

ABSTRACT

Title of Thesis: EMBEDDED HEALING POTENTIALS: AN EMBODIED RITUALISTIC EXPERIENCE OF TREATMENT

Christopher Noel Reyes, Masters of Architecture, 2018

Thesis Directed By: Clinical Associate Professor, James W. Tilghman AIA, School of Architecture, Planning & Preservation

Contemporary design and construction for cancer care and healthcare facilities in general must satisfy a wide range of design criteria elevated to the highest standards of health safety, and welfare. As such, architectural solutions must satisfy sophisticated functional requirements while at the same time designing for experience. Although recent trends in the industry have shifted towards the potential healing facets of the man-made environment, this aspect of design could be improved through specific focus on the ritual created by the procession through spatial sequences. Within the language of architecture, the composition, form, and space can provide moments that promotes peace and tranquility. Within the ritual of receiving treatment for cancer this could help reduce stress and anxiety. If the ritual of treatment is carefully considered within the fabric of a building, spatial sequences can afford an experience that champions healing and is sensitive to the feelings and emotions of those reviewing treatment and the friends, family, and loved ones that support patients on that journey.

EMBEDDED HEALING POTENTIALS: AN EMBODIED RITUALISTIC
EXPERIENCE OF TREATMENT

by

Christopher Noel Reyes

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Advisory Committee:

Clinical Associate Professor James W. Tilghman AIA, Chair
Consulting Mentor Jason C. Winters AIA, Committee Member
Professor Brian Kelly AIA, Committee Member
Professor Carl Bovill, Committee Member

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[2018]

Dedication

To my father, thank you for being the strongest person I know.

KEEP FIGHTING!

Acknowledgements

Professor James Tilghman:

Thank you for being such a great dedicated and amazing mentor throughout graduate school. It is a great honor to learn from you and couldn't have asked for a better experience. I promise to eat healthier and to share your wisdom that you have taught me to others.

Jason Winters:

Thank you for your guidance. You have taught me more than just architecture and how to become a better person. Without you, I wouldn't have learned how to push my limits, ascend to new levels and be open to endless possibilities.

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Chapter 1: What is Ritual?

This chapter explores the philosophy of ritual through culture and architecture. Rituals can potentially describe moments of time and space that is traditional, sacred or habitual. Upon analyzing precedents of rituals supported and empowered by architecture, through the lens of other architects overtime, lay several elements that encompass and begin to define the idea of ritual. Through observations of shared characteristics of spatial conditions that promote rituals within ritualistic spaces; how might these elements transcend into the healthcare environment to generate a ritual that enhances the experience of healing spaces and nurturing environments?

The Philosophy of Space & Ritual Meaning

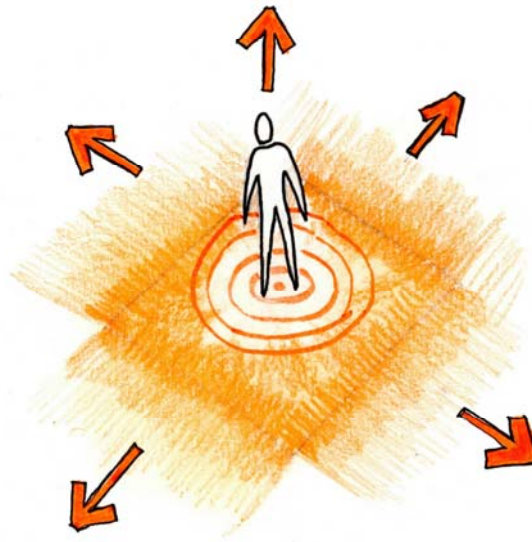


Figure 1: Point in Space Diagram (Source: Author)

The infinite void that all man occupies in the physical world has the ability to manipulate experience. Whether in the natural or manmade environment, the tectonics of architecture and nature physically manifest through elements such as material, color, and temperature, light and shadow to create visuospatial experiences and haptic possibilities. Careful design of the built environment focused on memorable moments in the time utilize the senses to generate transcendental moments that elevate empirical experience to a metaphysical condition. Some examples include moments of ephemeral introspection reminiscing, contemplating, or forming new memories from objective and subjective perceptions. Interaction with the form, surface and space of architecture can provide the environment for these enlightened experiences. Within this framework, the sense of being, finding and

connecting play an important role in the success of the experience. This understanding of orientation in the world is further heightened, they are the final component of existence that give us a “process of situating human life in the world.”¹

“Ritual, the performance of ceremonial acts prescribed by tradition or by sacerdotal decree. Ritual is a specific, observable mode of behaviour exhibited by all known societies. It is thus possible to view ritual as a way of defining or describing humans.” -Encyclopædia Britannica²

Ritual can encompass several types of acts such as traditional, sacred or habitual. Rituals can be utilized as indicators in stages of life. For example, events such as birthdays, anniversaries, or holidays. Rituals may also be formed through daily events that can be as common as waking up to an alarm or driving to work. Through the repetition of movements in space every day, this becomes something calculable and can begin to define an orientation in space; this is known as a place.

A place can be discovered within the natural or built environment that man has formed. Once that space is discovered, it can be consciously defined to have a proper position for others to connect to (*Figure 1*). It is not a man-made space, but can be architecturally manipulated to achieve order in one’s surroundings.³ What can

¹ Lindsay Jones, *The Hermeneutics of Sacred Architecture : Experience, Interpretation, Comparison TT -*, Religions of the World; Religions of the World (Cambridge, Mass.) TA - (Cambridge, MA : Distributed by Harvard University Press for Harvard University Center for the Study of World Religions, n.d.), 26.

² Hans Penner, “Ritual | Britannica.com,” *Encyclopædia Britannica, Inc.*, last modified 2016, accessed December 12, 2017, <https://www.britannica.com/topic/ritual>.

³ Jones, *The Hermeneutics of Sacred Architecture : Experience, Interpretation, Comparison TT -*.36.

create an experience within the environment, may include a sense of harmonious organizations that one's senses can connect to.

Patterns can be used as a visual movement through space by manipulating surfaces and textures, which become pathways and can lead to a focal point in space. The organization of light is an example of how it can create pathways; light has directionality and can be controlled to focus on a source. Light and shadow can also be engaged with one another to create visual patterns along a surface. The source from where light enters into the space can be hidden visually to generate a sense of mystery; the invisible source where light comes from is one part of a whole sequence that portrays a sense of discovery. These characteristics begin to invite conscious beliefs from an exterior metaphysical source to the experience and begins to make the space one is inhabiting memorable.

Spirituality in Architecture

Sacred spaces encompass a sense of spirituality within the built environment. Sacred spaces are formed through silence no matter how big or small the space is; this allows for one to meditate and search for enlightenment. Silence can act as the threshold from the outside to inside world and be a sense of travel away from the profane no matter the location.

A sacred space is not only an indoor environment, but it can also be an outdoor environment. The philosopher Mircea Eliade believed that what made sacred spaces special required rare landscaping elements. The environments that sacred spaces could be held in would be in areas that have mountains, waterfalls, densely

forested trees, groves, caverns or stones.⁴ Sacred spaces are never chosen by people. They are to be discovered and not created; the space will reveal itself to the wanderer. These sacred areas are separate from the profane. Profane spaces are connected within the human realm that everyone lives in. In sacred spaces, connections to the cosmos and divinity portray a role in the space.

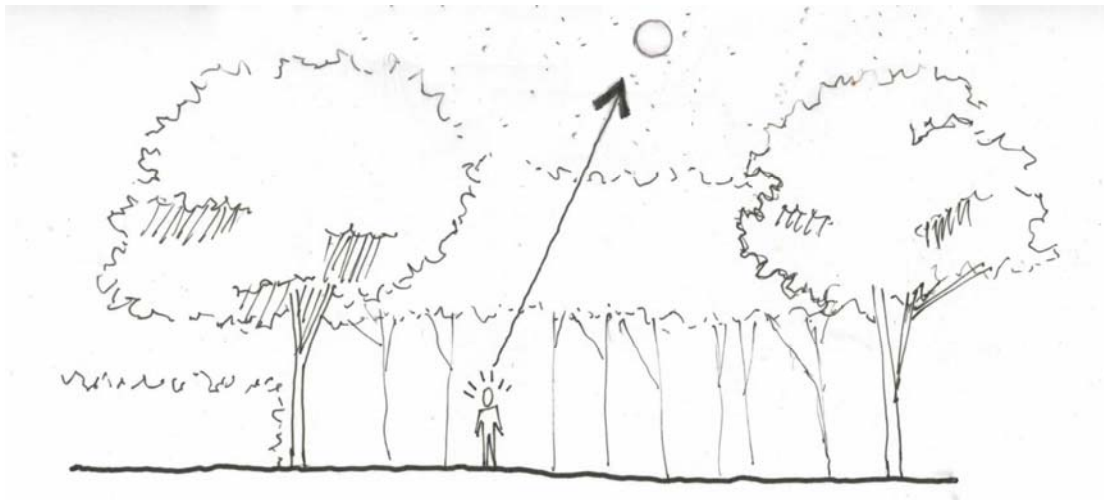


Figure 2: Sacred Space Landscape Cosmic Connection Diagram (Source: Author)

The cosmic connection of integrating the universe into a sacred area within the landscape lead people believe that gods lived amongst were to be brought to earth only to touch that space in a small moment of time (*Figure 2*). Religious buildings provide a ritual through worshipping of distant celestial bodies (*Figure 3*). These types of buildings promote spirituality by providing a dwelling for the divine. Vincent Scully, an architectural historian, mentions that there is a relationship between buildings and gods. There is an architectural commemoration of divinity. The position of structure within the surrounding landscape creates a form, and ultimately

⁴ Ibid. 34-35.

creates a ceremony; “one ritual whole”⁵ Architecture can be the body, the dwelling of god, and have abstracted attributes that represent god.⁶

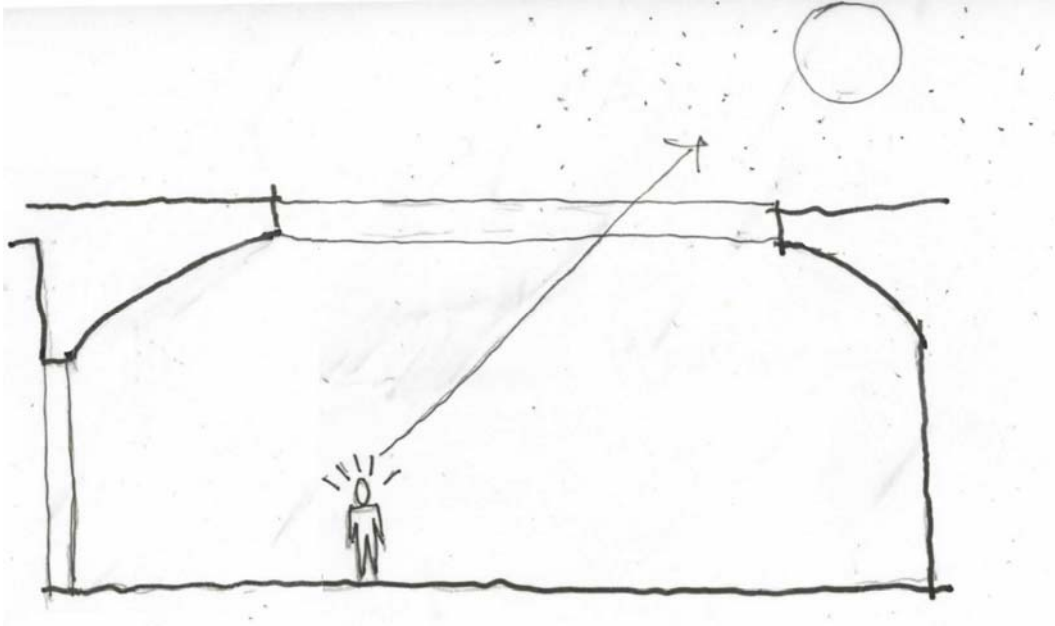


Figure 3: Interior Space Cosmic Connection Diagram (Source: Author)

Not all sacred areas are personified as structure. Natural elements can have personification. In Japanese culture, stones and trees can have a personification that can act as a body of god. Jones describes that architecture can act as a house of divinity. In Buddhist monasteries, there are different rooms that inhabit different deities. After the rooms are built, ceremonies are performed to invite the deity to inhabit the space. If the deity decides to leave the space then the senior Lama is required to reconstruct the space of the temple. This is bringing a sense of dwelling to the deity and makes the space sacred for as long as the deity remains.⁷ Not all architecture has direct visualization to the sky. Architecture without the literal

⁵ Ibid. 93.

⁶ Ibid.. 95.

⁷ Ibid. 98-101.

connection to the universe can still create the sense of connection through the unique formed surfaces, colors, light and darkness, temperature and materiality. These characteristics together form a different atmosphere that other spaces do not provide which make it unique from all other spaces. Elements such as contemplation, connections to the cosmos, and sanctuary describe how sacred spaces are formed. These modes of spirituality and architecture being connected together to form any sequence such as a profane and sacred ritual cause one to experience in different ways.

Modes of Ritual

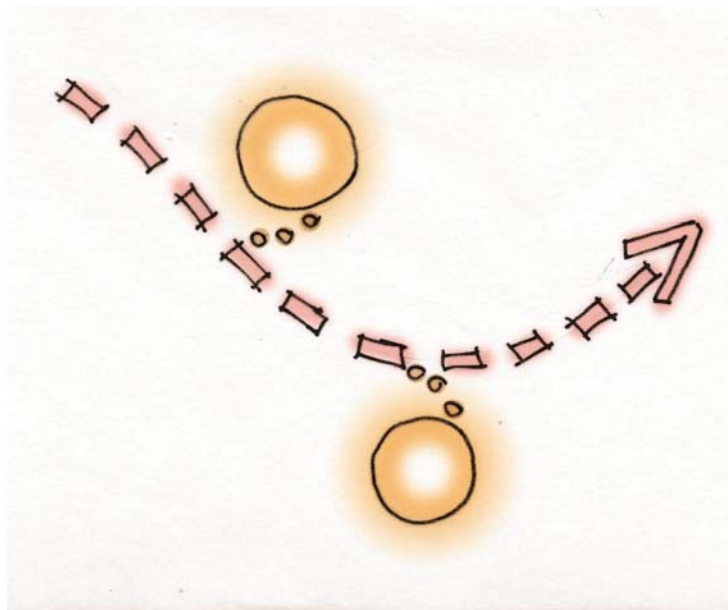


Figure 4: Moments of Intimacy along Path Diagram

Moments of intimacy can be discovered that is offset of the sequence of one's spiritual journey (*Figure 4*); these moments in space can create deep reflections of oneself of awakenings and atonement. The architecture of the contemplation space creates a focus for devotion as well as sending messages throughout space and time.

Similarly, commemoration is written in the space and time of the void that one immerses oneself into and can describe stories of the past of other wanderers and seekers that once contemplated in the space. Spirituality exists beyond the dimensional void of contemplation and the space and time creates the transcendence between the physical and spiritual realm through the spiritual thoughts of the wanderers. This is a place of meditation, of metaphysical and spiritual reflection (*Figure 5*).

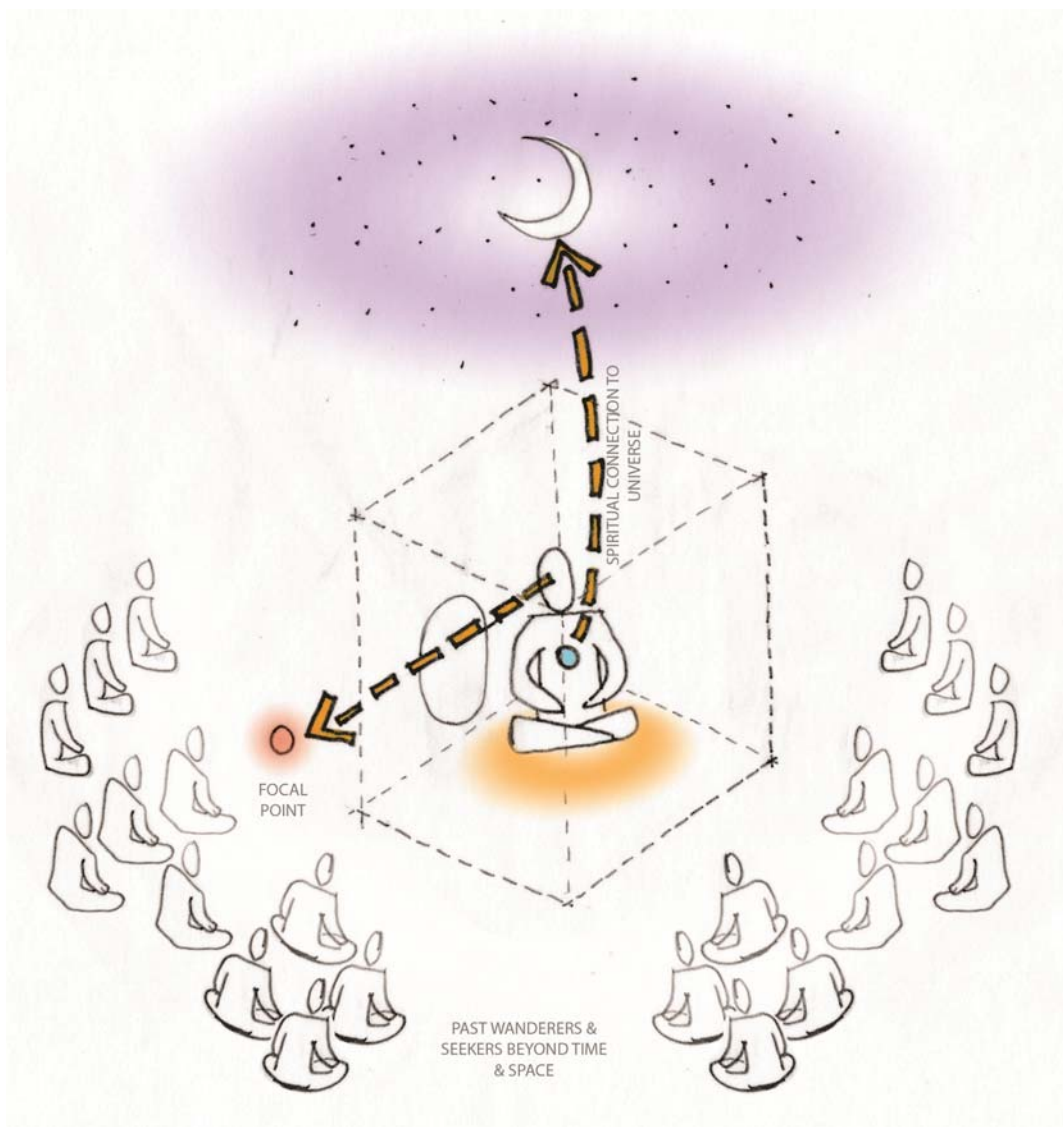


Figure 5: Contemplation Diagram (Source: Author)



Figure 6: Person Contemplating Through Video at U.S. Holocaust Memorial Museum (Source: Author)

Throughout, the journey of discovery within the sacred space is known as propitiation; the wanderer is restoring harmony to oneself. A series of sequences builds up to a special moment of peace.⁸ Within architecture, this is manifested as a special context of healing, known as a sanctuary that connects through the human body and the universe; it is a metaphysical spiritual realization that bridges the gap between the two realms. Sanctuaries are ritualistic architectural configurations that function as built space. Constructed through a series of thresholds, sanctuaries create boundaries between the two modes of being, the sacred and profane. The atmosphere of the sacred space provides a sense of being, purity, silence, refuge and short sensations.⁹

⁸ Ibid. 260

⁹ Ibid. 280

Chapter 2: Spatial Sequence through Human Cognition

This chapter explores how both the sequence and atmosphere of a place contribute to the quality of that space. The sequence includes both exterior and interior elements comprising of the gateway or portal, path and place. Our senses connect us directly to our built environment. Using one's senses through spatial sequences create intimate experiential moments that overlap within the same space. The other element, atmosphere, is dependent on the sequence. The atmosphere includes sensorial elements and how those contribute to the human cognition and experience. Atmospheric elements come from the element of time, and create memorable moments and experiences through the use of light, shadow, and acoustics. Upon understanding the ritual of sequence and atmosphere, one can start to see how it manifests itself architecturally.

Sequence: Threshold, Path & Place

Rituals can act a marker of time through a sequence of spaces. These sequences include an exterior and interior element of movement when one approaches to a site. Some basic elements include a gateway, portal, path and place.

Exterior Gateway

The exterior gateway plays an important role in sequence since it defines the entry and it is the first impression a visitor has when entering a space. A gateway can be both physically and symbolically defined. Physically, a gateway is part of the frame and boundary to the inside environment; while symbolically, the gateway separates the inside and outside realms. This framed threshold can be shaped through man-made or through natural landscaped material surroundings. For example, a gateway does not always have to be defined by a wall, it can also be shaped by trees and shrubs.

This is evident in the Katsura Imperial Villa which uses landscape to define boundaries and entries. When the wanderer crosses through the threshold they are brought into a new world which consists of settings such as courtyards, gardens, or plazas. In this Villa, the threshold into the tea garden is a gateway that is framed by wood columns and roof covered with straws. Its boundaries are defined by the hedged wall that encompasses the space. This entry leads to a path that invites the wanderer into a calming, intimate, landscaped environment (Figure 7). Although the manifestation of a gateway can be several different forms, the purpose it still the

same- to both define and cross into a new exterior space. Once through the gateway, a path transitions the wanderer into new areas.

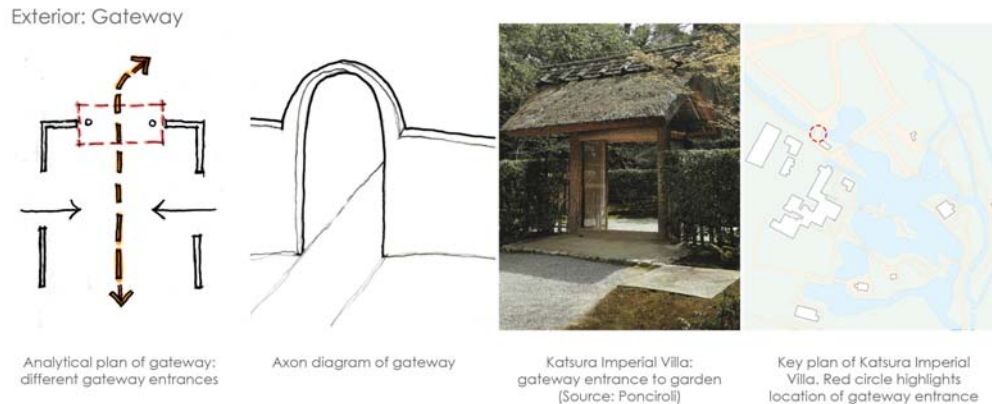


Figure 7: Exterior-Gateway (Source: Author)

Exterior Path

The path is the second element in a sequence, after a wanderer has passed through an exterior gateway. Physically a path is the connection between spaces with a terminus. They are formed by surfaces and edges that give a sense of continuity and directionality. In a symbolic sense, paths can create experiential moments that can capture memory; it also can recall memories of familiar paths one has taken before and use that knowledge to know where the path ends.

In the Katsura Imperial Villa the landscape defines a path. Physically, the path is defined by gravel and bordered by grass (Figure 8). Symbolically, the texture of gravel creates a connection with the natural environment. When people are walking the path their feet interacts with the gravel and conforms to the shape of their feet. This creates a distinct crunch sound compared to when someone is walking on grass and the sound adds to the ambient noise that the water and trees make when the wind

or animals interact with it. Not all paths have a clear terminus, but it can take the wanderer to a special place that can define the destination.

