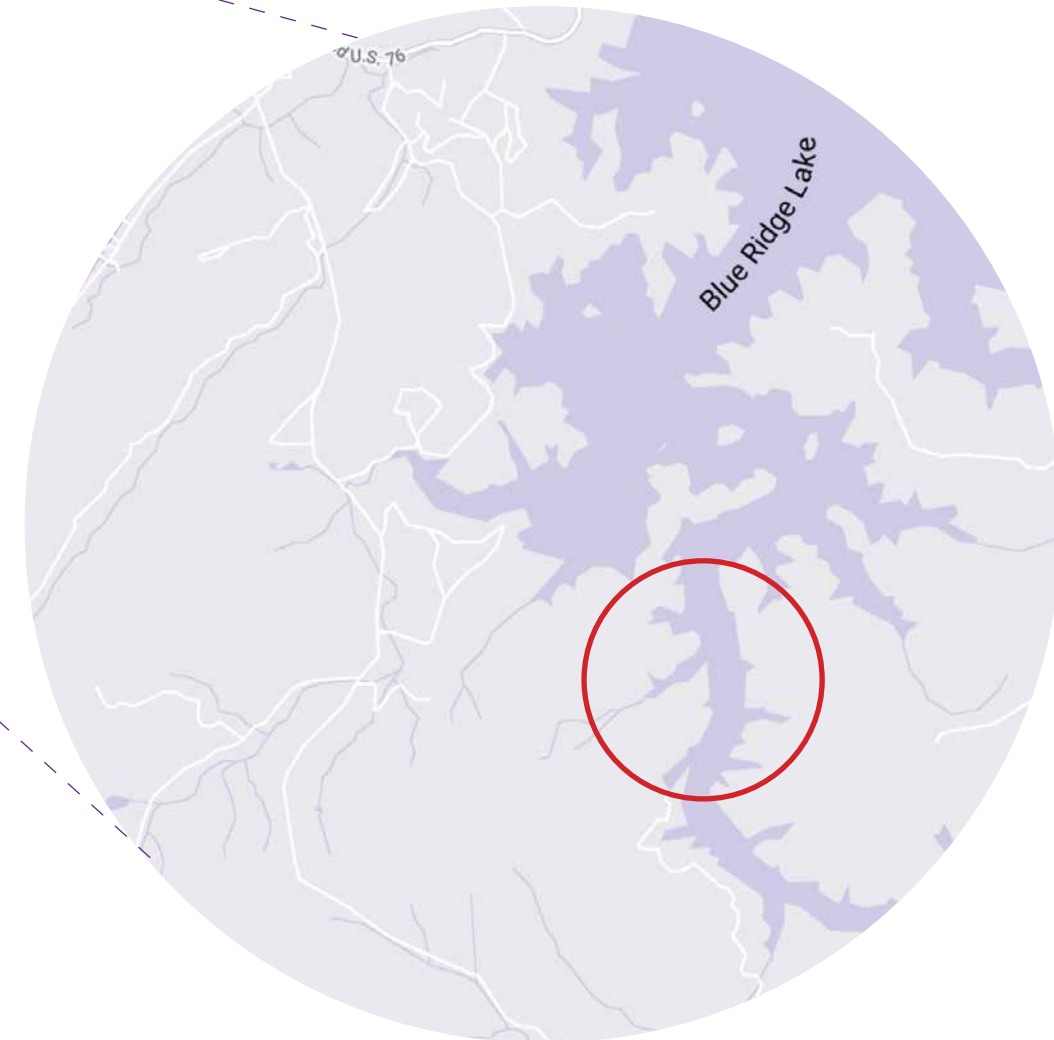
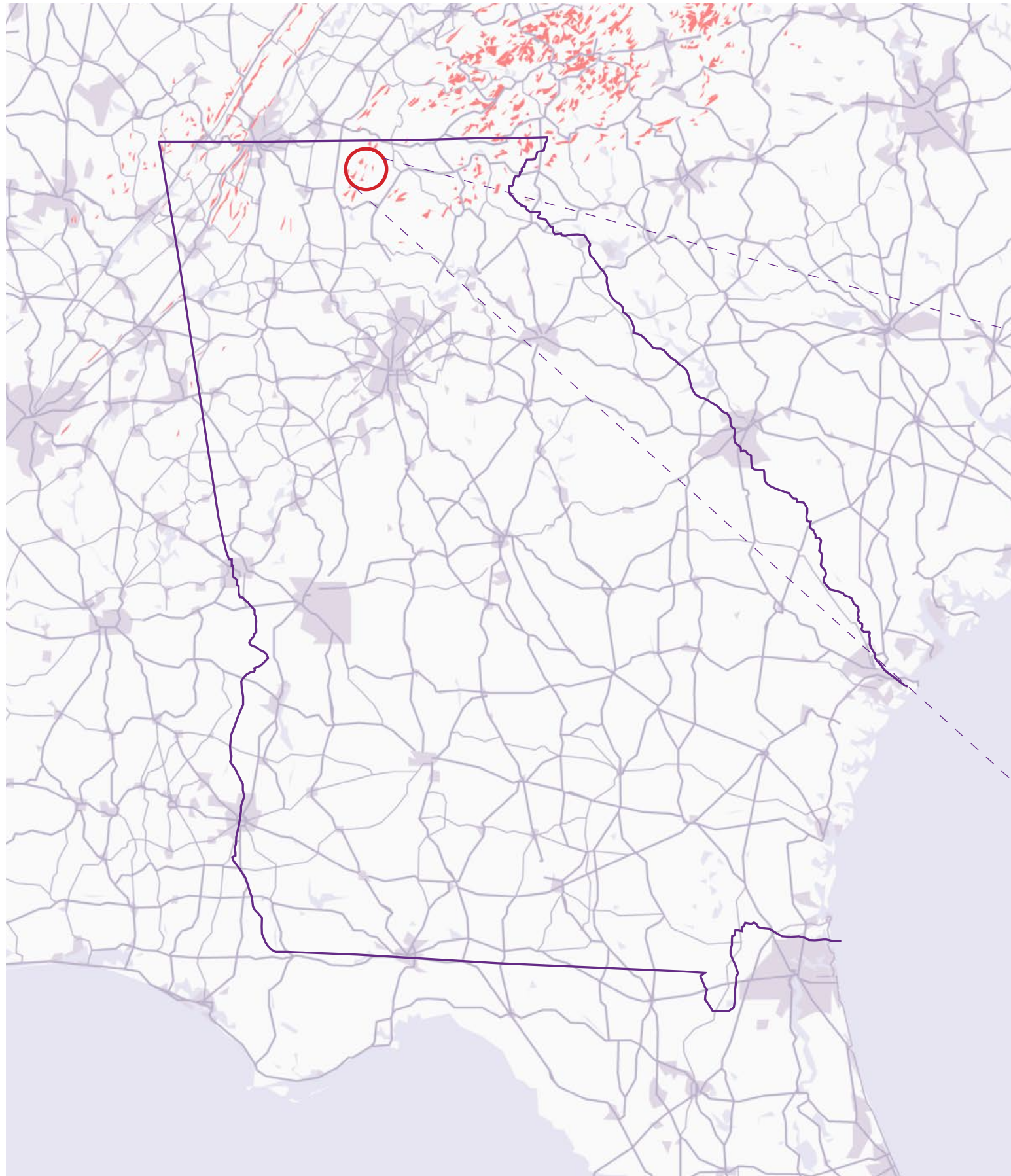
Blue Ridge Mountains, (Photo courtesy of realtor.com)



Blue Ridge Mountains, (Photo courtesy of Georgia's Blue Ridge).

Blue Ridge Mountains, Georgia

This site location, in the Blue Ridge Mountains, relates to this project through the separation from the busy life of Atlanta and the deep connection with nature it encompasses. The design of this project is based on the stimulation of the senses and nature can intensify the sensations through natural ways and basic design. This site location is located about an hour and a half drive from the Atlanta area. It is a reasonable distance to drive for a day trip retreat so it can be used for the surrounding Atlanta area mental health care facilities as treatment for their patients.



Blue Ridge Mountains contains some of Georgia's tallest peaks. Forests account for nearly 90 percent of the land cover in the Blue Ridge, a higher percentage than in any other region of the state.



MOUNTAINOUS LANDSCAPE

NATURAL LANDSCAPE

WATER ELEMENT

Blue Ridge Mountains, (Photo courtesy of Google Map with overlay).

- +Use of the natural environment to help with the stimulation of senses.
- +This design will isolate the sensorial characteristics of the natural environment.
- +Natural light, sounds of nature, smells of nature, texture of natural and man-made materials will generate stimulation of each of the controlled spaces created within the built environment.

Fauna and Flora

Black bear, grouse, songbirds, turkey, wild boar, whitetail deer, many species of amphibians and reptiles, thousands of species of invertebrates, and a variety of small mammals are found in the Blue Ridge. The area also is generally part of the Appalachian flyway for birds, especially tanagers, thrushes, vireos, and warblers.

Trees:

Several oaks, sourwood, maples, hickories, yellow birch, yellow buckeye, white ash, locust, American beech, tulip poplars, white pines, red spruce, hemlocks, Fraser fir, red spruce, and balsam

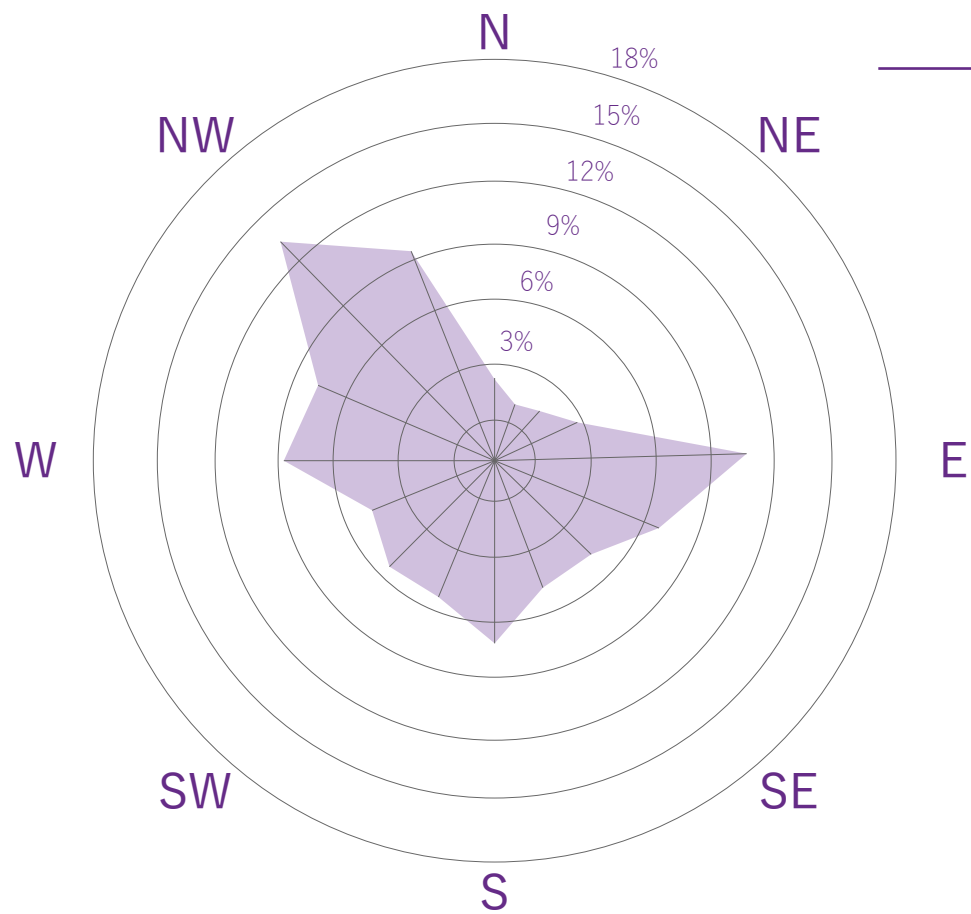
Flowering Shrubs:

Rhododendron, flame azaleas, mountain laurel, Carolina silverbells, serviceberry, mountain magnolia, mountain ash, and pinxter flowers

Wildflowers:

Gray's lily, Oconee bells, Blue Ridge goldenrod, Heller's blazing star, Dutchman's britches, trillium, bloodroot, violet, spring beauty, lady's slippers, bluets, fringed phacelia, trout lily, dwarf crested iris, orange-flowered Turk's cap lilies, black-eyed Susans, Michaux's lily, bee balm, Joe-Pye weed, pink turtlehead, thistle, and coneflowers

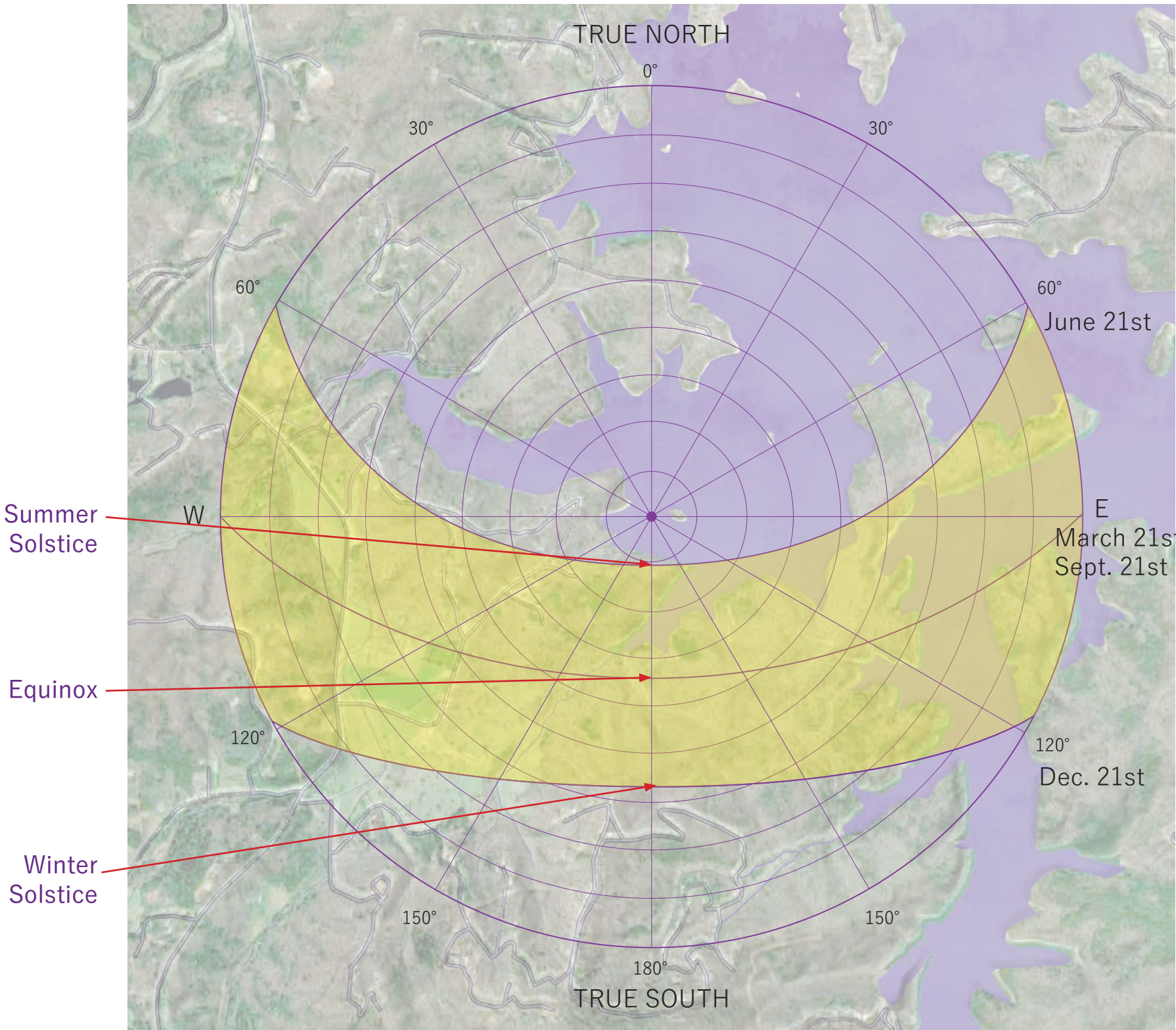




This site has a variable wind flow from most directions on the site. The design will be orientated in a way to take advantage of this especially for ventilation and the stimulation of the sense of smell. This also has the possibility to enhance the sense of sound.



Perspective View of Site - (Image courtesy of Google Maps).



Blue Ridge, Ga ~ 34° Altitude

This diagram shows the range of sun light through-out the year and sun angles. This is significant because of how important the sense of sight is. The sense of sight is important for all of the rooms/spaces but is especially important for both the Light room and the View room.

2.3_Program Analysis

Each space will be designed in a way to suit the needs of each patient. There will be spaces that can accommodate those who have certain sensorial impairments.

Space Types

View



Space designed for sight specific therapy. This space will incorporate scenic views into the surrounding natural environment.

Smell

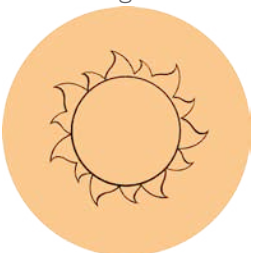


Space designed for smell specific therapy. This space will incorporate natural and soothing smells from the natural environment including the local flora.



Space designed for touch specific therapy. This space will incorporate natural materials coming from the surrounding areas in order to create varying textures for the patients to experience.

Light



Space designed for sight specific therapy. This space will allow for natural light to filter into the space and bounce off surfaces for a full experience.

Sound



Space designed for sound specific therapy. This space will be immersed with soothing nature sounds coming from the surrounding forest and lake.

Biophilia

Biophilic design is defined as the inherent human inclination to affiliate with nature. Humans tend to need to feel a connection with nature because it brings us back to our roots. It reminds us that we are alive and human.

Variations in natural lighting within the built environment have been studied in connection with physical and mental well-being. It tends to have a positive affect on most people. It goes back to the idea of human connection with nature. The built environment has an effect on the daily mental health of the people who inhabit it.

The use of natural elements for sensorial stimulation is a key part of the design, and focusing on how it will positively affect mental health.



Tree Image - (Image courtesy of Say Trees). Skyscraper Image - (Image courtesy of FutrexTech).

Activities/Programs

The activities and programs for this space generate around the idea of personalized mental soothing. Through the execution of the architectural principles. The visitors will have the choice to wander through the spaces as they please creating their own experience and heal in their own way.

Group Therapy

Group therapy is helpful in the way that visitors can experience the spaces together and discuss the experience of the spaces or how the spaces can help them soothe their mind. Groups can be formed before hand or through on-site socialization. This site is meant to be a safe and peaceful gathering space to heal and create bonds through sensorial stimulating experiences.

Depression & Anxiety Therapy

The design and programming of this retreat is especially directed toward those who suffer from depression and anxiety and feel like a more naturally stimulating type of therapy. The individualized therapy can be guided through the suggestion of a mental health specialist or can be self guided to meet a more personalized need for self identification.

