NO CHILL

AN ANXIOUS EXPLORATION INTO ARCHITECTURAL DESIGN FOR HEALING ENVIRONMENTS

CHALMERS

[TABLE OF CONTENTS]

WE FAIL FOREVER

[ABSTRACT]

In the age of media over-stimulation and overconsumption, we tend to find it harder and harder to cope with the stress that comes with the ever shifting social requirements that overcome our lives. Feelings of insecurity and alienation affect an increasing number of people unable to handle the stress and anxiety that occur with consuming social roles.

Since young adults nowadays have had constant access to technology growing up and are faced with changing socio-political norms, gen y millennials are affected more than ever by a multitude of stressors, often times resulting in faulty coping mechanisms.

This puts forth the question of how can architects use their knowledge in order to break these misguided patterns.

The purpose of this project is the exploration of how architecture can be of aid in relieving stress, how it can help people cope with anxiety by promoting health and assisting with recovery.

The research carried out for this thesis aims to identify a set of principles and design criteria including colour, light, materials, as a guideline that will be used to create a suitable space for counselling students and young adults who suffer from anxiety and other stress-related issues.

The methodology includes studying which factors trigger anxiety and how they can be managed through therapy. The acquired knowledge will be combined with the explorations into how design affects the state of mind. The resulting criteria will be applied in the proposal for a counselling centre for anxiety treatment.

The investigation into this matter is an attempt to compile a toolbox of design methods for healing environments with a focus on stress prevention and mitigation, and a functional result in the form of the counselling centre that can be recreated in various environments in order to help people around the world.

[OPENING STATEMENT]

At first I did not know what to call it. I was in a state of constant terror, a mute, pulsating fear that took hold of every aspect of my life. I thought I could actually see it, a web of intertwined branches that twisted painfully at themselves.
I was painfully aware of my uneven breathing and I could feel my heart beating oddly in my throat. Eating became a burden and so did sleep, in which events of the day played monstrously in my dreams. I was in a state of constant alert, pondering about words, noticing glances, making intricate scenarios in my head all which lead to the same "painful" conclusion: *Everything that can go wrong will go wrong.*

The events in my life at that time where hardly worthy all the poetic waxing I was doing around them but logic did not keep my mind at ease. Anxiety for me was the fear of having all my suspicions proven, a fear of fear itself that manifested throughout a few months which crippled me emotionally as well as physically.

I sought help from my friends but I quickly realized that, while they tried to be supportive, they were all battling their own daemons. On social media you see the same feelings of anxiety echoed throughout think pieces, Facebook comments, tweets, "memes" and so it gives the impression that it is a common experience among people of my generation. That or, I might just need new friends…

We seem to be in a constant state of alert, always on the lookout for the newest topic, trend or story, always in need to be on top of the general knowledge of the times. We peek into our peers' lives, often carefully manicured into its most gleaming version. And with all those things we need to know and internalize, all those things we think we need have done by now but still haven't, no wonder we're simply just so anxious all the time.

In the article *"Why Generation Y Yuppies Are Unhappy"* [1], author Tim Urban argues that gen y's unhappiness derives from an unshattered, often times misguided blind hope in one's "specialness" and the cold wakeup call one has when faced with the reality of the working world.

Add to that the constant comparison we make with other people's projected image and we end up with a disappointing contradiction which ensues confusion and anxiety.

After internalizing all these conclusions, I sought to find out how my domain reflects on this problem. As I've learned so far in my master, architecture does more than provide a simple shelter or a space in which activities happen. Architecture creates the landscape for life and acquires the physical representation of our internal mentalscape. Can we conclude, then, that architecture also has the power to change our mental health? As Richard Neutra answered to the question of houses affecting our mental health *"How can they not? I mean, where do we go crazy?"* [2]

My goal then turned into looking at healthcare architecture from an outsider's perspective, trying to learn just what features can be applied in order to create a functional, effective healing space, architecture for the soul, let's call it. How can I, through the knowledge I possess and access, create an environment that can actually change people's internal state?

There is a general consensus amongst the literature I've reviewed that, unfortunately, with all of the research and observations that have been made, there is still no unified theory or a well-structured and tested guideline that could be easily employed in order to achieve success with healthcare spaces. Far from having the ambition to do so myself, within this paper, I decided to make my own "toolbox" of design criteria and apply it, successfully I hope, in the design of a counselling centre for anxiety treatment.