Exterior: Path

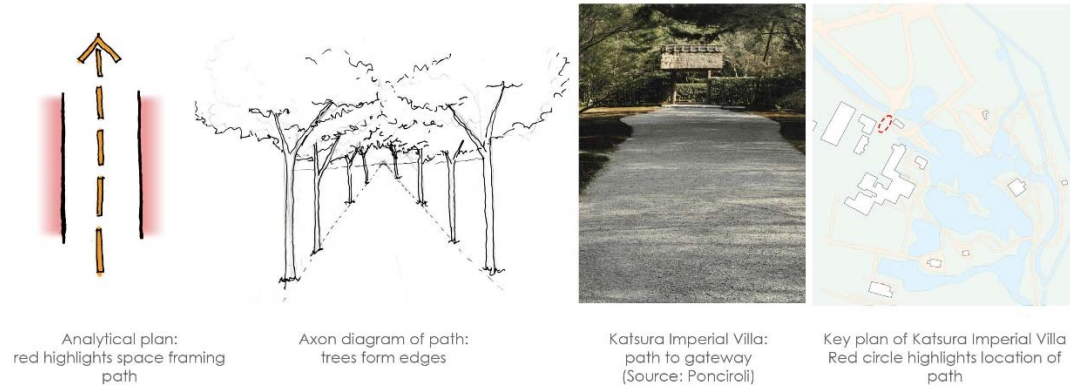


Figure 8: Exterior-Path (Source: Author)

Exterior Place

The place is the final exterior sequential element that the path brings the wanderer to. Place is a defined landmark of arrival. Physically, place can be an arrival to the front of a church, a house, or an outdoor public or private area. Depending on the layout of the environment, place can be located near the front of a gateway, in the center, back or along the edges.

Katsura Imperial Villa has many intimate places a wanderer can travel to. One of those places leads the wanderer to a special area where a bonsai tree sits in the center of the lake (Figure 9). At this point in time, the wanderer is at the center point in environment connecting with nature while interacting with the bonsai tree through

their senses of touch, sight, smell and hearing. The spatial attributes of gateway, path and place play a similar role in the interior of a building.

Exterior: Place

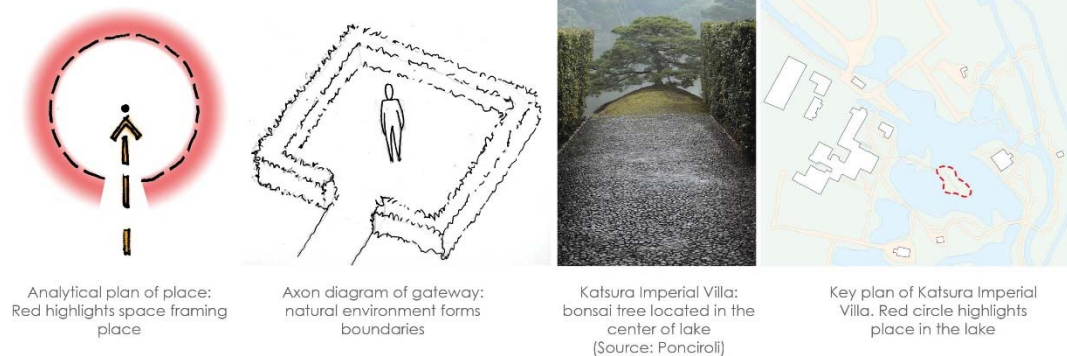


Figure 9: Exterior-Place (Source: Author)

Interior Portal

The entry of a building known as the portal, is the beginning of the interior sequence. Arriving to the entrance is a new moment where the wanderer is about to travel deeper into the unknown world to discover the core moment of place. This portal is a significant point of entry that transcends people into a new atmosphere. A portal is not only an opening, but can be a door that begins to the experience of entering a building. These portals can range in transparency, and have different textures of materiality that begin to engage in the senses; especially when one begins to grasp a door handle. These doors have the ability to be opened manually and automatically; it can range in height to create a monumental opening.

A portal can consist of many openings around a building. The Paper Church has its façade designed to be the portal. The wood framed doors swing open to invite everyone from three sides of the building into the small church (Figure 10). After entering through the portal, the wanderer begins to walk down the path to new spaces.

Interior: Portal

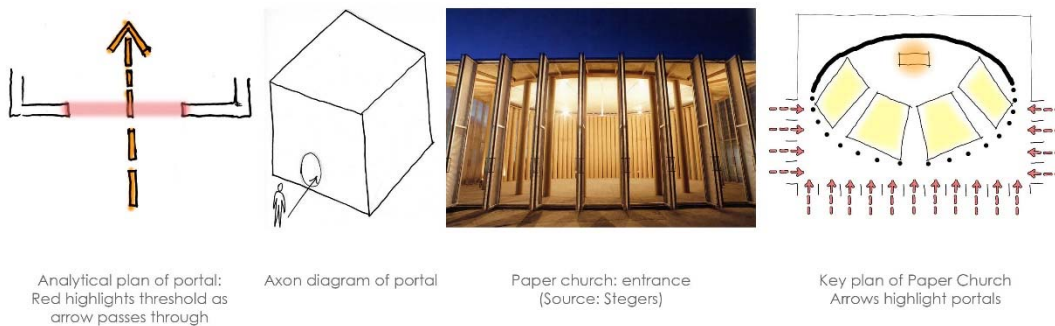


Figure 10: Interior-Portal (Source: Author)

Interior Path

Similar to the elements of an exterior path, the interior paths in buildings frames a circulation space that leads to a place. Paths can be created through surfaces that incorporate the senses. Using senses can have the wanderer remember certain experiences that they understand where they should go. Examples are texture, scent and visual awareness. With texture, the person can feel the surface on the wall or floor as they are walking to a new space. Similar to touch, visually looking at a pattern can also guide them to a different space. As scent travels through air, the experience of memory can become vivid and could create a strong sense intuition on where to navigate through the building.

Spaces can be shaped to create experience on a path. Ceiling can lower in height, and walls can squeeze to create a more intimate space; thus making the wanderer feel like they should travel faster. Walls can also be angled against space to feel like it is creating a moments of uneasiness and disorder. Lifting and expanding these spaces can slow down the person’s movement. An example of an effect of spatial expansion occurs in a church. Like In the Church of the Sacred Heart, a path is clearly defined from the organization of the benches that faces the pulpit (Figure 11). The end of a path lies at the hearth of the building that is known as place.

Interior: Path

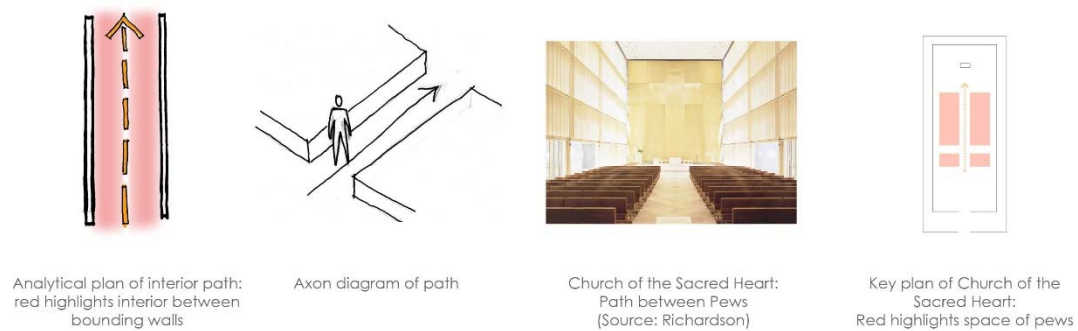


Figure 11: Interior-Path (Source: Author)

Interior Place

The final interior sequence is known as place. The space of the place can vary in size depending on the typology, such as a museum, house, a place of worship, or an institution. Place is discovered through the use of senses and physical placement of the architecture. It can have a central focal point such as being in a church and facing

a priest, or entering into the main atrium space of a museum with a large fountain in the center.

The hearth of the building is a place for all to gather. In the Benesse House Oval (Figure 12), the destination of place is the space known as the Water Garden. It is a space that has to be accessed to enter into other rooms. The oval opening invites the natural light to shower into the reflection pool that is centered. Nature is brought into the space and as one stands it begins to have a connection back to the universe.

Interior: Place

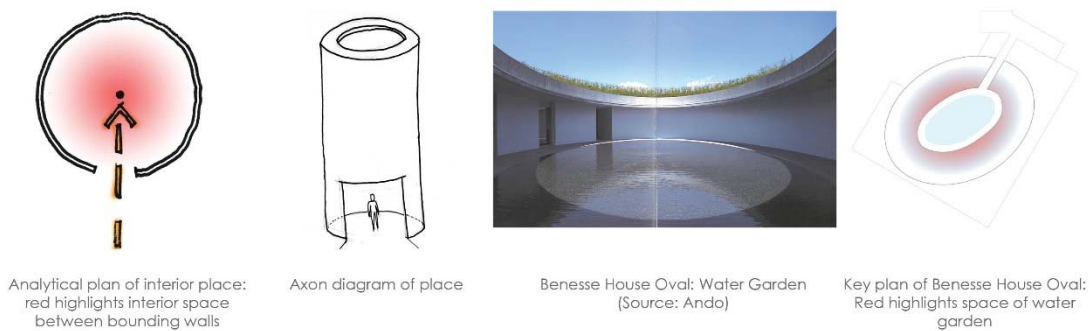


Figure 12: Interior-Place (Source: Author)

Atmospheric Ambiguities

While sequence is essential in ritual, the qualitative aspects of the spaces created is equally as important. This includes elements such as light and darkness; ordering systems; as well as sensorial elements such as vision, sound, smell and taste.

Light & Darkness

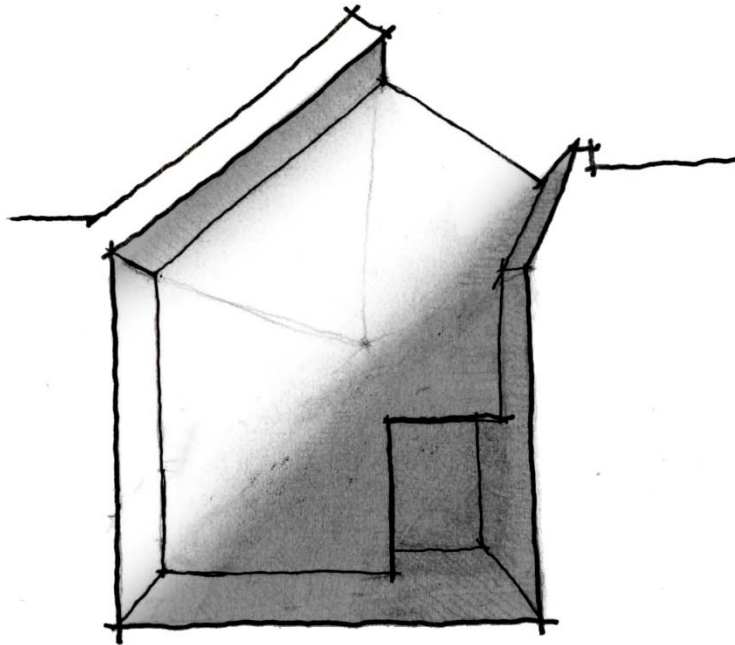


Figure 13: Light & Shadow (Source: Author)

While progressing through a sequence, one can begin to see how light and shadow are manifested into a building and begin to create an atmosphere within a space. Light has qualities that can be uplifting and symbolic. Light is a natural phenomenon that enters in two different forms, direct and indirect. For direct light, the architecture forms an opening for light to enter and have a direct focus on a point in space (Figure 13). Indirect light washes over other surfaces to highlight space. Without shadow, one cannot appreciate the light.

Shadow is the opposite of light and is created from material. Shadow is not complete darkness, it comes in different gradients when light is not present. Light and

shadow are materials that wash up against surfaces and can create order by visually guiding one through space. Shadow creates a sense of cool spaces while light can create a sense of warmth. Light is a loud material and shadow is silent. The interplay between the two modes can create memorable experiential moments.

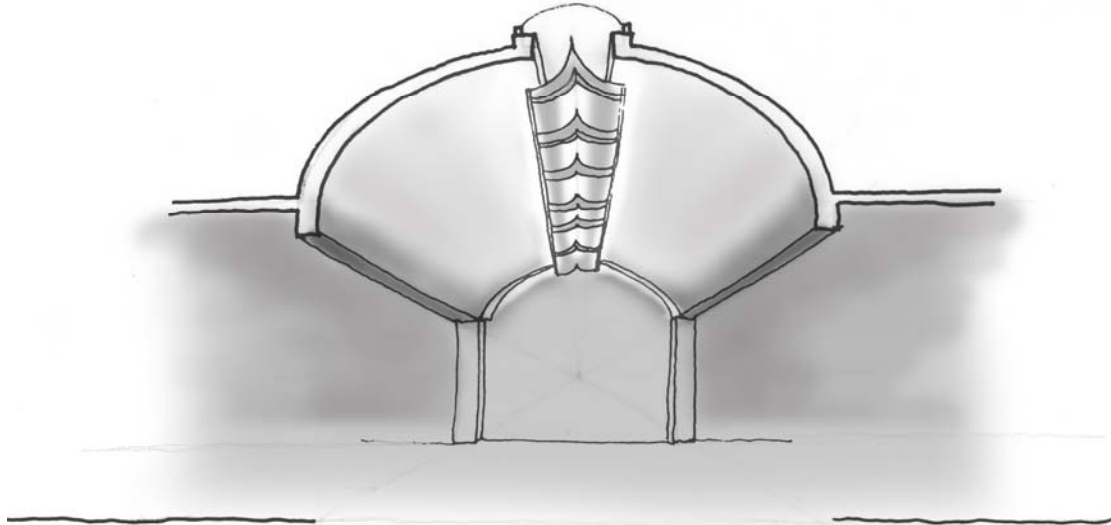


Figure 14: Kimbell Art Museum Shadow Diagram (Source: Author)

Architects have the ability to control light and use it to design a meaningful space. Louis Kahn is one architect who focused on the potential of articulation between light shade and shadow. According to Louis Kahn:

“Silence, the unmeasurable, desire to be, desire to express, the source of new need, meets Light, the measurable, giver of all presence, by will, by law, the measure of things already made, at a threshold which is inspiration, the sanctuary of art, the Treasury of Shadow.”¹⁰-Louis Kahn

¹⁰ John. Lobell and Louis I Kahn, *Between Silence and Light : Spirit in the Architecture of Louis I. Kahn TT -, TA -* (Boulder : Shambhala :, n.d.). 20

Accordingly, light and shadow are materials that should be expressed and be given an appreciation. Shadow is the projected space of material. The light gives presences to shadow when there is a surface to be projected on. Kahn was able to control light and shadow in built environments that created inspiring, transcendental moments. Kahn uses this ambient material to create experience through rhythm of columns, walls and openings. In the Kimbell Art Museum, Kahn was able to design an atmosphere without using direct lighting. Using a translucent skylight and a reflector at the top of the arches diffuses light, and highlights the arched ceilings (Figure 14). The visual composition results in the highlighting of a space through diffusion of light.

Color

Colors can influence emotions and through architecture can create impactful experiences. When light passes through a prism, the eye captures various wave lengths from infrared to ultraviolet. As light touches an object, the object absorbs it and bounces the rest of the wavelengths into the retina where the information is translated into the sensation of color. The eye does this consistently throughout the day as one sees colors within the environment, and begins to affect our behavior.

Through architecture, color can be used as a way to create different sensations. Steven Holl experiments with color and light through the design of the Chapel of St. Ignatius located in Seattle, Washington. His concept sketches of the chapel were driven by seven bottles of light in a stone box (Figure 15). These colors that are applied on the exterior of the windows reflect to the idea of creating a vision

of physical and spiritual spaces from the pools of white and colored lights.¹¹ As atmosphere changes colors from sun rise to sun set; the experience within the space have colors are changing as well throughout the day while the natural light shines into the space. The colors splash against the back of the floating walls and wash away from the sides creating a halo effect (Figure 16). Spaces like the chapel are unique to their environments; by using light, shadow and color these elements can inspire different emotions experiences and perceptions.



Figure 15: "Bottles of Light" in a stone box diagram (Source: Holl)

¹¹ Seattle University, "Chapel of St. Ignatius - Seattle University," *Seattle University*, accessed November 15, 2017, <https://www.seattleu.edu/chapel/>.



Figure 16: Chapel of St. Ignatius Interior (Source: Antonio)

Experience through Sensing

The built environment is the man-made space that people live, work, and experience on a daily basis.¹² These environments include buildings in cities, houses in the suburbs and in the rural areas, streets, parks, open spaces and infrastructure. The environment influences a person's physical activity to create new daily experiences such as walking to the store, park, school, libraries and other places. Not all built environment can be considered a good environment. Many places and spaces are designed without thinking about natural light entering into buildings; factories creating unpleasant views and pollution into the air; and non-walkable areas and places that begins to blind the senses. The built environment can be more electively designed to prioritize the promotion of health and well-being. A memorable

¹² Karen Roof and Ngozi Oleru, "Public Health: Seattle and King County's Push for the Built Environment" 71 (2011): 24–27, accessed November 13, 2017, https://www.cdc.gov/nceh/ehs/docs/jeh/2008/july-aug_w_case_studies/jeh_jul-aug_08_seattle.pdf.

experience can be when architecture, space, material and time combine into one singular dimension.¹³ It is one basic substance of presence that becomes embedded deep into our consciousness. The bridge between the built environment and our consciousness is through our senses of touch, vision, sound, smell and taste.

Vision & Tactility

“Touch is sensory mode which integrates our experiences of the world and of ourselves”¹⁴ – Juhani Pallasmaa

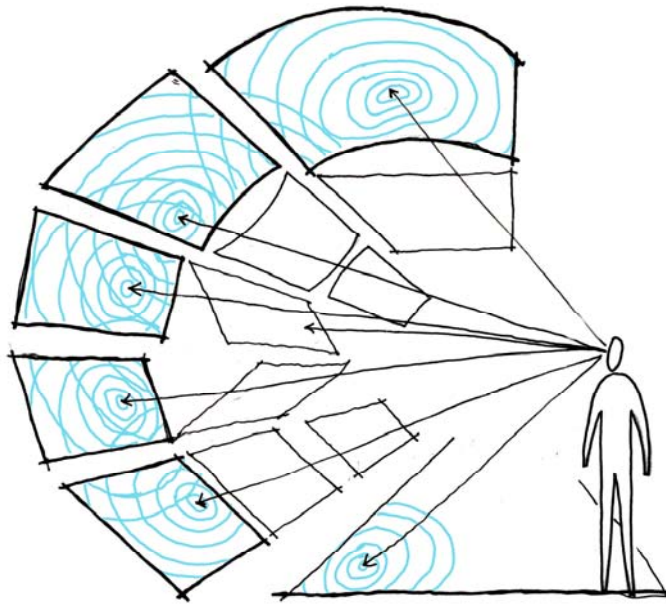


Figure 17: Vision Diagram (Source: Author)

Touch and vision are two senses that begin to immerse one's experience into the world. There are two primary ways of touching; through vision and through the

¹³Sarah Goldhagen, “Sarah Williams Goldhagen: ‘Welcome to Your World: How the Built Environment Shapes Our Lives’; | Talks at Google - YouTube,” *Youtube*, last modified 2017, accessed November 14, 2017, <https://www.youtube.com/watch?v=Y-4Oenywkog&t=2388s>.

¹⁴ Juhani Pallasmaa, *The Eyes of the Skin : Architecture and the Senses* TT -, TA -, 3rd ed. (Chichester : Wiley, n.d.).

skin. Vision is the extension of touch. The eyes follow form as it travels along the contours of surfaces from a distance (Figure 17). This sense connecting our imagination to the experience of knowing how surfaces feel without actually touching it. For instance, the surfaces in the Heydar Aliyev Center (Figure 18) have a visual pattern through the contours of the surfaces between floor and ceiling. In most Zaha Hadid projects, she manipulates the surfaces to act as one continuous surface. The floors form into walls and then into ceilings which create a sense of continuity. This visual perception mimics soundwaves which gradually expand as they approach the back of the theater. The artificial lights create a layered pattern of highlighted contoured surfaces for the eyes to follow, leading to the stage. As the eye absorbs information about space and surface, the body can physically experience and inhabit these surfaces.

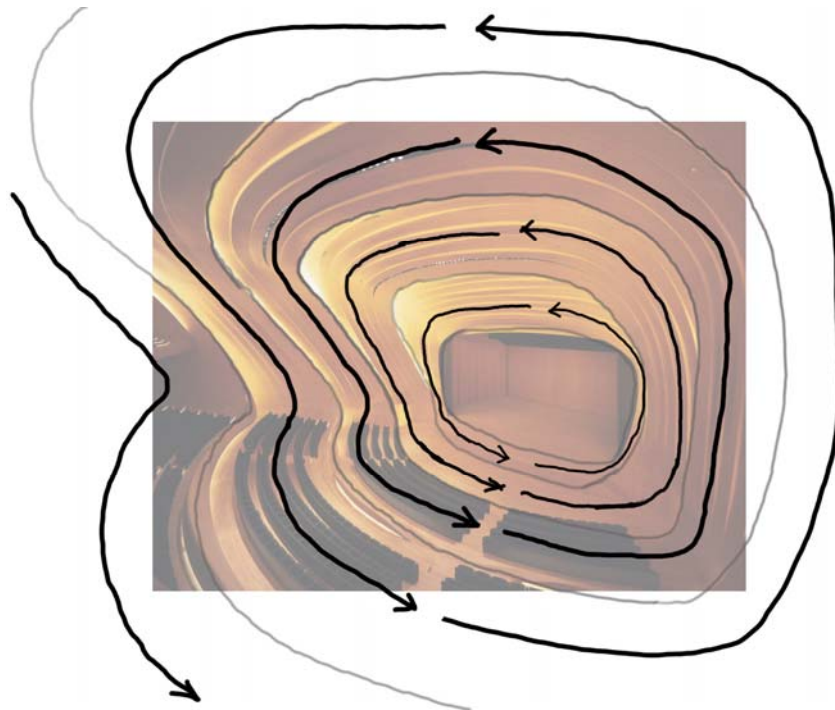


Figure 18: Surface Wrapping Diagram (Source: Author, Underlay: Binet)

The skin is a primary organ of physical communication. When one interacts with an object or space, it begins to bring self being, such as knowing location in space. Touch brings the physical sensation of spatial depth; there is a sense of weight, resistance, understanding of shapes, of materials and that shapes extend beyond the point of where one stands (Figure 19). Touch is an unconscious vision. The skin can trace temperature in spaces such as a warm spot left by the sun and a cool spot created by the shadows; this becomes part of the experience within space. Together, vision and touch begin to integrate our experience of the world (Figure 20).

