ABSTRACT

Title of Thesis:	LIFE AFTER DIAGNOSIS: REIMAGINING WELLNESS FOR CANCER PATIENTS AND THEIR FAMILIES
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Cancer is one of the leading causes of death in the world. Not only are these patients and their families dealing with the devastating news of their illness, but they also need to think about how they are going to afford it. The cost of medical bills, chemo treatments, mental health appointments, and housing (if they plan to stay home or relocate to be closer to a hospital) can be a large burden to take on at once. The main question that drives this thesis is, **how can architecture and design elements be utilized to create a calming and therapeutic environment within housing and a community center to support the mental wellbeing of cancer patients?** There are many foundations that have started designing these healing spaces through housing and community center designs, for example, Gilda's Club, Maggie's Centers and the American Cancer Society Hope Lodge. By using these foundations as precedents, this thesis can gain some inspiration on key architectural elements that can benefit the overall wellbeing of cancer patients while battling their illness. The complex life of battling cancer leads to high levels of depression and anxiety due to feeling isolated and out of control of their situation. This thesis aims to restore independence to patients and to move away from the typical sterile hospital design being the only place for patients to heal.

LIFE AFTER DIAGNOSIS: REIMAGING WELLESS FOR CANCER PATIENTS AND THEIR FAMILIES

by

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Dedication

I dedicate this thesis to my mom and uncle who both fought cancer with a brave face and I was inspired by their courage and willingness to always laugh with loved ones to stay positive in a storm that no one prepares you for.

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Chapter 1: The Silent Intruder: Delving into the Complexity of Cancer

Introduction:

Cancer, one of the biggest threats to human health, is a complex and intricate illness that comes in many forms. “Cancer is the process of abnormal or damaged cells multiplying and spreading to other parts of the body” (National Cancer Institute. 2021). Each type of cancer is unique with how the body processes and fights it. In most cases the fight is painful, exhausting and can take a large toll on the body. A few symptoms caused by the treatments and cancer can be losing hair, nausea, joint pain, etc., but the most common symptom for each cancer type are tumors. Tumors are the largest mystery to cancer because they can either be cancerous or non-cancerous and sometimes, they can be misdiagnosed, leading towards a bigger problem to unfold. Curing cancer is still a mystery because each case is different, and most people immediately assume the worst-case scenario. However, the focus shouldn't just be on finding a cure. The focus should also be on how to ease the process of battling this terminal illness. For this thesis, it starts by explaining different types of cancers, the symptoms that occur and what each one specifically needs to survive. These are important to understand the type of spaces, support systems and physical needs must be met in an attempt to help different case scenarios.

Breast Cancer:

The first example, breast cancer, is one of the most diagnosed cancers around the world. “Breast cancer is when breast cells mutate and become cancerous cells that multiply and form tumors” (Cleveland Clinic, Jan. 21, 2022). The sad reality is that this type of cancer can affect anyone, such as younger or older women and men, however it affects mostly women (Cleveland Clinic, Jan. 21, 2022). Breast cancer symptoms can vary depending on the subtype it falls into, but they mostly consist of “a mass or lump, change in shape and size, blood-stained or clear liquid leaking out and/or looks inflamed” (Cleveland Clinic, Jan. 21, 2022). Many cases show that some people don’t get diagnosed till the symptoms get worse due to the fact most people don’t check themselves for these changes or have regular checkups. The causes of breast cancer have a wide range between genetics and life choices, such as, diet, smoking and/or radiation exposure (Cleveland Clinic, Jan. 21, 2022). The dangerous part of breast cancer is the chance of it spreading to other parts of the body at a certain stage (Cleveland Clinic, Jan. 21, 2022). The first, second and third stages of breast cancer are referred to as “the development of cancerous cells around the breast tissue and tumors starting to grow” (Cleveland Clinic, Jan. 21, 2022). The fourth stage of this cancer is the dangerous one because it means that “the cancer has spread to multiple locations in the body, such as the bones, liver, lungs or brain” (Cleveland Clinic, Jan. 21, 2022). Not only is this cancer painful, but the treatment is also exhausting and has many side effects. The most used treatments are the surgery choices, “a mastectomy (breast removal), a lumpectomy (removal of cancer cells and some healthy breast tissue) or breast

reduction" (Cleveland Clinic, Jan. 21, 2022). Even though these surgeries do help, they are very dangerous and can lead to many complications like infections or blood clots (Cleveland Clinic, Jan. 21, 2022). "Health providers may also use chemotherapy or radiation therapy side-by-side with the surgery treatments" (Cleveland Clinic, Jan. 21, 2022). The exhausting side effects of these treatments consist of "nausea, fatigue and sometimes losing hair" (Cleveland Clinic, Jan. 21, 2022). This first cancer example shows how exhausting and traumatic this type can be and data shows that once the cancer spreads there's only a "30% chance of surviving five years after the diagnosis" (Cleveland Clinic, Jan. 21, 2022). Even with those chances, many professionals say that it can be managed with light exercise, such as walking, to help ease stress because stress is the largest contributor to preventing the healing process (Cleveland Clinic, Jan. 21, 2022).

T-cell lymphoma:

The next cancer type example is T-cell lymphoma. This rare type of cancer stems from non-hodgkin lymphoma, "a blood cancer that develops in the lymphatic system" ("Non-Hodgkin Lymphoma: Types, Causes, Symptoms & Treatment.". 2022). Even though it is similar to non-hodgkin lymphoma, it spreads widely, and each subtype affects different parts of the body such as the "skin, lymph nodes, gastrointestinal tract and spleen" (Cleveland Clinic, April 26, 2023). T-cell lymphoma varies in its symptoms depending on the person, but the most common one is "red patchy skin" (Cleveland Clinic, April 26, 2023). Other symptoms consist of "pain in the belly, bones or chest, heavy night sweats, constant fatigue, swollen lymph nodes,

and unexplained weight loss or fevers" (Cleveland Clinic, April 26, 2023). The dangerous part of this type of cancer is that its symptoms are similar to other non-threatening illnesses and can make the cancer become overlooked until the worst symptoms appear (Cleveland Clinic, April 26, 2023). This disease affects mostly older men and the causes stem from genetics and/or being exposed to carcinogens, such as UV rays and workplace chemicals (Cleveland Clinic, April 26, 2023). The stages of T-cell lymphoma focus on the development of where the cancer is located, either in one or two lymph nodes or in vital organs, such as bone marrow, liver and lungs, which only happens in stage four (Cleveland Clinic, April 26, 2023). Most treatments focus on chemotherapy or stem cell transplantation but, in most cases, patients' symptoms are not developed enough to start these serious treatments, therefore, it involves watching for any changes that might happen (Cleveland Clinic, April 26, 2023). Chemotherapy is the most common treatment for each type of cancer because it's meant to destroy the cancer cells, but it also leads to many side effects, such as hair loss. Radiation therapy is another commonly used treatment that can also be dangerous because it can lead to other issues (nausea, headaches, body pains, hair loss, etc.) in the body later in life (Cleveland Clinic, April 26, 2023). The reality is that even though patients can go into remission (not seeing any symptoms), this type of cancer has a high chance of coming back (Cleveland Clinic, April 26, 2023). However, the best way to live with this disease, if a patient must live with it or it comes back, is by doing light exercises, getting plenty of rest and to do things that reduce stress (Cleveland Clinic, April 26, 2023).

Nasopharyngeal Carcinoma

Another cancer type example is Nasopharyngeal Carcinoma. This type of cancer "affects the tissue that connects the back of the nose to the back of your mouth, called the nasopharynx" (Cleveland Clinic, September 7, 2023). This type of cancer is created by abnormal cells growing uncontrollably and then becoming tumors (Cleveland Clinic, September 7, 2023). It mostly affects the nasopharynx and your lymph nodes but if someone has stage 4 of this type of cancer, it can spread to other areas, such as the lungs, liver and bones (Cleveland Clinic, September 7, 2023). It's considered a rare type of cancer and mostly diagnosed by 1 out of 100,000 men and in some cases women (Cleveland Clinic, September 7, 2023). The dangerous part of this type of cancer is that the symptoms are similar to other less serious illnesses, such as ear infections, headaches, stuffy nose, lump in the back of the neck, etc. (Cleveland Clinic, September 7, 2023). Most of the symptoms don't raise an alarm to see a doctor which can then lead to the cancer spreading. Most of the causes for it are from life choices and genetics. For example, "being a heavy smoker, drinking a high consumption of alcohol, or eating high salty based foods" (Cleveland Clinic, September 7, 2023). Like many other branches of cancer, treatment consists of chemotherapy and radiation therapy (Cleveland Clinic, September 7, 2023). Surgery is also an option, but the nasopharynx is in a "difficult location to work on", therefore surgery isn't common (Cleveland Clinic, September 7, 2023). These treatments are harsh on a person's body and have many side effects that vary per person and yet they are the most used (Cleveland Clinic, September 7, 2023). Survival rate can be up to 82% if it's caught in earlier stages, however, stage 4 only has a 42% survival rate due

to the cancer spreading to other parts of the body (Cleveland Clinic, September 7, 2023). Nonetheless, professionals recommend for people that are living with this cancer to “eat a healthy diet, practice meditation and try to join support groups” (Cleveland Clinic, September 7, 2023). Their advice further proves that having this thesis can help aid cancer patients' mental wellbeing and while trying to overcome cancer by providing support groups and knowledge of healthy habits.