With this master thesis I plan not just to fulfill academic requirements but also, at the same time, find answers and get help for both me and my same-suffering peers.

JUST REMEMBER TO BREATHE

[PROJECT PLAN]

• Purpose & Aim

The purpose of the project is to examine if and how architecture and design can influence the healing process, especially in the case of people suffering from stress-related issues. The focus will be on how spatial planning and certain design features can be used to improve the general state of patients, how light, colour and textures can affect moods and how they can be used in creating safe, healing spaces.

The aim is to design a counselling centre for anxiety treatment based on the studied principles.

• Relevancy for sustainable development

The topic focuses on social sustainability as it deals with the struggles that people face and how they can be supported. For the building itself, sustainable construction principles will be employed. Teaching about sustainability or even growing food on site would also be part of the program of the centre.

• Who is it for

When thinking about who would benefit from this centre, young adults come to mind, as they are constantly bombarded with information and are subjected to new requirements on what it is to be a relevant working professional of 2017. Overstimulated by media portraying the "successful" people only, they become disillusioned with their own path and want more from themselves, which leads to frustration and anxiety. The counselling centre would target students, as pressure in academia should also be addressed. It would cater to people who feel that they can't cope with

with requirements in their social or professional life, people who don't need institutionalized help, but wish for preventive treatment, people who are diagnosed with anxiety disorders and need to learn coping mechanisms, and people who are looking for group therapy, as well as a peaceful individual retreat.

• Delimitations

The project will limit itself to being a centre providing psychological counselling, various group activities and offering intimacy when needed. Whilst there will be medical care provided, the intention is not to design this as an enclosed medical amenity. Nor should the design be something in the lines of a spa, since the plan is to have a degree of medical expertise infused in the project's program. The centre will be focused on treatment of certain anxiety disorders, particularly through individual or group therapy, while providing the framework for a salutogenic approach to treatment.

• Methodology

The research process will start by looking into specialized documentation regarding anxiety and its causes, finding a suitable program on which the counseling centre will be supported.

Similar projects will be looked into to find common themes and both successful and failing features.

Then, researching guidelines for healthcare architecture which deals with mental health will be done in order to come up with a toolbox for further design. After analysing the chosen site and resulting characteristics, the design of the building will take a more cohesive shape, being based on the conclusions drawn from the research.

• Typology of MT

The project would employ a Research for Design method, drawing in on the research done in the first part, in order to support the design of a physical building.

CAN ARCHITECTURE HEAL?

WHAT ARE THE RELEVANT DESIGN STRATEGIES EMPLOYED IN CREATING A HEALING ENVIRONMENT?

CAN DESIGN ACTUALLY HELP IMPROVE THE MENTAL STATE OF PATIENTS OR AID IN THE PROCESS OF HEALING?

HOW CAN PEOPLE BE BROUGHT TOGETHER IN A PLEASANT ENVIRONMENT AND ENGAGE IN BENEFICIAL INTERACTIONS ?

[BACKGROUND - A LOOK ON ANXIETY]

• *What it is*

Merriam-Webster Dictionary defines anxiety as "an abnormal and overwhelming sense of apprehension and fear often marked by physical signs (such as tension, sweating, and increased pulse rate), by doubt concerning the reality and nature of the threat, and by self-doubt about one's capacity to cope with it". [3] It's the reaction to danger that the body naturally develops, a warning that takes place when you feel threatened, under pressure, or are facing a stressful situation. [4]

As opposed to fear, which is the rational reaction to an existing, present threat, *anxiety is the reaction to perceived future threat*, whether that is realistic or not. It occurs in situations only perceived as uncontrollable or unavoidable, but not realistically so.

Whilst these states might sometimes overlap, they are very different, with fear being linked with surges of autonomic arousal necessary for fight or flight, thoughts of immediate danger and escape behaviours. On the other hand, anxiety is associated with muscle tension, caution regarding a perceived future danger and avoidant behaviours which become coping mechanisms. [5]

Moderate levels of anxiety are never an issue, but when it becomes constant and overwhelms the sufferer, when it disrupts the normal relationship patterns and also one's active life, anxiety is not functional anymore and takes the shape of an anxiety disorder.