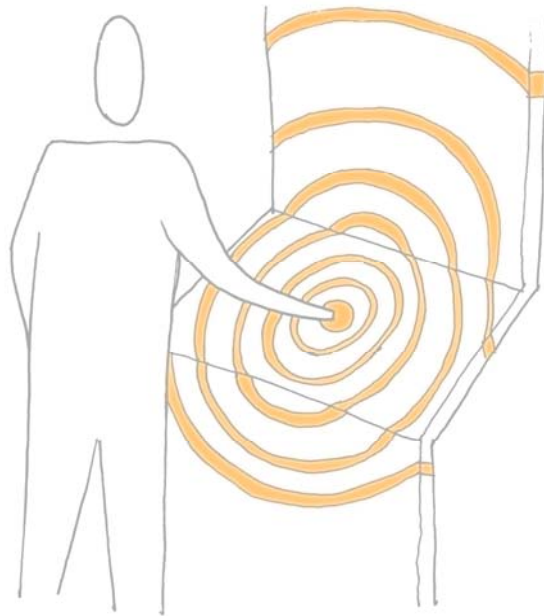


Figure 19: Touch Diagram (Source: Author)

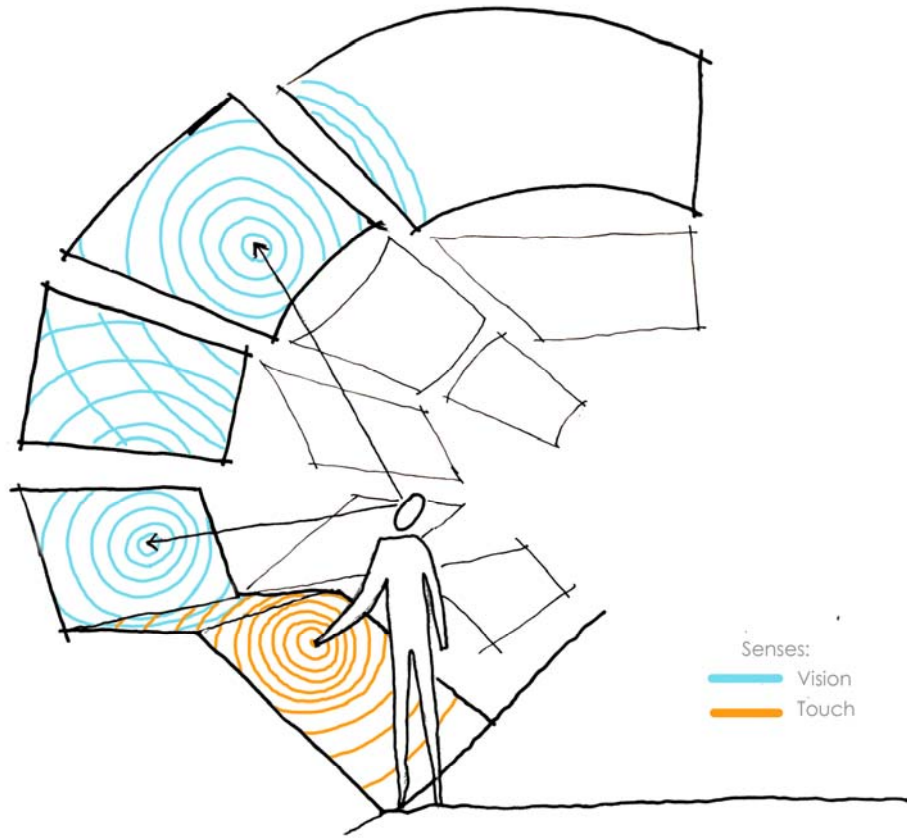


Figure 20: Vision & Touch Diagram (Source: Author)

One's perception of vision and touch can inspire memory and thought. Surfaces, colors and shapes do not need to be touched to inspire memory; being engaged or imagining of being engaged physically with an object. Looking at different textures can create memories or assumptions as if knowing what the texture feels like; such as feeling different fabrics like cotton, wool, nylon or silk. In places such as churches that have tall ceilings, begin to stimulate the senses in which start to influence an emotion. The effect of having tall spaces can have some people feel

spiritually uplifted¹⁵. People can be inspired to move closer together in a large, tall and silent space (Figure 21). Elements like these can also be applied to small spaces.

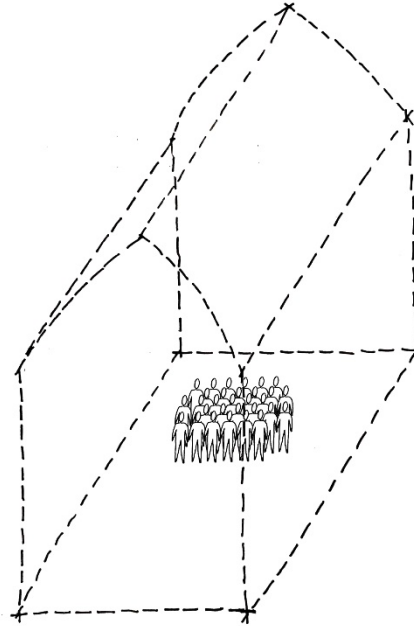


Figure 21: Gathering Diagram (Source: Author)

Sound & Time

Sound is another sense one uses to navigate through space and understand time. Architecture is the art of silence. A powerful architectural experience silences noise from the outside to create a new world in the inside. The sound in buildings vibrates and bounces off the materials and textures as it takes time to expand throughout space. Sound focuses the attention on the existence of where one is standing and creates awareness of solitude (Figure 22). Architecture creates the slow healing flow of time. Buildings act as an instrument of time; it enables people to see and understand the past as the building ages and decays. A building is like a person

¹⁵ Goldhagen, “Sarah Williams Goldhagen: ‘Welcome to Your World: How the Built Environment Shapes Our Lives’; | Talks at Google - YouTube.”

that breaths calmly; and if one is silent, they can listen to its tempo of breathing. Every being that is living is participating in the time cycle that surpasses time. An ambient sound resonates through space, similar to the scent of a fragrance lingering in the fabric of space.

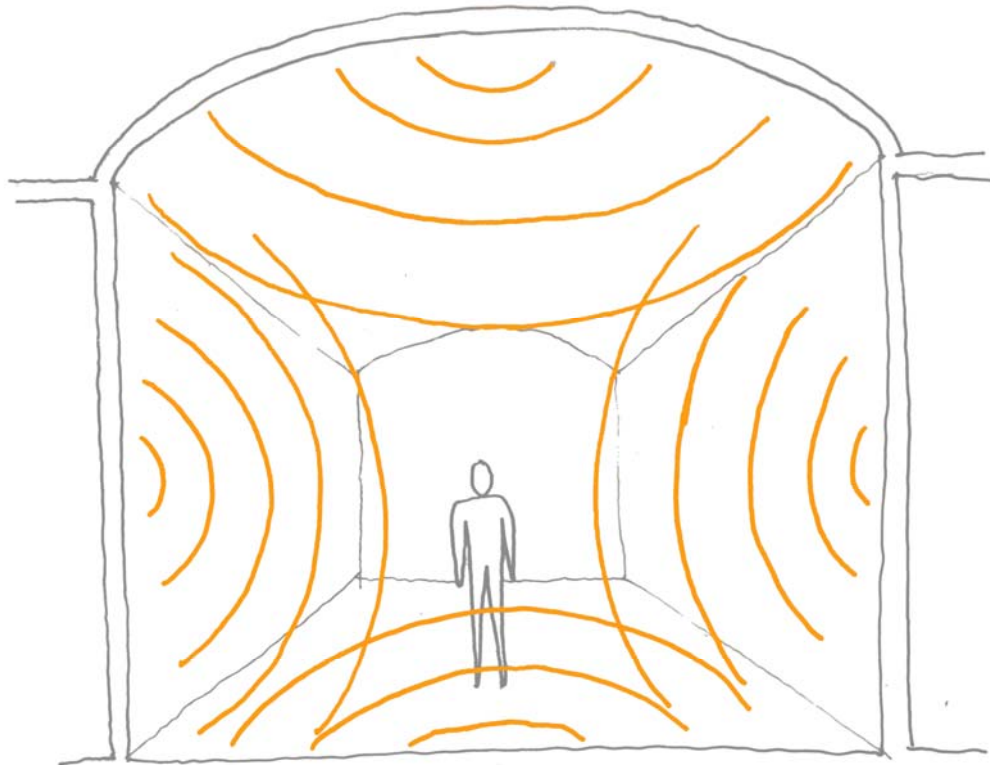


Figure 22: Ambient Noise Diagram (Source: Author)

Smell & Taste

The last two senses that brings long distant memories is smell and taste. Every building has its own fragrance and can immediately impact our ways on how we feel about the space. Similar with the other senses, it begins to create sensations as one breathes in the space within the architecture. Smell awakens our forgotten memories from the past and can influence a heavy daydream state. For instance, the scent of

food can remind us of past relatives cooking in the kitchen; specific settings like the sea; or a market where vendors sell fresh food. Scent can also be used as a checkpoint in time. Coffee shops release specific types of coffee flavors during specific seasons; for all, the aroma of coffee could begin to remind people of the fall season. Scent creates experiential and memorable settings. It is difficult to image scent without taste, both go with one another.

The tongue creates a unique haptic experience within the body. As one is breathing in the fragrance around, the taste of the scent enters into the body as it glides along the surface of the tongue and into the lungs. When entering into someone else's home, immediately one breathes in the scent around and can taste the air; especially when one is cooking, the person can begin to taste the food through the air. The location of where people eat can create impactful memories such as eating dinner with the family in the dining room on a holiday. As one eats and uses the tongue and nose to taste and smell different textures, the brain begins to record new memories and recall forgotten memories.

Chapter 3: Ritual Spaces

This chapter will explore the different spatial atmospheres from various building typologies, both sacred and profane places that one can visit. The sacred building typologies consist of places of retreat that are immersed within nature as well as places of worship. Profane places are buildings that people can visit any time of the day and are located within cities. Each precedent will illustrate different ways how natural elements are invited into the space in order to understand how the effects of spatial conditions on the people within it.

Spaces in Nature

Upon exploring rituals through nature, one can see how the buildings can become integrated with a given environment and create a connection to nature through the senses. The interstitial space between the outside and inside begins to show how nature is one with the architecture by allowing nature to enter into the space.

Katsura Imperial Villa

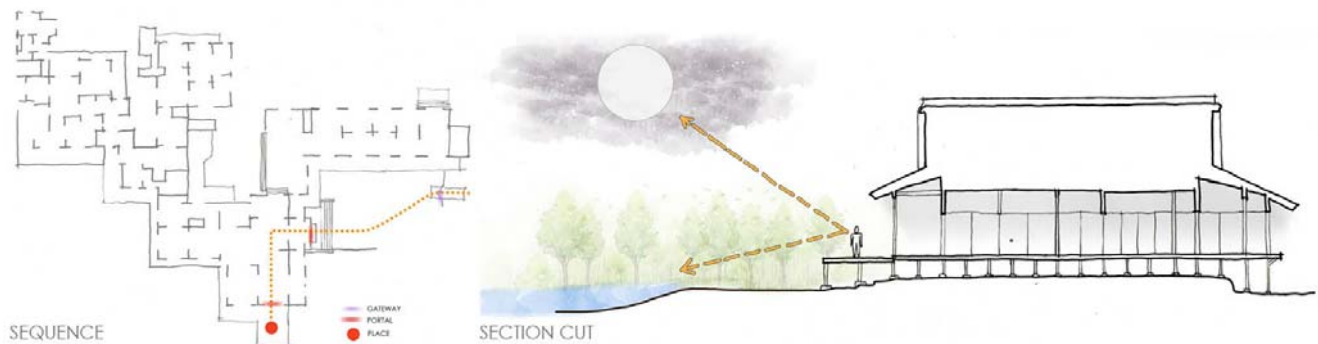


Figure 23: Connection between the universe and nature from moon platform (Source: Author)

The Katsura Imperial Villa is a tea garden where one creates one's own journey as one walks from one tea house to another. While interacting with nature along the way. Part of the experience of drinking tea in the houses are the large sliding doors creating framed views back to the garden; this also allows the tranquil atmosphere of the garden to enter into the houses. Upon entry to the site, one experiences the primary approach to the main palace. A large viewing platform is attached to the main palace's Old Shoin for visitors to sit or stand to not only view the large lake in front of them, but to also go moon watching. Together, the idea of

connecting to the natural landscape and the universe come together at the platform (Figure 23). One can see how this concept of integrating nature and the senses into the architecture can be applied to other places such as the Therme Vals.

Therme Vals

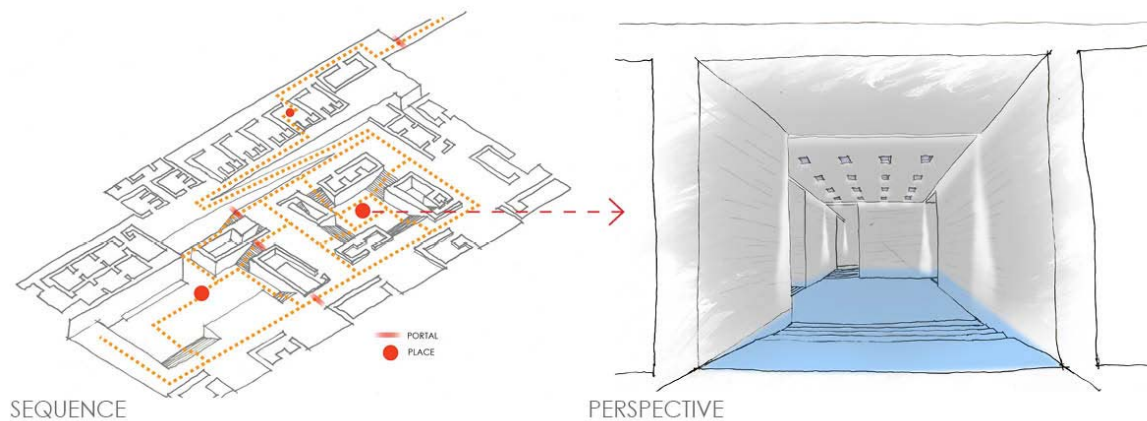


Figure 24: Sensing through water (Source: Author)

Therme Vals creates a unique sensorial experience through nature as one wanders and rediscovers the ancient benefits of bathing. Integrated within a quarried mountain side, the spa is made of valser quartzite slabs. The space inside is dark and cave-like with slits of natural light washing down against the quartzite walls.

Although this may feel like it can be a cold atmosphere, the warmth from the hot springs begin to create a tranquil experience for some as they breathe in the heat. One begins to use the senses when walking through the space after coming out of the dressing room wander through the dark corridors and through the pools. In the center indoor bath a unique atmosphere is created when light enters into the space through the narrow openings from the ceiling not touching up against the walls (Figure 24).

The space begins to create a tranquil moment as one is immersed within the pool and

listening to the ambient noise echoing. After leaving the center pool, one can walk into the next body of water that leads towards the outside into a bigger area where people can get scenic views of the town within the valley of the surrounding mountains. Water can be a unique way to connect people and their senses together; one can see how this happens in the Benesse Oval Hotel.

Benesse Oval Hotel

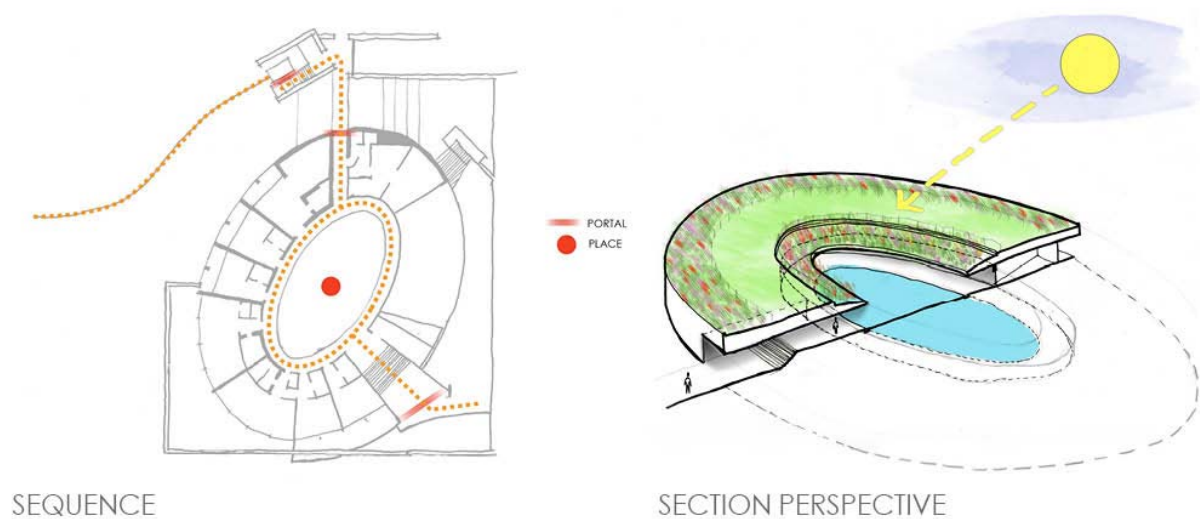


Figure 25: Connection between sky, roof garden and pool (Source: Author)

The ritual in this architecture is through the interaction of the water garden. The hotel is embedded into a cliff side overlooking the sea as it houses six rooms for visitors to stay in. In order to get to this place, one must take a car cable lift or take the stairs from the Benesse House Museum. The main space of the building is the oval shaped water garden where everyone will always have to use in order to go into new areas. The oval space is open to the sky and it is surrounded by a garden on the roof. One can watch the sea from the garden roof scape or from the rooms they lodge in. The connection that happens in this space is between the water, garden and sky

(Figure 25). Together this forms a tranquil atmosphere as the natural light touches the water and reflects a blue tone on the walls. Although one can see how nature can evoke the senses through tranquility and peace, it can also influence different emotions through the architecture that it enters into.

Spaces in Museums

Wandering through a museum, one begins to notice that there are moments of pause within the sequence that they are experiencing through. The experience within the architecture begins to create unique atmospheric spaces that influence moments of reflection. In the United States Memorial Holocaust Museum and the National Museum of African American History and Culture, moments of reflection are created through large objects within the voids. These objects metaphorically represent the hardships that both cultures endeavored through; and one can appreciate the space and message being sent across if they have background knowledge more than the ones who don't before entering into the reflection spaces. The atmosphere is created through light and shadow in large voids. These voids begin to slow the person down, having them feel as though they are symbolically part of the experience.

The United States Memorial Holocaust Museum

The museum is a tribute to all who have suffered through the holocaust war. The two spaces that stand out primarily from the rest of the museum are the Tower of Victims and the Hall of Remembrance (Figure 26). These two spaces stand out from the others because of the way how natural light enters into the spaces and touches upon the surfaces creating two different experiences one goes through.

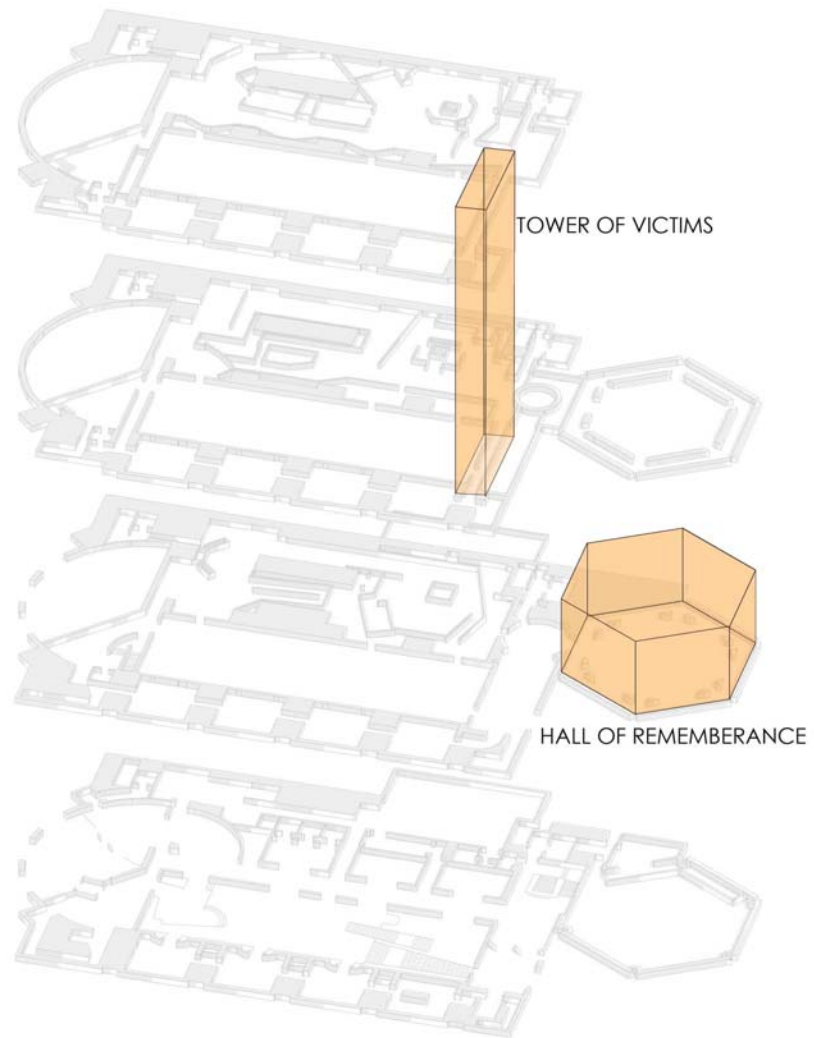


Figure 26: Tower of Victims & Hall of Remembrance locations

Tower of Victims

The Tower of Victims is a space consisting of images of people who were victims in the war. The space is a three story void that one crosses through on a bridge located on the fourth floor and on the ground at the third floor. Four large steel walls that are angled create a trapezoid-like void causing people to slow down as their

eyes begin follow the pattern of images going to the top of the wall as they step further into the space. Located at the top of the tower are windows allowing light to enter into the space. Although the space is mostly shadowed from the steel angled walls, the light shining upon the surfaces begin to create an atmosphere of reflection as one observes the faces of the victims (Figure 27). On the third floor, the atmosphere changes and is darker than when one is crossing the bridge above. This begins to imply that the sequence behind the space makes the user feel as though they are symbolically experiencing what it felt like to be in the war. At the end of the experience is a memorial hall for all who have suffered.

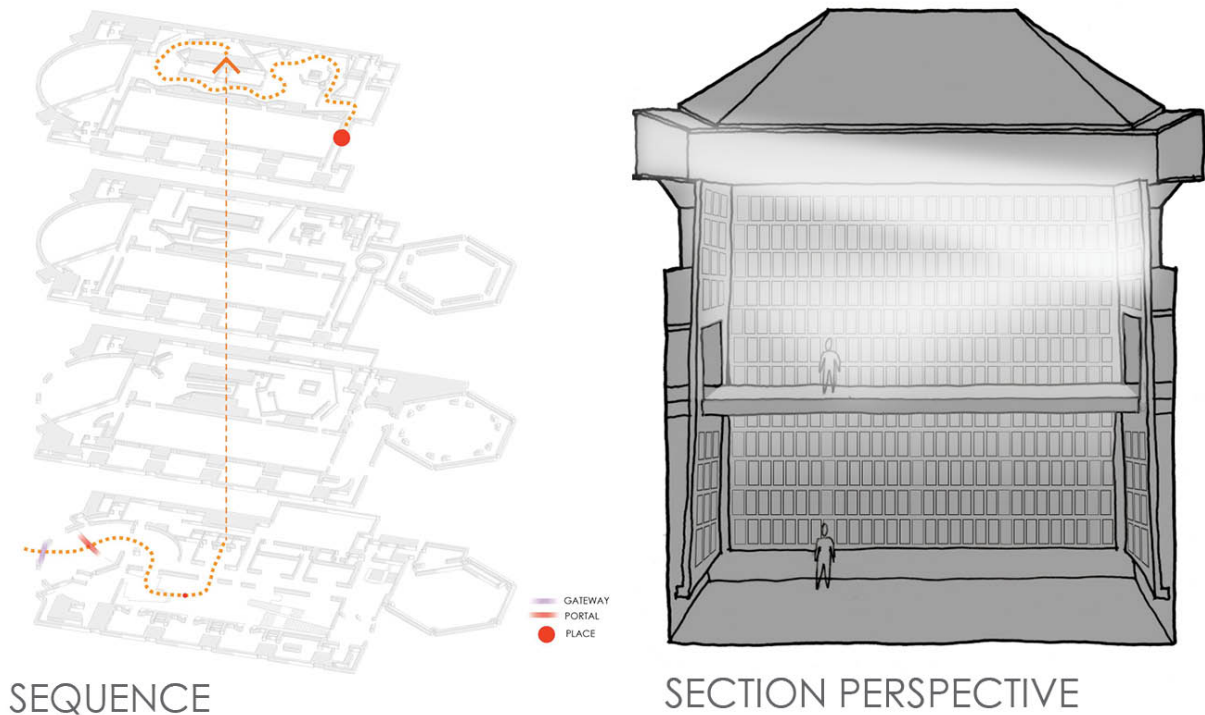
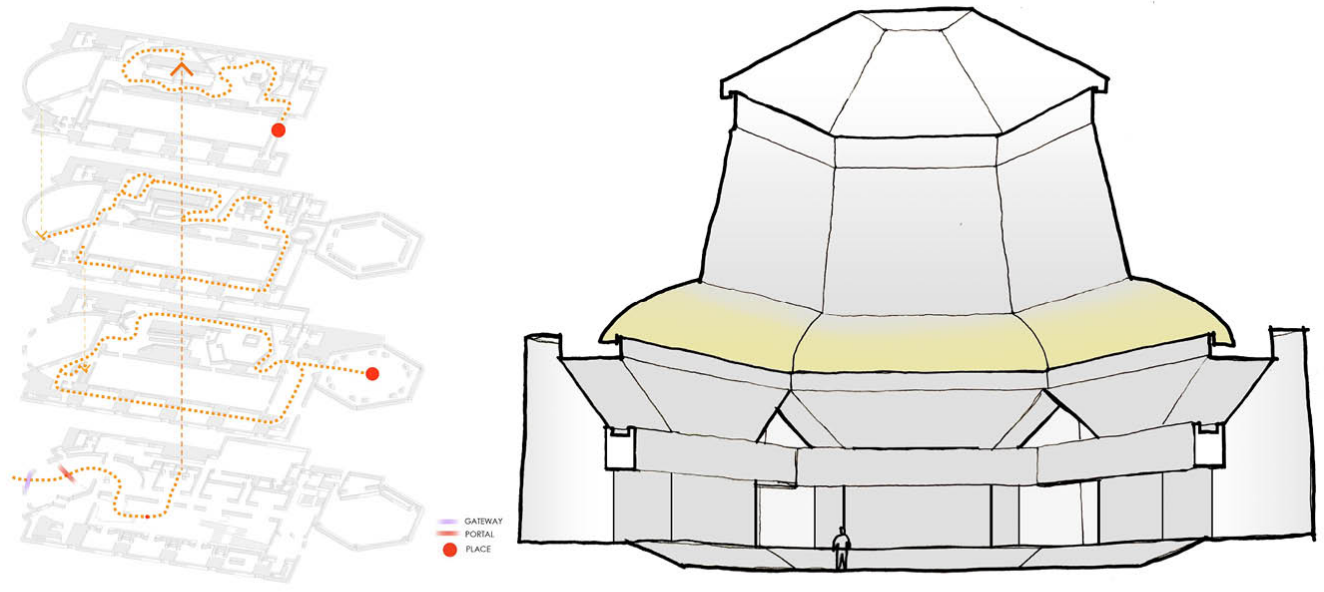


Figure 27: Tower of Victims (Source: Author)

Hall of Remembrance

In the final destination of the ritual one goes through in the museum lies the Hall of Remembrance. This place pays tribute for of those who has suffered through the war. The space is an octagon shape with a flame center at the back wall that one faces when entering into the space. The atmosphere is a unique experience compared to the rest because once one passes through the threshold, the temperature immediately becomes warmer. Symbolically it is as if the flame is heating the entire space. The three story void is showered by light from the openings at its corners, the skylight and the cove lighting that highlights the geometry of the space (Figure 28). The space is silent when one enters and echoing footsteps vibrate through the air as one approaches the flame. This museum brings the sense of emptiness when walk out of the space after seeing many stories of lives being lost. While the purpose is to inform the public about the war and the impact it had on mankind, The National Museum of African American History and Culture create an opposite effect.