Conclusion:

In conclusion, there are many types of cancers that go through different experiences and affect different parts of the body. Even though this chapter only explains a few, they all have similarities in their experiences. All of them rely on similar treatments that cause harmful and traumatic effects on a patient's body. They also share that the best way to live and overcome the disease is by reducing one's stress. Even though that’s the case, there are not many places for cancer patients to find that support and a place to destress. That's why this thesis’s goal focuses on the importance of providing hope and helping provide a sanctuary for the patients to destress after a long day at the hospital.

Chapter 2: Understanding the Origins, Impact and Solutions to Mental Stressors

Introduction:

Anxiety and depression are the most common stressors cancer patients go through. Around 34% of cancer patients suffer from anxiety and 15 - 25% of patients suffer from depression (CancerQuest, March 14, 2024). Stressors naturally have a negative physical effect on a person's body, healthy or not, and they are the cause for most illnesses or diseases that humans go through. However, cancer can speed up due to the stress hormones. This is why it's important to understand what causes these stressors, the physical effects that occur and lastly how architectural elements can support and ease their stress while they battle their cancer.

Types of Stressor and their Causes:

Anxiety: Anxiety is your body's natural response to stress. It's a feeling of fear or apprehension about what's to come" (Holland, 2022). Usually, anxiety is a normal feeling to have when nervous about something but when it gets to a serious level, that's when it's considered an "anxiety disorder". This is when the nervousness and fear can become extreme and cause harmful effects to the body. Some of the symptoms that occur includes, "restlessness, trouble concentrating, fatigue, unexplained aches and pains, etc." (Holland, 2022). The worst case of anxiety is when a person experiences a panic attack. This can lead the body to have "chest pains, sweating and chills, shaking, nausea, etc." For cancer patients, anxiety can get

to this level for multiple reasons, such as, getting treatment, not having support, being alone, stress about finances, and feeling out of control. The most common anxiety inducer is when a patient is getting treatment because most patients feel worried and scared about the pain and side effects. This leads to them feeling alone and the treatment causing more pain that could have been prevented if they had something to help calm them down. The harmful reality of this stressor can help speed up the cancer's process of spreading more and making their healing process painful and slow.

Depression: "Depression is a mood disorder that causes a persistent feeling of sadness and loss of interest" (Sawchuk, 2022). This type of stressor affects each person differently, but the most common symptoms are "feelings of sadness, loss of interest, anger outbursts, sleep disturbances, feeling worthless or guilt, etc." (Sawchuk, 2022). Statistics show that "16 million adults suffer from clinical depression" and even though it's a common thing there's still a large stigma around the disorder (Sawchuk, 2022). People with depression are usually met with society saying they're lazy or are seen as weak and rarely do people show empathy towards them. Depression is common for cancer patients after receiving their diagnosis. The main feelings they go through that lead to their depression is confusion, grief, feeling out of control, and low self-esteem ("Depression", Cancer.net, 2023). The most common symptoms that are concerning for cancer patients fall in the categories, "behavioral, cognitive, and physical" ("Depression", Cancer.net, 2023). Each category focuses on the how depression can negatively affect a person's way of living,

such as, shutting themselves out, not having any interest in something, being irritable, having fatigue, and in worst cases having thoughts about suicide (“Depression”, Cancer.net, 2023). This disorder is a huge contributor to cancer patients losing the will to fight cancer which is why understanding these symptoms of depression is important in order to find ways to support them in the specific ways they need.

Studies of the Ties between Cancer and Stressors

Stress is a natural thing that happens in the body. In the past it was used for survival, human fight or flight systems. It would cause our body to be full of adrenaline and enough fear to help us and then later the body would go into a state of “homeostasis, a state of rest and recovery after the stress” (Cort Davis, 2022).

There have been many studies on how stress can affect the human body but one of the most impactful is a study done by Dr Steve Cole. His research focuses on the study of socio genomics, “the effect stress has on a body’s genomes” (Sloan, 2010). One experiment he did involve implanting mice with cancerous tumors and analyzing how different scenarios might change the tumors development (Sloan, 2010). One mouse was left on its own and it showed signs of stress, leading the tumor's development to speed up (Sloan, 2010). Another mouse was left in a space crowded with other mice, making it also stressed out which then led the tumors to grow and spread faster as well. However, when they did a study on how a mouse with cancerous tumors may react to people petting it and showing it love, the tumor's development was slowed down because that mouse wasn't stressed (Sloan, 2010). These studies further prove the impact stress has on a cancer patient and how

with a small amount of support can greatly decrease its growth speed (Huang, 2023). An example of this, on a human scale, is how stress impacts a woman's health. Studies have shown that “women that undergo high levels of stress have a higher chance of contracting breast cancer” (Cort Davis, 2022). Another example is how high levels of stress can lead to the process of receiving treatment to be painful while staying calm can make the process faster and more effective. The main issue with that is most medical facilities don’t provide that support during treatment, making the patient feel confused, worried, scared and unable to calm down (Sloan, 2010).

Architectural Solutions to Help Relieve and Restore Mental Health

Through this research and understanding of these stressors, it can be seen how important recovery is for cancer patients before and after a long day at the hospital. The focus is finding ways to calm their nerves and have a space to get them out of their head that's full of worries and stress. Research shows that there are a couple key ways to alleviate anxiety, depression and stress physically and mentally.

One example is the benefits of meditation, specifically mindfulness meditation. This type of meditation “is training your attention to achieve a mental state of calm concentration and positive emotions” (American Psychological Association, 2019). This type of meditation can be a helpful way to teach cancer patients therapeutic options on ways to calm themselves down either with a group of people or during a triggering situation that is causing the stress (American Psychological Association, 2019). Some architectural elements that can be useful

when designing meditation spaces is considering how many spaces are for a group of people or for one person. Some feel more benefits recovering by themselves and others need people around them, that's why it's important to consider both sides. One precedent I plan to use as inspiration for these spaces is the New York's Luxury Meditation Center. This center incorporates multiple scales for different therapeutic purposes with also the use of calm colors and muted light. A few of these spaces can also include opportunities such as yoga for another version of meditation and a light mix of exercise. Even though for some cancer patients exercise might not be possible, medical professionals say it's still important to try light movements to stay active for your body to be strong enough to battle the illness.

Another therapeutic space I plan to incorporate are therapy offices large enough for support groups and individual meetings. Even though many cancer patients may say that talking about it won't change anything, it can be a mental burden to hold onto worries, questions and fears. Having either a professional or other people who have the same cancer type help talk them through their worries can have huge physical and mental health benefits that can help restore them.

With the help of these few examples of therapeutic spaces, the effort to help ease and restore the mental battle cancer patients go through every day is proven to work. Research and studies are slowly showing how mental health is crucial for physical health, therefore it is the backbone of this thesis.

Chapter 3: Grasping Living Experiences

Introduction

While interviewing a cancer patient and a family member of a cancer patient, it helped open a conversation about different ways cancer care could improve architecturally. By understanding each unique experience, coping mechanisms, support systems, stress inducers, etc. evolved more program types to be implemented in this thesis. The main question that was asked in each interview was “what could have been added to their daily surroundings that would have helped them during the process of battling cancer or help a family member with cancer”? A realization occurred when asking this question because the cancer patient spoke about how they never considered that before. After some time to ponder this question both patient and family members came up with many ideas that were not considered before and were led with excitement for what this could become. That excitement is the driver for this thesis; to find a way to bring a positive environment for cancer patients to feel comfortable, supported and to have the ability to get out of the sterile environment to reduce their stress.

Interview 1- Cancer Patient (A Fathers Experience)

The first interview was with a father who was diagnosed with cancer when he was 46 years old. He first spoke about what led up to being diagnosed and after listening to it, it sounded very similar to many cancer patients' experiences. In his words “He was a healthy individual and didn’t ever have a need to go to the doctors

ever". Since he's always been strong and worked out a lot, he was helping his family lift a jet ski trailer one day and when he lifted it, his back popped. He explains that "it didn't feel really painful, I just thought it was old age" and he moved on with his day. However, after some time passed the pain started to settle in and was becoming very sore, leading to his wife taking him to the doctor to get a physical done. During the first doctor visit, they said everything was fine and it was just a normal back pull and to not worry about it. After that appointment though the pain wouldn't go away no matter what he did, and it made him worried about what this could be. A couple days later he pulls himself away from his family and "keels over" because he felt as if his "sides were being stabbed". His wife finds him and rushes him to the emergency room, then after many tests and x-rays, they tell him he has a collapsed lung and then later came back to say that the x-rays found masses around his lymph nodes, meaning that he had cancer. Even when finding out he felt frustrated because the first doctor blew it off as if it was nothing and it had to get this bad for a doctor to find the cancer. This is a common experience with many cancer patients because most don't find out unless they feel something is off or it gets serious enough for the cancer patient to feel excruciating pain.