Anxiety is prevalent in modern culture as a reaction to today's "competitive postmodern technological society" [6] emerging as one of the most researched subjects in sociology, psychology and psychiatry. Its debilitating nature has made it adamant that its origins, functioning and treatment are thoroughly analysed.

• *How it works*

Stress is a response to a threat. Anxiety is a reaction to that stress.
When one feels debilitated, the sensory system reacts by discharging a surge of stress hormones, including adrenaline and cortisol, which put the body in crisis mode.

STRESSORS

BUSY
FINANCIAL PROBLEMS
MAJOR LIFE CHANGES
RELATIONSHIP DIFFICULTIES
WORK OR SCHOOL
FAMILY LIFE

OVERTHINKING
CHRONIC WORRY
NEGATIVE SELF
PERFECTIONISM
PESSIMISM
RIGIDITY

STRESS

DEPRESSION
UNHAPPINESS
MOODINESS
OVERWHELMED
ISOLATION
LONELINESS

MEMORY PROBLEMS
POOR JUDGEMENT
INABILITY TO CONCENTRATE
RACING THOUGHTS
WORRYING

PAIN
NAUSEA
RAPID HEART BEAT
DIARRHOEA/CONSTIPATION
CHEST PAIN
LOSS OF SEX DRIVE

BAD EATING PATTERNS
BAD SLEEPING PATTERNS
PROCRASTINATION
VICES
NERVOUS HABITS

HEALTH PROBLEMS

PAIN

HEART DISEASES

WEIGHT PROBLEMS

SKIN CONDITIONS

COGNITIVE & MEMORY PROBLEMS

DIGESTIVE PROBLEMS

SLEEPING PROBLEMS

AUTO IMMUNE DISEASE

DEPRESSION & ANXIETY

The heart pounds faster, muscles tighten, circulatory strain rises, breath quickens, and your senses sharpen. These physical changes increase your strength and stamina, speed your reaction time, and enhance your focus.

Conditions that generate stress are called stressors and they can be basically anything that puts high demands on one's psyche, be it from the outside or completely self-generated. The intensity with which they impact depends completely on each one's personal perception and coping abilities. Causes can range from:
- External: life changes, professional/academic/financial, relationships & family, etc.
- Internal: pessimism, perfectionism/unrealistic expectations, inability of accepting uncertainty, lack of flexibility,etc.

When stress occurs symptoms can range from:
- Cognitive symptoms: memory problems, inability to concentrate, poor judgment, anxious or racing thoughts, constant worrying.
- Emotional symptoms: depression or general unhappiness, agitation, moodiness, irritability, anger, overwhelming, loneliness and isolation.
- Physical symptoms: aches and pains, diarrhoea or constipation, nausea, dizziness, chest pain, rapid heart rate, loss of sex drive, frequent colds or flu.
- Behavioural symptoms: eating disorders, sleeping troubles, withdrawing from others, procrastinating or neglecting responsibilities, using alcohol, cigarettes, or drugs to relax, nervous habits,etc. [7]

As these symptoms become more prevalent intro one's life, a series of health issues may arise including heart diseases, digestive or weight problems, sleep disturbances and of course, mental health challenges such as depression and anxiety.

Types of anxiety

The DIAGNOSTIC AND STATISTICAL MANUAL OF MENTAL DISORDERS (DSM-5) recognizes 9 mental disorders that fall in the anxiety category:

1. *Separation Anxiety Disorde*r: This happens when the individual is frightened by the thought of being separated from attachment figures to an inappropriately degree.

As this disorder starts revealing itself in childhood and less in later stages in life also, it is not one of the main issues that students are affected by, so *I will not focus on that.*