SEQUENCE

SECTION PERSPECTIVE

Figure 28: Hall of Remembrance (Source: Author)

National Museum of African American History and Culture

The National Museum of African American History and Culture sequentially transition the visitors through the experience of hardship to joyfulness while having the sense of reflection all throughout the museum. Similarly, like the Hall of Remembrance, the African American museum has a place of reflection. This space is known as the Contemplation Court and is located below ground level. Similar to the Benesse Oval Hotel, the circulation of the space is framed by a large pool. A large shower cascading down from the void above splashes loudly like a waterfall; the only thing one hears is the water and themselves in their head (Figure 29). The atmosphere is dim with natural light highlighting the waterfall. This space symbolizes the path

that enslaved African Americans took to freedom¹⁶. Spaces of reflection can occur between the outside and inside environment, spaces like this often occur in places of worship.

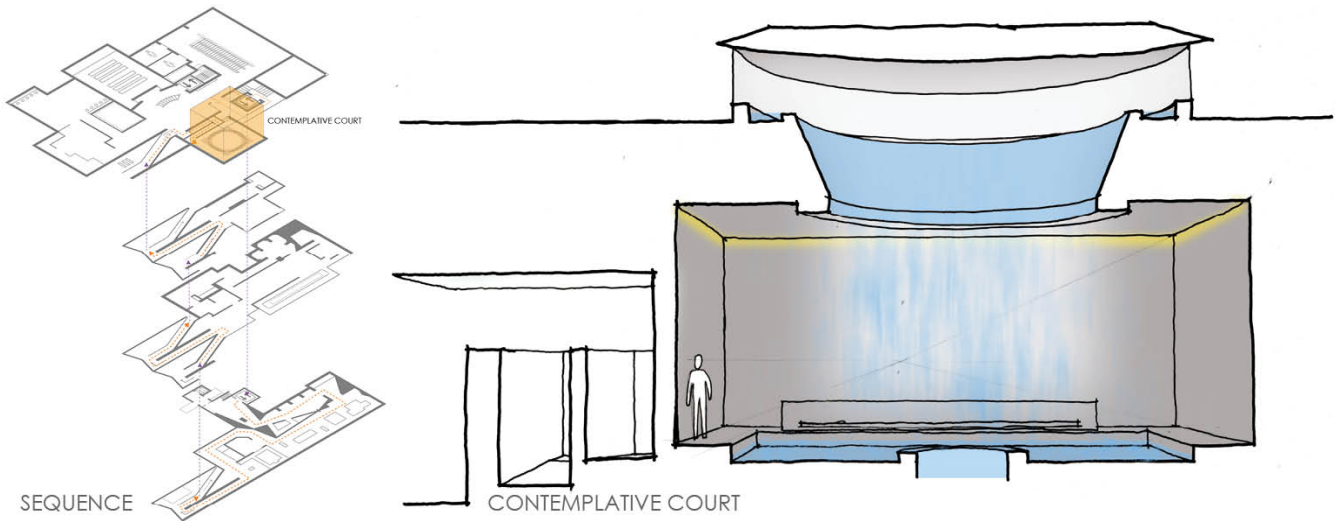


Figure 29: Contemplative Court (Source: Author)

Spaces of Worship

Similar to how light and shadow affect the atmosphere in a museum, one can see how the same effects transition to a place of worship. The use of colors and light begin to shape the space. These types of atmospheres not only inspire intimacy and reflection, but also can create a sense of tranquility when one uses the space.

Church of the Light

The church of the light is a small church based on introducing light into a dark space. The rectangular volume is formed by concrete and wood planks to enhance the

¹⁶ Michelle Goldchain, "The National Museum of African American History and Culture: An Illustrated Guide - Curbed DC," *DC Curbed*, last modified 2016, accessed November 24, 2017, <https://dc.curbed.com/2016/9/27/13072752/african-american-museum-illustration>.

tactile experience. A large angled concrete wall intersects within the volume forming an entrance that one walks through and must go around the object in order to be aligned on center of the space. As the church is oriented towards the sun, the light pierces through the darkness through a large cross shaped opening from the altar wall (Figure 30). This light in its most abstracted form represents the purity that exists between nature and the people who are in the church. Similar to representing abstracted light is the M.I.T Chapel.

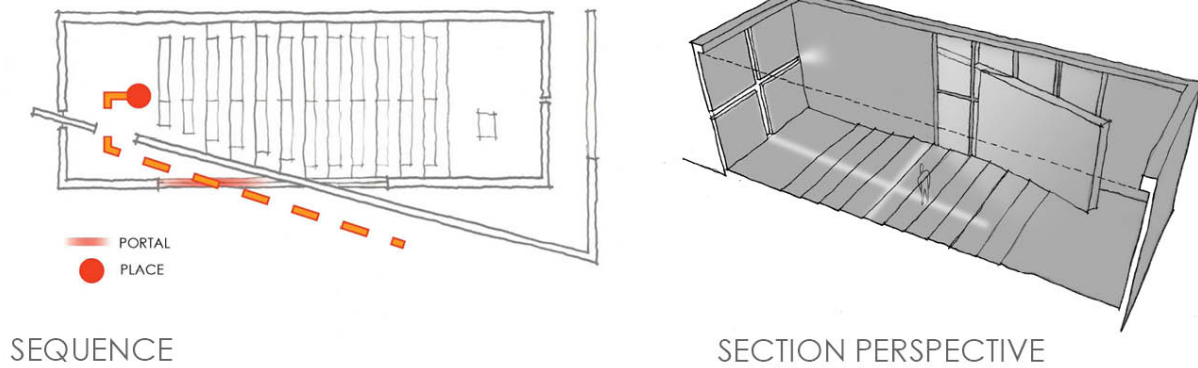


Figure 30: Interior of church (Source: Author)

M.I.T Chapel

Separated from the outside world, this chapel is its own universe within. The chapel separated by a moat and lifted off the ground. Its cylindrical form shaped façade is connected to a bridge and acts as the transition between the outside and inside world leading into the chapel space. Inside the chapel has a curvilinear brick pattern that creates its own unique shape from its exterior shell. The focal point of the space is the oculus above the altar from which it is the only opening that light shines upon the altar (Figure 31). Between the altar and the oculus is a sculpture that begins

to slow down the speed of light. Its rectangular metal pieces hanging on string reflects the light and has it feel as though light is not traveling down, but it is rising. As places of worship imply a sense of healing the spirit, places of healthcare begin to do the same as they physically heal as well; one can see some places do this more successfully than others.

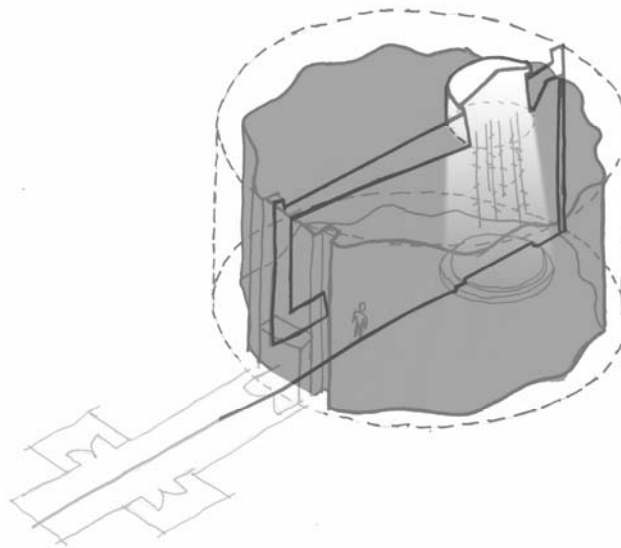


Figure 31: Chapel Space interior oculus (Source: Author)

Space in Healthcare

In most healthcare facilities there is a disconnection between nature and the users within. This should be a concern on how future healthcare facilities should consider its architectural designs around the users. In some new healthcare buildings, the atmosphere within the spaces are beginning to be re-conceptualized to integrate nature with the patients. These spaces show different ways to integrate the patient with nature to improve recovery.

St. Charles Cancer Bend Center

This cancer center's unique space creates a tranquil effect for patients receiving infusion. The second floor where patients receive infusion are connected to nature through the large floor to ceiling panoramic views that wrap around to the space and also allows plenty of natural light into the open space (Figure 32). The infusion seats are located nearby each other in the open space to encourage socializing with one another. Located on the side of the space are semi-private open bays that are nearby the deck to allow more private moments with families as they over looking towards the healing garden. Introducing views to nature enhance the patient and staff experience; another building that has a similar concept is at the Nanaimo Hospital.

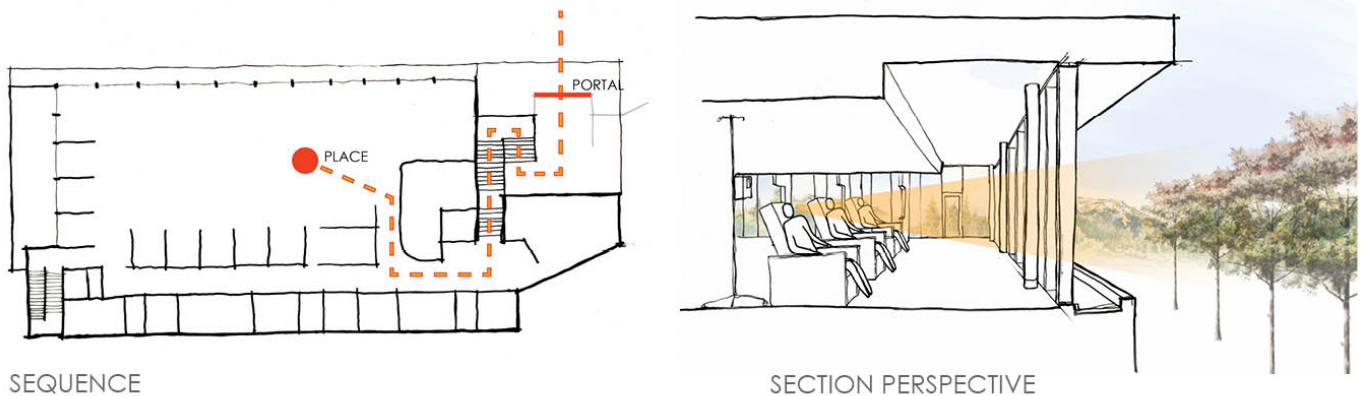


Figure 32: Panoramic view to nature (Source: Author)

Nanaimo Hospital Emergency Department

The Nanaimo hospital's new emergency department addition consists of several courtyard spaces to help alleviate patient stay. The courtyard wells are two stories tall and bring in natural into the spaces (Figure 33). As one stays in bed during

recovery, the view towards the courtyard wells allows them to recover a little faster than looking at a blank wall. Although as one can see how natural elements being invited into spaces change the effect on patients, not all space have the opportunity to do this.

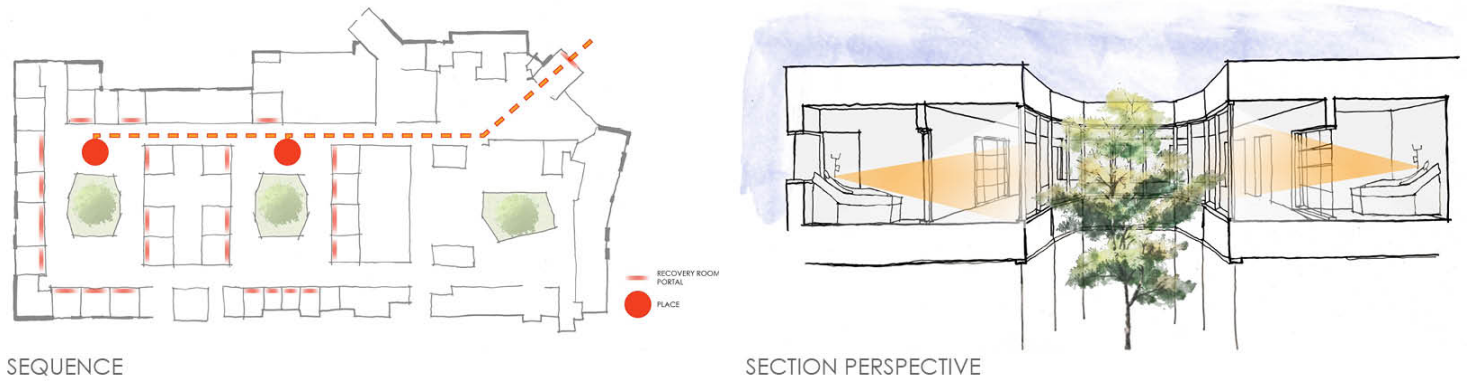


Figure 33: Emergency Department Courtyard (Source: Author)

Cedars Sinai Comprehensive Cancer Center

Cedars Sinai Comprehensive Cancer Center is a subterranean space for infusion patients. The large barrel vaulted ceiling illuminate the space and the curved walls diffuse the light as it reaches further down the space. The concept is to incorporate families within the treatment environment and create a place for socializing and interaction while semi open closed curtain rooms helps determine the level of patients privacy.

Comparing from the last two precedents; what begins to lack in the atmosphere is a sense of connection to the natural environment and social interaction. A place that is located underground begins to feel that the treatment is not as a comfortable environment to be in like being in a hospital. The privacy rooms do not have natural light like how the atrium space does and looks as though artificial light is

used to brighten the space. The way the seating is arranged faces away from the patients and use a low wall to divide the seating spaces (Figure 34). What could be more effective in the space is if the cubical like spaces were to be removed and also introduce small plants to begin creating a sense of interaction between others and the nature.

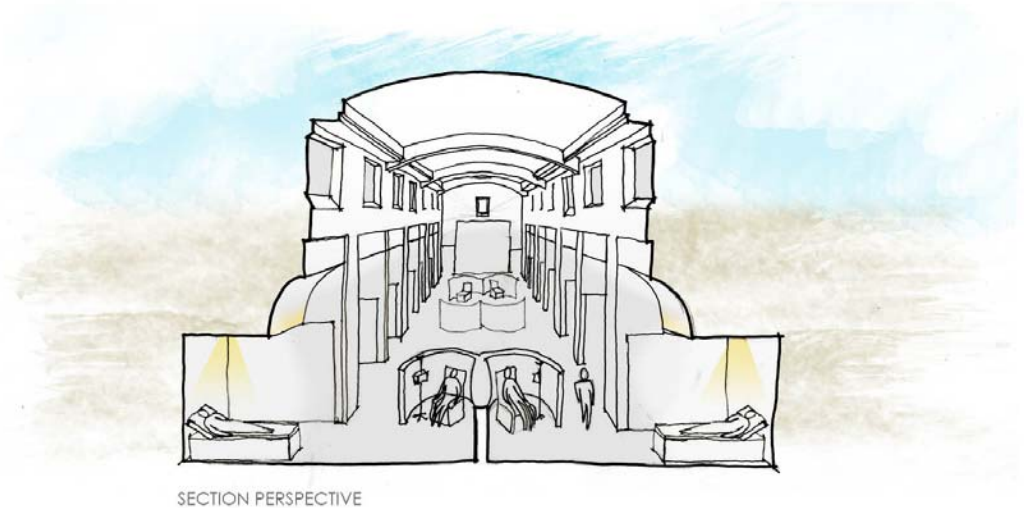
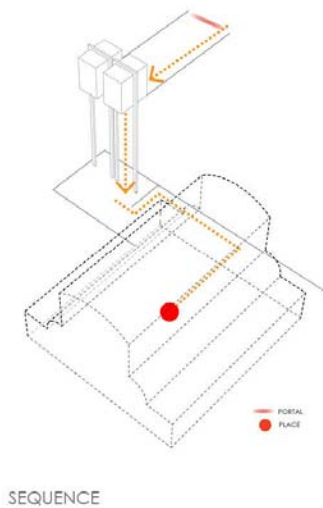


Figure 34: Underground infusion space (Source: Author)

Chapter 4: Healthcare Treatment Centers

Cancer has been known for many centuries and while there is no current cure, it can be treated. As cancer affected the United States, doctors and philanthropists began to collaborate to form centers of research in order to find a cure. Cancer centers began as child cancer centers and progressed to become larger organizations due to the complexity of cancer. Through data analysis, one can see how over the years cancer has affected many citizens within the United States and also see how chances of survival have been increasing. This chapter will explore how treatment facilities became its own program; how has it improved over time and where the future of healthcare is heading.

History of Treatment Centers

With treatment research overtime, physicians have been able to detect cancer sooner and aim to increasing the patient's chance of survival. Current treatments taking place in hospitals have difficulty having an influencing and calming yet functional environment for patients to feel comfortable.

The Chronic Disease

The disease that many people from around the world unexcitingly receive is cancer. It is a chronic disease that cannot be cured but treated through different types of methods. When people receive news that they have become diagnosed with cancer, they immediately forget everything around them and begin to think to themselves that this is the end for them. Cancer is when cells grow abnormally sometimes in a small concentrated area and then begin to spread throughout the body. Cancer was discovered back in ancient Egyptian times around 1600 B.C from the remaining bones that were mummified. It is described as a crab-like form from which it received its original name.

Throughout the 20th century, cancer had become more of a serious concern for many people in the U.S. When children were getting sick, they were put in hospital wards until doctors found out why they were sick. After the children were diagnosed with leukemia, they were told that they were not going to survive. A doctor named Sydney Farber decided to attack the cancer with a poison to see how it would affect the cancer cells within the child. Although this had slowed down the cancer within

the child, the cancer later flared up and the child would pass away. It was decided to further research on what this disease was like, and through donation programs doctors began to invest into building their own facilities that primarily focused on finding a cure to cancer.

Progression of Treatment Centers

The intense research of finding a cure for cancer spawned the programs such as the Jimmy Fund Foundation and the National Cancer Act of 1971. The March of Dimes program became the catalyst into uprising programs to fight other diseases. The Variety Club of New England saw Sydney Farber researching his aminoterin trial and he saw an opportunity to create a facility strictly for researching leukemia in children. Farber had a hospital design in his mind where all the children with leukemia would be located on the first floor while the floors above were laboratories to research and find the answer on how to cure leukemia. One of the children who was diagnosed with cancer became the mascot for the new cancer fighting-organization called the Jimmy Fund Foundation.



EXTERIOR OF JIMMY FUND BUILDING



INTERIOR CHILDREN'S PLAY AREA

Figure 35: Exterior and interior screen shot of hospital from video "Magic Bullets" (Source: Burns)

Through the Jimmy Fund Foundation, a new children cancer hospital came to existence called the Jimmy Fund Building. The hospital was a five story tower and on the bottom floor had all the children roaming around (Figure 35). The floor was filled with toys and activities for the children to not think about what's going on creating a distraction therapy. After continuous research to finding a cure, Sydney Farber had realized that this type of research needs a bigger organization.

With the help of Mary Lasker, both she and Sydney focused their efforts on a small government organization called the National Cancer Institute (NCI). The NCI was a building that was researching different natural and unnatural ingredients that could possibly kill cancer cells. This building had a storage library full of drugs and natural elements that were being tested on children. Through the combinations of different types of drugs, a chemotherapy treatment was created to fight leukemia and turned into positive outcomes for children. In 1971, Richard Nixon had signed a document called the Cancer Act of 1971; this act's purpose is to eliminate cancer as the major cause of death. With a large donation of money to cancer research, the goals of finding a cure has evolved from thorough research; doctors are getting closer to finding a cure to most cancers in today's society.

Statistics

Cancer is one of the most life threatening diseases in the United States. From gathering data of various patients who were diagnosed show overtime how some treatments have improved to extend life expectancy, reduced mortality, and form predictions on how many new cases of cancer will be estimated in the given year.

These charts show an accumulation of patients diagnosed with cancer all over the United States; these charts do not represent an individual who has cancer- all individuals diagnoses are unique from each other.

Between the years of 1992-2014 the amount of new cases and deaths have decreased. It is estimated that in 2017 approximately 1,688,780 people will become diagnosed (Figure 36).

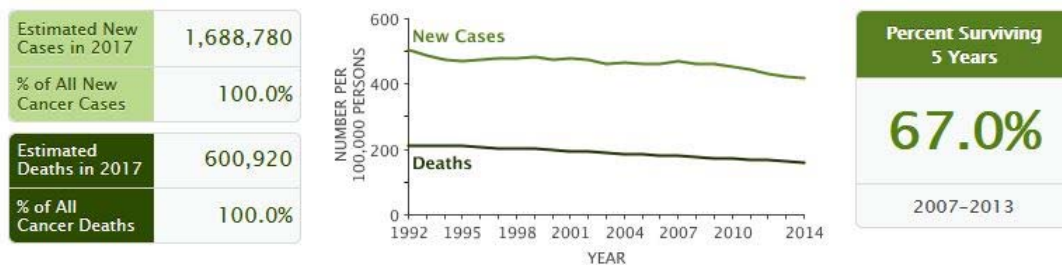


Figure 36: Graph of new cases and deaths (Source: SEER Cancer Statistics Review)

After one has been diagnosed with cancer, physicians from all over the country send in data to the Surveillance, Epidemiology, and End Results (SEER). The data is categorized in specific graphs and tables to visually represent the changes overtime; this helps scientists understand if progress is being made and where the focus should be towards to find better treatments.¹⁷ Currently the five year patient survival rate is about 67% from any site in the United States (Figure 37).