Through this interview, it can be heard how much this has affected him, mostly involving his family. As a father, he was raised to believe that taking care of his family was a top priority and there was a level of guilt because he felt like a burden on them. After being diagnosed, his treatment consisted of 2 years of chemo, then he experienced lumbar punctures into his vertebrae (the spine), and radiation; all three phases of chemo.

Even through all that treatment, his resilience and strength showed when he kept himself working and luckily was able to work from home. With the support of his wife and kids it pushed him to keep fighting and staying on top of his work helped him process his reality. In the interview, it was asked if he had to do any long visits (a couple weeks) at the hospital and to explain his experience. He explained he never had to relocate because in his situation he was lucky to be only thirty minutes away from the hospital, making the situation easier. However, in that span of two years with cancer, the longest time he needed to be in the hospital was more than 60 days. In that time frame, he was able to make a lot of friends with the nurses and doctors that talked with him and those friendships helped him stay in a positive mindset. He even sold two houses to two nurses that looked after him and was even invited to a nurse's baby shower, which showed how close he got to these nurses during his time there.

Another thing that stood out in the conversation was how he would always try to laugh in situations that made him nervous to keep himself positive. He realized that going through cancer and staying in a dark mindset wouldn't help him. He brought up again how amazing the nurses were and "it took a special breed to work at a cancer clinic" because of the things they see every day. He also mentioned how grateful he was to his doctor in John Hopkins Annapolis because they were able to help answer any question he had; therefore he didn't feel scared about the process he would need to go through to battle cancer. The positive emotions and support helped prevent him from getting stressed out, which was crucial because even the nurses told him to not stress out too much or it would make the cancer more active. This realization will be a helpful reminder of how important the nursing staff is during the process of battling

cancer and how important having a friend there to talk to about random things outside of the cancer topic can become a healing process. He also further proved that stress is professionally known to be physically bad for cancer patients because it can make cancer more rapid.

The last thing we spoke about was his experience with chemo treatment spaces and how stressful they can be. He explained the biggest reason why most patients request not to have their families in the room with them, while they get treatment, is because they don't want to scare their family, especially kids. The space had curtains with a chair and a tv set up and is a very sterile environment with 10 - 20 people in the same room with him. He would watch tv while he sat there for about half an hour. Some of the other patients were silent but most were crying which increased more stress for him and other patients hearing them cry. He mentioned that if there was a treatment space where the patient could have more privacy, feel less sterile, comfortable, smell nice, nice views besides a tv, etc. it would have helped the process of receiving chemo.

This interview helped evolve more ideas of what should be included within this new cancer center/housing. It's more than mental support, it's also providing the necessary space these patients need to stay positive and potentially have an easier time fighting cancer.

Interview 2- Nephew of Cancer Patient

This interview follows a close friend who had an aunt who passed away from Nasopharyngeal Carcinoma cancer when he was a teenager. He explains that his aunt was diagnosed with this type of cancer in his early teen years, between the ages of 10 - 13. He further explains he remembers how this was the first time he experienced something like this, which ties back to why the father, who was interviewed, explained why he didn't want his kids involved because of that reasoning. He heard of cancer before, but he had never seen it before. He explains further that since he was so young he didn't get to see everything, however he remembers seeing her when she was going through chemo and how it slowly was changing her appearance. This is a common experience because of how drastic chemo treatments can affect a human's body.

A question was brought up about her living situation, if she was at home or in a hospital most of the time. He answers with "it was back and forth. I remember her being in the hospital for a while then being discharged too". He then explains how she went through remission but got diagnosed again 3 - 4 years later. "The cancer hit harder the second time, due to it ultimately ending her life, however, she was able to stay home more often which was nice to have the family close to her during her last few months". She was still going through chemo treatment, but it wasn't constant. The next question touched base on how she was as a person and how she was around people? He answers with how bright, funny and outspoken she was. "You couldn't even tell she had cancer with how she acted around people, especially family". He also explained she was a faithful woman and used that as her comfort that kept her

going and helped her cope with her reality. She was very close with her children, grandchildren and many friends that helped her through her battle. He speaks more on the fact that she had a positive outlook on life and loved to laugh, which he believes helped keep her going. This is like the story of the father that was interviewed with how laughing and staying positive does not only help the patient but also keeps the family stay hopeful for what's to come. He mainly remembers visiting her at her house which he believed helped the family and his aunt feel safe, comfortable and happier than being in a hospital room.

This interview opened new revelations on how important it is to have family surrounding these cancer patients because it helps inspire them to keep fighting, to have happy memories, to feel comfortable/safe and to have a support system through the tough and good times.

Conclusion

After both interviews, this thesis has gained a whole new perspective and new concepts to consider when designing this new cancer center. These new concepts will focus on three main things; comfortability, accessibility, and how it influences positive emotions. These interviews show that the experience may feel different for a patient who has cancer and a family member supporting them but, in the end, they both need each other in order to fight this brutal disease.

Chapter 4: Current Applications of Cancer Mental and Physical Care

Introduction:

There are not many architectural applications of support systems for cancer patients in America however there are a few foundations that are there to reach out too and can help fully understand what support could be added to this thesis. A few examples in this chapter include Gilda's club and the American Cancer Society Hope Lodge. Outside of America, in the United Kingdom, and a few other countries, there are architectural projects that have been built that can help list key design choices they made and can be applied into this thesis's design development. This chapter's focus is to research the main missions of these programs and how their messages can be applied and shared through architectural elements.

Maggie Centers:

The story of Margaret Keswick Jencks has many turns and surprises. She was a writer and a designer and had many dreams for her future until one day in December 1987, she and her husband found a lump in her chest (Jencks, 2015). After many misdiagnoses they were finally told what they feared, she had an aggressive form of breast cancer (Jencks, 2015). There were a lot of questions of what type of treatment to choose between radiation, chemo or surgery. She decided to have surgery and went through chemo as well (Jencks, 2015). After a while the doctors, Maggie and her husband, Charles Jencks, thought she was free from the cancer (Jencks, 2015). Until five years later, when Maggie and Charles found out it came back and

now was in her liver and her bones (Jencks, 2015). They only gave her a couple months to live (Jencks, 2015). Even with the tragic news, she realized how draining and dreadful the spaces she was constantly surrounded in when receiving or waiting for her treatment, such as waiting rooms (Medina, 2014). She would say "in such neglected, thoughtless spaces, patients like herself were left to wilt under the desiccating glare of fluorescent lights" (Medina, 2014). With the last year of her life, she spent it dedicated to finding "an idea for a cancer center which she hoped would change the lives of other cancer sufferers" (BBC, 2016). She believed that "above all what matters is not to lose the joy of living in the fear of dying" (BBC, 2016). Similar to this thesis, Maggie's center's main focus is by providing knowledge, support and having a contracting space compared to a hospital, it can inspire hope to all that have been touched by cancer (BBC, 2016).

After she passed away, her renowned landscape designer husband, Charles Jencks took over her message and kept it going with the help of her friends, family and many famous architects, such as Zaha Hadid and Frank Gehry (BBC, 2016). Frank Gehry had a close friendship with Maggie and her husband and was the first architect to design a Maggie Center (BBC, 2016). At first it was hard to find the right style that he thought Maggie would envision, since at that time she had already passed away, however after many trials and errors the Maggie Center Dundee was born (BBC, 2016). The rippled roof paid respects to Maggie when both her and Frank went to see paintings done by Vermeer in a British museum (BBC, 2016). The buildings are related to a small cottage that allows plenty of light in and has many spaces for contemplating or for group discussions. Each space is designed so the

visitors or workers don't feel cramped or crowded (BBC, 2016). Having a world-renowned architect design these Maggie Centers spread Maggie's message like a wildfire and helped inspire people to donate or have more architects design them (BBC, 2016).

Figure 1: "BBC Two - Building Hope: The Maggie's Centres, an Introduction to the Remarkable World of Maggie's Centres." 2016. BBC. November 8, 2016. https://www.bbc.co.uk/programmes/p04f5vrt.

The fifth Maggie Center, which became famous, was designed by Zaha Hadid. This center turned out to be her first building she designed in the UK (BBC, 2016). Zaha's design was on a complicated site, and it was decided to turn the building away from the bland hospital and have it face the only green space on that site (BBC, 2016). This proves that designing with green space in the forefront is a key element of the Maggie Centers, even in urban sites. Another design choice she made was to have floor to ceiling windows that allowed the space to feel tranquil with plenty of access to light (BBC, 2016). The ironic decision for this center is that even though the exterior is angular and geometric, the interior is organic and curved (BBC, 2016). "These curves later became her signature style" (BBC, 2016). Even though each

Maggie center looks completely different, the program never changes (BBC, 2016).

Figure 2: "BBC Two - Building Hope: The Maggie's Centres, an Introduction to the Remarkable World of Maggie's Centres." 2016. BBC. November 8, 2016. https://www.bbc.co.uk/programmes/p04f5vrt.