2. *Selective Mutism* – Is characterized by failure to speak in social situations, even if the individual doesn't have any problems speaking normally, often leading to consequence in academic achievements and social communication. It tends to affect mostly young children and adolescence, therefore, *I will not focus on that.*
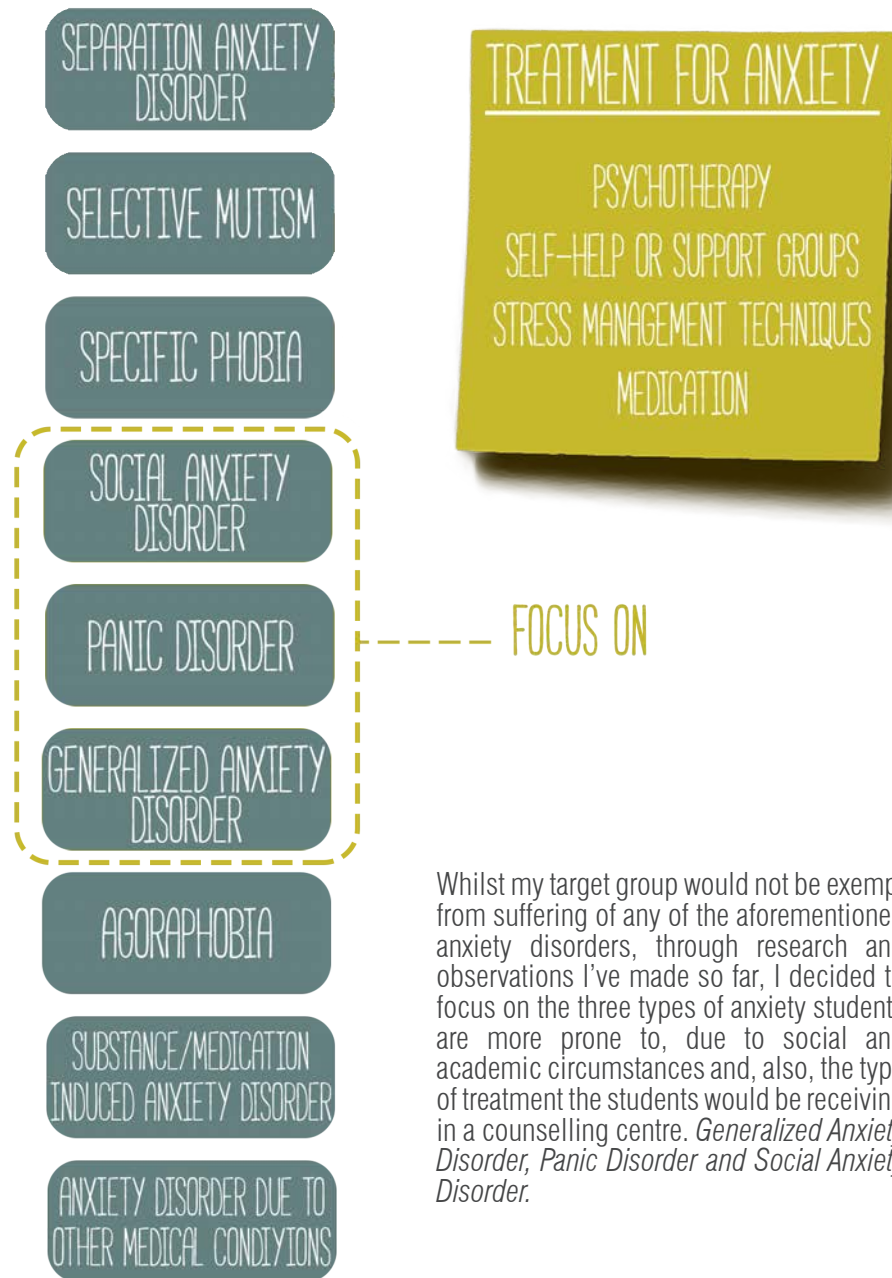
3. *Specific Phobia* – Individuals with specific phobias are fearful or anxious about or avoidant of circumscribed objects or situations. Anxiety is immediately induced by the phobic situation and is persistent excessively to the actual risk posed. Treatment for phobias is very specific and differs from therapy programs for other disorders, so, *I will not focus on phobias.*

4. *Social Anxiety Disorder* – The individual is anxious about or avoidant of social interactions and situations where they could be scrutinized. These include social interactions such as meeting unfamiliar people, situations in which the individual has to "perform" in front of others. The cognitive ideation is being evaluated by others, by being embarrassed, humiliated, or rejected, or offending others. The disorder deals with the social problems that students face often, so *I will be focusing on it.*

5. *Panic Disorder* – The individual experiences recurrent unexpected panic attacks and is persistently concerned or worried about having more or changes his or her behaviour in a negative way due to the fear of recurrence. Panic attacks are abrupt surges of intense fear or discomfort that reach a peak within minutes, accompanied by physical and or cognitive symptoms.
Panic attacks happen to young adults in stressful situations, such as the academic environment that puts a lot of pressure on them. In conclusion, *I will be focusing on this disorder*.