¹⁷ N Howlader, "Cancer of Any Site - Cancer Stat Facts," *National Cancer Institute*, last modified 2016, accessed December 14, 2017, <https://seer.cancer.gov/statfacts/html/all.html>.



Figure 37: Five year survival rate chart (Source: SEER Cancer Statistic)

The data represents that people between the ages 45-84 are more likely to become a new case (Figure 38).

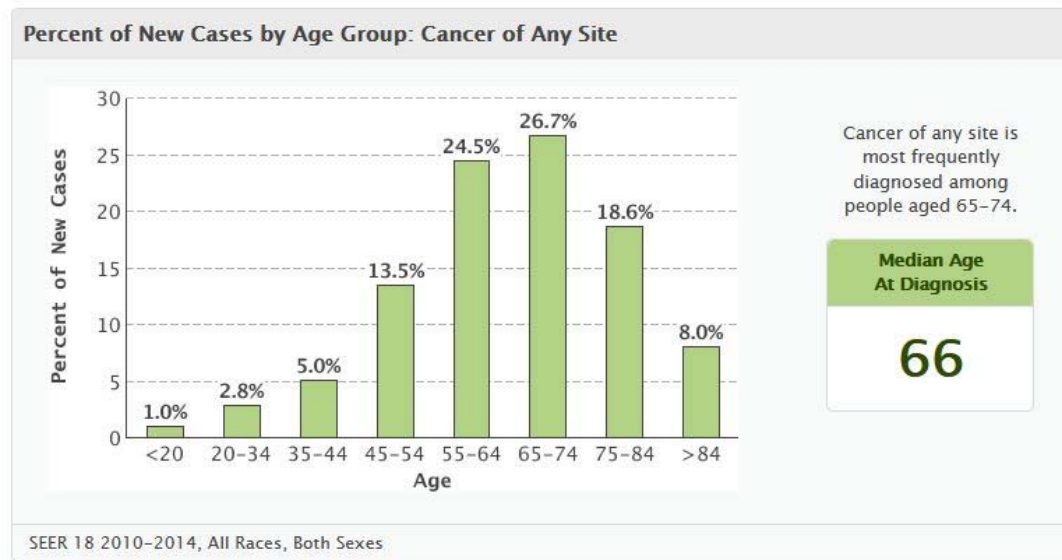


Figure 38: Age group percent of new cases graph (Source: SEER Cancer Statistic)

From the ages of 55-84, a patient has a higher chance of mortality (Figure 39).

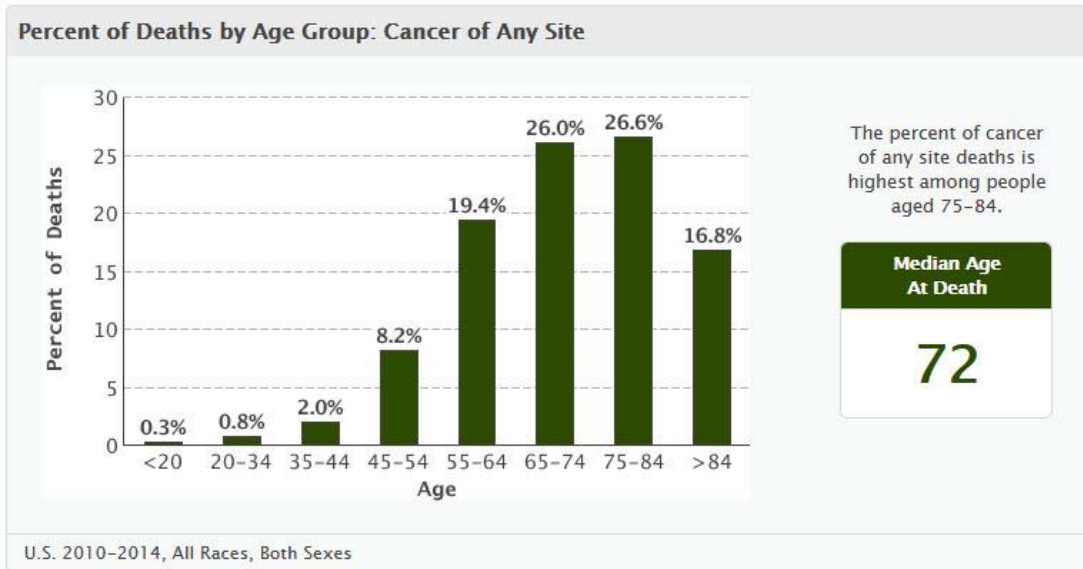


Figure 39: Age Group Mortality graph (Source: SEER Cancer Statistic)

Dissecting further into the charts, all races of male and female, the chart shows that males have a higher risk of becoming a new case (Figure 40) and also have a higher chance of mortality (Figure 41).

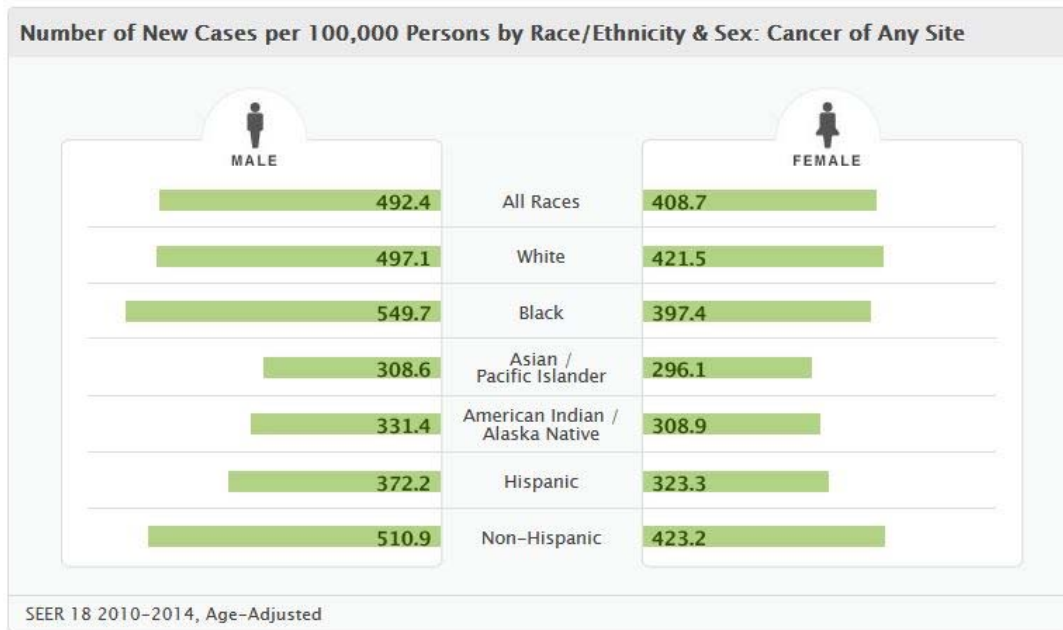


Figure 40: Gender new case chart (Source: SEER Cancer Statistic)

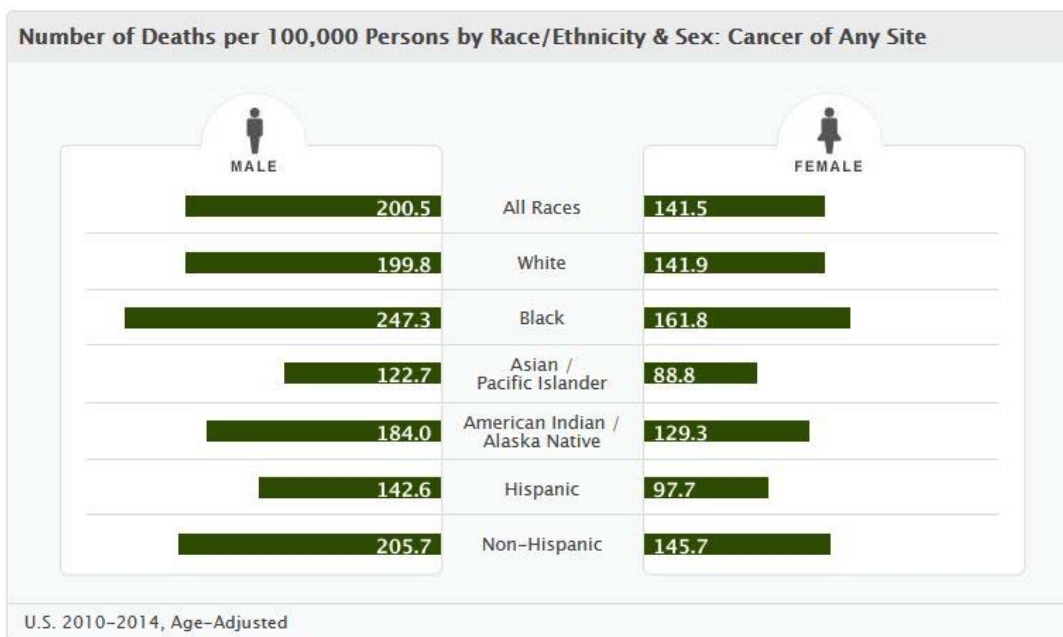


Figure 41: Gender mortality chart (Source: SEER Cancer Statistic)

This data helps not only scientists, but the public as well to be informed on how cancer effects society as a whole. Although more cases of cancer is occurring

every year, the survival rate of patients have been increasing. In 1975, the survival rate stood at a 48.9% and has increased overtime to about 69.2 (Figure 42). The evolution with in healthcare is currently happening and with new technology and carefully designed environments to help treat cancer.

5-Year Relative Survival (Percent) by Year of Diagnosis

Year of Diagnosis	All Races		
	Both Sexes	Males	Females
1960-1963 ^a	-	-	-
1970-1973 ^a	-	-	-
1975-1977 ^b	48.9	41.7	55.9
1978-1980 ^b	49.0	43.1	55.0
1981-1983 ^b	50.2	45.2	55.1
1984-1986 ^b	52.4	47.2	57.6
1987-1989 ^b	55.3	51.1	59.6
1990-1992 ^b	59.9	59.1	60.9
1993-1995 ^b	61.3	60.8	61.8
1996-1998 ^b	63.3	63.0	63.6
1999-2001 ^b	66.0	66.3	65.7
2003-2006 ^b	67.5	68.1	66.9
2007-2013 ^b	69.2 ^e	69.2 ^e	69.1 ^e

Figure 42: 5-year relative Survival chart 1975-2013 (Source: SEER Cancer Statistic)

The Present and Future of Healthcare

The healthcare industry is evolving through the careful design around the patient. Many leaders in the healthcare industry believe the trend of healthcare is moving towards suburban outpatient facilities, physician’s office care, micro hospitals and virtual care. Hospitals would be the new place for emerging technology, telemedicine and IT applications to care for patients from their own homes. Although

hospitals may begin to serve these new functions, it will still be a place for everyone who are in critical need.

Carefully designing an outpatient facility can begin to create sensitive areas for patients to be immersed and treated with comfort. Physicians and CEOs of hospitals believe that technology will provide comfort to patients by designing machines that emit powerful gamma rays to remove tumors and would have no need to surgically open a patient.¹⁸ Although most hospitals have the highest end pieces of technology to fight cancer, it lacks the sensitivity needed for patients to be immersed in the environment; this could be accomplished from an outpatient facility by integrating natural elements into the space. Connecting the patient and physician through the virtual realm could create alleviation for patients since they can have their appointment directly from home and could have test results in an instant with supplies to be shipped to their house. When one walks into an outpatient facility, artificial intelligence could be the one to see what the diagnosis is before the patient reaches the physician. Healthcare facilities will support better wellness based design that incorporates natural lighting, cleaner air quality, biophilic elements, views towards the outdoors, non-toxic building materials and improved spatial qualities.¹⁹

¹⁸ Laura Dyrda, “45 Hospital and Healthcare Executives Outline the Hospital of the Future,” *Becker’s Healthcare*, accessed December 14, 2017, <https://www.beckershospitalreview.com/hospital-management-administration/45-hospital-and-healthcare-executives-outline-the-hospital-of-the-future.html>.

¹⁹ *Ibid.*

Chapter 5: Rituals of Cancer Treatment Centers

Patients that are diagnosed with a specific cancer are advised by their physician to go through a treatment process that is appropriate to their condition; this process becomes habitual as one goes through a sequence of different spaces when receiving treatment. Treatments are typically performed within an area of a hospital or in an outpatient location; there are three types of treatment therapies to be offered, infusion, radiation and surgical. Typically a treatment that is not surgical can last from days to weeks or even for the rest of the patient's life depending on what the doctor advises. Through primary observation, each therapy is unique when it comes to receiving treatment and can be life changing to the patient and family.

Infusion Therapy

The longest type of therapy one receives is infusion. This therapy known as chemotherapy is when one is connected through an IV on their arm or port located on the chest to receive the medicine to fight the cancer. This ritual begins as soon as the patient and family enter into the facility. The patient checks in and sits in the waiting room until called upon. Nurses call the patient to blood with drawl room to begin extracting the patient's blood and send it off to testing in order to know the appropriate dosage of chemotherapy for that day. After a moments waiting, the patient is called upon once more to be guided by a nurse to the infusion room (Figure 43). This room is filled with stations that have reclining seats because for the next couple of hours one will be sitting there receiving the chemotherapy.

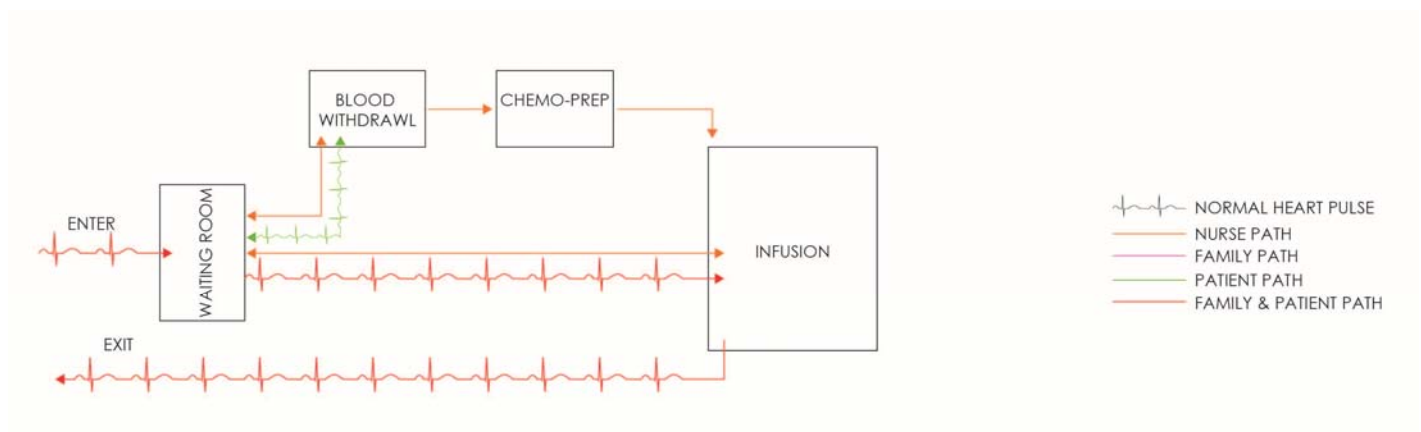


Figure 43: Infusion sequence paths (Source: Author)

The infusion room can have the views around the station feel less active. A standard set up for an infusion space has the stations focused around a nursing station so that nurses can always keep an eye on the patients and sometimes have a television for people to focus on to. In the Doylestown Hospital Outpatient Infusion Unit, one can see how the seating arrangement is orchestrated to face the nursing station and the

television above (Figure 44). The windows and height of the chair do not line up to give the patient a view to the outside. Although the televisions may distract the patient for a while, this space does not create an engaging atmosphere for the patient to interact with other patients for socializing and being connected to the outside environment. Infusion spaces have the design opportunity to create a relaxing space for the patient and create views to the outside environment.



Figure 44: Doylestown Hospital Outpatient Infusion Unit (Source: Doylestown Hospital website)

Radiation Therapy

The faster type of therapy to go through is radiation therapy. Radiation is a type of treatment where the patient's body is exposed to high energy particle waves that can be either x-rays, gamma rays, protons, or electron beams. Similar to the beginning of infusion, one must wait in the waiting room until called upon. In this type of treatment, the nurse checks to see how the patient is doing in an exam room

and depending on the type of location on the cancer, one must change into a hospital gown. As the patient approaches the radiation room they can see that the doors to the room is a vault door (Figure 45). These doors are wrapped with lead shielding and can be up to around 1 foot thick; these doors are mechanically operated to open.

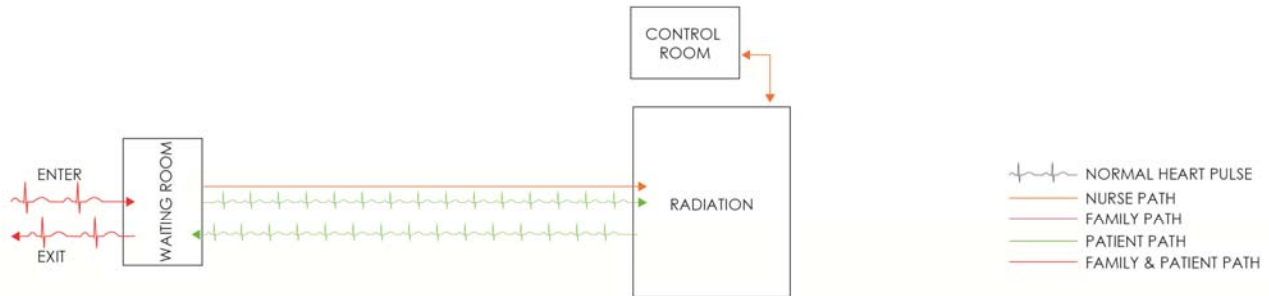


Figure 45: Radiation Sequence Path (Source: Author)

Once past the threshold, the room can either be a direct orientation or a maze orientation. A direct orientation is when one can immediately see the Linear Accelerator (LINAC). A maze orientation is when one walks through a small corridor and around the corner is the LINAC. The corridor acts as a secondary shielding from the scatter of radiation (Figure 46). The entire room is surrounded by leaded walls so that the radiation doesn't expand beyond the space it is in. When the patient is lying on the table, a meshed mask that was submerged in warm water is placed over the patients face and is formed to the shape of their face. This mask will be reused every time when a patient is receiving treatment and is screwed down to the table to make sure that the patient's head is as still as possible when radiation is being applied. The overall timing of setting up and receiving treatment takes about 8-15 minutes.

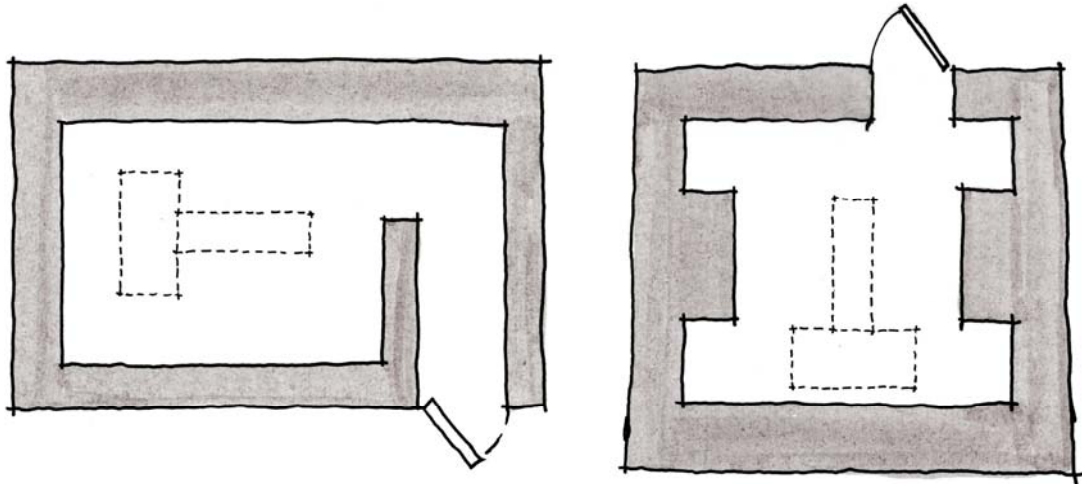


Figure 46: Maze vs direct layout (Source: Author)

Spatially the radiation room has no connection to the outside and is focused solely on the size of the machine. Doctors monitor the patient from outside of the room through either a leaded glass opening or through a monitor system from a different room. This would depend on the type of machine being used as they can range in power. Radiation is used the most for most cancers as it has the biggest impact on killing cancer cells. When infusion and radiation treatment are finished, the final treatment option to go through is surgical.

Surgical Therapy

The final option a patient has to remove cancer is through surgery. Surgery is the most frightening experience that the patient and family mentally has to prepare for it. This treatment can create a sense of anxiety, fear and nervousness; the build up to that moment begins from waking up and approaching to the facility where it will be performed at. It is important for the architecture to shape an experience as the family travels to the waiting room to prepare for surgery.

There are three parties that experience the sequence of surgery, the surgeon, patient and the family. The family and patient travel together to get to the waiting room. This movement can become difficult to navigate through because of the emotions the family and patient are going through. Both the patient and family are nervous and afraid as they walk through the maze of a hospital (Figure 47). The long white sterile corridors seem infinite from the aligned doors; this can create a confusing experience as the family is trying to find the correct door or hallway to take. Some doors are set back from the plane of the wall, giving an illusion that there is an intersection corridor. Once the family finds the waiting room, they wait until called upon and are split away from each other for a brief moment.

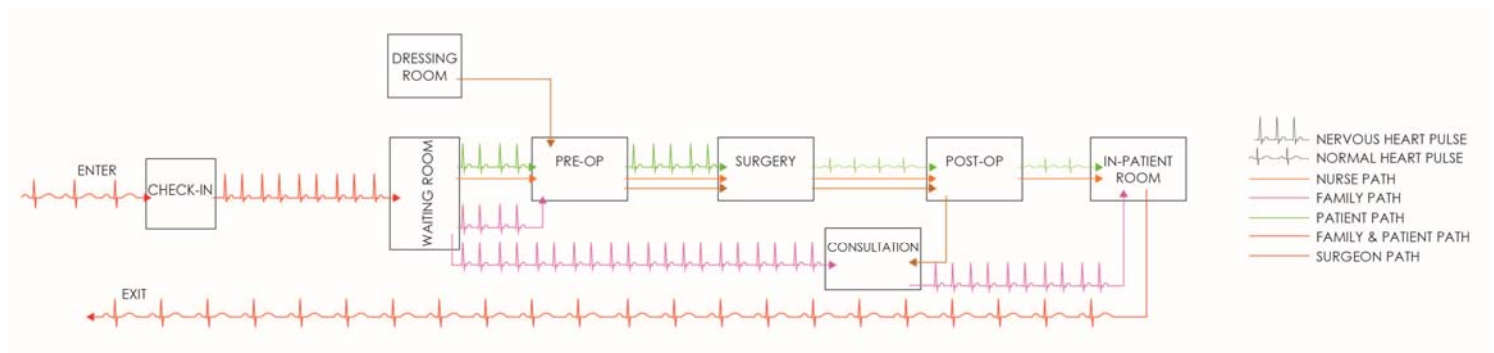


Figure 47: Surgical sequence (Source: Author)

The patient is called upon to prepare for surgery. The sequence that the patient goes through is by first changing into a hospital gown and then is placed on a bed in the pre operation room and begins to be hooked up to an IV tube. As the operation approaches closer to time, the nurse prepares the patient and is then consulted with the doctor. The pre operation room is organized in bays around the perimeter and the nursing station is located in the center. The family is called in to enter for one final moment before surgery and is to be informed what the process will be like for when

the surgeon operates. The family is sent to the waiting room still feeling nervous and anxious not knowing what the outcome will be.

The surgeon prepares and performs surgery. The surgeons and nurses change into their hospital gowns specifically meant for operating while other nurses take the patient into the operating room. It is a cold environment in order to keep bacteria levels low and for surgeons to feel comfortable in. The center of the space is where the patient is being operated on and is surrounded by ceiling mounted lighting, movable medical equipment. Anesthesia is then applied to the patient and the operation begins. Once it has ended the patient is sent to the recovery room and finally sent to the in-patient room.