The last Maggie Center example was designed by Richard Rogers in 2009. The site was surrounded by tall buildings, a bland hospital, and busy streets. Richard however believed these constraints of the site would help make the design better in the end (BBC, 2016). Similar to other Maggie centers, the main idea was to create a sanctuary separate from the outside world (BBC, 2016). Ivan Harbor, co-architect, explains in an interview that the entrance "acts as an arm stretched out and hugging you as you slowly see the streets disappear and be replaced with trees as you walk inside" (BBC, 2016). There are many "interactive spaces" that create an "indoor/outdoor experience" (BBC, 2016). The form resembles a lantern with its large canopy roof and bright reddish orange walls, similar to a warm flame keeping visitors warm and safe (BBC, 2016).

Figure 3: "BBC Two - Building Hope: The Maggie's Centres, an Introduction to the Remarkable World of Maggie's Centres." 2016. BBC. November 8, 2016. https://www.bbc.co.uk/programmes/p04f5vrt.

There is plenty of creative freedom for these architects that the charity helps fund while having a few specific requests (BBC, 2016). These requests include “a welcoming entrance, a space to pause beyond the door, office spaces, a kitchen area for a room of 12 people, one large room, two smaller rooms, space to lie down, and a garden” (BBC, 2016). The reason why these centers have helped many cancer patients is because unlike hospitals, design focuses on the technical and machinery side, these centers focus on the emotions the building can evoke and that’s the most important aspect to remember for this thesis.

Gilda’s Club:

Gilda’s club is an example of support groups that America currently has as a resource when people get diagnosed with cancer. They have over 20 clubhouses around the United States that hosts support groups, feeds the community and provides therapy for families. This club was inspired by the Saturday Night Live actress Gilda Ragner (Gilda’s Club, 2024). Gilda was a famous comedian of her time and sadly was diagnosed with Ovarian cancer in October 1986 (Gilda’s Club, 2024). After she passed her husband, Gene Wilder and her friends started the Gilda’s Club in her memory (Gilda’s Club, 2024).

The focus is providing a space for cancer patients to talk to other people that understand their experience and give hope back in their unpredictable lives (Gilda’s Club, 2024). Another thing they’ve done in the past is go on “George to the Rescue” and have George and other designers redesign their play areas for the young kids and teen spaces as well (George to the Rescue, 2024). In the video they mentioned their

slogan, “cancer support for the whole family the whole time” (George to the Rescue, 2024). This slogan is another key idea to this thesis because the community center and housing isn’t just for cancer patients but their families as well that are going through their own struggles and need their own space to process (George to the Rescue, 2024). During the redesigning process the application of color, interactive elements, outdoor spaces, murals and light have a big impact on how to evoke positive emotions (George to the Rescue, 2024).

Figure 4: George to the Rescue “Powerful Design Transformation for Gilda’s Club Cancer Support Community | George to the Rescue.” n.d. Www.youtube.com. Accessed March 28, 2024. https://www.youtube.com/watch?v=FOlsEm1Ze6s.

American Cancer Society Hope Lodge:

The last foundation that also provides support and knowledge for cancer patients is the American Cancer Society Hope Lodge. They focus mostly on providing a home away from home (American Cancer Society Hope Lodge, 2024). There are many cases of families that need to relocate to be closer to a hospital either in their home state or in different states. The type of spaces they have typically, include communal kitchen, play arena, up to 2-bedroom condos, laundry room, etc (American Cancer Society Hope Lodge, 2024). The place you live is a key element for these patients and their families because after a long day of treatment or just a

long day in general, having a space you can call your own, outside of a hospital, can help a person unwind and destress. Another positive with this program is it's funded by American Cancer Society, therefore it's free for the guests and it takes away at least one financial burden (American Cancer Society Hope Lodge, 2024). This is why including housing in this thesis is key because it can help enforce the message of providing hope, reducing stress that comes with having cancer and helps them stay close to the hospital in case of an emergency.

Chapter 5: Program Ideals that can Promote Mental Healing

H. C. Andersen Museum

Figure 5: "H.C.Andersen Hus Museum / Kengo Kuma & Associates." 2022. ArchDaily. March 25, 2022. https://www.archdaily.com/979082/hcandersen-hus-museum-kengo-kuma-and-associates.

This museum is the epitome of a whimsical, warm space that creates an interactive experience that focuses on the human scale. This precedent is located in Denmark and is built around H. C. Andersen's story books. He has created many famous novels, such as, the little mermaid, ugly duckling, etc. and each circle is either an exhibit that provides each story's environment or is a natural exhibit that focuses on the paths that wind a person through the site.

Figure 6: "H.C.Andersen Hus Museum / Kengo Kuma & Associates." 2022. ArchDaily. March 25, 2022. https://www.archdaily.com/979082/hcandersen-hus-museum-kengo-kuma-and-associates.

This natural setting holds a program layout that focuses solely on the human experience which leads to how this thesis plans to use the same mindset when walking through and around a cancer center/housing. The curvy paths can be a fun way to include a walking path for cancer patients that need to stay active in order to keep their body mass from deteriorating. The paths can also be stimulating for families with young kids to have fun and run around.

The use of removing some of the ground scape can be a positive design concept when a patient is in a treatment room, so that radiation machinery can stay "underground" while chemo stations can have a private view into a hidden garden. Views are important when designing a treatment room because after learning from the interview with a cancer patient, having privacy with open views and feeling comfortable with the right furniture and smells from the garden can all cohesively make that experience less stressful. The natural choices between the mass timber construction, trees lining the pathways, tall glazed windows for natural lighting and air ventilation, etc. all will have a key part in this thesis too because through research having views and being surrounded by vegetation can influence a calm mind while

also providing fresh air, vitamin D, space to keep the body moving, and plenty of spaces to spend time with friends and family in interior or exterior setting.

St. Charles Cancer Bend Center

This center is another bright example of how to design treatment spaces that can feel warm and inviting while also having many other additional treatment spaces that circulate in a cohesive way. Each treatment space focuses on comfort and strays away from typical white and sterile hospital spaces.

Figure 7: "St. Charles Medical Center, Bend Outpatient Cancer Center and Radiation / Oncology Remodel - Work - ZGF." n.d. Www.zgf.com. Accessed May 15, 2024. https://www.zgf.com/work/963-st-charles-medical-center-bend-outpatient-cancer-center-and-radiation-oncology-remodel.

Seen in the images (Figure 7) it shows a bright space with an option of being in an open space or private cubbies which can help provide patients with a choice of what they prefer.

Figure 8: "St. Charles Medical Center, Bend Outpatient Cancer Center and Radiation / Oncology Remodel - Work - ZGF." n.d. Www.zgf.com. https://www.zgf.com/work/963-st-charles-medical-center-bend-outpatient-cancer-center-and-radiation-oncology-remodel.

The use of water elements also are favorable considering they help with cooling spaces down, helps with canceling noise, and provide a calming view when looking outside of the building. Water can be used in multiple ways, such as, seen in (Figure 8) being a calming pond, or a water wall, or used to help circulate visitors. All of these choices will be considered during the designing process while thinking about what the water's main use should be.

Figure 9: "St. Charles Bend Cancer Center by ZGF Architects | 2015-06-16 | Architectural Record." n.d. Www.architecturalrecord.com. Accessed May 15, 2024. https://www.architecturalrecord.com/articles/7481-st-charles-bend-cancer-center-by-zgf-architects.

The last thing from this source that stands out is the circulation around the site. Like the H. C. Andersen Museum, it wraps around the building and is full of vegetation, water, and different walk paths, such as a small bridge meeting a sidewalk (Figure 9).

Maggie Leeds

Figure 10: "Maggie's Leeds by Heatherwick Studio." 2021. Architizer. December 16, 2021. https://architizer.com/projects/maggies-centre-1/.

Maggie's Leed is one of the many Maggie Centers that incorporates similar design choices that are seen in St. Charles Cancer Bend Center and the H. C. Andersen. The center's form is based on a biophilic design in the shape of mushroom with vegetation acting as a barrier from the landscape of its surrounding city. The walls that hold the roof up include tall glass walls and mass timber organic walls that curve into the ceiling of the building seen in (Figure 10).

Figure 11: "Maggie's Leeds by Heatherwick Studio." 2021. Architizer. December 16, 2021. https://architizer.com/projects/maggies-centre-1/.

Figure 12: "Maggie's Leeds by Heatherwick Studio." 2021. Architizer. December 16, 2021. https://architizer.com/projects/maggies-centre-1/.

The center also includes warm colors that allow the sun to bounce off the surfaces of the walls, making the space feel brighter while also keeping the space cool. The scale of the lounge spaces vary depending on the use, such as, eating area, intimate small groups or personal spaces. These room sizes can be used as reference for the therapeutic spaces that are in the program for this thesis. Space like a spa,

gym, group therapy, personal therapy, meditation spaces, etc. will all have a similar feel to the space in the image (Figure 11 & 12) to influence calm and positive emotions.