6. *Agoraphobia* – It's the fear of either being in open spaces, in enclosed places, standing in line or being in a crowd, or just being outside, alone. This disorder has very specific treatment that is generally different from the ones for the disorders I've chosen to cover so *I won't be covering this*.

SEPARATION ANXIETY DISORDER

SELECTIVE MUTISM

SPECIFIC PHOBIA

SOCIAL ANXIETY DISORDER

PANIC DISORDER ----- FOCUS ON

GENERALIZED ANXIETY DISORDER

AGORAPHOBIA

SUBSTANCE/MEDICATION INDUCED ANXIETY DISORDER

ANXIETY DISORDER DUE TO OTHER MEDICAL CONDITIONS

TREATMENT FOR ANXIETY

PSYCHOTHERAPY
SELF-HELP OR SUPPORT GROUPS
STRESS MANAGEMENT TECHNIQUES
MEDICATION

Whilst my target group would not be exempt from suffering of any of the aforementioned anxiety disorders, through research and observations I've made so far, I decided to focus on the three types of anxiety students are more prone to, due to social and academic circumstances and, also, the type of treatment the students would be receiving in a counselling centre. *Generalized Anxiety Disorder, Panic Disorder and Social Anxiety Disorder.*

7. *Generalized Anxiety Disorder* – The key features of GAD are persistent and excessive anxiety and worry about various issues including work and school performance, that the individual finds difficult to control. The disorder deals with the social problems that students face often so, *I will be focusing on it.*

8. *Substance/Medication-Induced Anxiety Disorder* - It involves anxiety due to substance intoxication or withdrawal or to a medication treatment. In this case, specialized help is needed so, *I won't be focusing on this.*

9. *Anxiety Disorder due to another medical condition* - Either due to endocrine disease, cardiovascular disorders, respiratory illness, metabolic disturbances or neurological illnesses. In this case, a more specialized medical care is needed, so *I won't be focusing on this*. [8]

• *Symptoms*

The National Institute of Mental Health [9] specifies these following symptoms as defining of the anxiety disorders I choose to work with:

1. Social anxiety disorder symptoms include:
- Anxiety over being with other people and having to talk to them.
- Feeling self-conscious in front of other people and worried about feeling humiliated, embarrassed, rejected,judged, or fearful of offending others.
- Worrying for days or weeks before an event where other people will be.
- Staying away from places where there are other people.
- Feeling nauseous when other people are around.

2. Generalized anxiety disorder symptoms include:
- Restlessness or feeling wound-up or on edge.
- Difficulty concentrating or having their minds go blank
- Muscle tension.
- Difficulty controlling the worry.
- Sleep problems and getting tired very easy.
- Irritability.

3. Panic disorder symptoms include:
- Sudden and repeated attacks of intense fear.
- Feelings of being out of control during a panic attack.
- Intense worries about when the next attack will happen.
- Fear or avoidance of places where panic attacks have occurred in the past.

- *Treatment*

1. *Psychotherapy* - or "talk therapy" has to be specially tailored around the patient's anxieties in order to be effective. *Cognitive Behavioural Therapy* (CBT) is a type of psychotherapy that encourages the patient to find different ways of thinking, behaving, and reacting to anxiety-producing and fearful situations. CBT is composed of cognitive therapy which is used to identify the problems and exposure therapy which represents confronting the fears. CTB is done individually or with a group of people and usually requires some "homework" to be done.

2. *Self-Help or Support Groups* – some people will benefit from these group meetings as sharing their problems and achievements can be deeply satisfying. Group meetings, support groups and chat rooms, even talking to trusted friends can have a beneficial impact on one's mental health.

3. *Stress management techniques* – SMT and meditation can help people with anxiety disorders calm themselves and may enhance the effects of therapy.

4. Medication – whilst it might not cure the disorder, medication is used to relieve symptoms but it should always be done under strict medical supervision and after careful medical examination and assessment.

- *Anxiety in students/young adults*

For many young people, college represents a significant shift in their lives where they experience many new situations from exposure to new culture, new lifestyles and way of thinking, friends and room mates and, particularly, academic pressure. These can represent serious stressors.