As the operation finishes, the family is told to go to the consolation room. The consultation room is a small space where the family and the surgeon speak privately about how the operation went whether it is good or bad news. In some hospitals such as Johns Hopkins Bayview Medical Center, the consolation room is within the waiting room. This can create an uncomfortable moment for the family because everyone in the waiting room knows that something terrible has happened to the family based on the length of time they are in there for as they try to absorb the news and come out hiding their emotions. The other families in the waiting room have an idea of what has happened and they are scared the same result might happen to someone that is being operated on; while the family exiting the consultation room feel judged because they have the feeling that everyone knows their situation. This private matter is no longer private within the family and now everyone in the space has an idea on what

has happened. As the family walks out of the waiting room, they head to the patient room.

The final sequence of surgery is when the family and patient meet together in the patient room. This room is where the patient will stay for the next few days to recover from surgery. Older patient rooms are big enough to fit two patients together with a curtain dividing the two. The patient room at John Hopkins has that similar description with a bathroom located near the entrance and has only one window. The atmosphere of the space is dark and does not create an appropriate setting to recover as the patient's bed is not aligned to a window to see the views to the outside. Once the patient has made a full recovery, the family checks out.

Treatment is a life changing experience for the family. As more treatments are becoming available options for patients, this can be an opportunity to design an experience from entering into the building to receiving the treatment and finally exit out of the building. Overall when a treatment is completed, one is given a certificate saying that they are a survivor; in some places the celebration is more engaging creating a sense of accomplishment. In order to see how to alleviate rituals of treatment, one must look at the site conditions to have the architecture influence its sequence and use its surroundings to create an experience as one already begins to enter the site.

Chapter 6: Site Selection

This chapter will explore four different site options. Each site is unique and could influence design from the way one approaches the site and exits. Based off the site matrix, this shows some elements that influence site choices. Each site shows several ways of how one can move around and create stopping spaces through the use of landscape and architecture.

Site Matrix

The four sites that have been chosen to analyze are located in Maryland in the towns of Annapolis, Rockville, Gaithersburg and Easton. When approaching each site, a site matrix (Figure 48) was created to determine what qualities each has in order to create a unique experience. Also looking beyond the primary factors, there were others to consider (Figure 49).



Figure 48: Primary Site Factors Matrix (Source: Author)

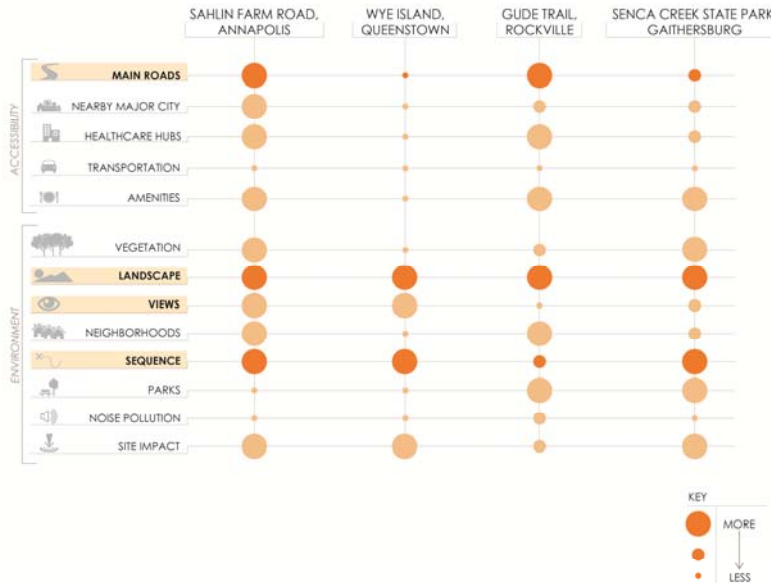


Figure 49: All Site Factors Matrix (Source: Author)

Wyetown Point, Easton MD

Located along the edge of the Wye River is farmland. Although this site lacks in connecting to majors streets that could head towards the nearest town, it has vast views of the river along with a flat topography (Figure 50) and has the potential to create a powerful sequence leading to the river (Figure 51). Overall the site is located along the edge of the river and is exposed to plenty of sun light (Figure 52). The wind most comes from the west which is where the Chesapeake Bay is located. There are little amounts of trees located around the site but none within the site.



Figure 50: Topography and site location (Source: Author)



Figure 51: Site approach diagram (Source: Author)

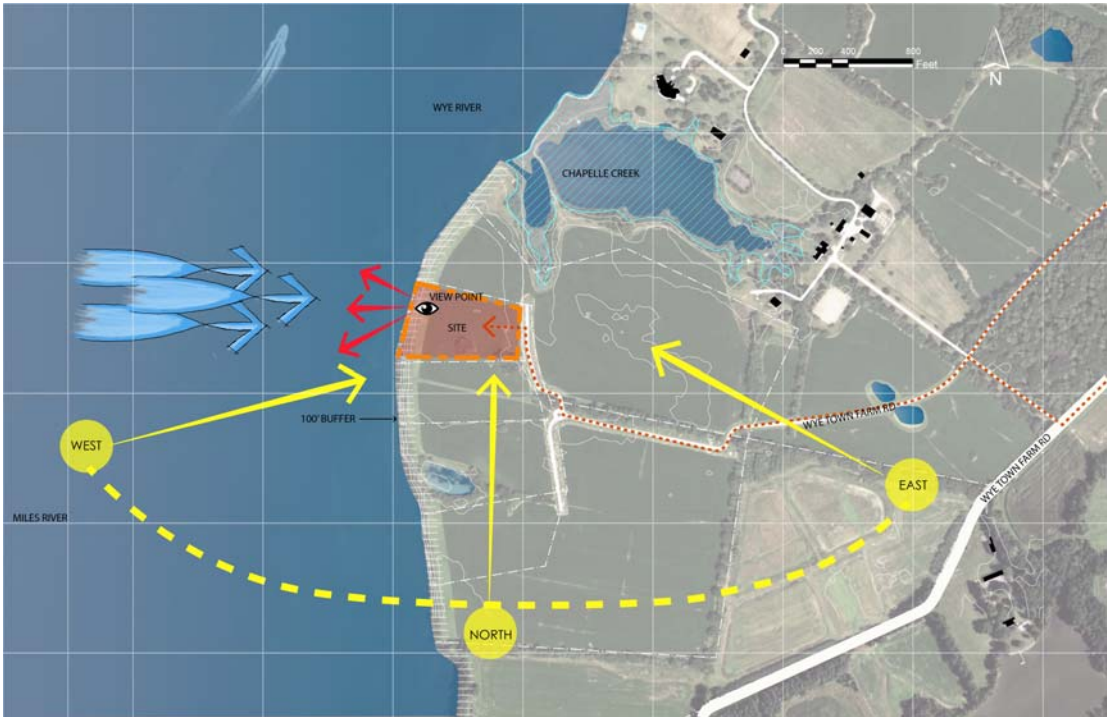


Figure 52: Site Synthesis, Sun Path, Wind Direction, Site Views (Source: Author)

In analyzing the site, there were both challenges and opportunities to be considered. The challenges constitute finding ways of to create an experiential approach. The two schemes (Figure 53 & 54) uses a landscape strategy by adding vegetation around the building and hiding the view towards the water. The concept is to create the element of reveal when one is at the water front side. The challenge is how to achieve that sense of reveal since everyone can already see the water as they travel down Wye Town Farm Rd. Strategies could incorporate bringing the people to a higher level to see the land and river for a further distance.

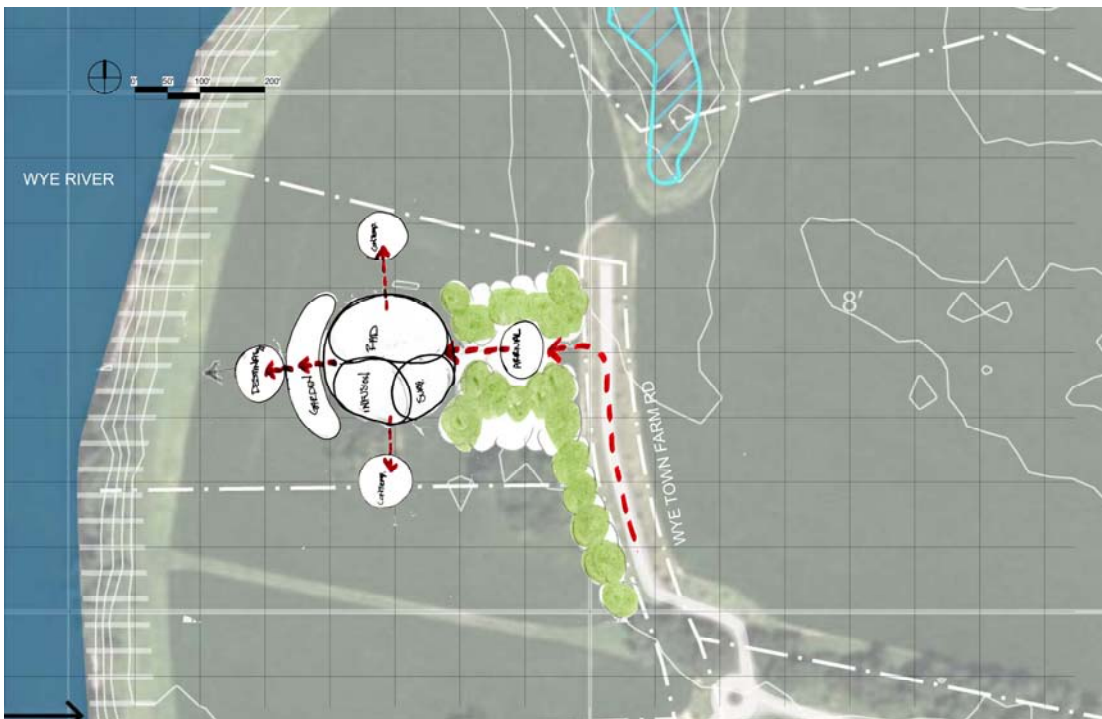


Figure 53: Scheme 1 single building approach (Source: Author)



Figure 54: Scheme 2, double building approach (Source: Author)

Gude Drive Recreational Park

Located in Rockville, MD is a large open vacant site. The site is elevated from most of the environment surrounding it by about 30' (Figure 55). Surrounding the site are residential houses to the northwest and light industry between the southwest to the southeast (Figure 56) as well as the Gude trail and Incinerator Ln. the only way to access this area is through a parking lot off of Carl Henn Millennium Trail, Gude Trail or Incinerator Ln (Figure 57). These light industry places around the southeast include a concrete mixer suppliers, steel fabricators, and auto recyclers. In the south to south west are hardware places, and auto body shops. The site is mostly surrounded by vegetation creating a noise barrier and privacy from the residing buildings (Figure

58). On site one can see pipes running across that is speculated to water the grass and small plants.



Figure 55: Topography, vacant space is located about 30' from Gude Trail (Source: Author)



Figure 56: Land use diagram, Yellow is residential, Grey is light industry (Source: Author)

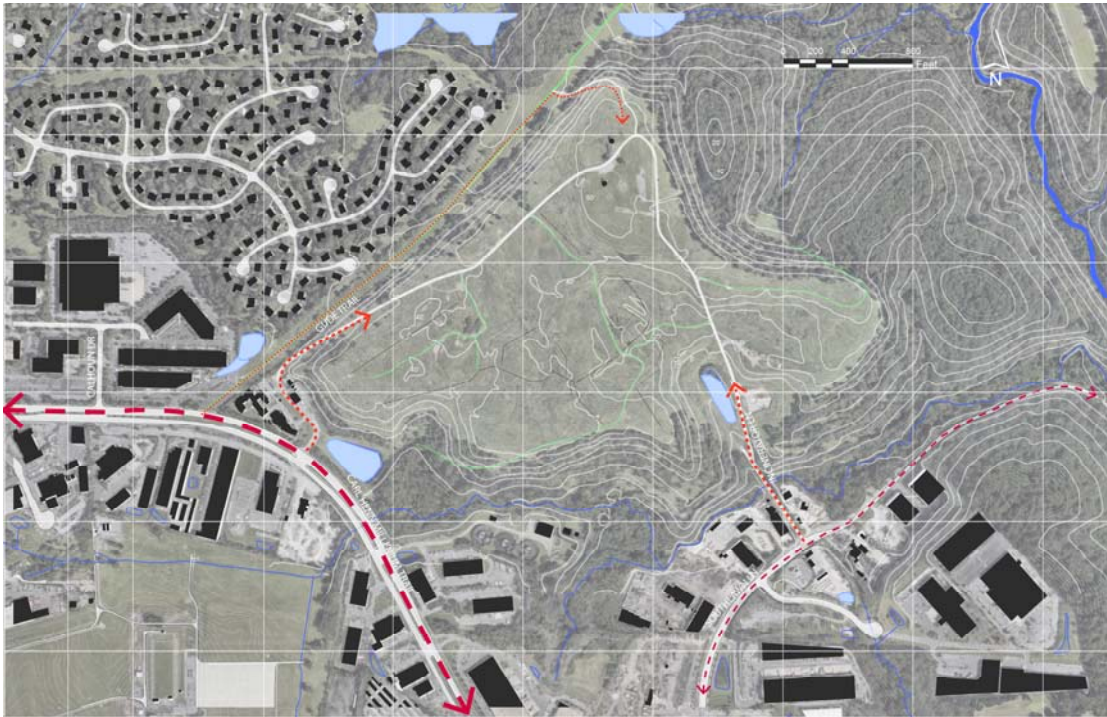


Figure 57: Site access from Gude Trail, Incinerator Ln and Carl Henn Millennium Trail (Source: Author)

The site is located towards the northwest of the area. The first scheme shows a possibility of designing a lake and having that be the center of the site. People could potentially appear on an island in the center of the lake creating an oasis like effect and have that become a private moment for the visitors (Figure 59). The second scheme shows that the lake is hidden away from a distance and the way to access it is to go through one of the two buildings framing the center garden space. It could be possible to also create an island that people can walk to if a bridge or terraform is designed (Figure 60).



Figure 58: Site Synthesis; Sun Path; Wind Direction; Site location; Vegetative Barrier; noise locations (Source: Author)



Figure 59: Scheme 1 Center lake between two buildings (Source: Author)



Figure 60: Scheme 2 hidden lake (Source: Author)

Seneca Creek State Park

Located in Gaithersburg, MD is Seneca Creek State Park. This park has a man-made lake in the center called Clopper Lake; and historic buildings located throughout the site. The site is located between two berms that range about 20' high from the flat area (Figure 61). Throughout the park, there are historic trails such as the Long Draught Trail, Lake Shore Trail and Mink Hollow Trail. The only street that is located by the site is Seneca Creek Rd (Figure 62). The site is densely vegetated with trees all around and provides shade throughout the park trails (Figure 63).



Figure 61: Topography of site (Source: Author)



Figure 62: Street hierarchy of site, thick line is primary, thinner line is secondary (Source: Author)



Figure 63: Site synthesis; Sun path; wind direction; view point (Source: Author)

The challenges of this site are to keep this location private from the public but also to control the topography. This would be a difficult task to accomplish, it is not possible to be able to move a historic trail. Both schemes show different ways to approach the water front by either have two contemplation spaces (Figure 64) or one contemplation space (Figure 65) before the final reveal at the waterfront.

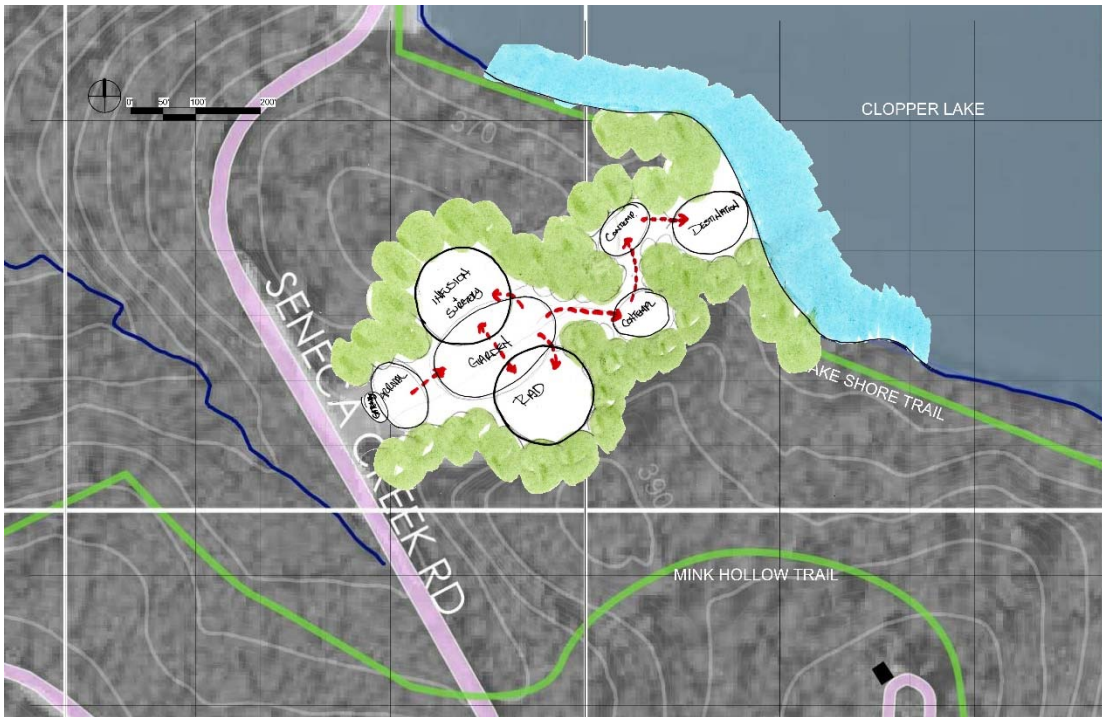


Figure 64: Scheme 1 two buildings between garden (Source: Author)

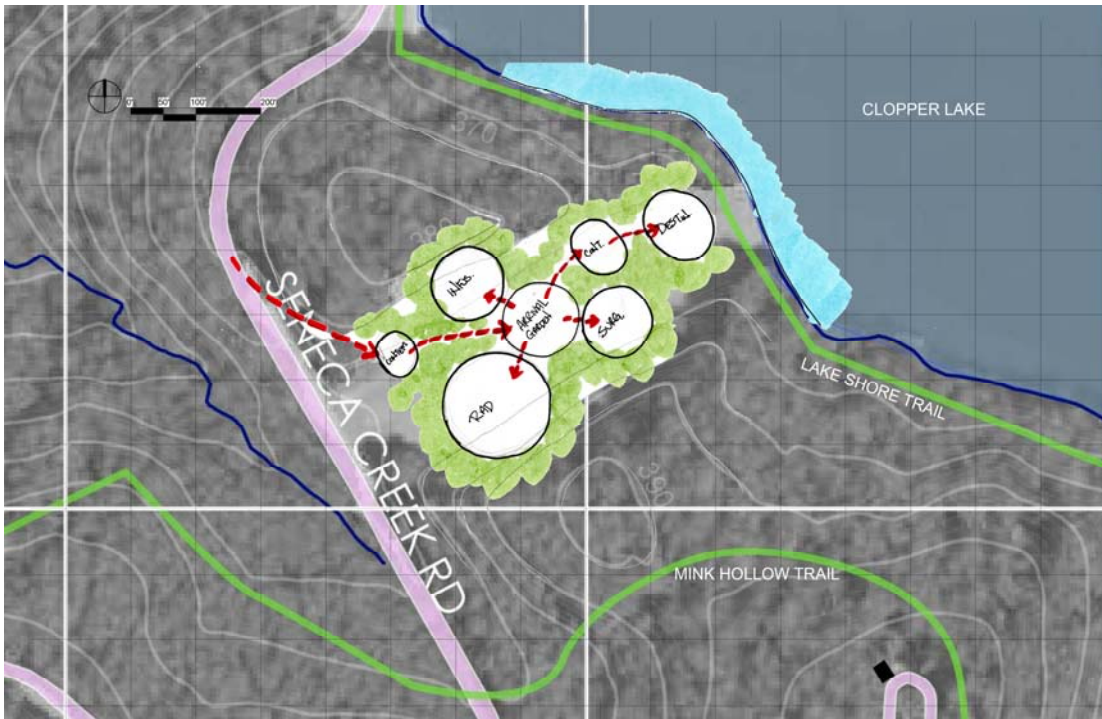


Figure 65: Three building layout between garden (Source: Author)

Final Site Selection

The final site is located in Annapolis, MD and is along the Severn River Sanctuary, Round Bay and Brewers Pond. In the site, the topography along the waterfront is steep, with a height of 60' (Figure 66). There are large pieces of property owned within the area and only one road connects all of the property (Figure 67). Every home is privately owned; Sahlin Farm Rd is gated at the beginning of the road that connects to the main streets. Along the side of the area is Brewers Pond Natural Area, this space is currently being revitalized by replanting native plant species by the locals who live in the general area. Towards the southeast are residential single family homes that are located along the edge of Brewers Pond and the Severn River Sanctuary. The buildable area chosen is along the waterfront edge in order to capture vantage points of the river (Figure 68). This area is heavily populated with vegetation

and according to Anne Arundel County Code, a 100 foot set back is required from the edge of the land. This site is heavily shaded from the trees and would require to removing existing foliage in order to build a structure. The direction of wind is primarily coming from the northwest and north direction because of the large open area of water.

Each scheme explores a sequence of arrival to the site; and the sequence of spaces and buildings leading to the destination of the water front (Figures 69 & 70). This site offers both challenges and opportunities. The challenge is the amount of vegetation and topography this site has but that can be used as an opportunity to control sequence of arrival to destination. Some of these schemes show different variations of how the building can be organized, such as creating one whole building up to three smaller buildings. Each of these buildings could potentially provide views to the water and be immersed into the vegetation at the same time that could create moments to reflect upon.