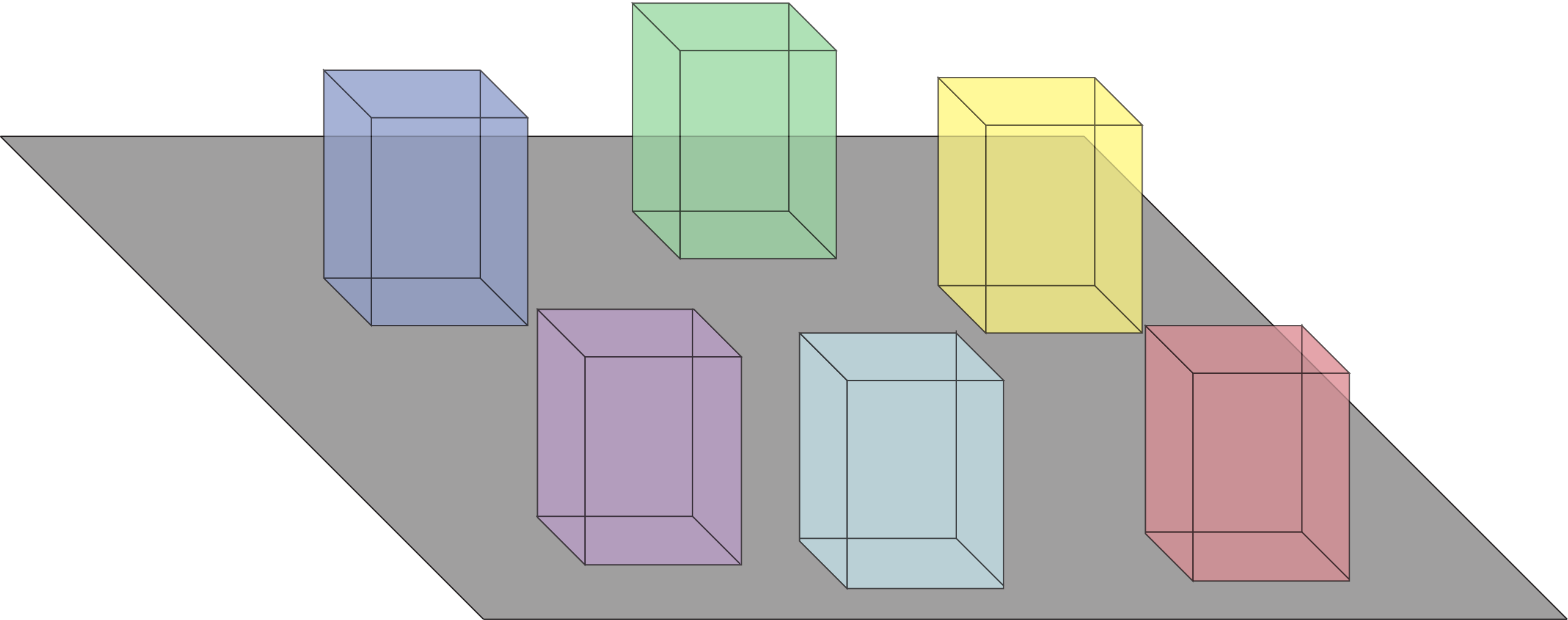
Spatial Program Organization

The Senses

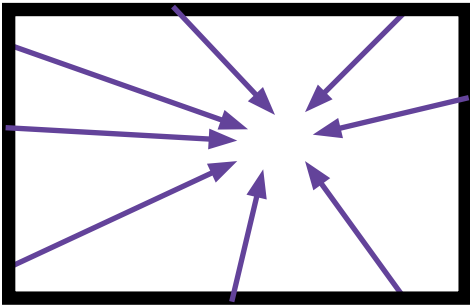
Lack of sensorial stimulation along with inflexible and uniformly designed spaces, can harm mental health. The senses are used to mentally engage people within spaces. Engaging the senses can help to focus the mind.

The use of nature will help to stimulate the senses with natural and mentally soothing stimulation. Humans perceiving a healthy space is directly tied to the stimulation of the senses. This is because when our senses are activated in a carefully designed way, it can lead to a clearer, more positive perception of the built environment and allow for individual and unique experiences for each person.

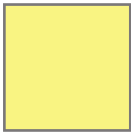
Experiential clarity can be achieved through the provocation of the sense and thus creates a cognitive connection to the built environment.



Spatial Programming Diagram



Room6: In-Between/Reset



Sound



Light



View



Touch

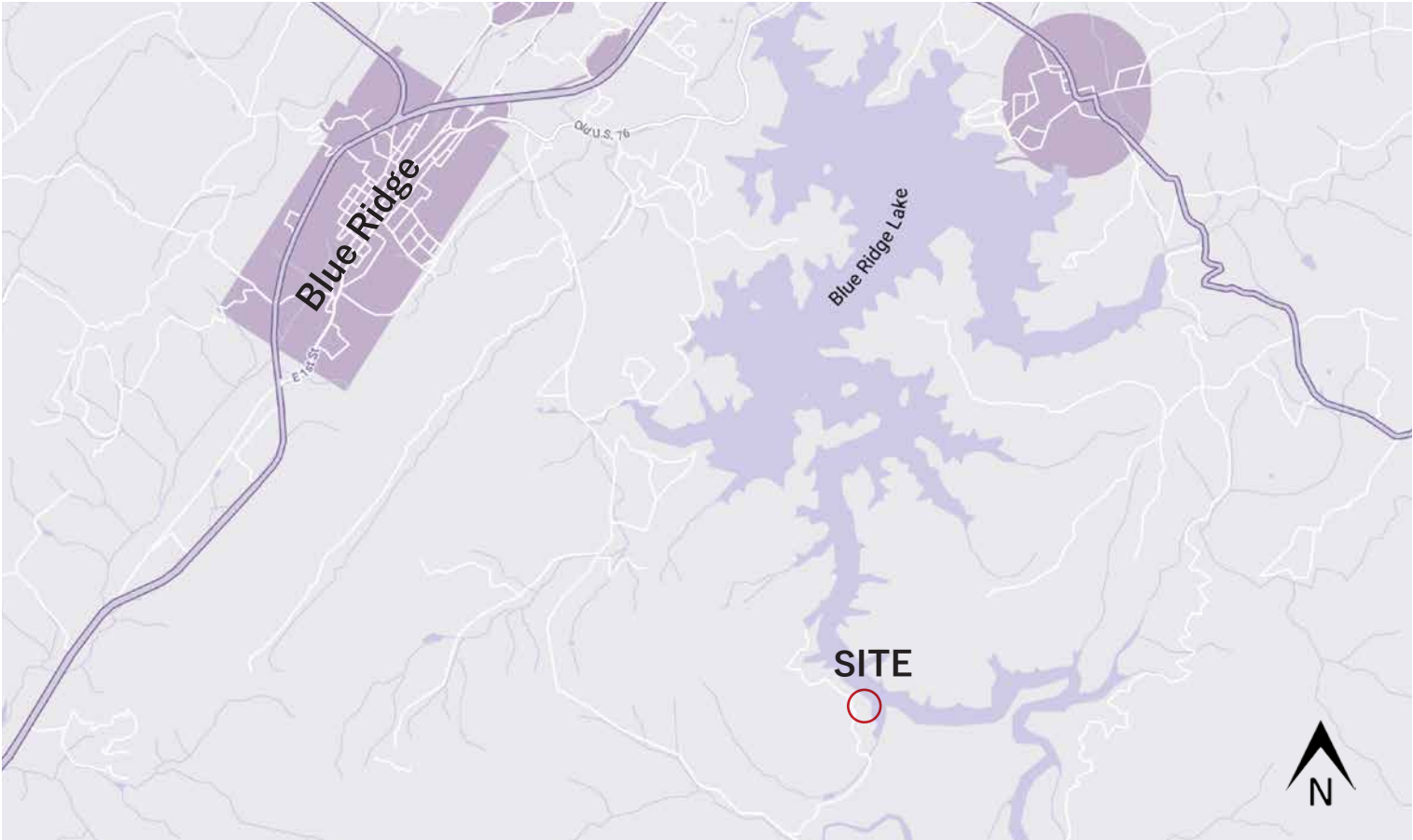
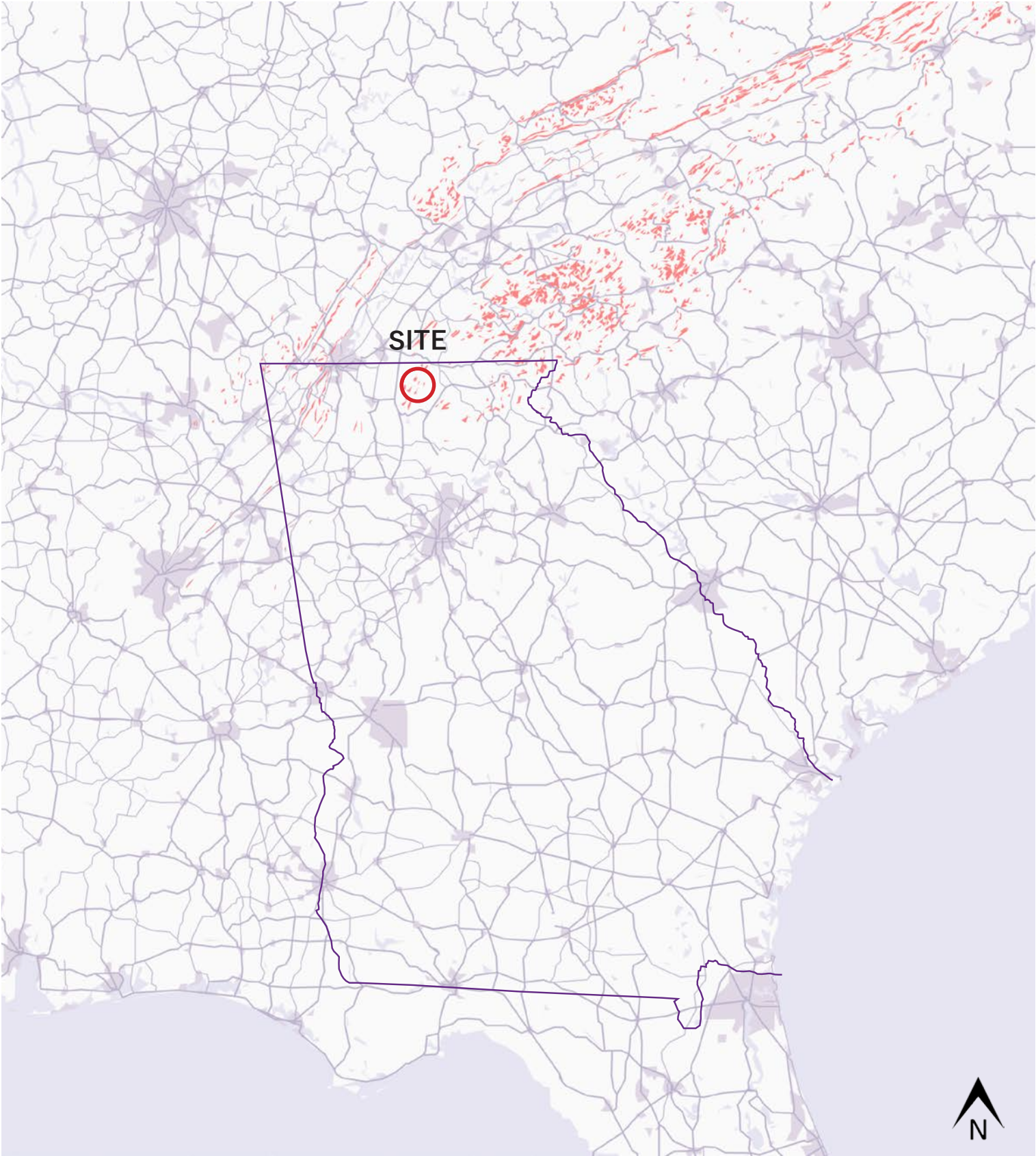


Smell



Chapter 03: Design

3.1_Site



Zoomed-In Sight Outline



Site Plan: scale: 1/64" = 1' - 0'

Site Plan

The building is angled towards the lake to capture view and is also related back to the wind rose and how the wind interacts on the sight (mostly coming from the North-West and South-East).



Site Elevation: scale: 1/64" = 1' - 0'



ROOMS

- | | | | |
|----------|---------|----------|-------|
| 1 | Sound | 4 | View |
| 2 | Smell | 5 | Light |
| 3 | Texture | | |

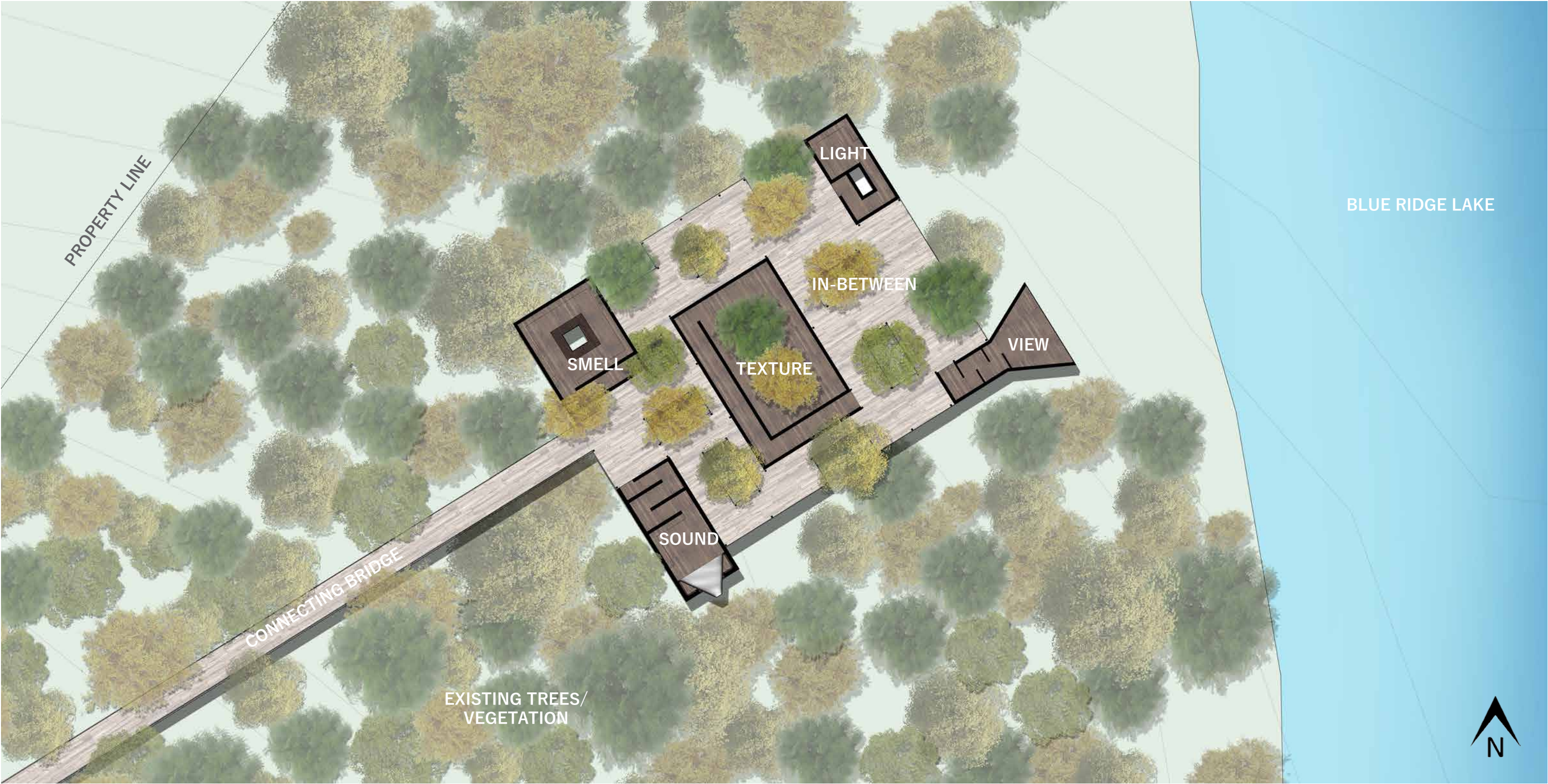
Site Elevation

Each room has its own unique experience and form, but the building creates a connection to each of the spaces through a linear datum from the road to the lake. There is a consistence with the level each of the rooms are on.

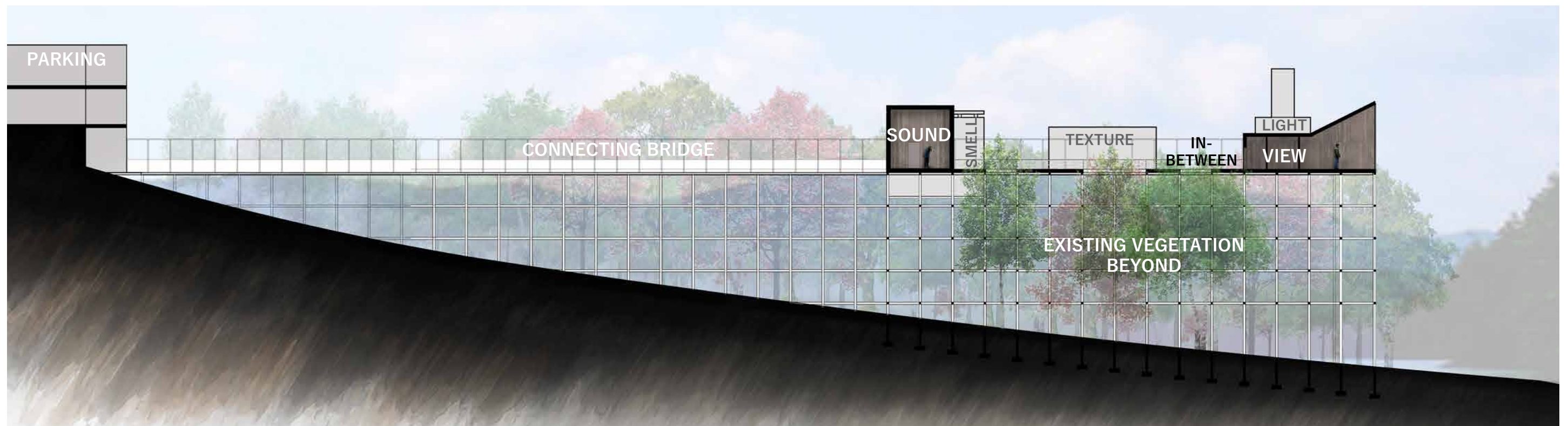


Site Render

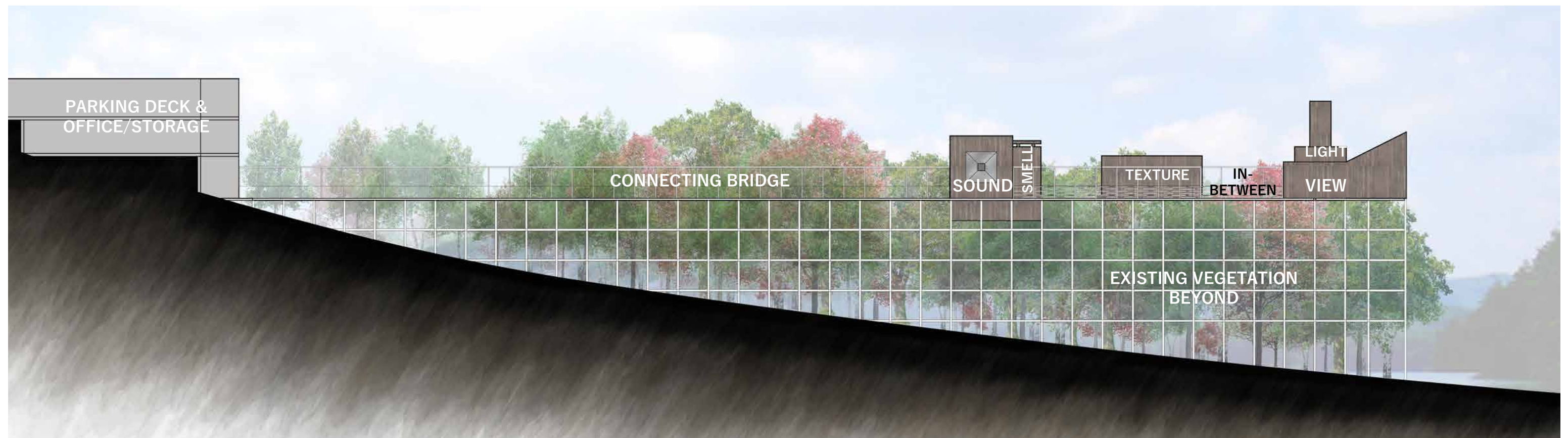
3.2_Building



Scale: 1/32" = 1'-0"



Building Section: scale: 1/16" = 1'-0"



Building Elevation: scale: 1/16" = 1'-0"

3.3_Room Design

Room 1: View

The cone of vision. This space encompasses the sense of sight. Through this shape and large opening towards the river and Blue Ridge Mountain scenery, inhabitants can use this view space as a therapeutic meditation space and stimulate ones sense of sight.



VIEW ROOM SECTION
SCALE: 3/16" = 1'-0"

VIEW ROOM PLAN
SCALE: 3/16" = 1'-0"



VIEW ROOM RENDER PERSPECTIVE

View Room Physical Model

The shape of the space is a truncated shape with one end wider than the other. The space expands outward to better capture the view. This shape represents the cone of vision. It physically represents the sense of sight.