Decided Program

After studying multiple precedents, the program includes three main categories: Restoration zones, Gathering Zones and Resting Zones. Each zone focuses on multiple ways to provide mental and physical healing spaces, such as, treatment rooms, meditation spaces, spa, housing, etc. Each of these examples show that medicine, therapy and family support can all work together to help cancer patients reduce their stress and have an easier time battling their cancer.

The first zone, Restoration Zone, will include treatment spaces (such as chemo), Physical therapy, Psychological therapy, Gym, Spa, Meditation Space and possibly a hot spring. The main purpose of having multiple types of "treatment" spaces is to have each form of treatment work together to have the cancer patient's body at its peak mentally and physically in order to fight this disease. Cancer comes in many forms, which means it needs to be treated in many ways that are conveniently close to each other.

The second zone, Gathering Zones, focus on the spaces for cancer patients, their family, friends and the surrounding community to come and enjoy the amenities this center provides. These spaces include a Waiting room, Day Care (for kids with cancer and kids that have a parent getting treatment), Food court, Retail, Auditorium, and Office spaces. These spaces enforce the bonds of families and provide a space to have fun, laugh, and spend time with each other. Through the interviews it can be

seen that having a cancer patient's family support them has positive effects on their overall wellbeing as well as the families, therefore providing plenty of these types of spaces in the program are important to the patients' health.

The last zone, resting zone, includes housing opportunities for families that have patients staying at the hospital for a long period of time and need to stay close but want to feel at home. This housing zone is also for families that need to relocate to be closer to the hospital to be close to their family member who has cancer and needs to be near a medical team. Even though these housing spaces will be right next door to a hospital, thes homes will feel comfortable with provided furniture, plenty of light and privacy, and if an emergency happens, they have medical care on site to help. Lastly the housing zone will be designed with affordability and comfort in the forefront of importance. Cancer patients already have financial stress from medical bills and life bills and providing a place for them to temporarily live with a piece of mind financially will also help reduce their stress and guilt.

Chapter 6: Enhancing the Mental Well-Being of Cancer Patients in Baltimore

Site Abstract:

This thesis focuses on providing a place that uses therapeutic architectural elements to help de-stress the mental health of cancer patients. The selected site's top priority is to instill positive emotions by working together with the built and natural elements. Baltimore was chosen as the location because of its history, diversity and

well-established medical facilities. Designing a community center for cancer patients with affordable housing can help color Baltimore in a new and positive light, opposite to the stigma it already goes through. The current three sites that are being compared each have specific qualities that can help elevate the final site experience. The main elements that are non-negotiable for the selected site are affordability, proximity to a hospital, sustainable opportunities, accessibility and connection to nature. These chosen criteria are important because each one considers the human scale experience and makes it convenient for patients to get their treatment while providing a space for them to relax with their friends and families outside of the sterile environment, they see weekly.

Baltimore Background:

Baltimore has a high stigma about its location that mostly focuses on how it is not a "safe" place to live, or most people are trying to move out of Baltimore instead of move into it. However, there are many positive qualities about Baltimore that make it the perfect area to build this community center/ affordable housing for cancer patients. A couple characteristics include its diverse community, rich history, affordable housing, fun activities, and many well-established hospitals that specialize in cancer treatment. John Hopkins has been a long-standing hospital that provides treatment and now MedStar hospitals are providing more options to patients in need. One problem is that most of these hospitals have wasted square footage, utilized by parking lots, that can be used for this thesis. There are three sites that stand out because it meets the main components this thesis needs to be successful, such as, safe location, diverse neighborhood, proximity to activities, affordable

location, hospital proximity and many sustainable opportunities. This chapter will further analyze these three sites, leading to the selection of which site to build on.

MedStar Health: Oncology Care at MedStar Harbor

Figure 13

This Medstar Hospital is located near the National Baltimore Harbor and has complete waterfront views. This site stood out from the others because of the amount of available square footage that could be used, the natural setting the area provides and how this new community center and affordable housing would be right next to the hospital in an affordable/safe area. Through the analysis ranking process, this Medstar site currently stands at the top spot because of its location, affordability, community diversity, safety, and its clear views of the water. Waterfronts naturally have a calming effect on people, especially ones that are stressed, because of what they see, hear and smell. Being close to water can be a strong strategy with using the site as another component of providing a

calming experience. This analysis also showed how being separated from the busy city is the best course of action because cities typically can be overwhelming for people, therefore having an open-air site is top priority. Even though it needs to be separated from the city it can be in close proximity. Being close to the harbor has its benefits because of the number of activities to do and how much development it's going through. The community center will provide events and activities for cancer patients and families to participate in but it can also include field trips into the city for groups to meet up at and step away from the hospital entirely but with people who relate to you.

John Hopkins: Sidney Kimmel Comprehensive Cancer Center

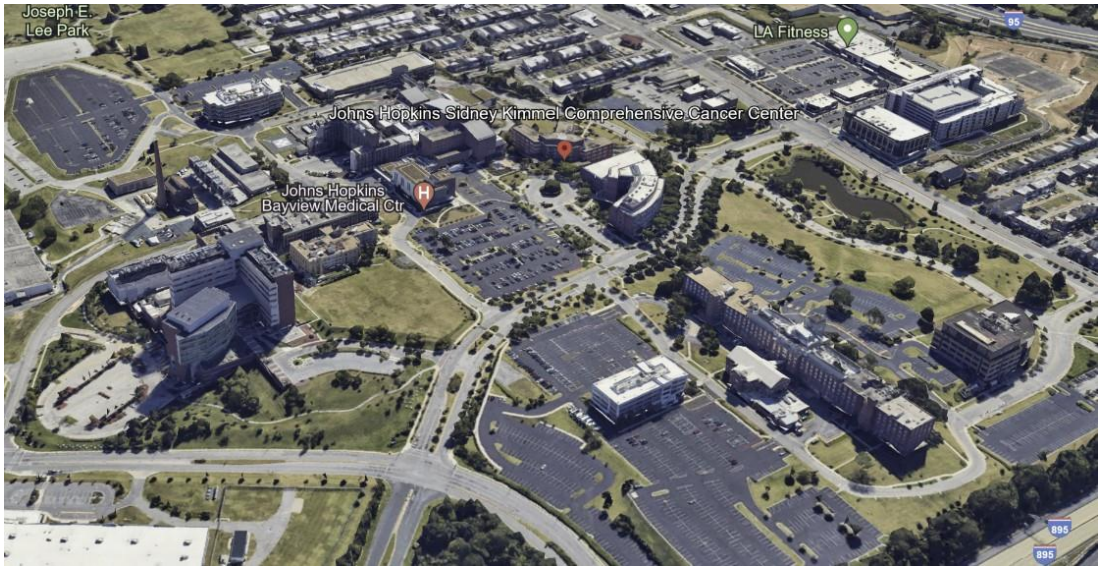

Figure 14

The next site is interesting because the current hospital, on the site, has an organic form to it that could be utilized for the designing process of this thesis. This new community center and affordable housing will be an organic form no matter what the hospital design looks like, however, the beauty of this site is by using the hospital form,

replicating it can be a strategy to tie the two healing spaces together. The area is also safe and has many parking lots that can be used but the area doesn't have as much diversity with its community compared to the first site. Diversity can mean many things for this project, such as race, gender, pronouns, jobs, stages of cancer, etc. Diversity is key for this project because the Community Center focuses on pushing a message that even though people are unique, they all are going through the same story and can help understand what they need. Even though this site provides a clear organic form that can be used, in the end, designing the community center/housing separately, displays this thesis's message clearer. This is because hospitals are designed and built to focus on the technical importance of space over the wellbeing and comfort of its patients. Therefore, this community center and housing will be completely different and will focus on how to provide the spaces they need to relax, have fun, and destress after a long day of anxiety and feeling hopeless.

MedStar Good Samaritan Hospital

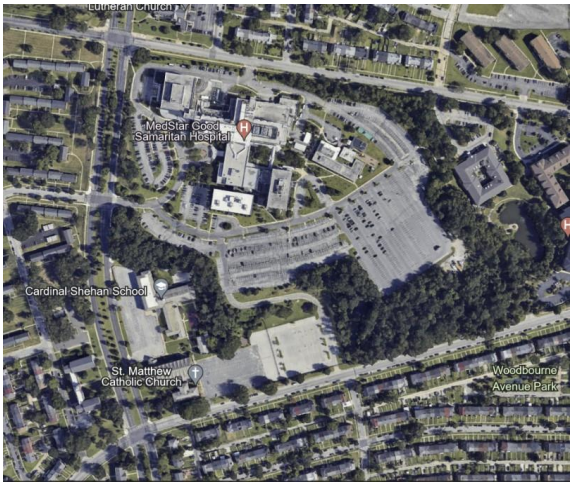

Figure 15

This last site is another highly ranked space because of its hospital proximity, safety, affordable location and the best part being its protective, warm vegetative arm that wraps

around the site. This is another example of utilizing the site's current state to provide a therapeutic environment that surrounds the project. Nature is the biggest component to site selection because of its importance in de-stressing patients. Research has proven that the more a person is surrounded by nature the better mindset they will have. Even though the idea to implement more nature is still going to be the core of this thesis design, the wrapped arm of trees can provide a parti for the beginning stages of design.