Figure 66: Topography of site area (Source: Author)



Figure 67: Property lines (Source: Author)

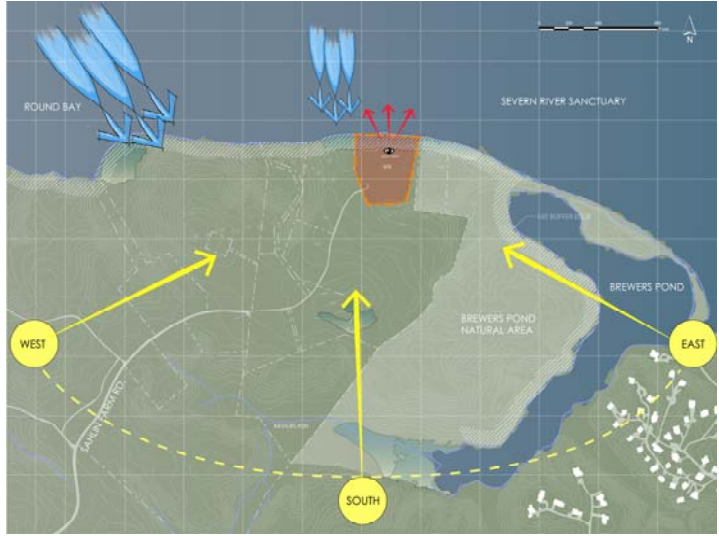
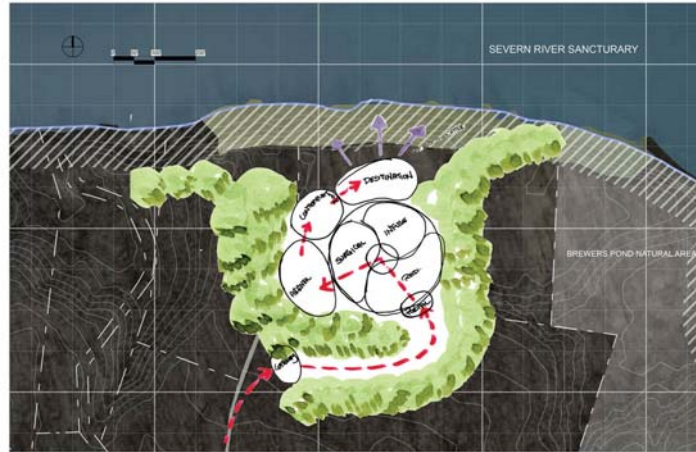
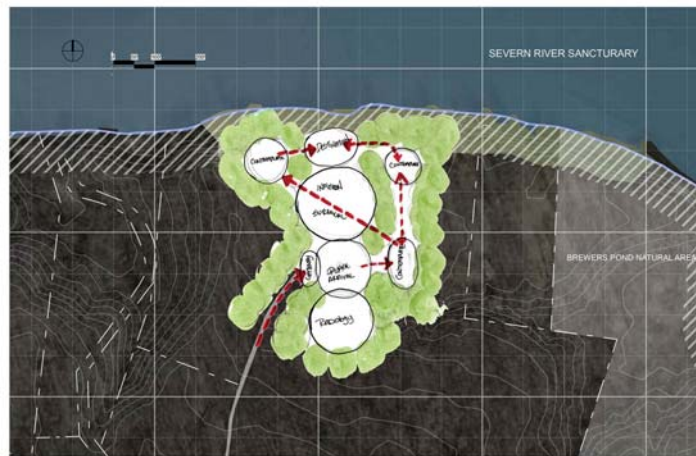


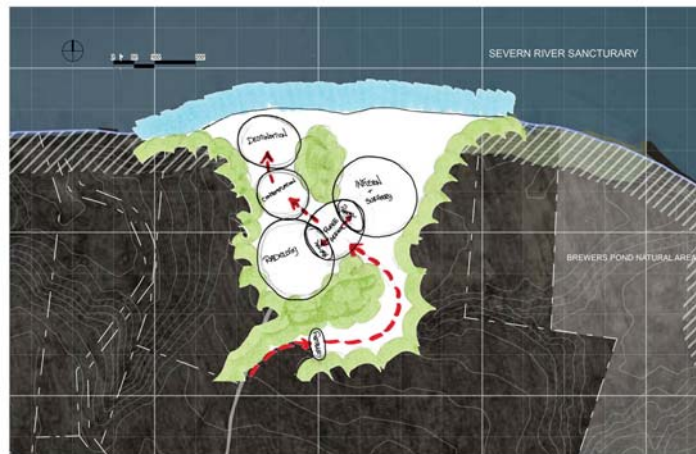
Figure 68: Site Synthesis; Sun Path; Wind Direction; Site Location; Primary views (Source: Author)



SCHEME 1

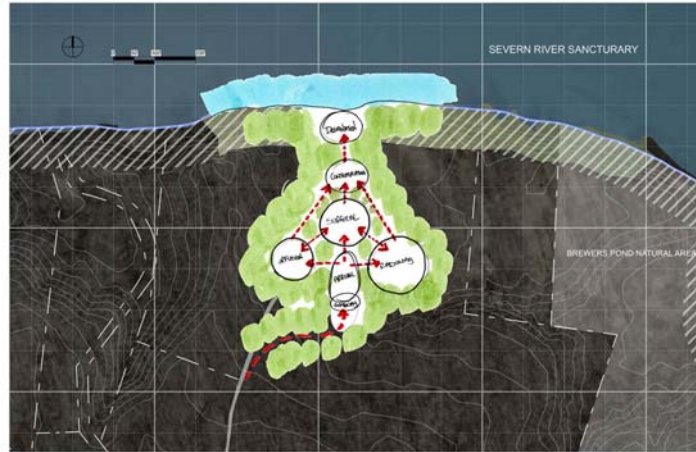


SCHEME 2

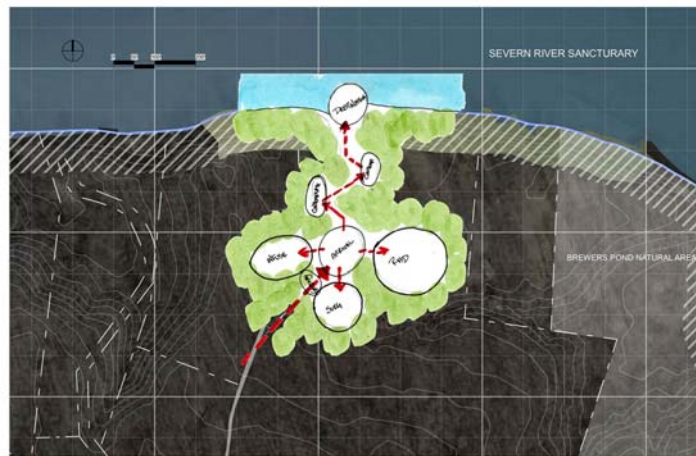


SCHEME 3

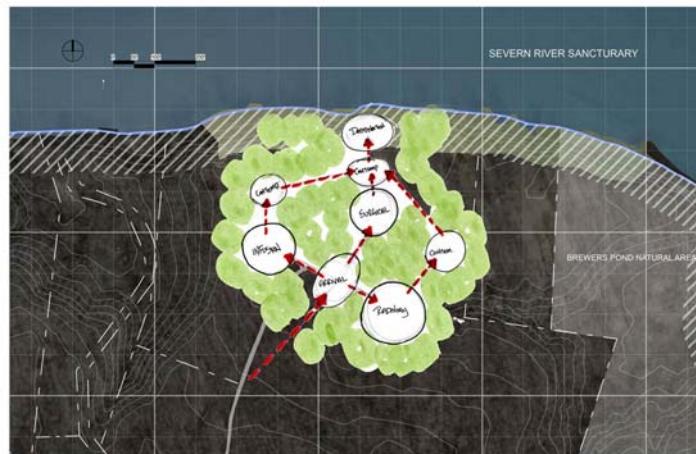
Figure 69: Schemes 1-3 (Source: Author)



SCHEME 4



SCHEME 5



SCHEME 6

Figure 70: Schemes 4-6 (Source: Author)

Chapter 7: Cancer Treatment Program

This chapter explores the program development of the cancer treatment facility. Through the process of massing and vignettes, the program consists of an infusion and radiation oncology as well as a procedure center. A focus of the landscape is included to understand what the form of the facility should be and how the end result of treatment can be celebrated as.

Building Program

The cancer treatment center consists of three program typologies, Infusion Oncology, Radiation Oncology and Endoscopy (Figure 71, 72 & 73).

Outpatient Infusion Oncology Center				
	Min Ft²	Description	# of Rooms	Total Min Net Ft²
CLINICAL SERVICES				
Exam Rooms	120		12	1440
Blood Draw	120		1	120
Infusion Treatment Space	5000		1	5000
DIRECT CLINICAL SUPPORT				
Patient Toilets	49		2	98
Clean Utility	120		1	120
Soil Utility	120		1	120
Consultation Room	120		4	480
Education Room	120		4	480
Storage	varies		varies	
ANCILLARY CLINICAL SUPPORT				
Visitor Toilet	49		2	98
Chemo Prep	200		1	200
Pharmacy	200		1	200
Intake	30	connect to reception	4	120
Waiting Room	600		1	600
Support Rooms	300		4	1200
Reception	200		1	200
STAFF SUPPORT				
Staff Toilet	49		2	98
Physicians Office	120		8	960
Staff Dressing	300	Mens & Women	2	600
Work Provider Space	500		1	500
Nurse Work Station	120		1	120
Staff Break Room	300		1	300
Conference Room	300		2	600
				Total Min Net Ft²
				13654
Total Min Net Ft²:				20481

Figure 71: Infusion Oncology Program (Source: Author)

Outpatient Radiology Oncology Center

	Min Ft ²	Description	# of Rooms	Total Min Net Ft ²
CLINICAL SERVICES				
CT Scanner	300		1	300
X-Ray	300	With Dark Room	1	300
Linear Accelerator	1000		1	1000
DIRECT CLINICAL SUPPORT				
Patient Toilets	49		1	49
Clean Utility	120		1	120
Soil Utility	120		1	120
Linear Accelerator Control Room	120		1	120
CT Control Room	120		1	120
Storage	varies		varies	
ANCILLARY CLINICAL SUPPORT				
Dressing Room	49		4	196
Holding	80		1	80
STAFF SUPPORT				
				Total Min Net Ft²
				2405
			Total Min Net Ft²:	3607.5

Figure 72: Radiology Oncology (Source: Author)

Outpatient Procedure Center

	Min Ft ²	Description	# of Rooms	Total Min Net Ft ²
CLINICAL SERVICES				
Pre/Post Op Room	120		6	720
Procedure Room	500		2	1000
DIRECT CLINICAL SUPPORT				
Patient Toilets	49		2	98
Clean Utility	120		1	120
Soil Utility	120		1	120
Scrub Room	120		1	120
Equipment Storage	120		1	120
Storage	varies		varies	
ANCILLARY CLINICAL SUPPORT				
STAFF SUPPORT				
Staff Toilet	49		2	98
Staff Dressing	300	Mens & Women	2	600
Nurse Work Station	120		1	120
				Total Min Net Ft²
				3116
			Total Min Net Ft²:	4674

Figure 73: Procedure Center (Source: Author)

Other treatments were considered such as proton, neutron, electron and cryo-therapy, but these would require larger spaces to integrate large machinery. This facility would

act as an extension to the Anne Arundel Medical Center, and would create a different experience for the patient, family and staff. By taking advantage of the surrounding landscape, the building and topography begin to homogeneously work and seamlessly blend together as one.

Massing & Process Sketches

Through various massing explorations, three different types of schemes were explored. Scheme A consists of three facilities (Figure 74).

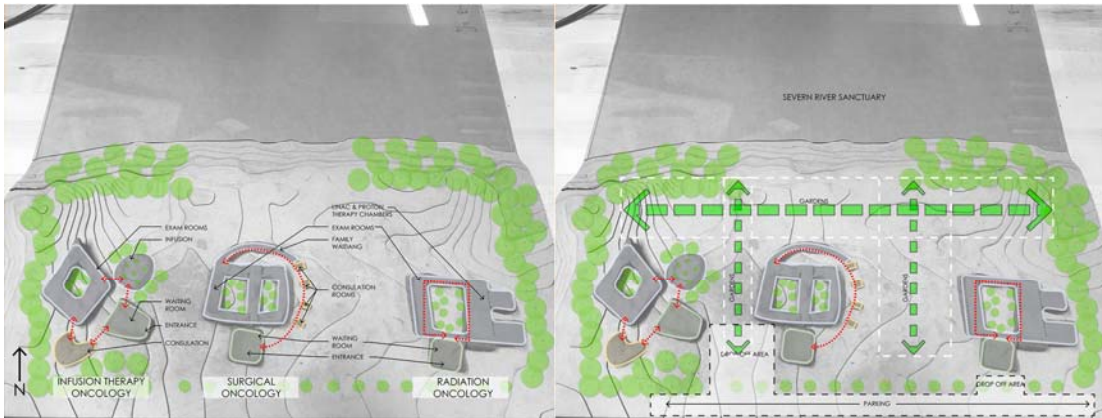


Figure 74: Scheme A (Source: Author)

Each building would have a different program associated to it along with a garden space in between each other to have landscape connect to each facility.

Scheme B consists of two facilities (Figure 75). One of the facilities would have two programs while the other holds the last program. Similar to scheme A, the landscape would connect the two facilities to begin to form an experience for the users transferring from one facility to the next.

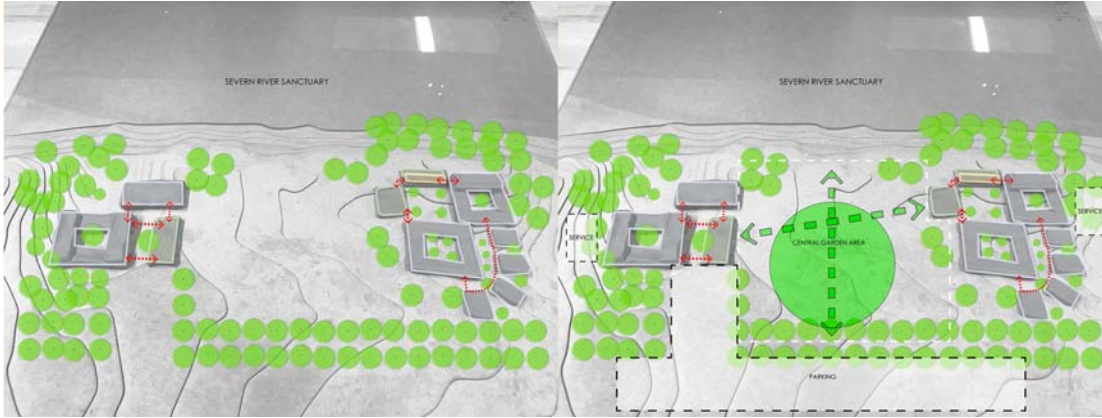


Figure 75: Scheme B (Source: Author)

Finally, Scheme C has all of the program associated into one facility (Figure 76). Scheme C became the resolution to the massing studies seeing as though it makes a simple spatial mapping experience for any user. The landscape would surround the facility and essentially starts to shape as a courtyard scheme. This scheme is studied further with process vignettes to understand what the experience begins to look like for one who uses this facility.

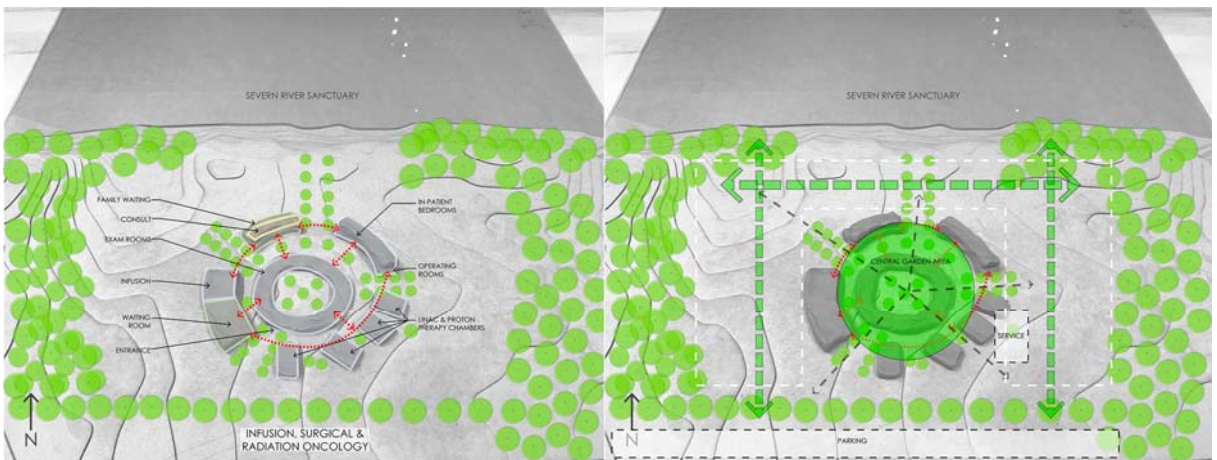


Figure 76: Scheme C (Source: Author)

The process vignettes show the experience what spaces could potentially be shaped into (Figure 77). Every perspective has a focal area towards nature whether it is an interior or exterior experience. The architecture begins to create an environment that distracts users as they wait for their treatment, and while they receive treatment. At the end of treatment, one can see a final ceremonial moment where a bell is rang to let others know that treatment can be accomplished and can psychologically help others who are struggling through the process. This bell can act as a symbol of hope for some patients who aren't as strong as others, knowing that there is a goal.

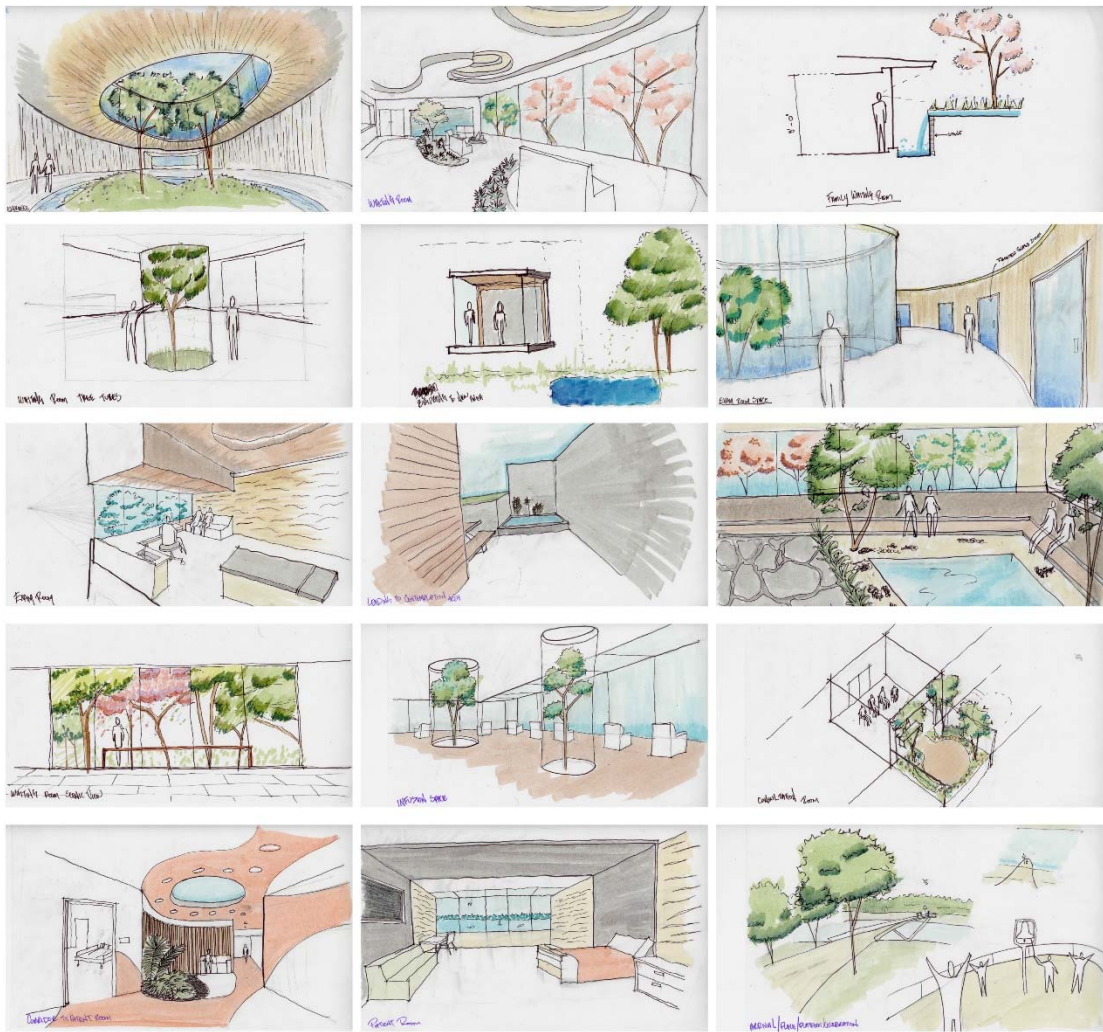


Figure 77: Vignette Sequences (Source: Author)

Chapter 8: Design & Feedback

This chapter shows the final results of the design for the cancer treatment center. The sequence takes one through the facility to understand spatially how the program is assembled and how users interact with the spaces. These spaces begin to affect the users' experiences as they wait to receive treatment and what the experience is like while they receive treatment. At the end of their long difficult journey of treatment, a bell is rang to celebrate their accomplishment which also influences others to stay strong and finish their treatments as well. Finally, juror's critique the design with valuable feedback to improve the design.

Parti & Landscape

The parti of this building is influenced by the two swales on the site. By using the language of the swales, a centrifugal form begins to take shape and allows to create panoramic views back out to the water and to the landscape (Figure 78). From there a core is created to have program surrounding around this space. (Figure 79). The landscape context has a steep 60' slope to the water (Figure 80). With this topography, the building can start to integrate itself into the cliff side to engage itself closer to the water (Figure 81). The landscape is peeled away from the building creating soft edges as the building settles itself into the landscape.

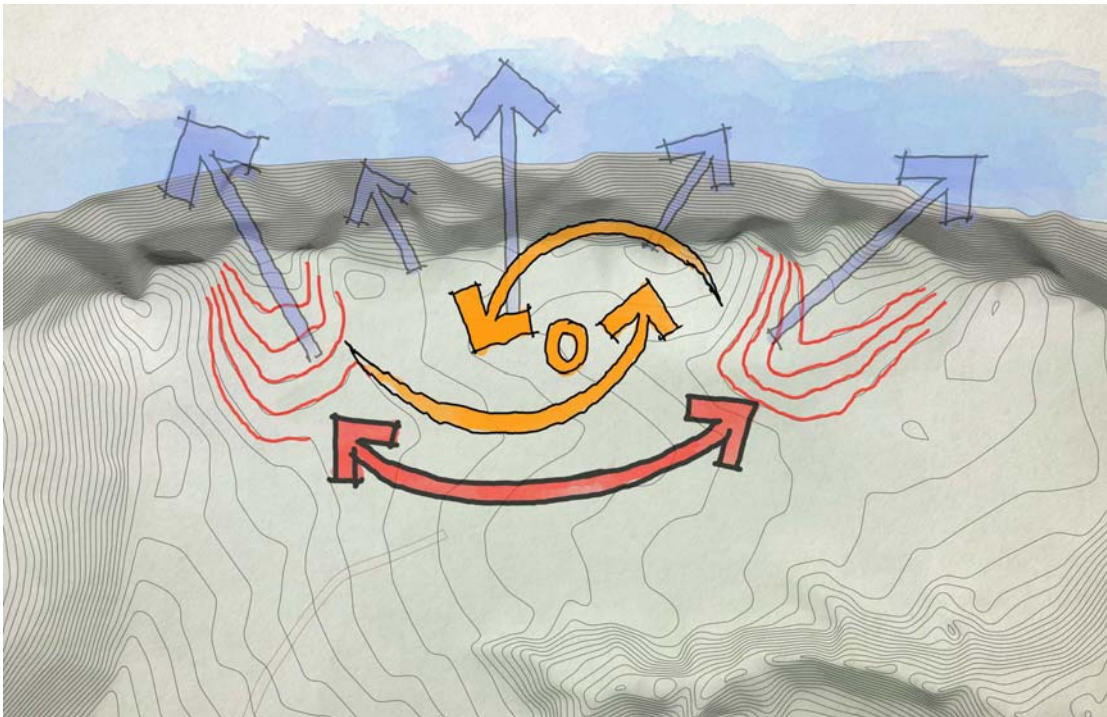


Figure 78: Parti Form (Source: Author)

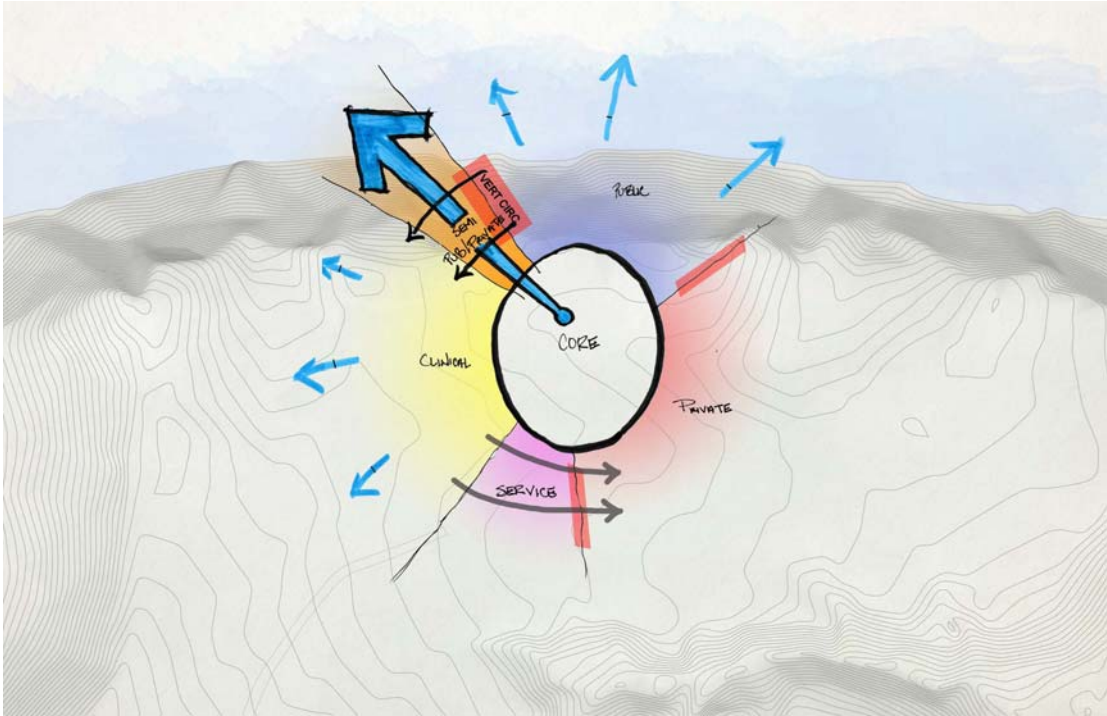


Figure 79: Parti Core & Organization (Source: Author)