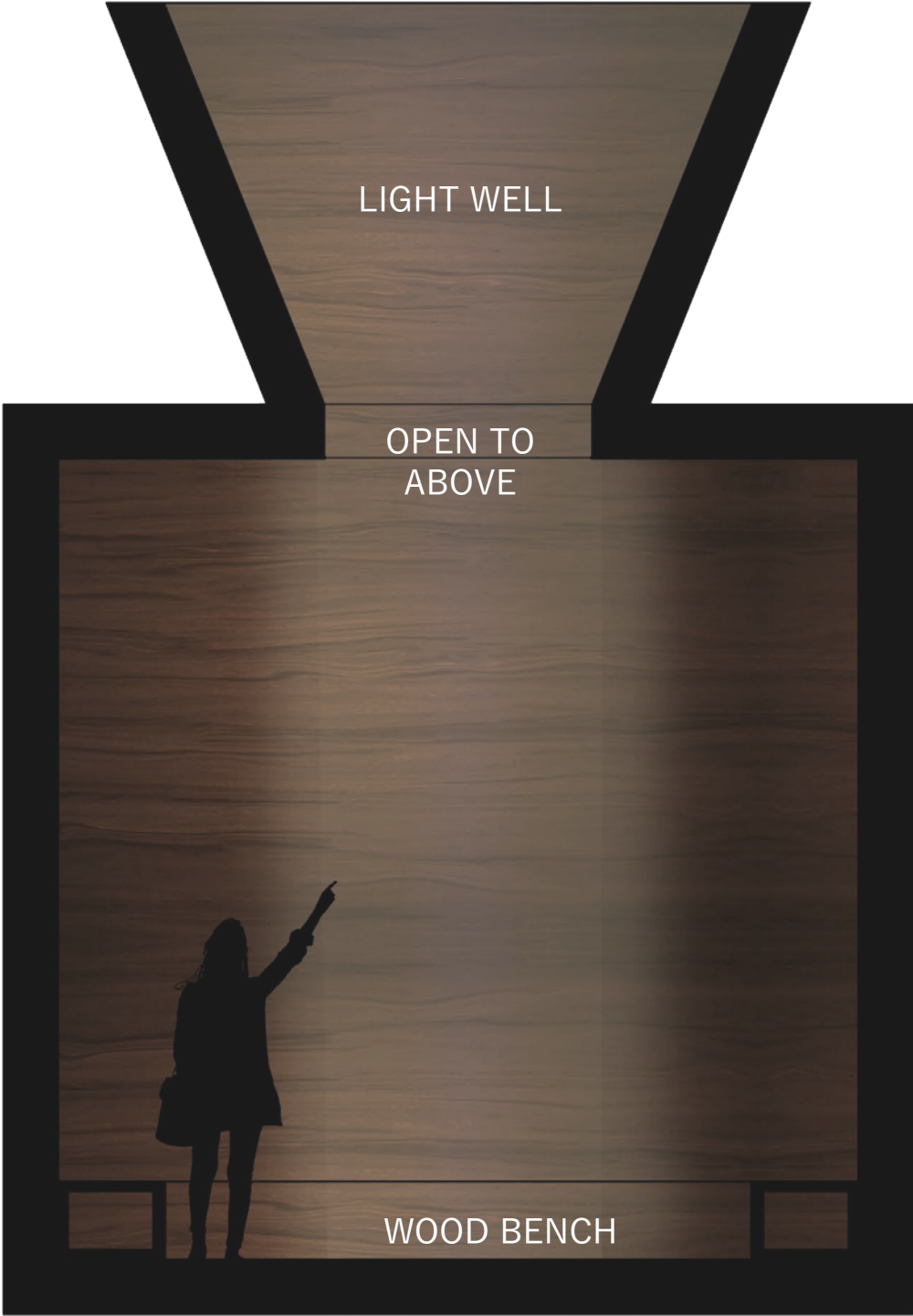
VIEW ROOM WOOD MODEL



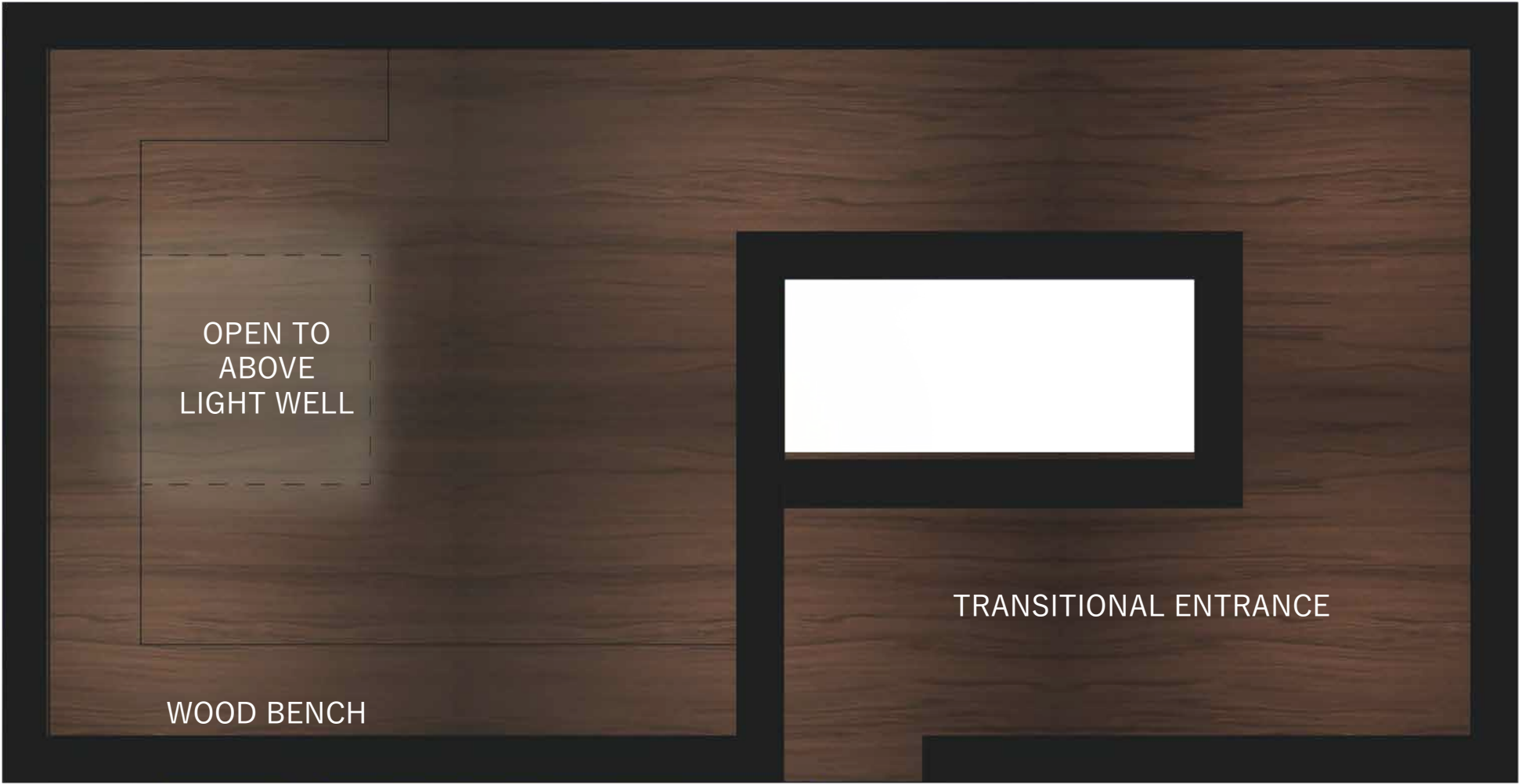
VIEW ROOM WOOD MODEL

Room 2: Light

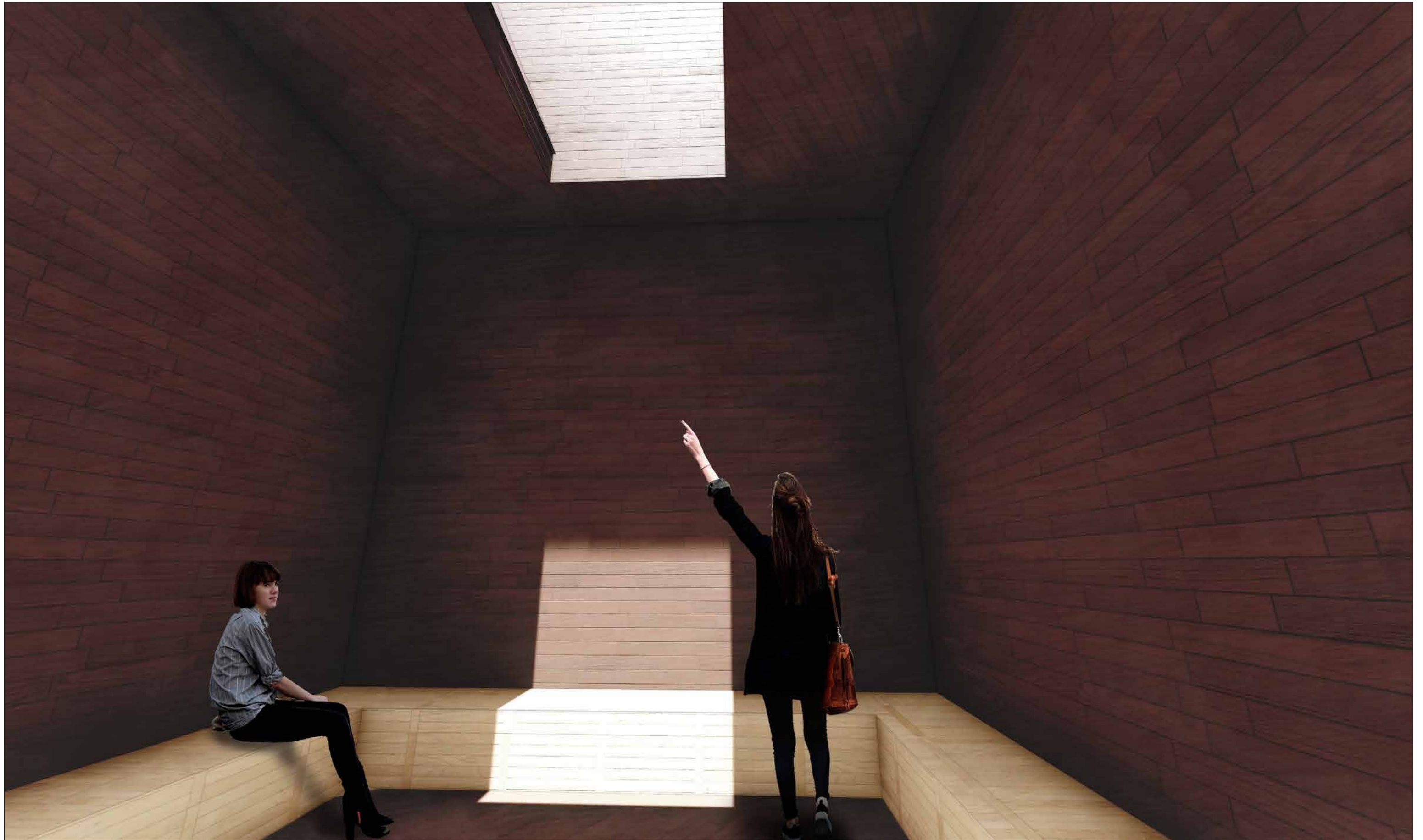
This space reaches out and grabs natural light so the inhabitants of this space can be engulfed in a large controlled ray of light. The light space stimulates the sense of sight through the use of natural light brought into the space.



LIGHT ROOM SECTION
SCALE: 3/16" = 1'-0"



LIGHT ROOM PLAN
SCALE: 3/16" = 1'-0"



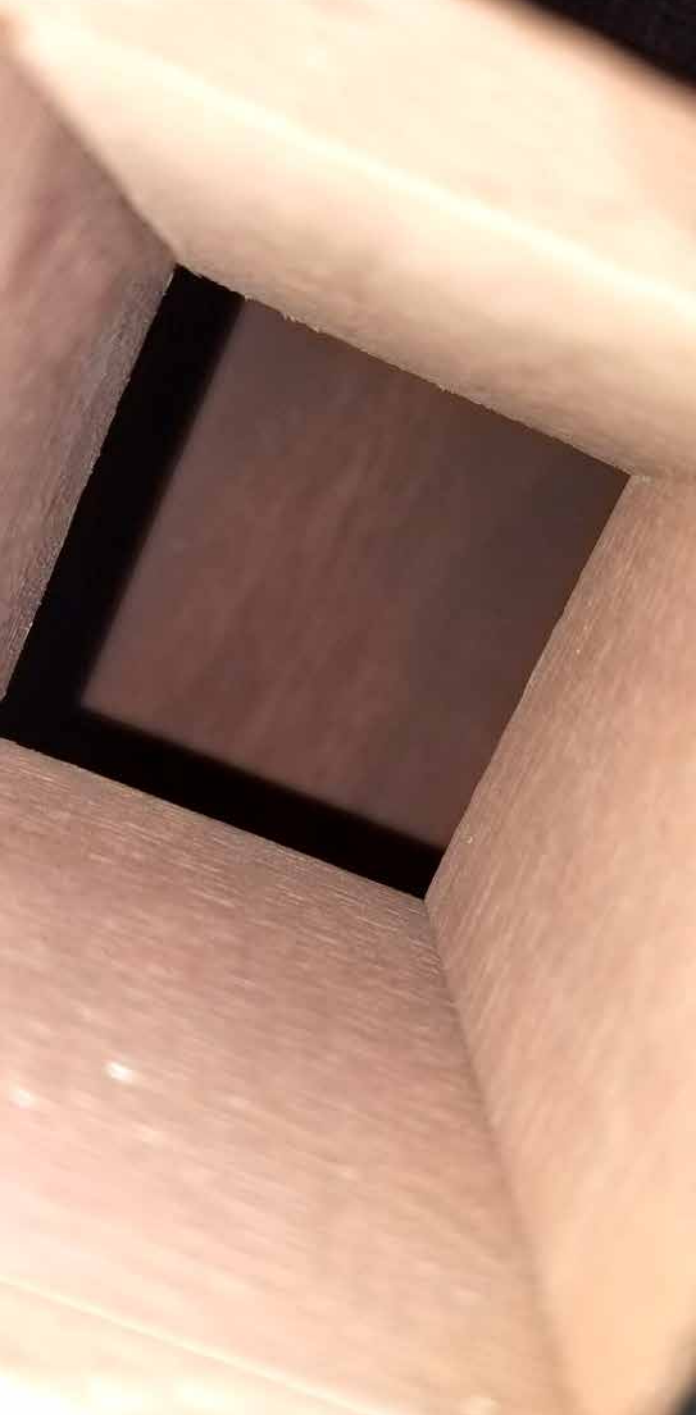
LIGHT ROOM RENDER PERSPECTIVE

Light Room Physical Model

This model is designed to capture natural light. It does so in a way where it reaches up towards the sky and basically grabs the surrounding light and emits it into the space in a controlled manner.



LIGHT ROOM WOOD MODEL



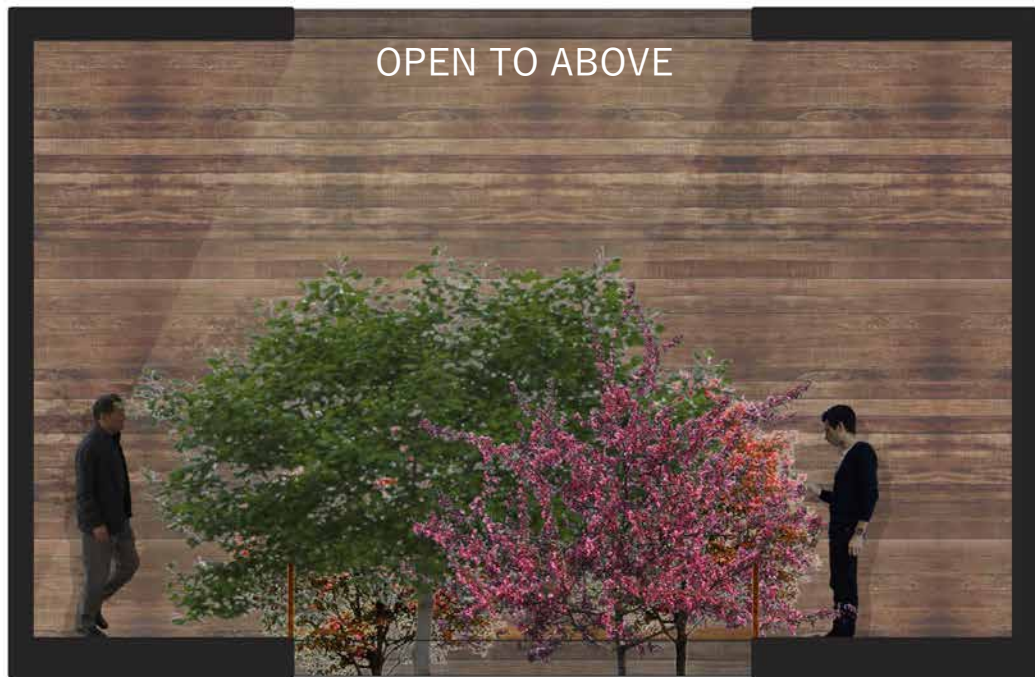
LIGHT ROOM WOOD MODEL



LIGHT ROOM WOOD MODEL

ROOM 3: TEXTURE

Texture is brought into the space through a cutout of the building. The inhabitants of this space can experience the textures of nature through a safe environment.



TEXTURE ROOM SECTION
SCALE: 3/16" = 1'-0"



TEXTURE ROOM PLAN
SCALE: 3/16" = 1'-0"



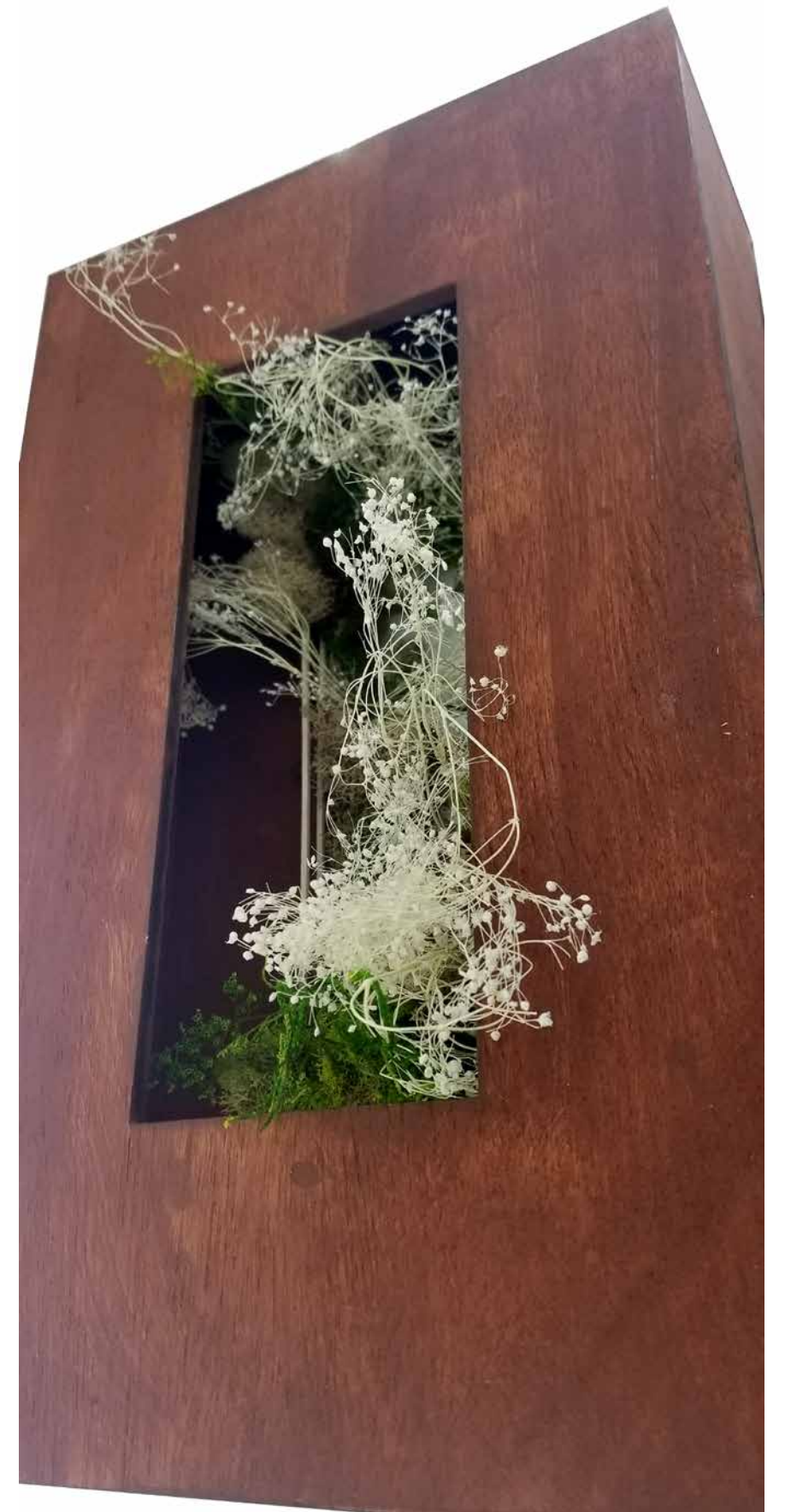
TEXTURE ROOM RENDER PERSPECTIVE

Texture Room Physical Model

The space was designed to physically capture the natural texture from the surrounding vegetation. There is a hole cut out through the entire space (roof and floor) to allow for the trees and vegetation to grow through the bottom and up. Visitors can experience the physical and visual experience of the sense of touch through nature in a safe and controlled space.