The site is also surrounded by a diverse neighborhood that's in a safe area full of families and older generations that can also use the new community center. Cancer patients are the main focus group for this thesis, however, that also applies to people that already live in the area and want to de-stress or have fun in the community center. This proves that having an idea of what spaces can be used by a wide variety of people and making it accessible is another top priority. Even though there are main pros to this site, it also has a con. It is further out from the city, therefore, if someone has a job in the city it would take longer to reach, compared to the other two that are in closer proximity to the city and what it has to offer.

Site Selection

After analyzing each site through the same criteria, the site that was chosen as the top choice was the MedStar Good Samaritan Hospital. The main criteria that it meets was being in close proximity to a hospital, it's an affordable area, it's a safe area with plenty of neighborhoods around, it's a relatively flat site which will help make it accessible and the big influence on the choice was the large canopy of trees that circle around the site.

Each part of the criteria that helped with the site decision focused mainly on human experience. This hospital is well rated among the community and has helped many people with cancer. The tree canopy stood out from the other site because this cancer center/housing intends to include plenty of green spaces and with the dense forest already there then at some point those trees may become the forming device for this center. Also, like how the trees hug the site and protect it, this cancer center/housing will open its arms to patients and keep them safe, comfortable and stress free.

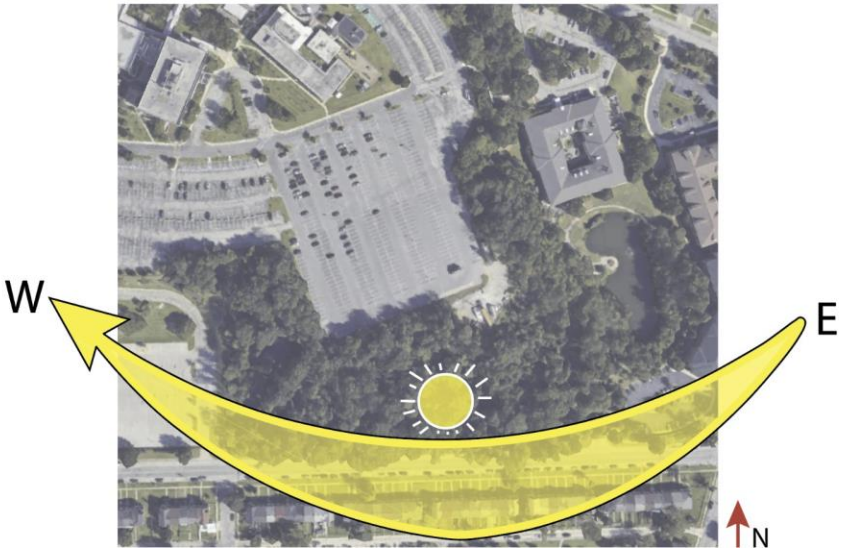

Figure 16

After doing an analysis on the site, it can be see in (Figure 16) how much sunlight penetrates the space but the trees will provide plenty of shade to the outer edges of the site, therefore thinking of strategies to add shade in the middle of this new center will be a key design component.

Figure 17

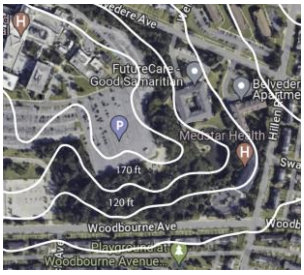

Figure 18

The images above (Figure 17 & 18) analyze the topography of the site. This was made important after the interviews because the cancer patient mentioned having a mile path for cancer patients to walk to keep their body mass intact. However, this would need a relatively flat site so that the path wouldn't be strenuous on the patient.

Figure 19

The last site analysis that was considered was entry points onto the site. Considering the main transportation access would be car, bus, uber and walking, finding out what the main entry point would be for each type of transportation is important to consider. This will help lead to studies of circulation on the site and how people walk on the site, where they have designated parking and where they can be dropped off. One

consideration is to have the main walking path connect the hospital to the center and into neighborhoods to weave the site into its surroundings. The big idea is to have the circulation form the building shape, like the H. C. Andersen Museum also provides forms that allow plenty of indirect light and wind access, like the St. Charles Cancer Bend Center and Maggie Center.

Chapter 7: Building Form Studies

Introduction:

Through research, it was determined that comfort, community and convenience would be the foundation for the design decisions towards this new cancer care center. The current state of cancer treatment centers revolves around evolving technologies and forgoes the human experience for patients. By improving the circulation of spaces, making spaces more comfortable and rethinking how to enclose a space can help improve the overall experience of cancer patients and aims to reduce the stress imposed on the patients. Each blocking option uses similar goals such as entrance placements, separate dwelling for program and a central family space while demonstrating their own individual design solutions.

Site Blocking Option 1:

In the first blocking option, the focus was to bring most of the treatment program above ground level to have views of trees and vegetation while having water weave past and under the raised dwellings. By having a cluster of buildings and wrapped by vegetation this allows an experience for cancer patients and their families to feel at

peace on this site that focuses mainly on calming stress. Each dwelling is connected in a way that is convenient and allows its visitors to feel a sense of interior/outdoor circulation that weaves through the program in a cohesive way. Lastly, the connecting bridges would allow continuous views of nature's when moving to the treatment spaces the patient needs instead of cold and sterile white hospital hallways.

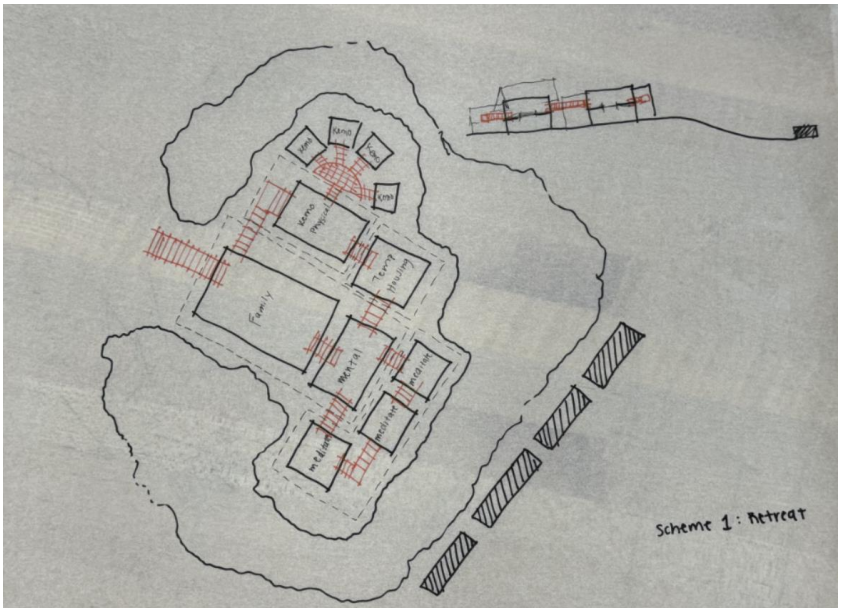

Figure 20: Site Blocking Option 1

<u>Site Blocking Option 2:</u>

The second blocking option provides a more organic layout that mimics the natural elements that surrounds the site. The site is used to create paths that connect the separate programmatic dwellings. This journey's main effort is to provide positive mental healing and the hope that cancer patients need to fight their cancer. The heart of this cancer center option is in the family spaces that cut into this site, making their mark with each of the other dwellings by having full visual access into the space. Lastly, the family space would be under grade that opens at grade level. By having the family spaces and treatment spaces

separate it allows the treatment spaces the respect and quiet environment it needs while also allowing patients to view fun family activities after receiving their treatment to uplift them.