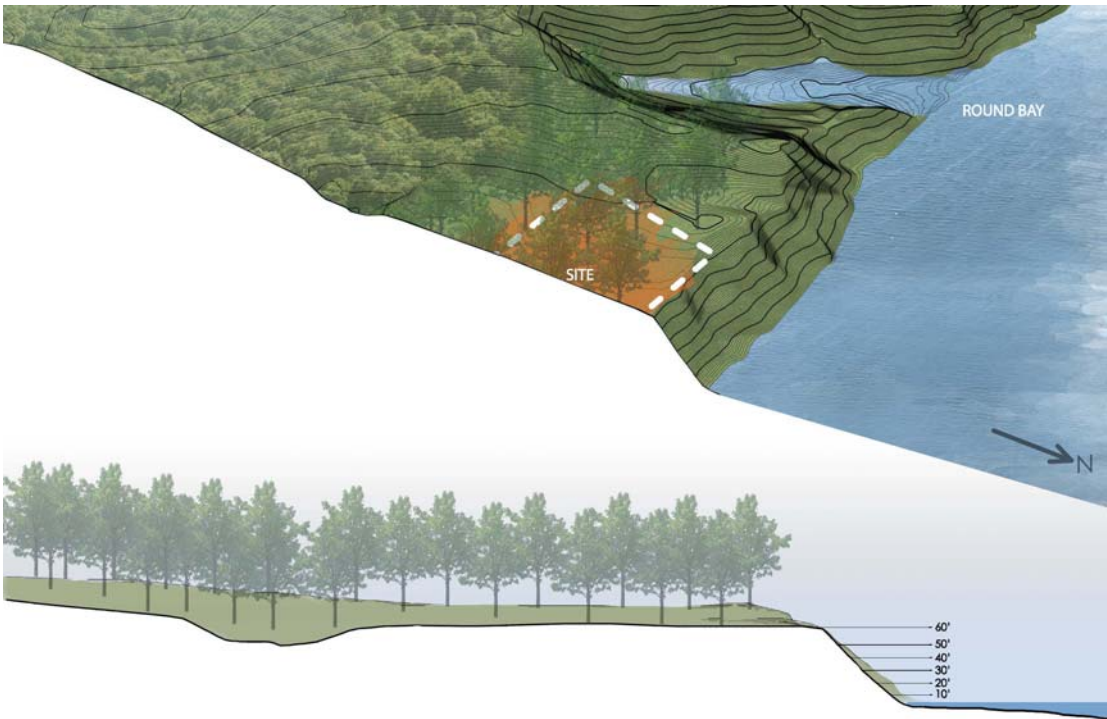


Figure 80: Site Section (Source: Author)

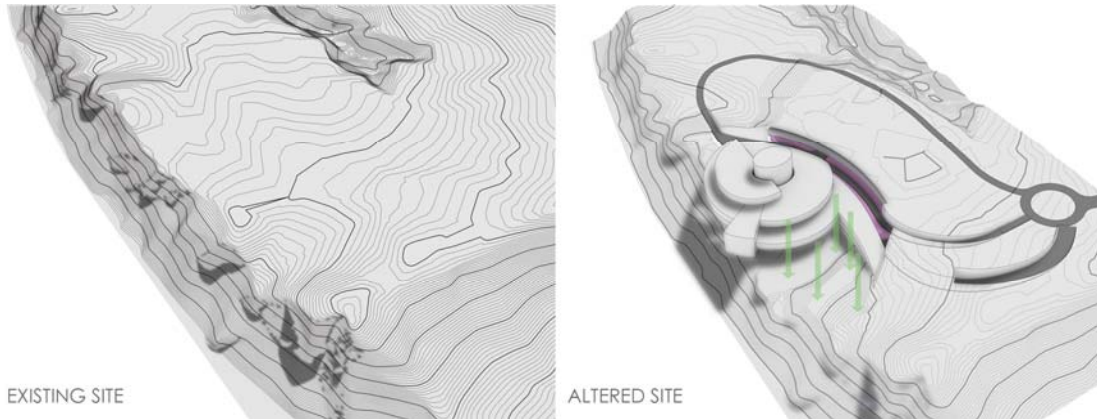


Figure 81: Existing and Altered Site (Source: Author)

The sequence begins at the traffic circle as one enters into the site. The circle separates the visitors and staff from the services (Figure 82). The staff and visitors maneuver to the right and following the bend of the road, they begin to travel into an underground level where a drop off is located. The parking for both visitors and services are located underground.

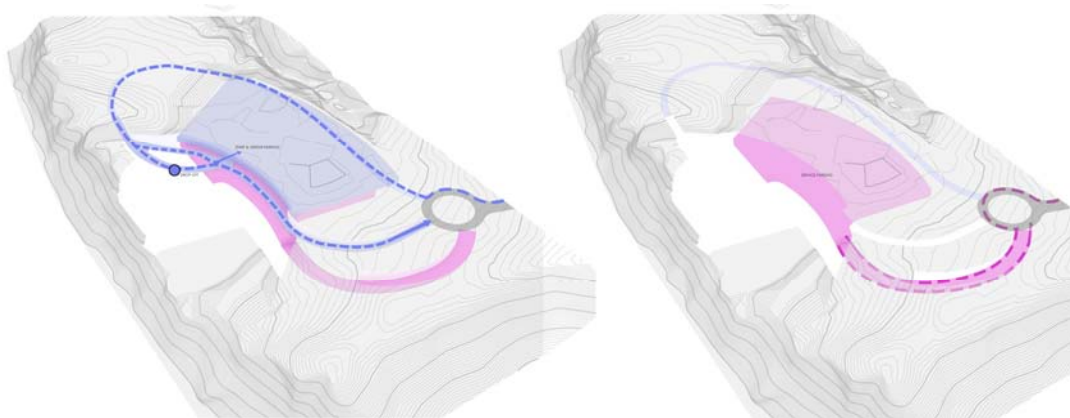


Figure 82: Visitor/Staff Parking (Blue) & Service Parking (Pink) (Source: Author)

Building Experience & Sequence

The building can be seen from two areas, the experience from the water (Figure 83) and from the car. The building is integrated into the site with foliage surrounding the area giving it privacy from the residences adjacent to the site (Figure 84).



Figure 83: Water Front Approach (Source: Author)

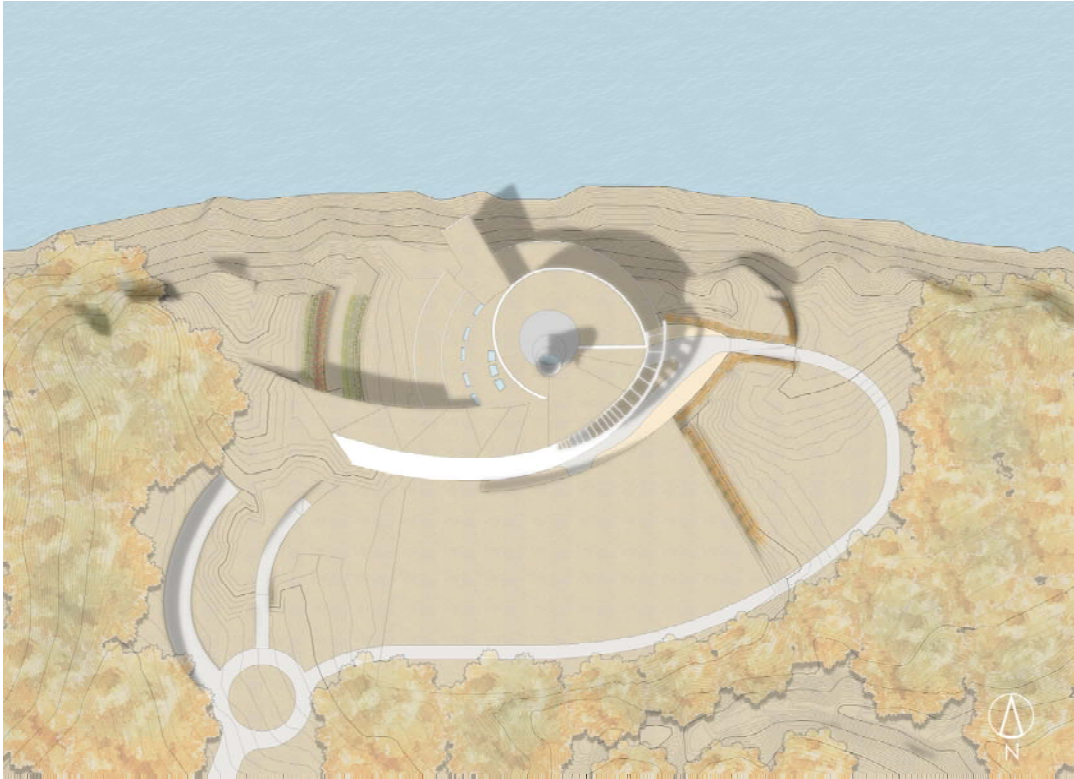


Figure 84: Site Plan (Source: Author)

There are four stories in the facility. Level 0 (Figure 85) holds the procedure center that accommodates recovery rooms looking into the landscape and a contemplation space located in the core. Level 1 (Figure 86) is where visitors and staff enters and has the radiology oncology and a staff area to hold offices and a break room. Level 2 (Figure 87) has the infusion consultation rooms, common spaces for people to wait for their appointment and the celebration space. Level 3 (Figure 88) has the infusion space where one receives their treatment. In the section cut of the building, one can see how the contemplation space at Level 0 has a spatial connection with the celebration space where the bell is located. This is the moment where while one contemplations, could hear and see the bell being rang to inspire them to finish treatment (Figure 89).

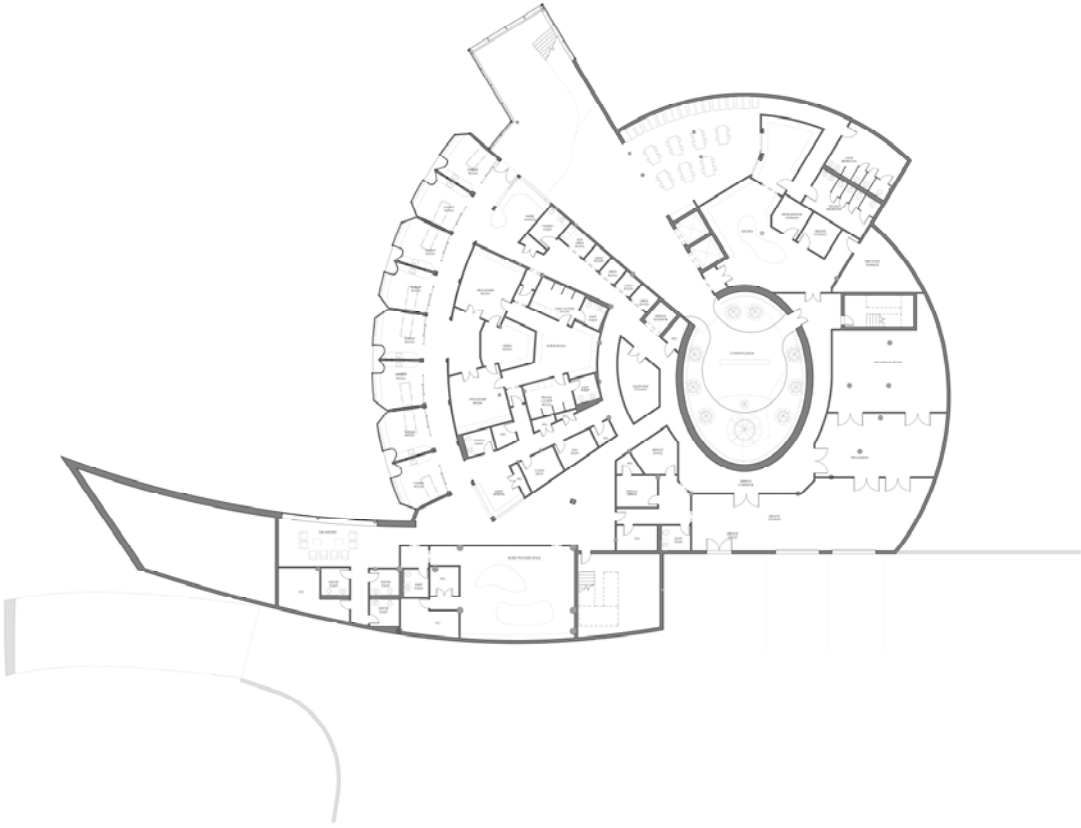


Figure 85: Level 0 (Source: Author)

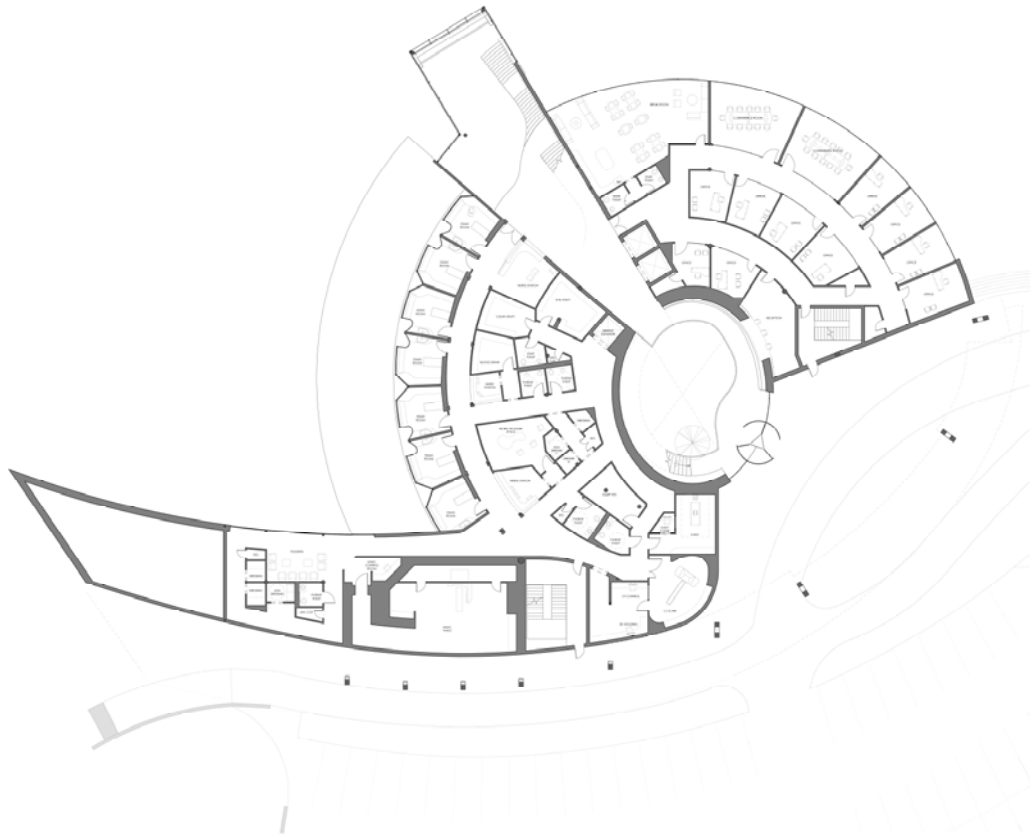


Figure 86: Level 1 (Source: Author)

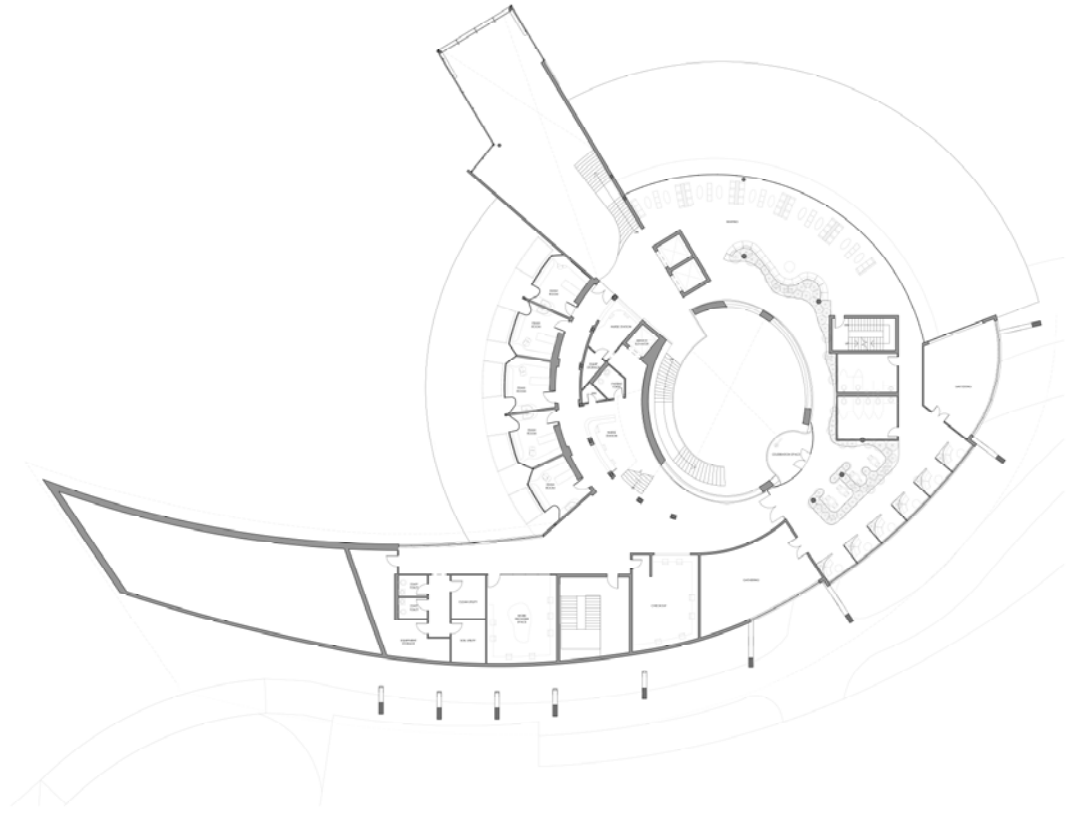


Figure 87: Level 2 (Source: Author)

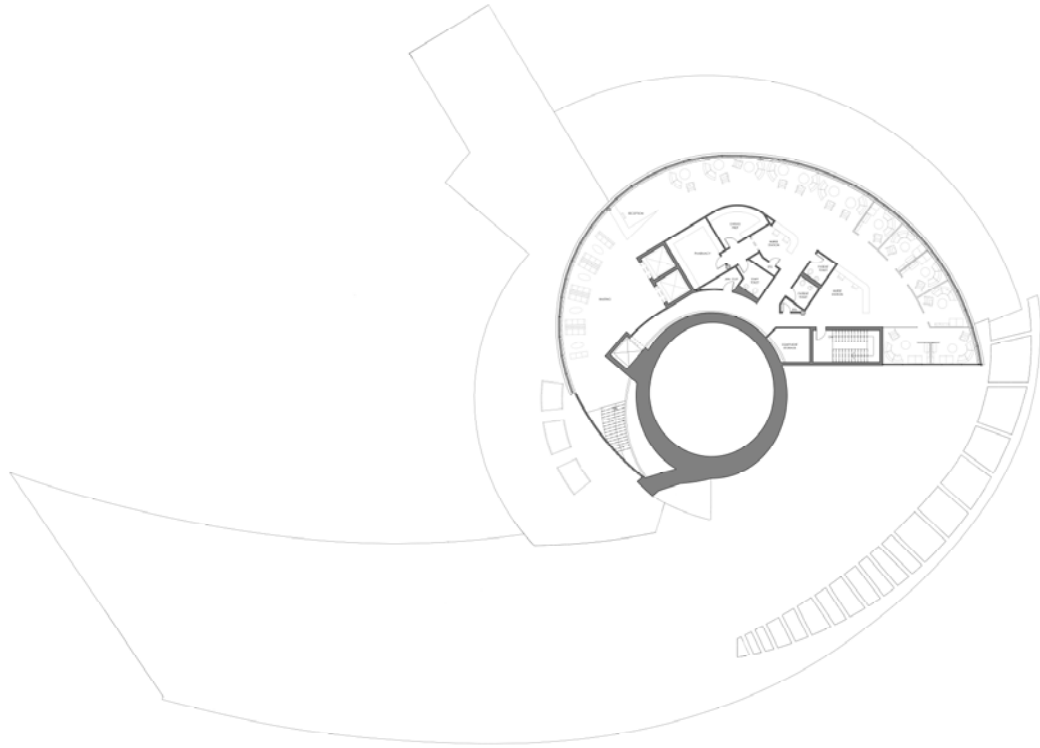


Figure 88: Level 3 (Source: Author)



Figure 89: Section Cut of Facility (Source: Author)

Finally, the sequence shows how one approaches the building, enters and experiences all the spaces (Figures 90-100).

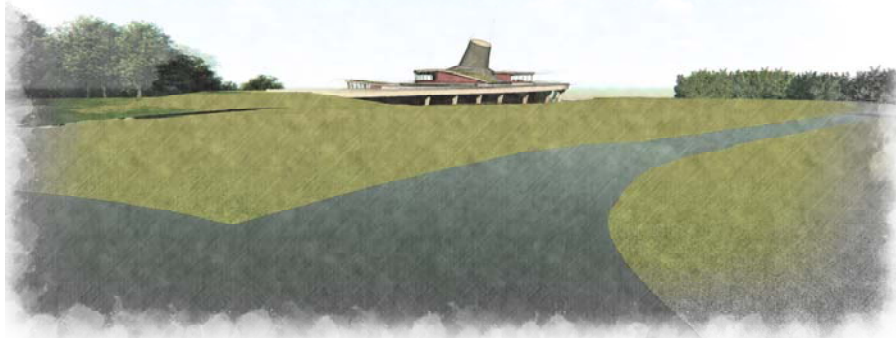


Figure 90: Approach at Circle (Source: Author)



Figure 91: Approach at Bend (Source: Author)



Figure 92: Drop off (Source: Author)



Figure 93: Entry (Source: Author)



Figure 94: Vertical Gallery (Source: Author)



Figure 95: Common Space (Source: Author)



Figure 96: Exam Room (Source: Author)



Figure 97: Recovery Room (Source: Author)



Figure 98: Infusion Space (Source: Author)



Figure 99: Contemplation (Source: Author)



Figure 100: Bell Ringing Ceremony (Source: Author)

Feedback

After the presentation, the jurors' comments were overall positive. They believed that the site is an appropriate setting and thought how the center core space acted as a great space of orientation, making navigating simple for all to use. Aside from the positive comments, their critiques questioned if there is enough space for an ambulance to come by to drop off other patients for treatment that are in more critical condition and if these spaces could become more of a learning environment for families who have never gone through treatment before so they can see how nurses and other family members interact with the patient. Another comment was questioning if the core space could be a little bigger, but as a defense, the space should remain at the current size to make sure that the contemplation space doesn't lose its intimate atmosphere. The final comment was to think about adding a garden space for users to walk through and if the roof could be an accessible feature for everyone to have a larger view back to the surrounding landscape. All of the feedback is valuable and will be incorporated for future improvement of the design.

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