TEXTURE ROOM WOOD MODEL



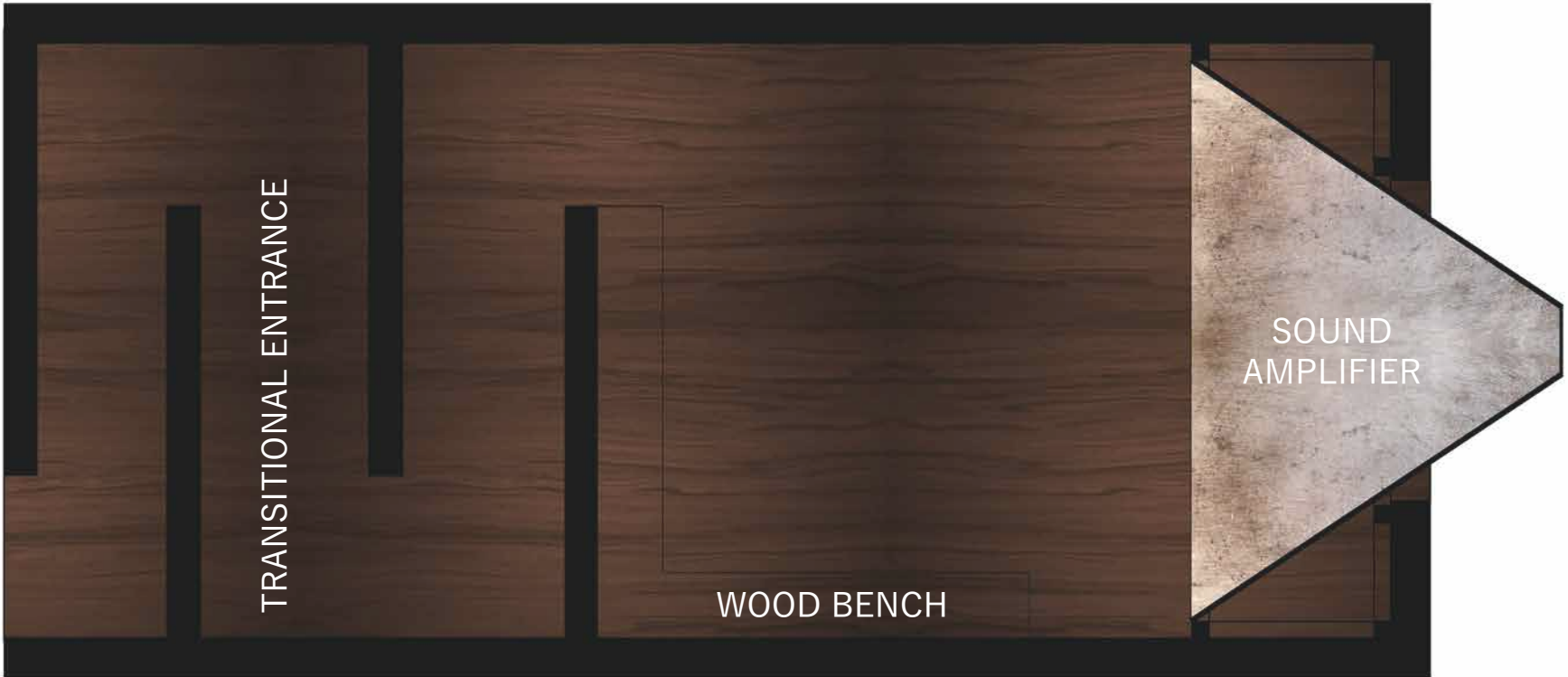
TEXTURE ROOM WOOD MODEL

Room 4: Sound

Sound is echoed through this space through the metal interior and angular shape of the building. The inhabitants of this space can experience echoes of sound bouncing off the walls in a unique way. The sounds can come from other people talking or sounds from nature entering the space.



SOUND ROOM SECTION
SCALE: 3/16" = 1'-0"



SOUND ROOM PLAN
SCALE: 3/16" = 1'-0"



SOUND ROOM RENDER PERSPECTIVE

Sound Room Physical Model

The sound space is an elongated space with sound enhancing material at the end (metal) to capture the sounds of nature and amplify it. The sound amplifier is in the shape of a truncated cone with the wider end inside of the space. The shorter end is extended outward and reaches out towards nature. This is designed in a way to reach out and grab the sounds of nature and amplify it.



SOUND ROOM WOOD MODEL



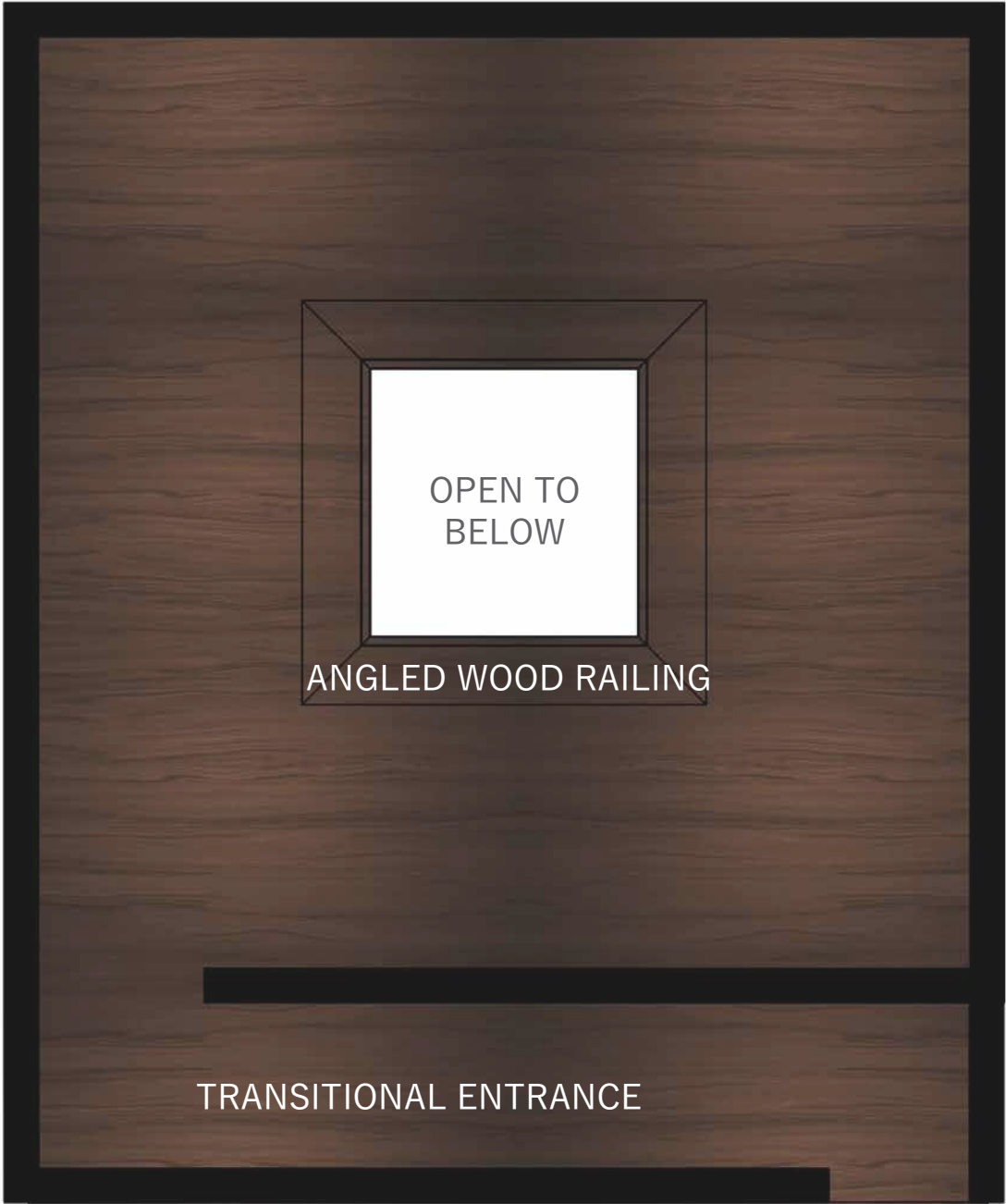
SOUND ROOM WOOD MODEL

Room 5: Smell

Smell is experience through the hole in the bottom of this structure. The hole is wider at the bottom and becomes smaller as it comes up and creates an angled railing. This angled part of the structure helps to grab wind and bring it up through the hole. The top of the structure is ventilated to allow for continuous air flow to allow for the scent of nature to flow through the space.



SMELL ROOM SECTION
SCALE: 1/4" = 1'-0"



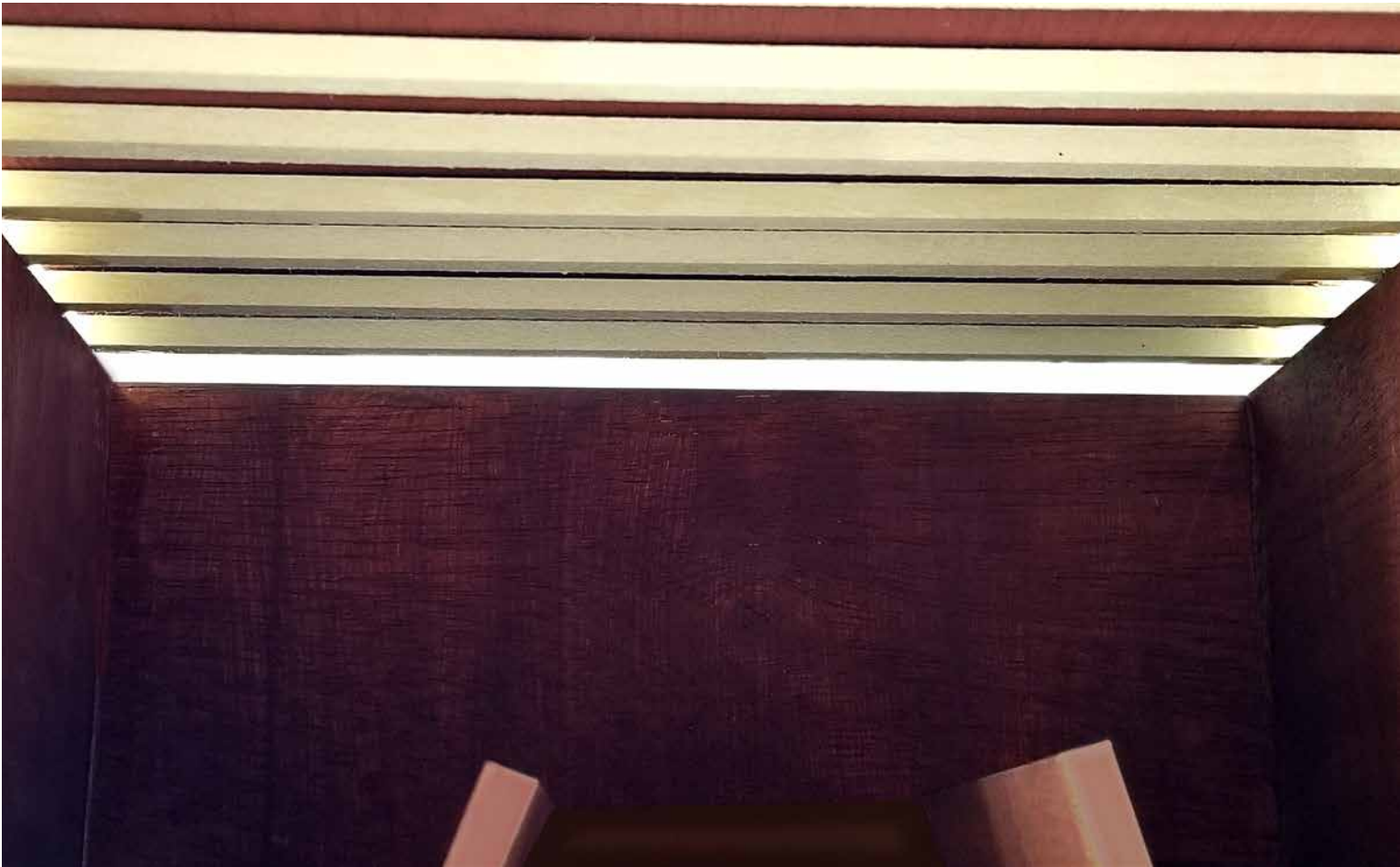
SMELL ROOM PLAN
SCALE: 1/4" = 1'-0"



SMELL ROOM RENDER PERSPECTIVE

Smell Room Physical Model

The design of this space allows to the air to flow up from the bottom and up through the raised roof. This allows for a continuous air flow through the space enhancing the sense of smell. It uses the natural smells of the surrounding wooded area.



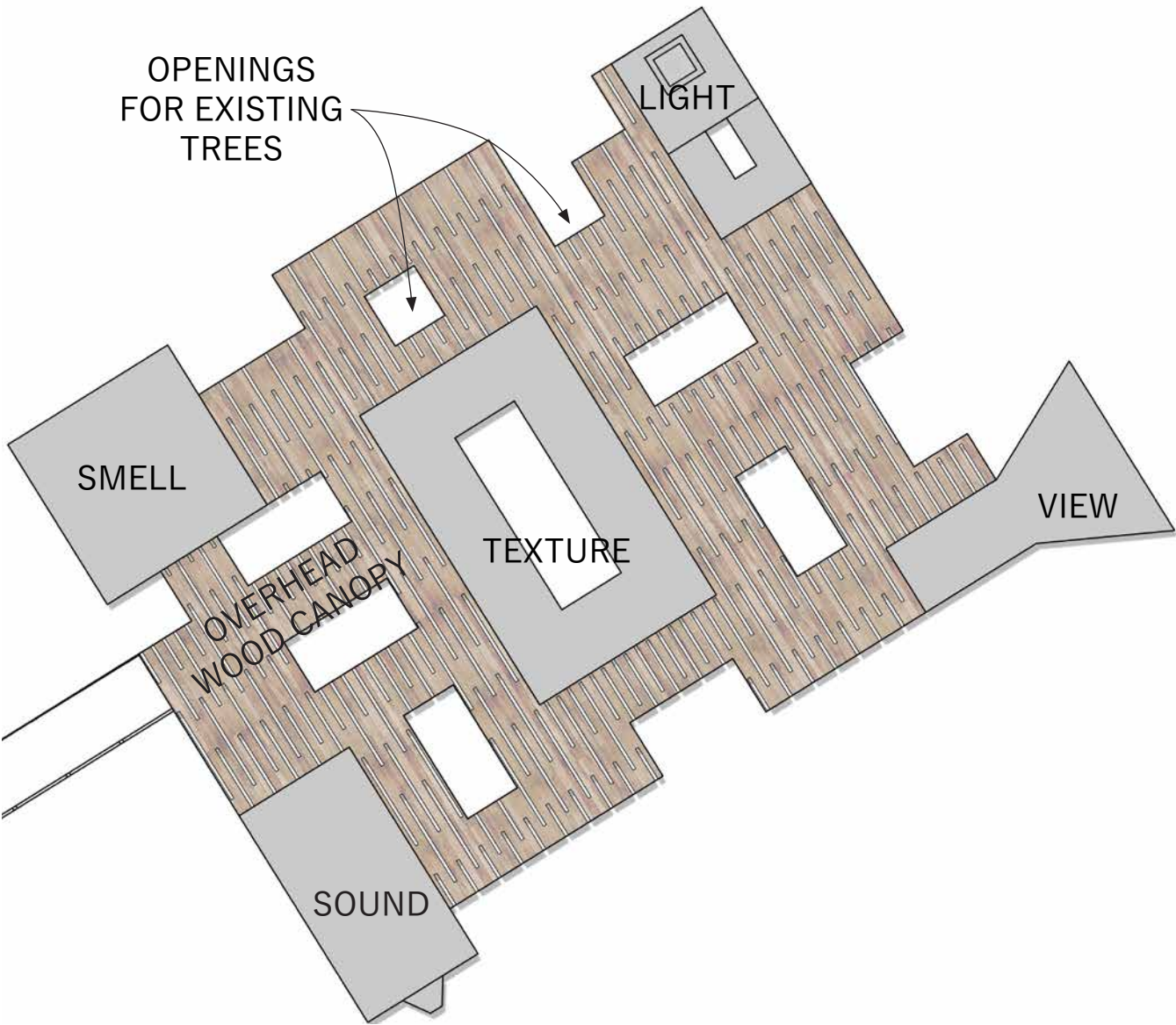
SMELL ROOM WOOD MODEL



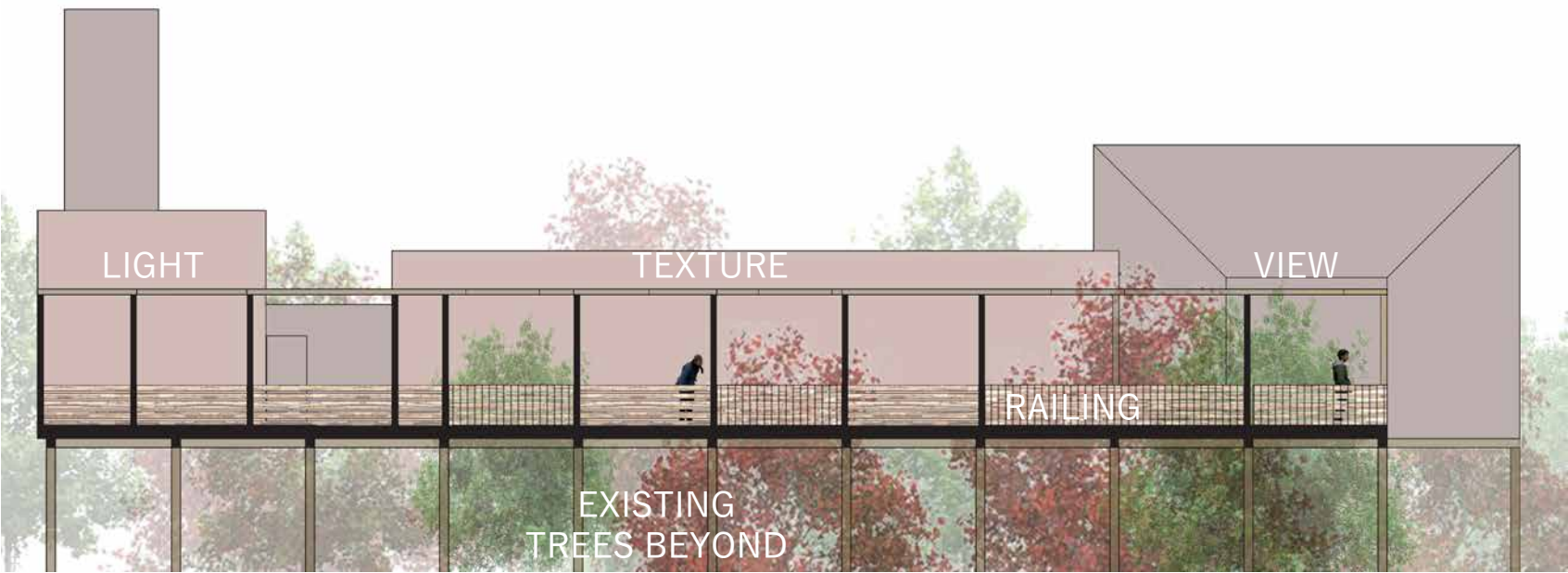
SMELL ROOM WOOD MODEL

ROOM 6: THE IN-BETWEEN

The In-between space is designed as a reset space to ease your mind from one stimulating experience to another. It is open as to allow natural light and air to flow through the space, not focusing on one single experience. This is to allow for an easier mindful transition from an intensified experience to a open airy experience.