Often times, students cannot cope with these new conditions. "I*f students do not feel adequate or prepared to cope with the new environment of a college campus, they could easily become susceptible to depression and anxiety,*" said Harrison Davis, Ph.D., Assistant Professor of Counselling and Coordinator of the Community Counselling master's program at North Georgia College & State University.[10]

In "Anxiety, Fears, Phobias, and Related Problems: Intervention and Resources for School Aged Youth" problems that students are usually faced with are separated into 3 types:

1.Problems caused by factors in the environment - This regards the changing conditions of students such as home, neighbourhood and school which can be anxiety provoking. These conditions should be taken into consideration first.

2.Problems caused equally by environment and person - Caused primarily by a significant mismatch between individual differences and vulnerabilities and the nature of that person's environment.

3.Problems caused by factors in the person - Caused primarily by factors of a pathological nature within the person.

Diagnostic labels meant to identify extremely dysfunctional problems caused by pathological conditions within a person are reserved for individuals who fit the Type III category (generalized anxiety disorder [GAD], social anxiety disorder [SAD], obsessive compulsive disorder [OCD], Post-Traumatic Stress Disorder [PTSD]).[11]

- *Anxiety and social media*

The pressure stemming from academic competition and the identity crisis that many students go through in college is amplified by the social requirements of fulfilling the successful path that some peers seem to be already on. As discussed in the introduction, social media allows people to carefully curate their lives with their on-line presence, often eliciting feelings of inadequacy in some young people.[1]

Social networking sites like Facebook and Twitter seem to facilitate easier connections with each other, by sharing activities,news, and keeping in touch with friends both old and new. However, the reverse can also be true, allowing for feelings of loneliness and alienation to harbor.Social media and its associated technology are a modern experience which adds new dimension to loneliness and anxiety by directly quantifying friendships, viewing the friendship networks of others for comparison, and providing immediate information about social events. Social anxiety and loneliness go hand in hand so, the way one perceives themselves in connection to "others" on social media feed into the destructive loop.

We can admit to ourselves that the use of social media by young people is not just a consequence of their social anxieties, but also a cause of additional anxieties and stresses that are all part of the modern day anxiety epidemic.

[COUNSELLING CENTRES]

According to the American Counselling Association, counselling is defined as, "a professional relationship that empowers diverse individuals, families, and groups to accomplish mental health, wellness, education, and career goals." [12]

Counselling aims to help people change their faulty ways of thinking, feeling and behaving, and is a course of action shared between a non-judgemental, supportive counsellor and the client, helping them tell their story, setting viable objectives, and developing strategies and plans necessary to accomplish these goals. Simply put, *counselling offers guides to explore and understand their worlds so they discover better ways of thinking and living*. As trust is an important aspect of counselling, privacy and confidentiality must be respected at all times. Counselling takes place with one person or a group (typically couples and families) and can be of different types, like face-to-face dialogue, group work, telephone, email and written materials.

• *Results of counselling can include*

  - Insight and understanding of oneself, with greater self-awareness
  - Changing of one's beliefs and mental models
  - Increased acceptance and appreciation of oneself
  - Increased emotional intelligence
  - Increased ability to control oneself and one's urges
  - Development of skills and abilities that require self-management
  - Improved motivation towards actions that are good for one's self
  - Understanding of others and why they act as they do
  - Increased appreciation and care for others
  - Improvement in relationships with others
  - Changing of relationship with family, friends and others
  - Making amends for past negative actions [13]

In conclusion, counselling generally leads to the resolution of a living problem, learning and improving social skills.

Counsellors frequently subscribe to specific schools of thought with regards to the most effective ways of helping. An important variable in this is the degree to which the answers to issues are provided by the counsellor or by the client.

This determines two different roles of the counsellor: critical thinker or facilitator. A facilitative approach may likewise be utilized when a more open investigation approach is put in action.

There have been discussions regarding the distinction between *counselling*, *coaching* and *therapy* and the limits are not at all clear. Therapy can be more clinical, however counselling still addresses significant issues, while coaching can mean lighter types of advising. Usually, counselling has a tendency to be more socially focused, while therapy and coaching are focused more on the individual.

In the past, counselling had been done through family and relatives, friends or even with the help of priests. Even if such help might not be of professional value, it shows just how important a safe, easy-going and dependable atmosphere counselling has to evoke in order for it to be truly helpful. In the history of counselling, the developments of medical care, especially in the form of mental health facilities have been crucial. The more knowledge was accumulated regarding mental issues, the more treatments and therapies have been developed.