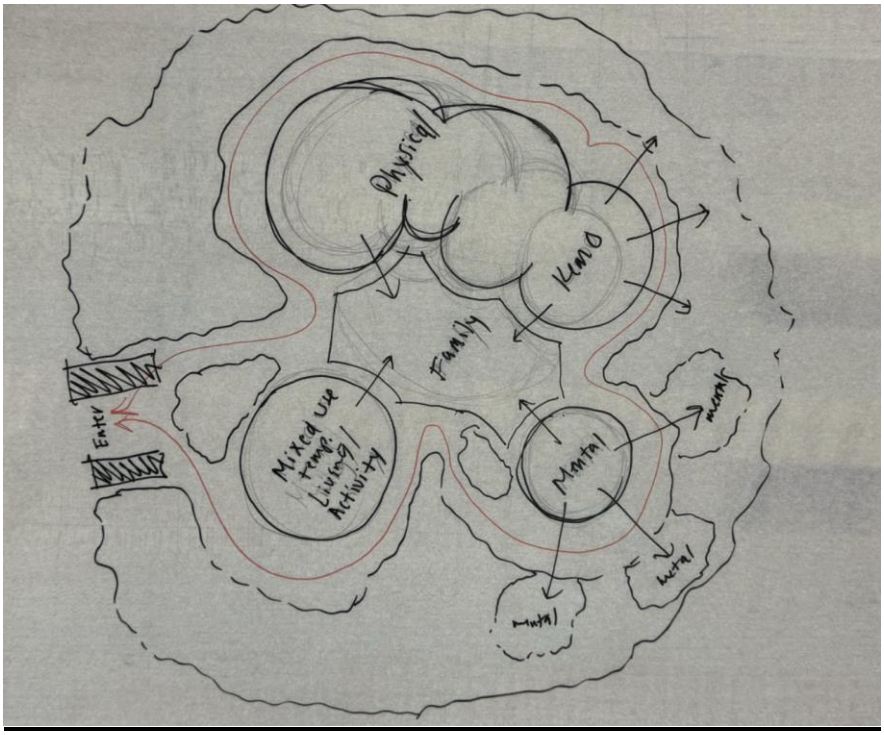

Figure 21: Site Blocking Option 2

Site Blocking Option 3:

The last blocking option focuses on connecting back to the community with a large stair running up the current hillside that runs behind the site. The stair connects back into the family spaces and becomes its main entry point. The community aspect opens the site to the surrounding neighborhoods and re-establishes the urban grid that is currently lost without it. Similar to the other blocking options, the program is separate and is connected by exterior circulation, allowing for continuous views of nature while walking to their treatment appointment.

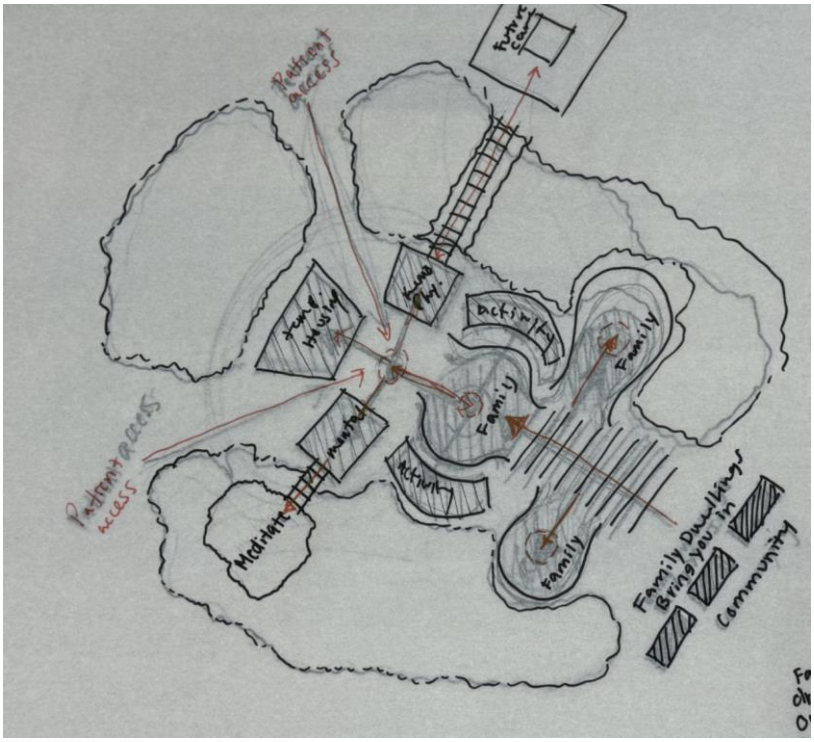

Figure 22: Site Blocking Option 3

<u>Conclusion:</u>

Comfort, convenience and community are the three main components that drive this thesis design decisions. Therefore, each of the blocking options provides individual traits that were used in the final cancer center design. Separate program, opening circulation, undergrade family spaces, threshold moments and different forms of enclosure were the final design decisions that aims to improve the experience of cancer care and lower the stress of cancer patient receiving different types of treatment.

Chapter 8: Design Solution

Site Layout:

The site design focuses mainly on providing an oasis that becomes its own separate being. Since the center is available for in-patients from the Medstar hospital and outpatients that commute to the site, it is important to provide similar experiences for both patient types when entering onto the site. Due to the stress of coming to a hospice setting it was decided to surround the patients in vegetation, with no views to the hospital with hopes to make the patients forget the reason they're there. Instead of seeing white cold walls and sterile spaces and using vegetative views while walking to the site, it can help calm a patient down and gives them a minute to ground themselves before going to their appointment (Figure 23 & 24).

Figure 23: Out-Patient Entry to the Cancer Center

Figure 24: In-Patient Entry to the Cancer Center

Another site design decision was to have each part of the program be its own dwelling that is connected by an exterior circulation. This improves the convenience of knowing where a patient needs to be for their appointment and keeping any correlating program within one dwelling. It provides natural and calming views of nature when walking around the site. It also allows the current nature to weave itself within and around the center, improving the current state of the large parking lot in front of the Medstar hospital. Instead of having one big building that holds each program type within actual walls, the trees themselves can act as the “walls”, the buildings act as the program, and the exterior paths act as the “interior” circulation”. Having constant access to nature also aims to improve how patients feel when leaving their treatment appointment by seeing something beside large white sterile walls of a hospital (Figure 25 & 26).

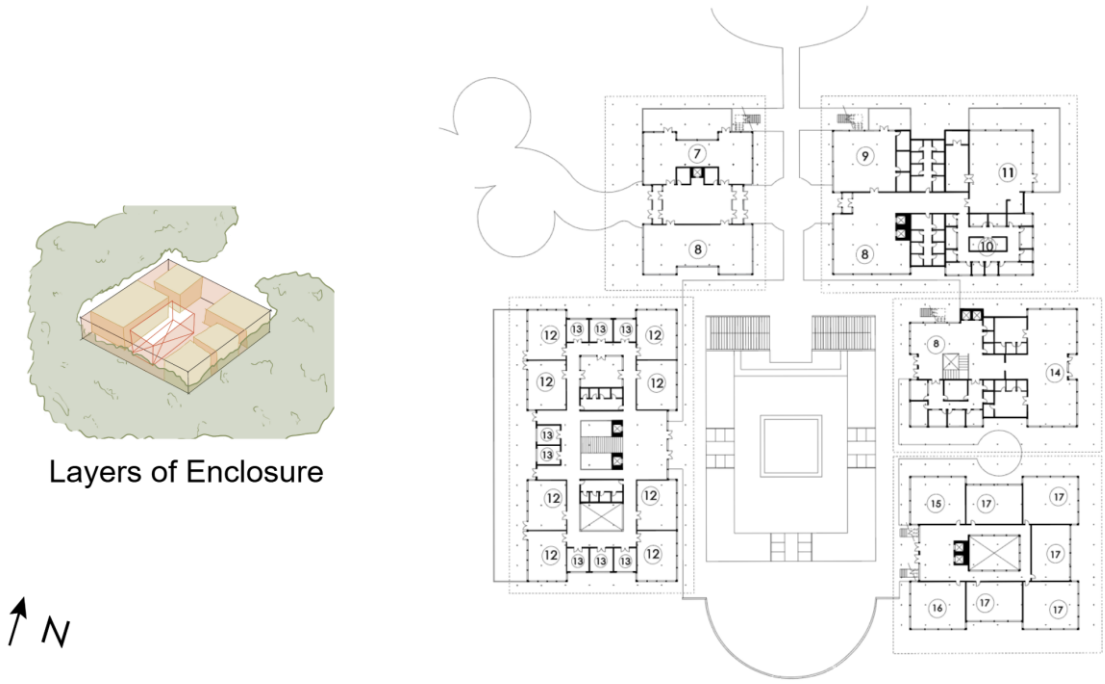

Figure 25: Parti – Redefining Enclosure

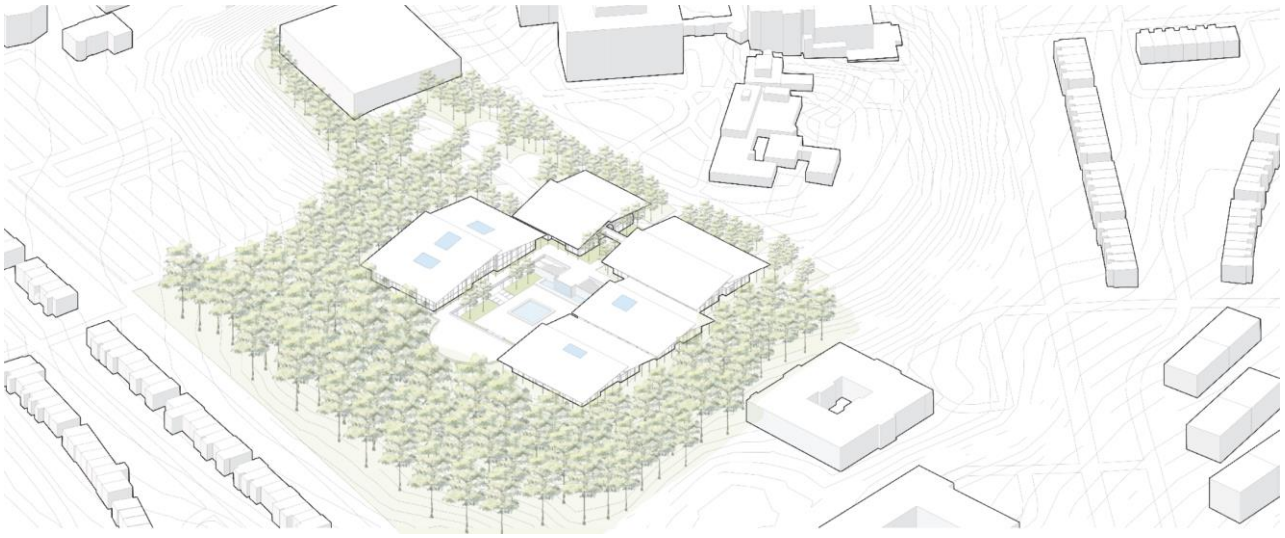

Figure 26: Cancer Center within Context

Another site design decision was to have a large family public courtyard in the center of the separate dwellings. It was important to have the family spaces be in the center of the site to

be another option for families waiting for their loved one to finish their treatment while also providing a constant reminder for cancer patients what they're fighting for. By seeing family members and the community having a good time, it aims to stimulate endorphins after receiving treatment. It represents the heart of this new cancer center (Figure 27 & 28).