This space is engulfed with the surrounding nature. Paths are carved out of the walkway to cut away for the existing trees. The paths are lightly shaded with a thin wooden canopy. The rooms are destinations for a more intensified sensorial experience. The In-Between space acts as a reset space to allow for a mental cool down between spaces.



IN-BETWEEN SPACE PLAN
SCALE: 1/64" = 1'-0"

IN-BETWEEN SPACE SECTION
SCALE: 1/64" = 1'-0"

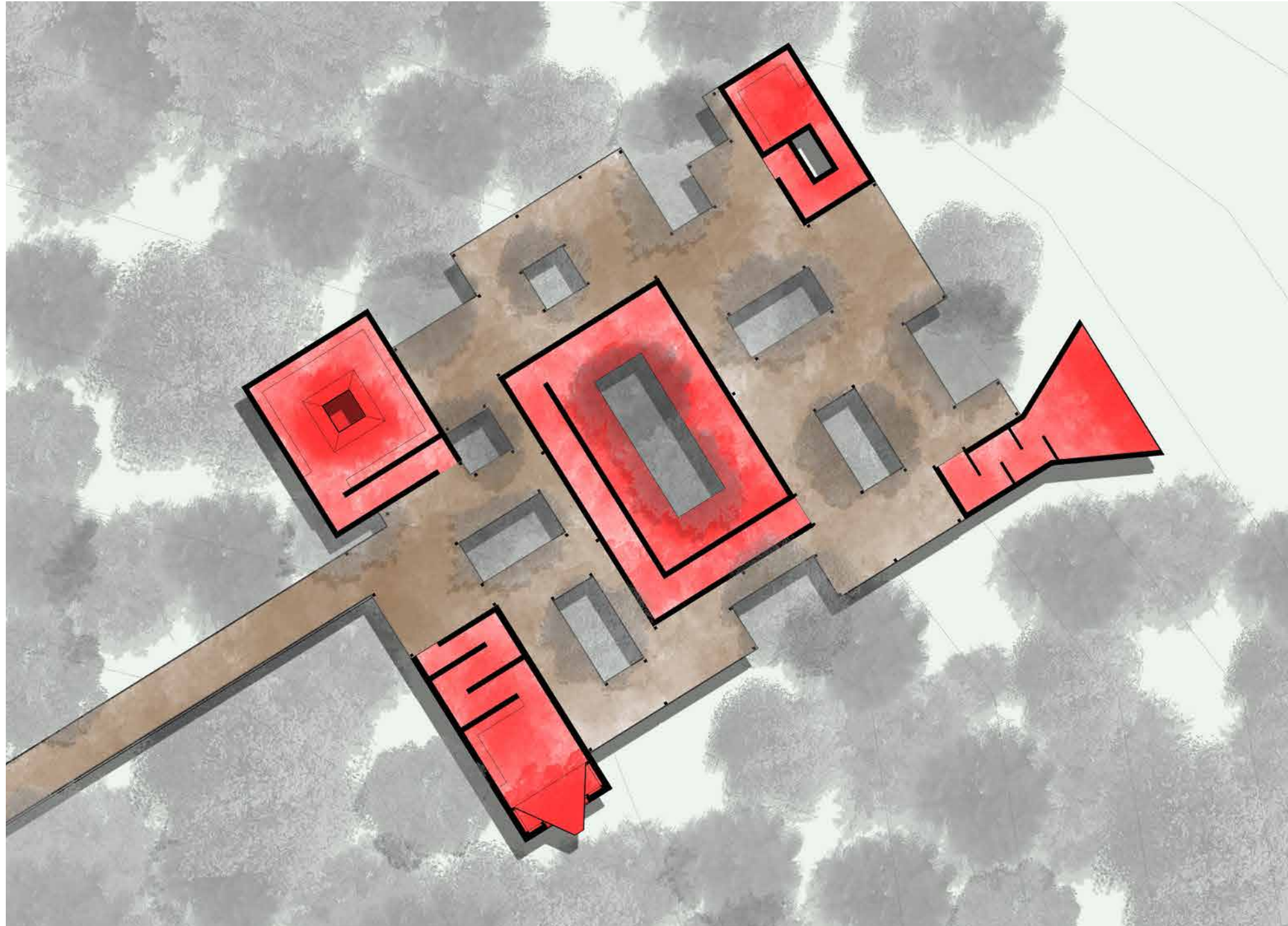


IN-BETWEEN SPACE RENDER

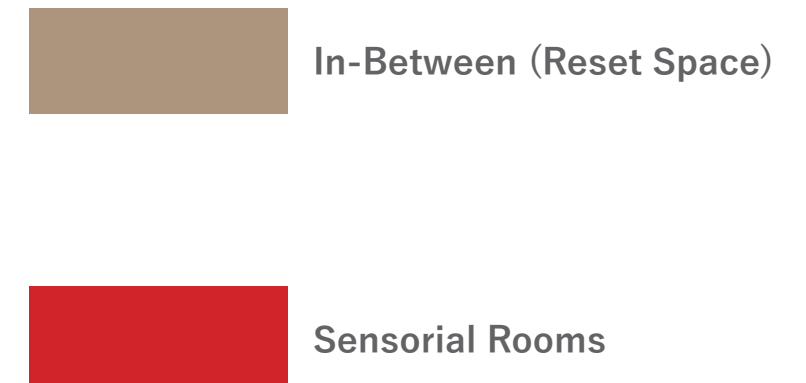
3.4_Principles Revisited

Sensorial Differentiation

-The differentiation of sensorial stimulation through transitioning from space to space helps to mentally reconnect the occupant to the built environment.

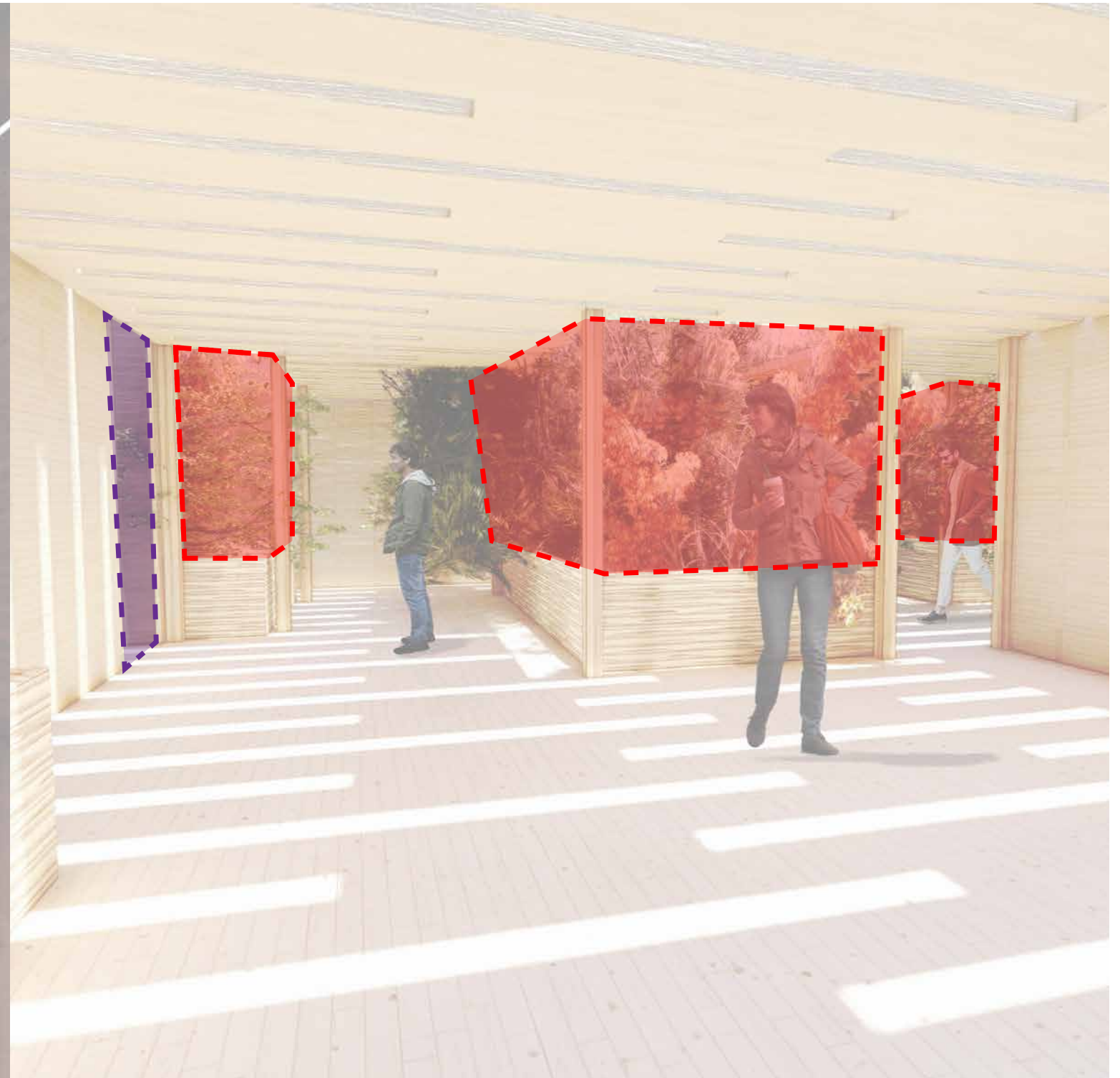


The sensorial rooms are intensified experiential spaces that are the focus of the building. These rooms take the sense(s) and stimulates them in a controlled manner. The In-Between space helps to soothe and reset the mind after the experience of the sensorial rooms, creating a easier transition from room to room or experience to experience.





This experience is the focus of the space. The opening allows for the air to flow up and out the openings at the top of the walls, allowing the space to be engulfed with the surrounding smell of nature.



This experience is of open airy space not enclosed within a room. The open in-between space has a lighter wood material separating it through material as well.



There is a peak into one of the experience focused spaces, which is a darker and more unique experience compared to the in-between space.

Acute Atmospheres

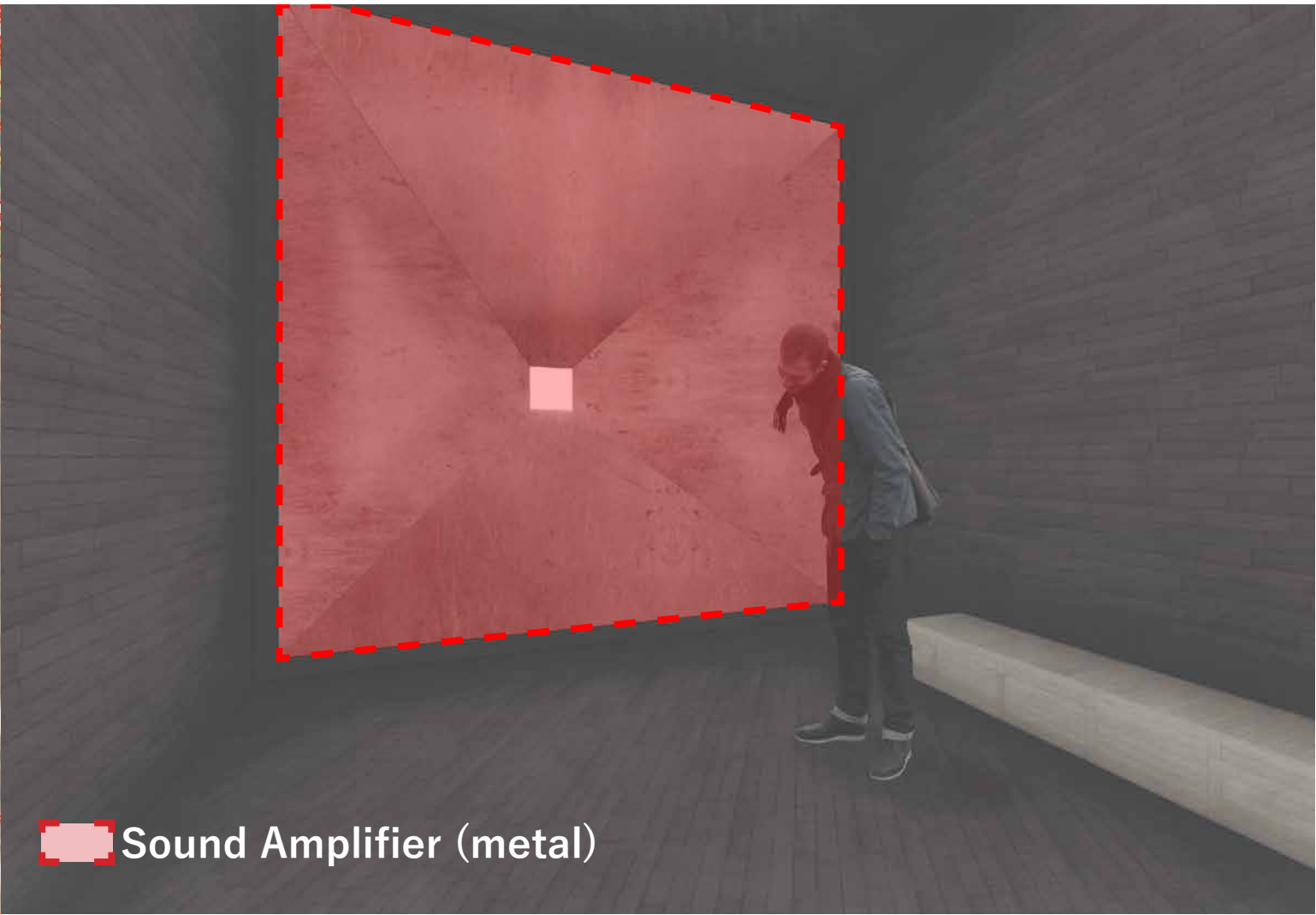
-The experiential atmospheres are intensely stimulating the human senses allowing the occupant to deeply immerse themselves within each experience.

The atmosphere of this space is intensified through the texture of the vegetation and the light peaking through the vegetation.

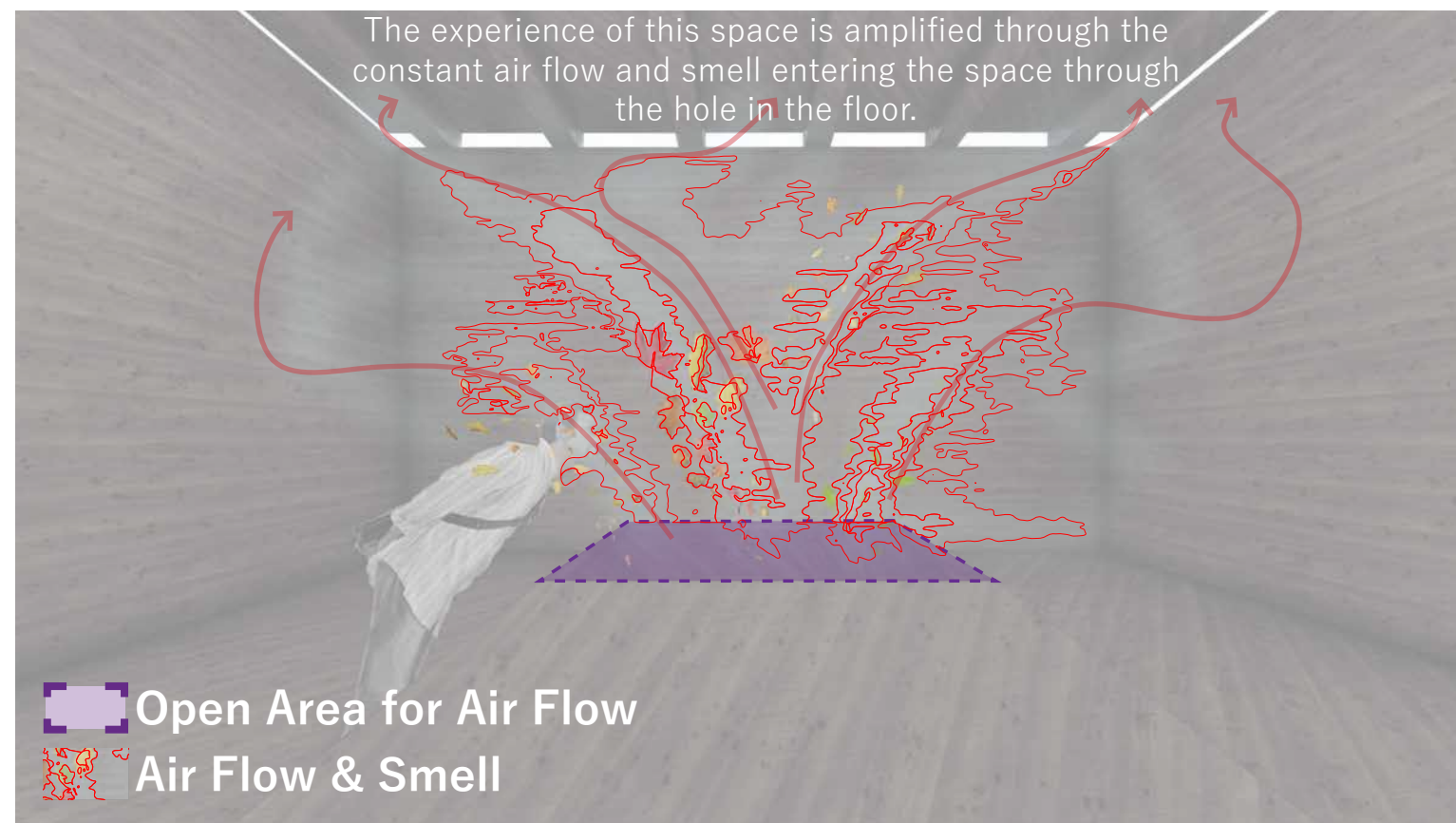


TEXTURE ATMOSPHERE

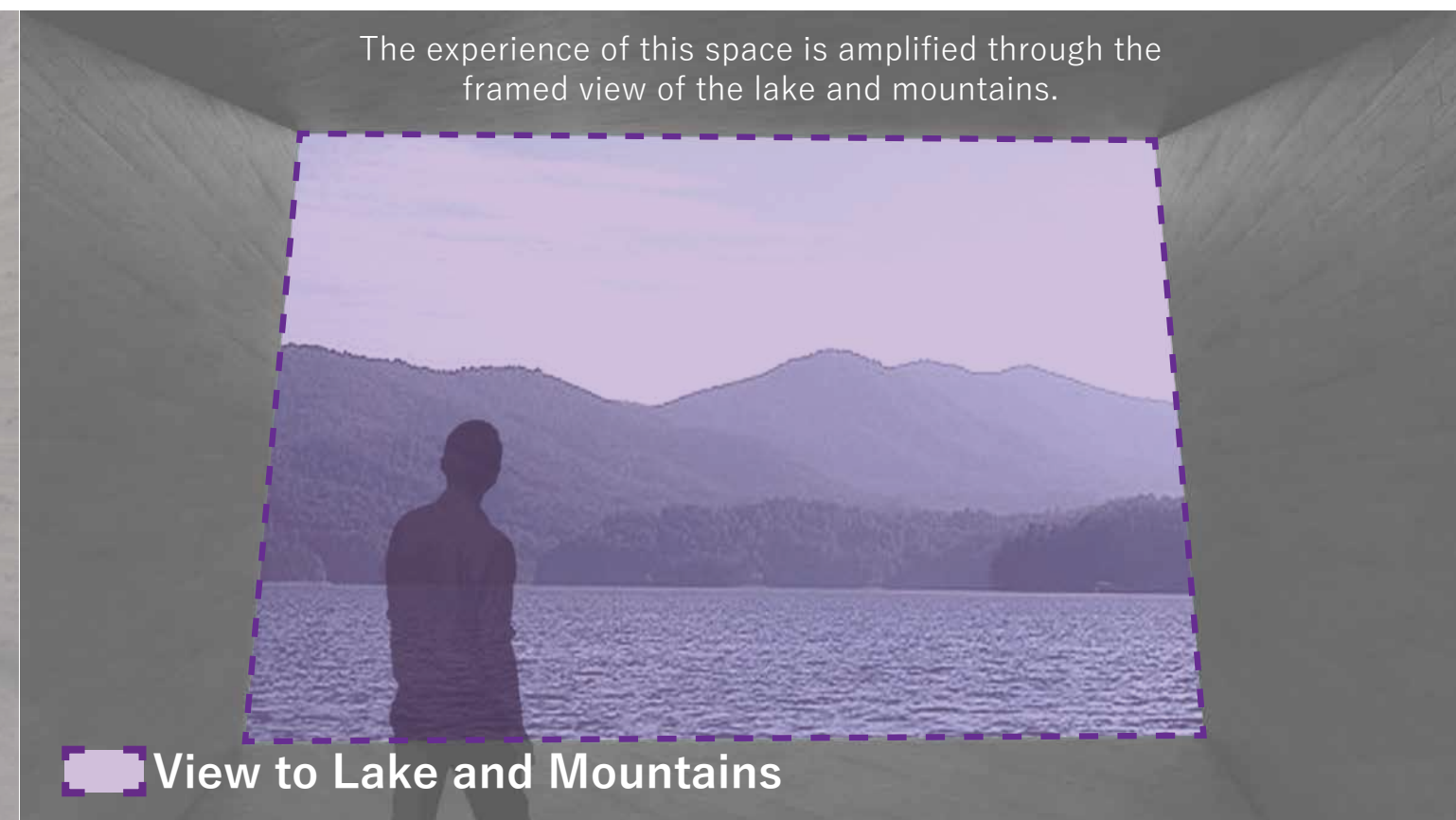
The experience of this space is intensified through the metal sheets which amplifies and creates variation in the sound entering the space.



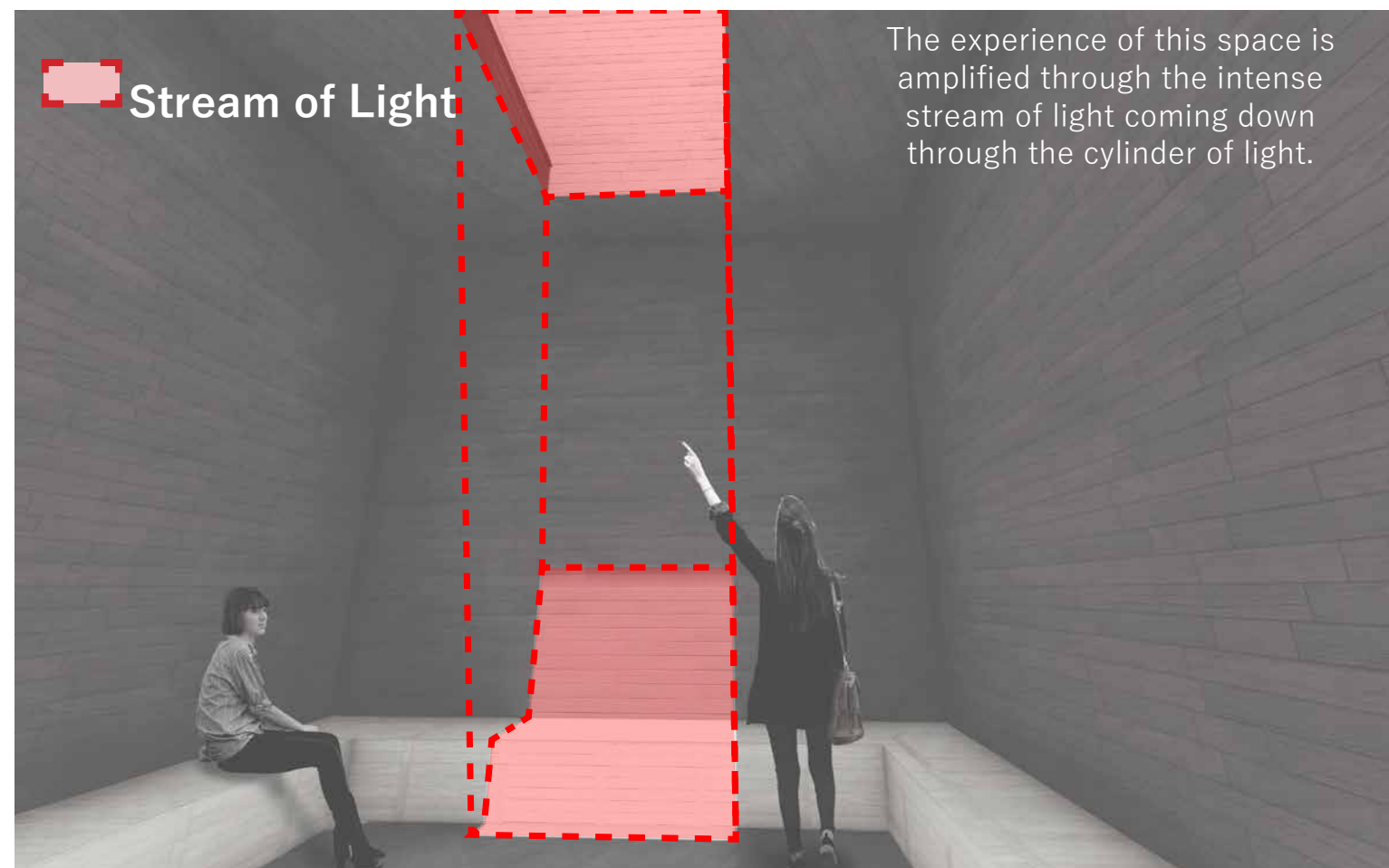
SOUND ATMOSPHERE



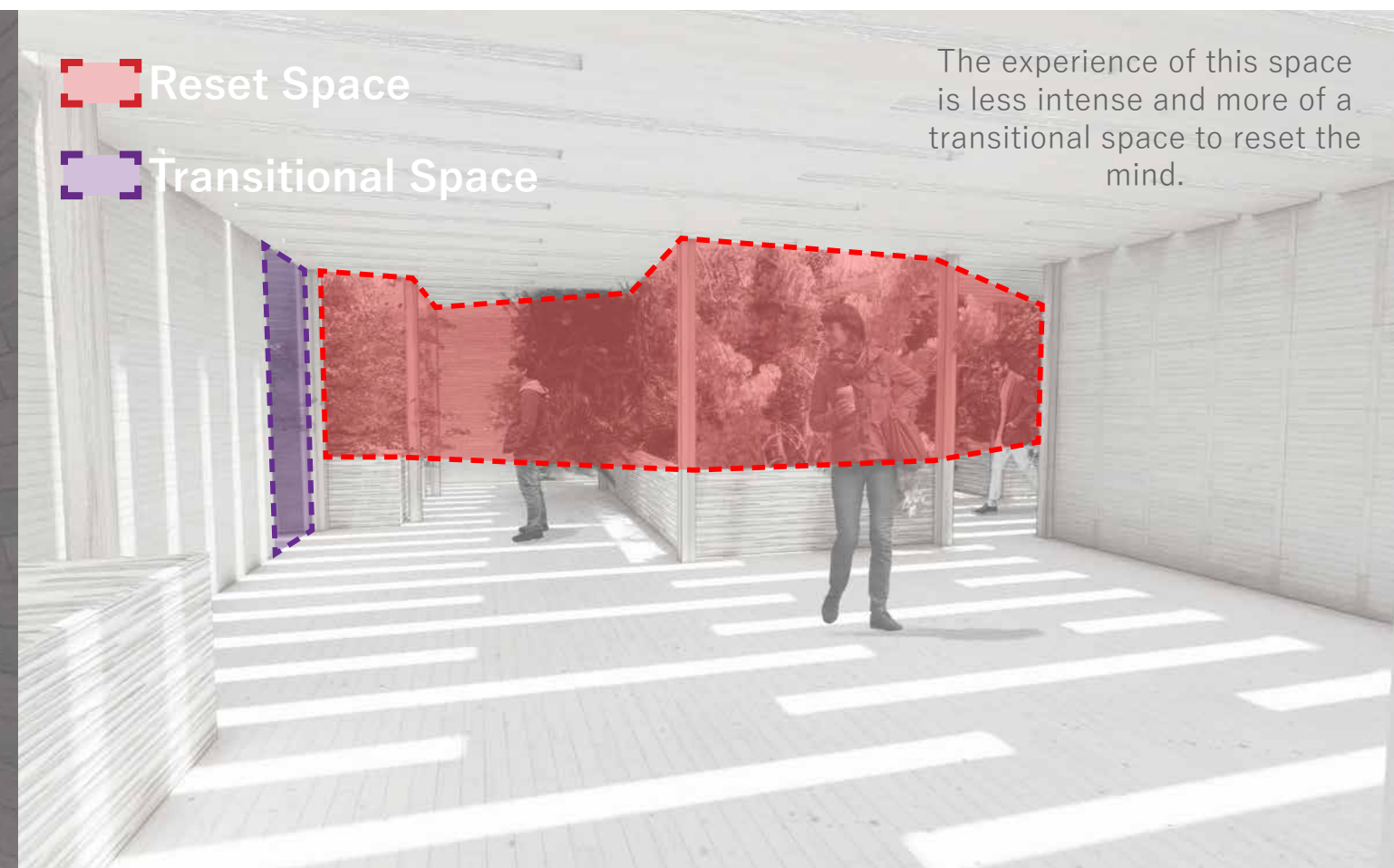
SMELL ATMOSPHERE



VIEW ATMOSPHERE



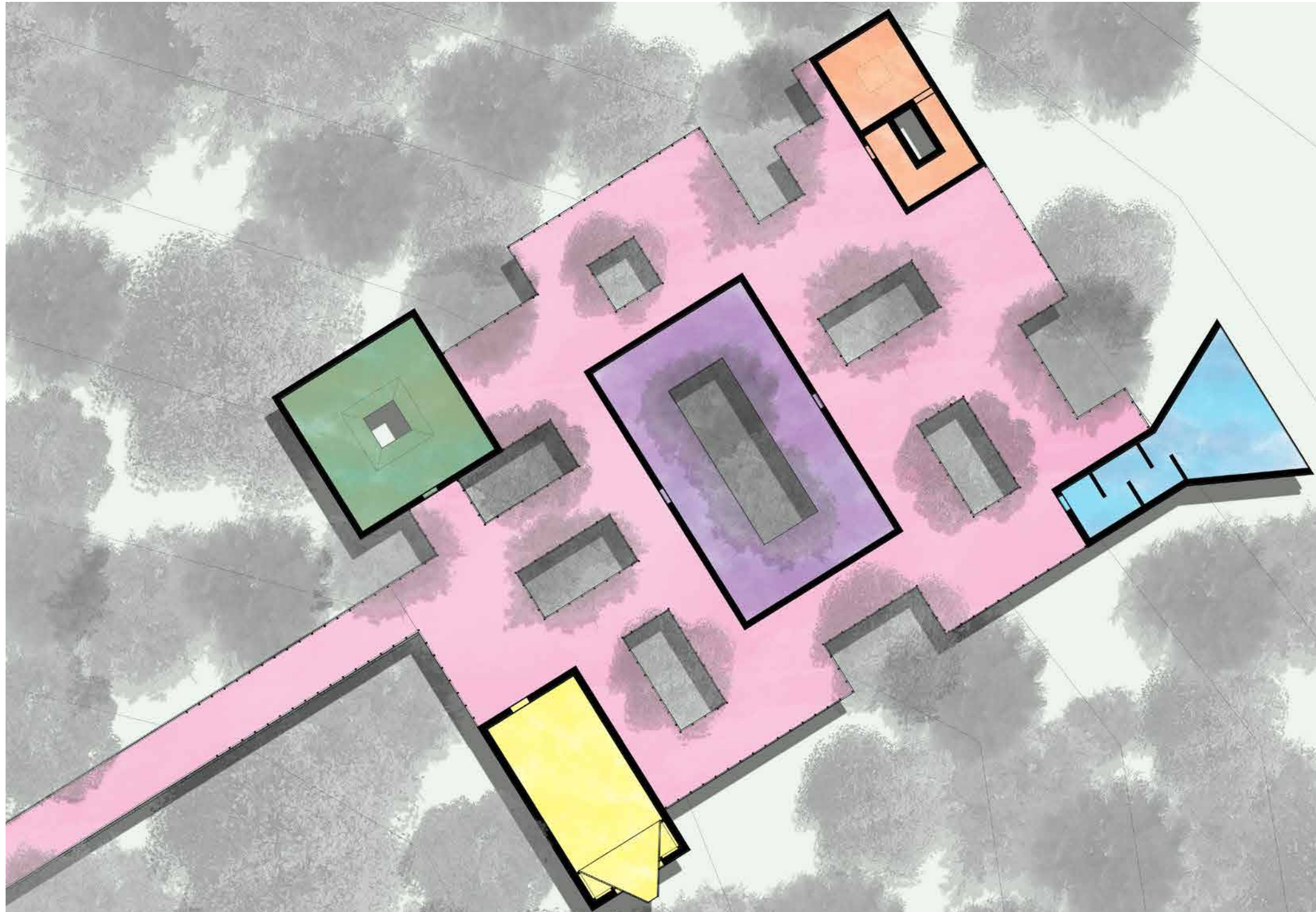
LIGHT ATMOSPHERE



IN-BETWEEN ATMOSPHERE

Experiential Clarity

-The separation of the senses into different spaces triggers cognitive and experiential clarity with the experience of each space. The spaces will focus on each sense to create mental focus at varying levels and enhance the overall experience of space. In total the connection of the human being and architectural space is constantly being created and recreated.



View Sensorial Space

The view space is focused on the stimulation of the sense of sight, with a direct focus on view of the natural site features.

Texture Sensorial Space

The texture space is focused on the stimulation of the sense of touch and stimulates through the texture of local vegetation.

Smell Sensorial Space

The smell space is focused on the stimulation of the sense of smell and does so through the smell of surround nature.

Light Sensorial Space

The light space is focused on the stimulation of the sense of sight and does so through a variation of light.

Sound Sensorial Space

The sound space is focused on the stimulation of the sense of sound and intensifies this sense through sound amplifying material of nature.

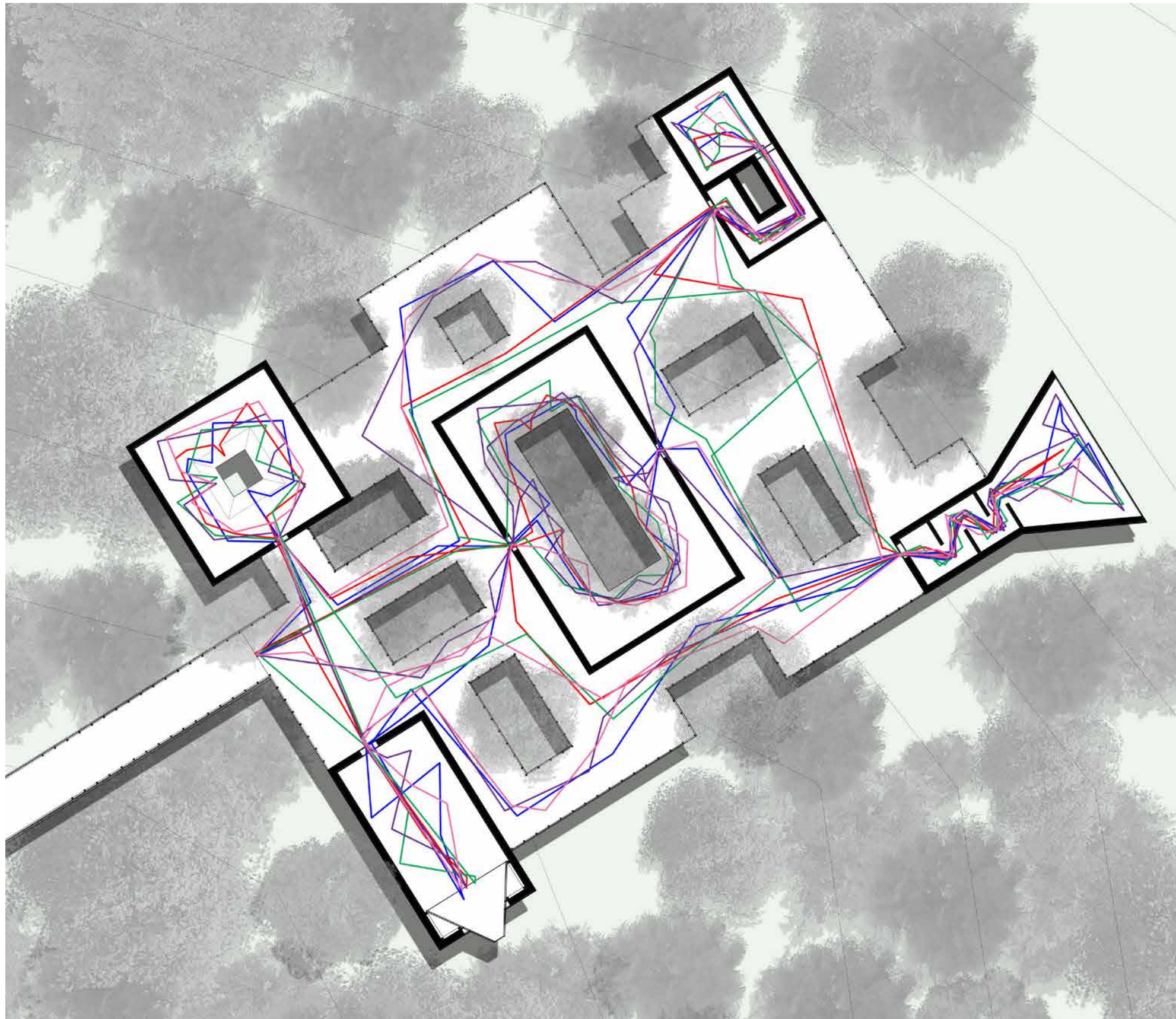
In-Between/Reset Space

The In-Between space is not focused on a specific sense and thus creates a less intensified experience.

Wander/Multitude of Paths

-The creation of bounteous and diversified paths throughout the built environment allow for individual and unique experiences for each person. The freedom of wander gives back to the occupants.

This diagram shows a variation of 5 people taking different paths throughout the spaces provided. The cutouts of the space allows for a wider range of variable paths to create. Many more paths can be created and experienced through this design.