Figure 27: Family Central Courtyard

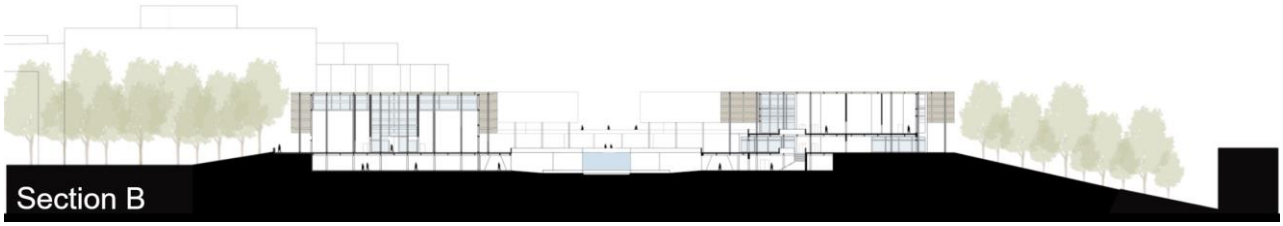

Figure 28: Section of Family Central Courtyard

The last site design decision was to layout the separate programmatic dwelling in a symmetrical way. Looking back at historic villas, symmetry can help a visitor understand a

space and have a clear view of a person's surroundings. This can help with the convenience of knowing where each dwelling is without needing to wind around unnecessary turns and paths. It can also connect back to the idea of redefining enclosure by making the walls line up with each other, giving the illusion that they connect theoretically (Figure 29).

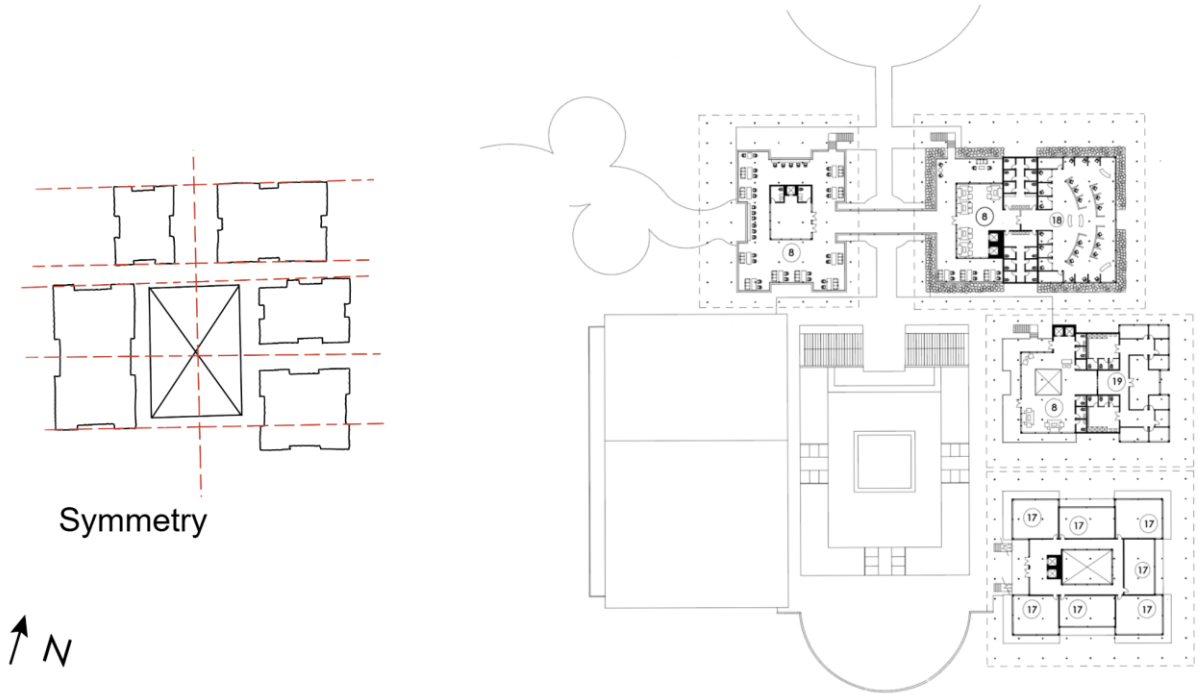

Figure 29: Symmetry

<u>Building Design:</u>

Even though each building provides different treatment options, such as chemo, physical therapy or mental therapy, they each have components that connect each one back to each other and give illusions to its visitors. With the use of the same type of canopy roof extended out past the walls, it combines the exterior spaces within its interior spaces, giving the illusion that both exterior and interior are part of the buildings. The roofs structure also extends past the exterior walls so patients can see it when they enter and when they're

inside the buildings. Another extension form was to have the main staircases of each building dwelling be outside instead of inside. The idea was to have patients have access to nature as long as possible before setting foot into a hospice setting.

The program of each of the building dwellings were also connected by similar values and goals. Design decisions were based on views and how they can improve a patient's mood and stress levels. Therefore, it was important to have all treatment spaces face outward toward vegetation and waiting spaces face towards the family courtyard. It has been proven that having views to nature can improve majority of the population stress levels and that's why that design decision was non-negotiable (Figure 30 & 31).

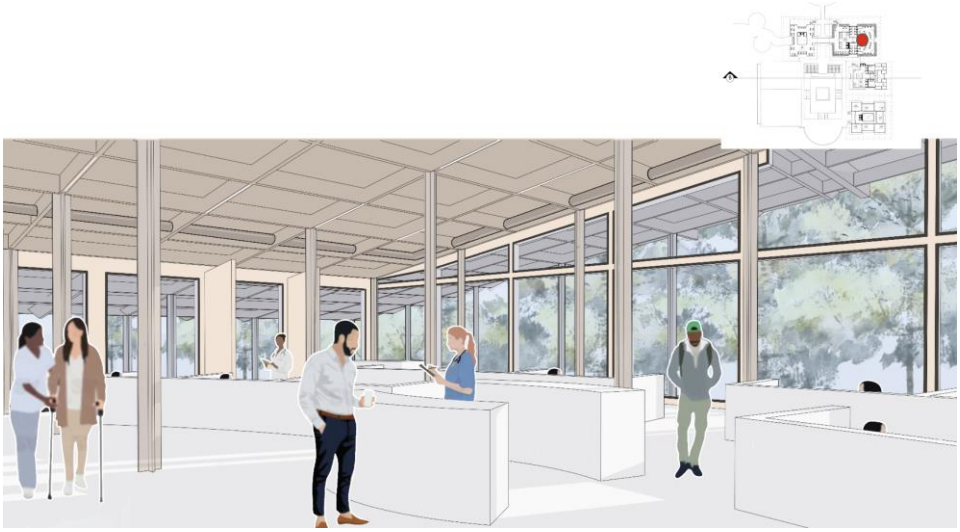

Figure 30: Chemo treatment

Figure 31: Meditation spaces

Lastly, mass timber was chosen as the main structure for these dwellings because of it stress relieving qualities and sustainable properties. Wood has a warm and inviting aura around it and it aims to disguise the treatment spaces by looking like a typical hospice setting. Sustainably it helps as well because it acts as a lung for the buildings. Similar to how trees breathe in carbon dioxide and breathe out oxygen, mass timber sucks up carbon dioxide like a sponge. These sustainable qualities help these dwelling acts like living organisms that mimic the tress that surround them.

Conclusion:

In conclusion, this thesis aims to help cancer patients and their families by providing an environment that can lower the cancer patients stress levels before, during and after receiving treatment to prevent their cancer from spreading at a rapid rate. This thesis's goal is also to re-establish how to provide care in multiple forms in one place to create a balance between healing methods. Healing can be more than medicinal; therefore, it needs other forms in order for the cancer treatment to take full effect and improve these patients overall wellbeing.

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