- Person 1 Path
- Person 2 Path
- Person 3 Path
- Person 4 Path
- Person 5 Path

Non-Uniformity

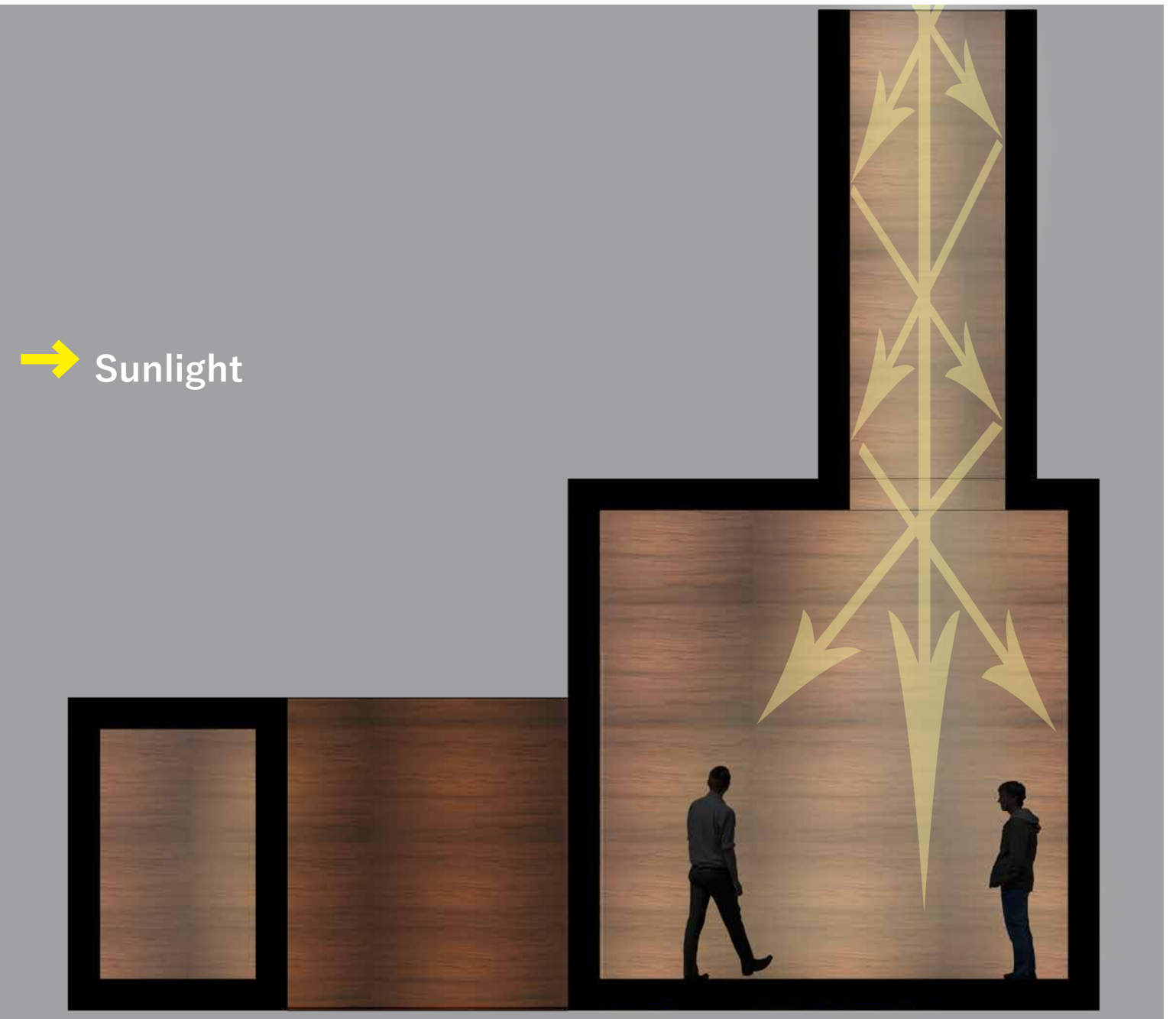
-Uniformity causes the mind to zone out of the physical space and in turn create negative impacts on the brain. This principle approaches how physical variation in architectural spaces can positively affect those afflicted with anxiety and depression and create an understanding of one's surroundings.

The smell room varies in how air enters the space. Ventilation is the key factor in creating a non-uniform zoning within the space. Air enters the space from the whole in the bottom of the room, moves around the room, and exits through the ventilated roof. The spacial experience is constantly changing because of constant air circulation.



Smell Space

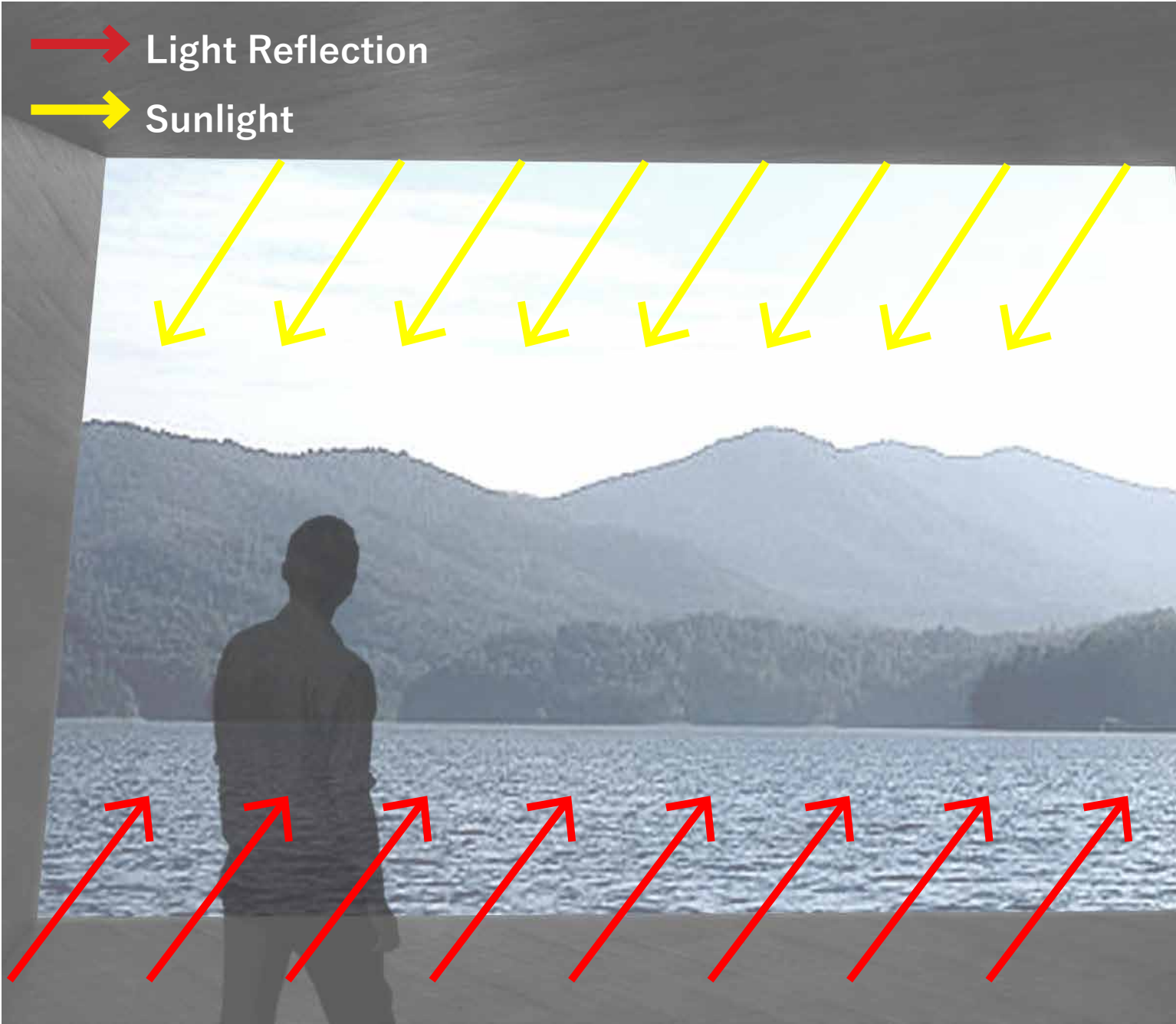
Through a tall chimney like structure at the top of this room, light is reflected and diffused down into this space. How the light enters the space is constantly changing depending on time of day and current weather; this causes a non-uniformity of experience within this space.



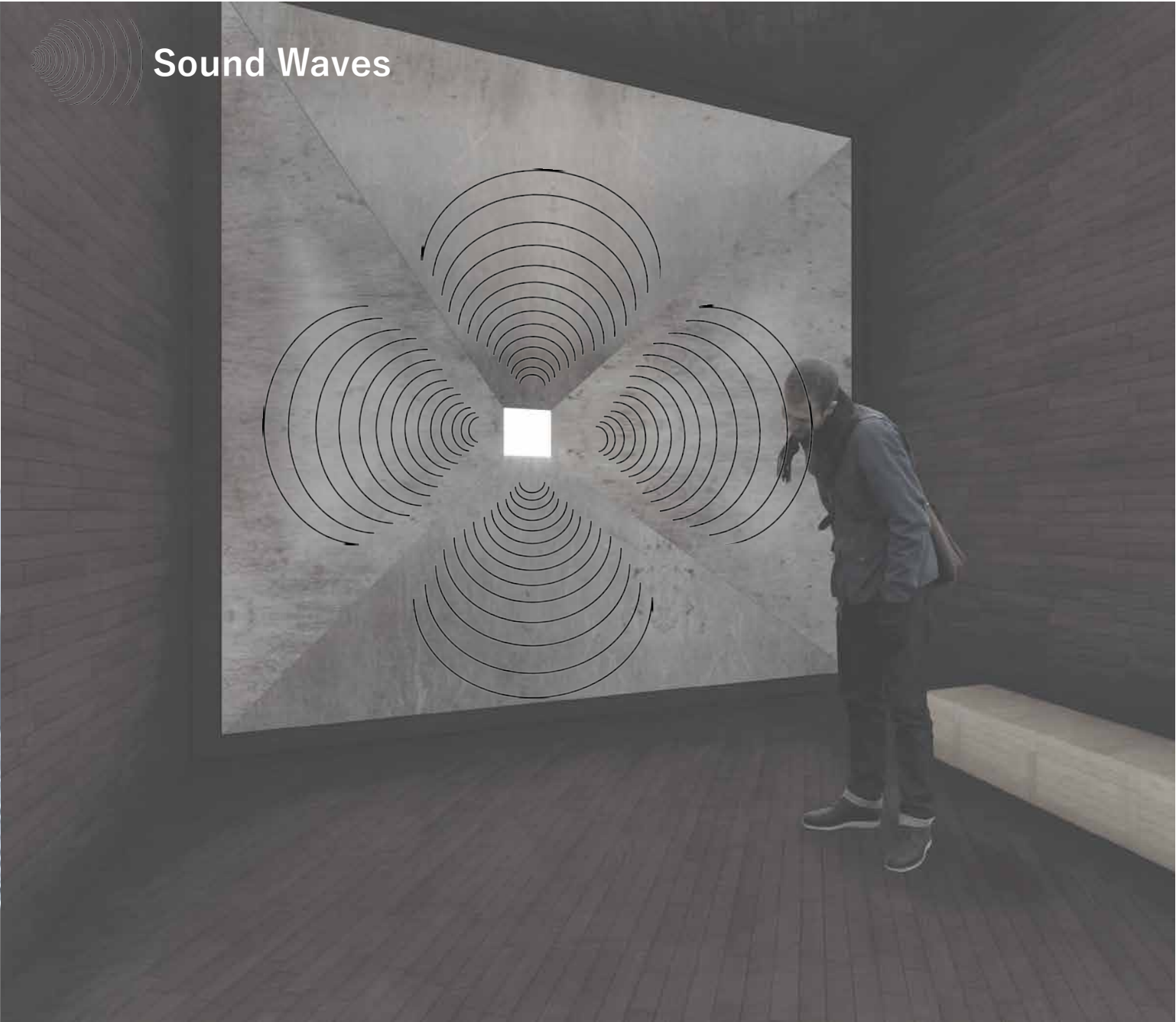
Light Space

Light enters the space through the larger truncated opening where the view of the lake and mountains can be seen. The light reflects back up in a variable manner. The inconsistent way the light reflects causes non-uniformity in the space.

Sound enters the space through a small opening on the far end of the room. The sound bounces off the metal sheets as it enters the space and thus enhances and causes more variability in the incoming sound. This causes a non-uniformity in the space.



View Space



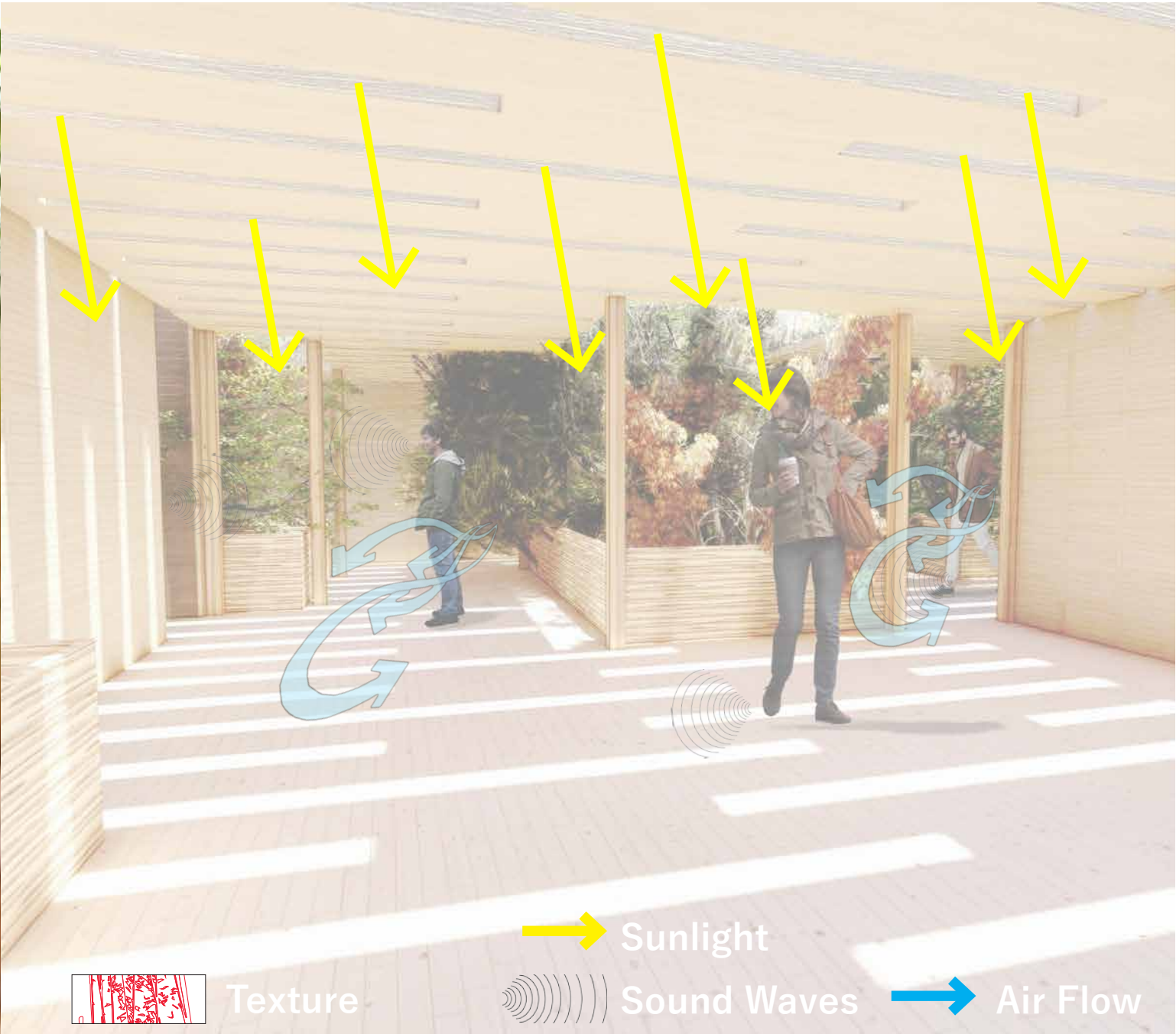
Sound Space

In the texture room, vegetation grows through the floor and up. Texture is non-uniform because of the constant growing of vegetation. Light enters the room through the large opening in the center of the roof. Light casts non-uniform shadows through the growing vegetation entering the space. Air flow can enter through the hole in the roof and floor breaking through gaps in the vegetation causing variation in the air flow through the room.



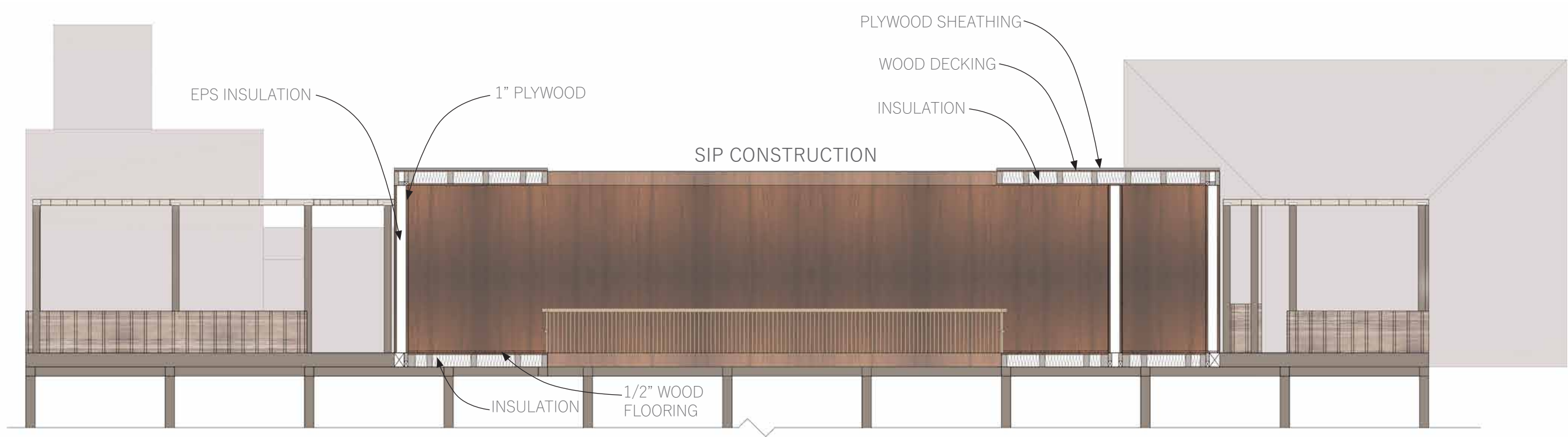
Texture Space

The In-Between space is the most inconsistent and non-uniform in experience. This space has many variables including: sunlight, wind, sound, and growth of vegetation. These every changing variables constantly creates a non-uniform experience but in a soften way compared to the sensorial rooms.



In-Between Space

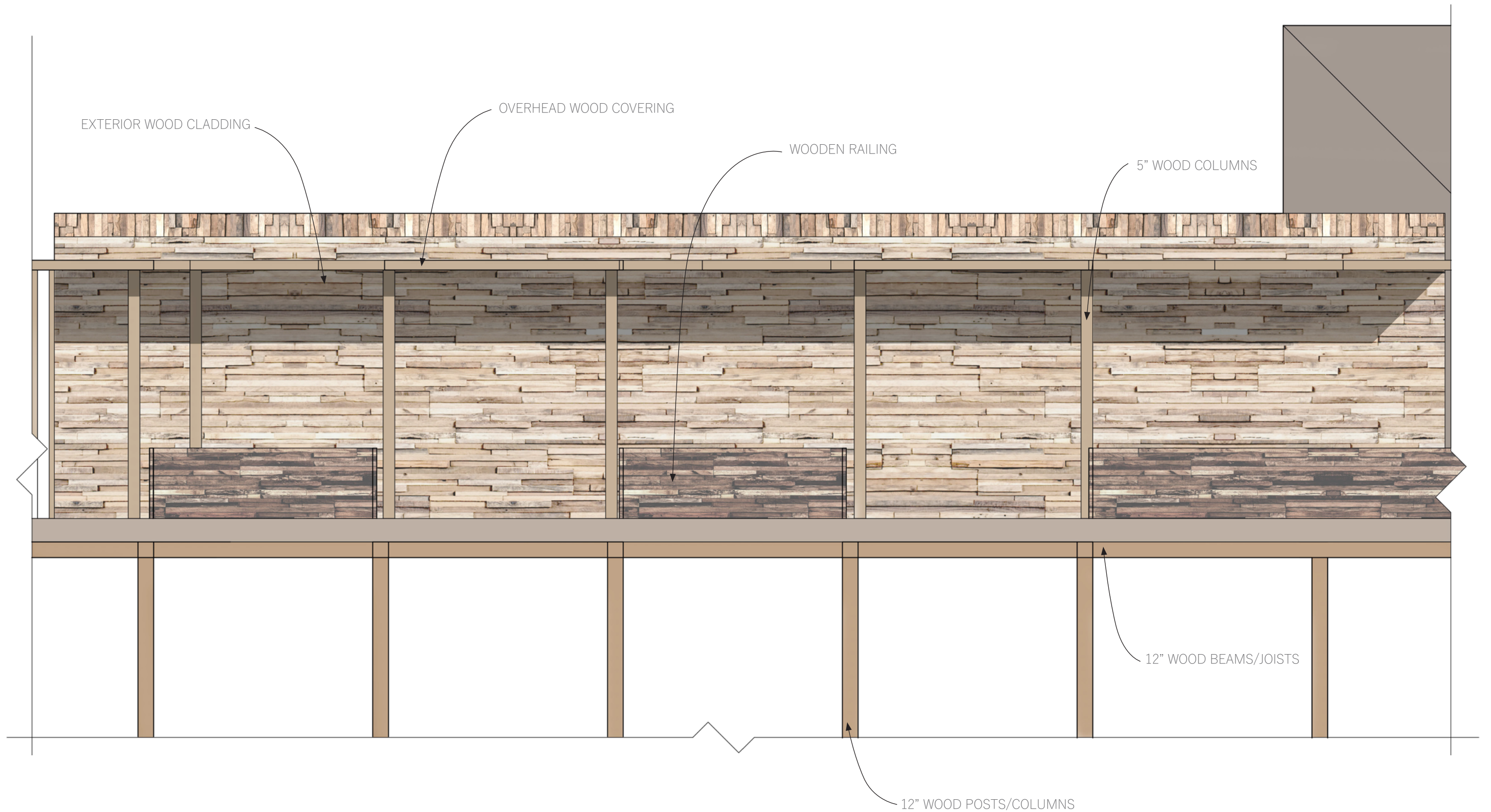
3.5_Tectonic Details



TECTONIC SECTION
SCALE: 1/8" = 1'-0"



TECTONIC PLAN
SCALE: 1/8" = 1'-0"



TECTONIC ELEVATION

SCALE: 1/8" = 1'-0"

Thesis by: Brittany Adkins

The layout of the poem allows for the consultant to wander through the poem as five planes. This gives the consultant the ability to understand the journey has choice at any given time. The multitude of paths gives freedom to the consultant to wander as five planes.

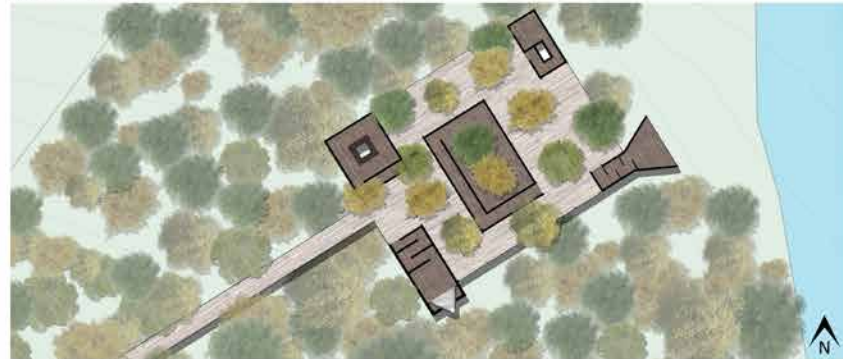
SITE & BUILDING PLANS



Site Plan: scale: 1/32" = 1' - 0"



Site Elevation: scale: 1/32" = 1' - 0"



Building Plan: scale: 1/16" = 1' - 0"



Building Section: scale: 1/16" = 1' - 0"



Building Elevation: scale: 1/16" = 1' - 0"

PROJECT DEVELOPMENT

ROOM 1: VIEW

The view of view, this space encourages the sense of sight. Through this stage and large opening towards the lake and Blue Ridge Mountain scenery, visitors can use this dark space as a viewpoint and reflection space and ultimately enjoy the view of sight.



View Room Section



View Room Plan

ROOM 2: LIGHT

This space stands out with gentle natural light in the interior of this space, and is designed in a stage-like structure of light. The light source illuminates the sense of sight through the use of natural light brought into the space.



Light Room Section



Light Room Plan

ROOM 3: TEXTURE

Texture is brought into the space through a series of the building. The materials of this space can experience the richness of nature through its site environment.



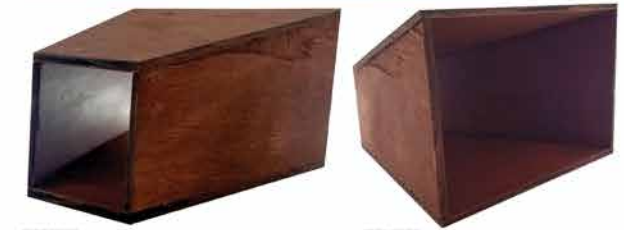
Texture Room Section



Texture Room Plan



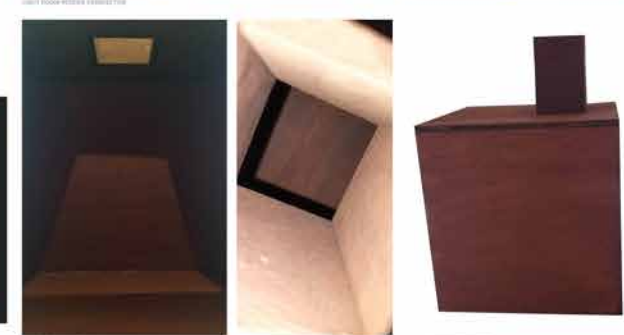
Room 1: View



Room 2: Light



Room 3: Texture



Room 1: View



Room 2: Light



Room 3: Texture

PROJECT DEVELOPMENT

ROOM 4: SOUND

Sound is filtered through this room through the metal screens and angular shape of the building. The vibrature of this space can experience various of sound bouncing off the walls in a unique way. The sound can come from other people talking or sounds from outside entering the space.



ROOM 4: SOUND SECTION
Scale: 1/8" = 1'-0"



ROOM 4: SOUND SECTION
Scale: 1/8" = 1'-0"

ROOM 5: SMELL

Smell is experienced through the hole in the bottom of this structure. The hole is wider at the bottom and becomes smaller as it comes up and creates an angled ceiling. This angled part of this structure helps to direct smell and bring it up through the hole. The top of the structure is ventilated to allow for continuous air flow to allow for the smell of nature to flow through the hole.



ROOM 5: SMELL SECTION
Scale: 1/8" = 1'-0"



ROOM 5: SMELL SECTION
Scale: 1/8" = 1'-0"

ROOM 6: THE IN-BETWEEN

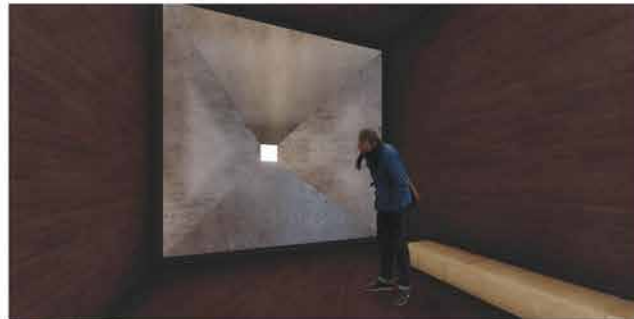
The In-Between space is designed as a neutral space to allow your mind from one stimulating experience to another. It is built as to allow natural light and air to flow through this space, not focusing on one single experience. This is to allow for the most visually pleasing view of the building experience to be seen and experienced.



ROOM 6: THE IN-BETWEEN SECTION
Scale: 1/8" = 1'-0"



ROOM 6: THE IN-BETWEEN SECTION
Scale: 1/8" = 1'-0"



ROOM 4: SOUND SECTION
Scale: 1/8" = 1'-0"



ROOM 4: SOUND SECTION
Scale: 1/8" = 1'-0"



ROOM 4: SOUND SECTION
Scale: 1/8" = 1'-0"



ROOM 4: SOUND SECTION
Scale: 1/8" = 1'-0"

ROOM 5: SMELL SECTION
Scale: 1/8" = 1'-0"



ROOM 5: SMELL SECTION
Scale: 1/8" = 1'-0"



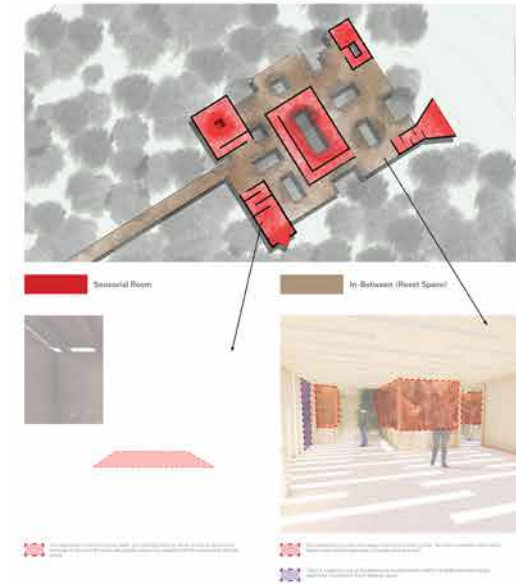
ROOM 5: SMELL SECTION
Scale: 1/8" = 1'-0"



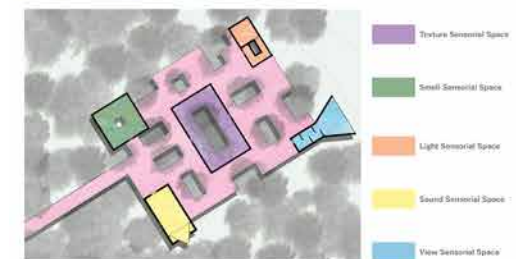
ROOM 6: THE IN-BETWEEN SECTION
Scale: 1/8" = 1'-0"

PERFORMANCE/SENSORIAL DIAGRAMS

SENSORIAL DIFFERENTIATION



EXPERIENTIAL CLARITY



NON-UNIFORMITY

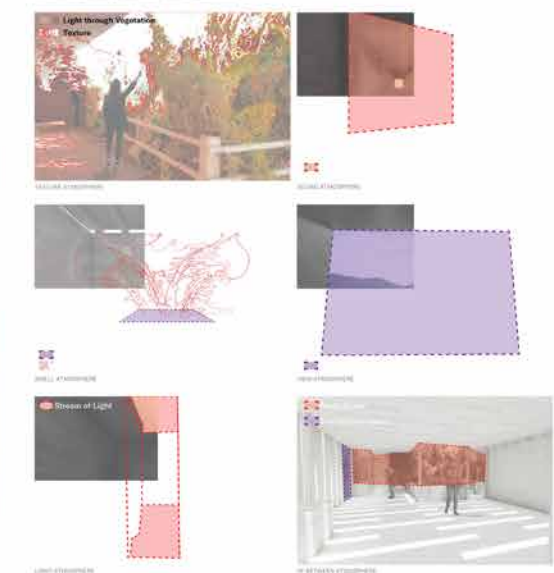


TECTONIC PLAN, SECTION & ELEVATION

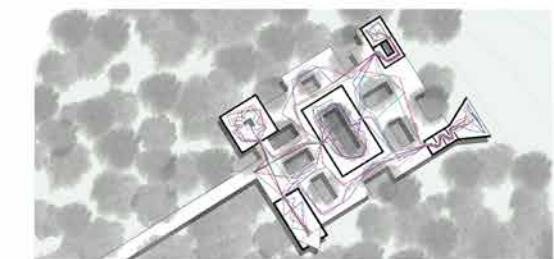


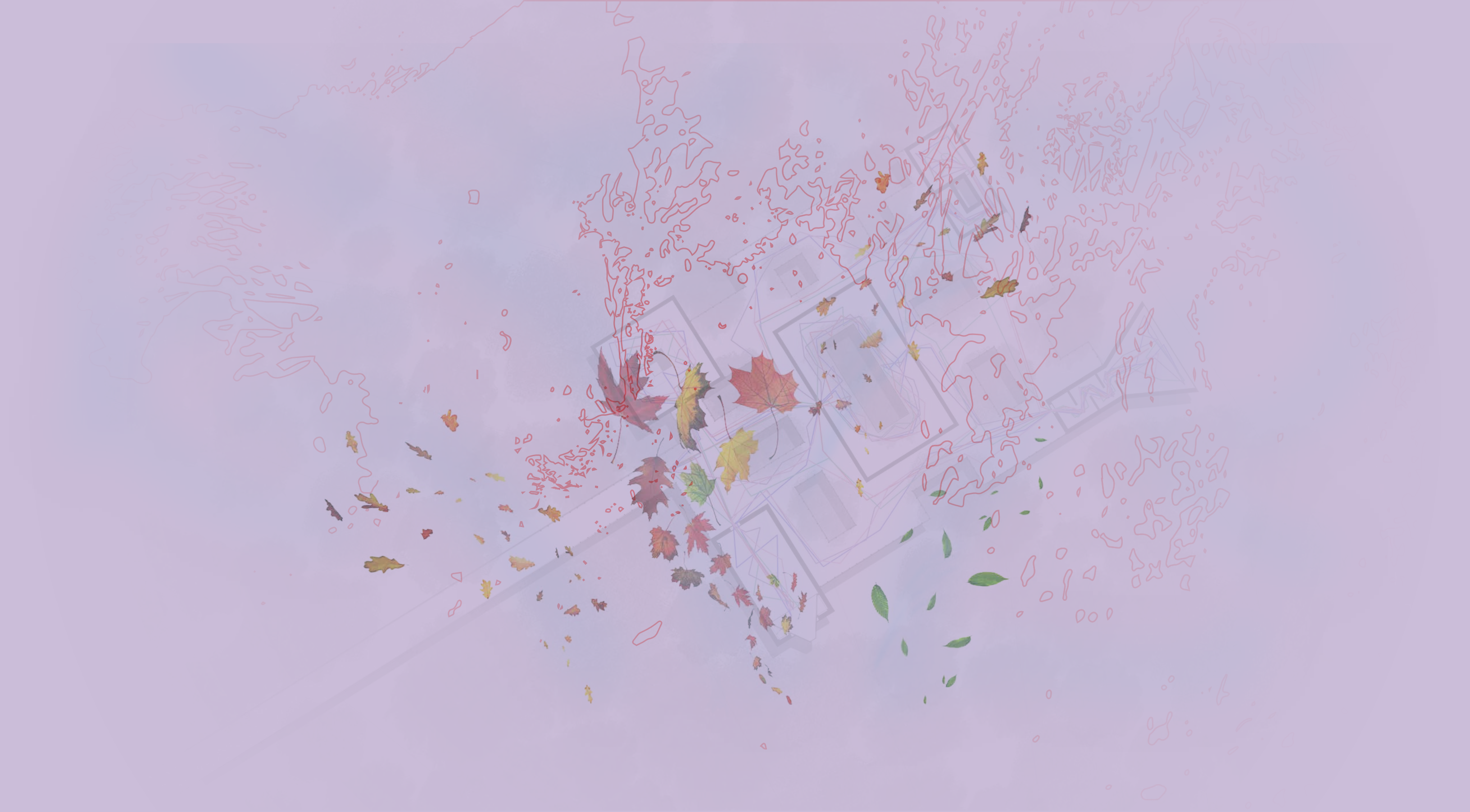
ACUTE ATMOSPHERES

The experiential atmospheres are created by utilizing the building's unique form and materials to create a sense of place and atmosphere.



WANDER/MULTITUDE OF PATHS





Chapter 04: Summary

4.1_Final Thoughts

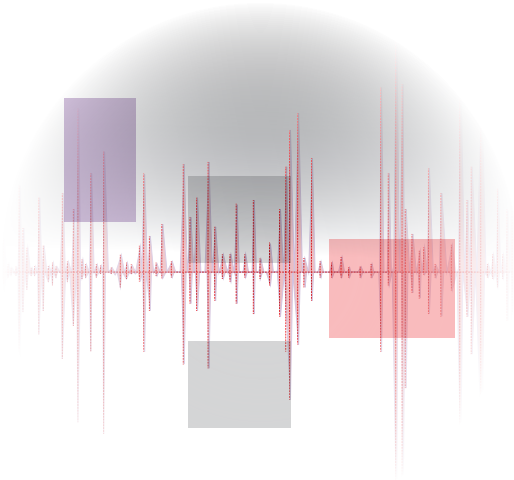
Reflection:

The goal of this thesis was to look further into an alternative of a mental health facility that does not require or the use of medication to numb the mind, but to stimulate the mind through the stimulation of the senses. Through research and examples found throughout this book, displaying how the stimulation of the senses can positively impact mental health. Through the study of various types of mentally soothing buildings and facilities, I set forth a series of 5 architectural principles that achieved a calming mental effect and/or created a sense of awareness of one’s surroundings.

Conclusion:

Mental health is a growing issue around the world. There is no right way to treat it since everyone heals differently. I moved away from the traditional way of treating patients and moved towards a design that would allow for an alternative way for each person to heal in their own way through the design of architecture and integration of biophilic design. The design of this facility was focused on the ability to integrate such intensity of nature within and surrounding the building to create such effects.

Non-Uniformity



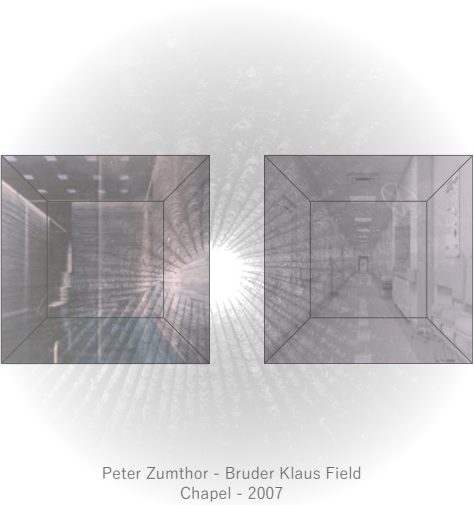
Non-Uniformity in the design is shown the various types of spaces, physically and experientially. The variation is not just in the types of spaces but is shown within each space. This variation stimulates the mind and causes a sense of awareness of the physical space surrounding one’s self.

Experiential Clarity



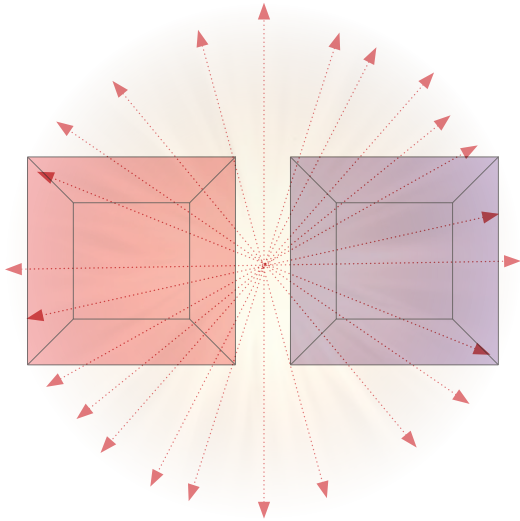
Experiential clarity is shown in the design through the stimulation of a human sense. The senses are separated and focused into each of the rooms. This separation allows for the focus on that particular sense creating a deeper connection with the space and enhanced overall experience of the space.

Acute Atmospheres



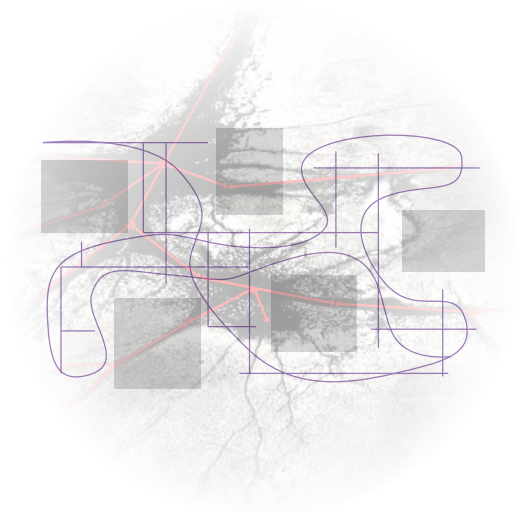
Acute Atmospheres are shown in the design through the intense experience of each space. The rooms are controlled spaces where the stimulation of a particular sense is intensified based on the surround context and design of the space. This allows for a deeply immersible experience.

Sensorial Differentiation



Sensorial Differentiation is shown in the design through the separation of the sensorial spaces. The sensorial experiences are divided into separate rooms to allow for a transition from space to space for a changing experience for each room visited. This keeps the mind stimulated in a positive way to help focus and promote awareness of the mind on the built environment.

Wander/Multitude of Paths



The principle of Wander is shown in the design through the ability to travel multiple paths to arrive at each room/space. This creates a unique and personalized experience for each visitor. This principles gives back to the occupants of this environment by allowing the freedom to wander. The design of the elevated platform cuts out areas for each room and for existing trees to remain. This encourages the occupants to create their own path.