Counselling has also been influenced by the arts, for example in using methods such as dance, painting and drama for therapeutic benefit in providing a channel that enables people to express their emotions.

Nowadays, counselling centres are a well-defined program and have a particular functionality when in collaboration with educational centres, schools and universities. As Gothenburg is considered a university-centre, I decided to focus on designing a counselling centre that would benefit students from Chalmers University.

I will be over-viewing two counselling centres in Sweden and one in Australia in order to draw conclusions regarding the types of programs offered in these centres.

• *Akademihälsan*

From their website: "The Student Health Centre is a complement to the public health care system for students at the University of Gothenburg or Chalmers. Our main task is the treatment of health problems caused by the study situation."

The Student Health Centre provides:
- Individual counselling/therapy
- General practitioner

Akademi hälsan

PHYSIOTHERAPY AND ERGONOMICS
COMPANY DOCTORS & PSYCHIATRISTS
COMPANY NURSES
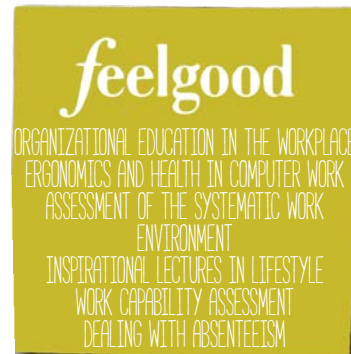PSYCHOLOGISTS & SOCIAL WORKERS
CRISIS SUPPORT
LEGAL AID

Individual therapy	*Group therapy*
- Physiotherapy and Ergonomics	- Mindfulness
- Company doctors and psychiatrists	- Stop procrastination!
- Company Nurses	- Stress management
- Psychologist and social workers	- Dare speaking
- Crisis support	- Grow your self-compassion. [14]
- Legal aid	

•*Feelgood Sweden*

From their website:"Feelgood is one of Sweden's leading health companies working with occupational health, exercise and physiotherapy. We offer innovative health services to businesses, organizations and private individuals. Our motto is that investing in health should be a profitable investment as a result of increased productivity and reduced costs of ill-health for businesses and increased quality of life for individuals."

feelgood

ORGANIZATIONAL EDUCATION IN THE WORKPLACE
ERGONOMICS AND HEALTH IN COMPUTER WORK
ASSESSMENT OF THE SYSTEMATIC WORK
ENVIRONMENT
INSPIRATIONAL LECTURES IN LIFESTYLE
WORK CAPABILITY ASSESSMENT
DEALING WITH ABSENTEEISM

The services they offer are divided into four areas:

- An attractive work environment: Feelgood Sweden helps create an attractive work environment by working systematically and planning long term.
- A sustainable lifestyle: Counsellors set out to equip employees with "knowledge about the types of behaviours which contribute to a sustainable lifestyle.
- Healthier rehabilitation: Patients are supported in identifying the early signs of arising health problems and are provided with data in order to make informed decision.
- Improved health: The organization provides with the "tools to lead a target-oriented heath effort which will result in increased productivity and increased profitability." [15]

Anxiety House BRISBANE

COGNITIVE BEHAVIOUR THERAPY (CBT)
ACCEPTANCE & COMMITMENT THERAPY (ACT)
DANGER IDEATION REDUCTION THERAPY FOR
OBSESSIVE COMPULSIVE WASHERS & CHECKERS
META COGNITIVE THERAPY
TREATMENT FOR CHILDREN & TEENS

• *Anxiety House Brisbane*

From their website: "Anxiety House is a unique clinic with a specific focus on the treatment of anxiety disorders. The clinic is known for providing evidenced based treatment for a broad range of anxiety disorders across all age groups. Our team of clinical psychologists led the way in providing contemporary mental health care.[16]

Treatment Programs for Adults	*Treatment Programs for Children & Teens*
- Cognitive Behaviour Therapy (CBT)	- Cool Little Kids (ages 3-6 yrs.)
- Acceptance and Commitment Therapy (ACT)	- Cool Kids® (ages 7-12 yrs.age)
- Danger Ideation Reduction Therapy for Obsessive Compulsive Washers (DIRT)	- Chilled® (ages 13-17 yrs.)
	-"No worries" for Generalized Anxiety Disorder (GAD)
- Danger Ideation Reduction Therapy for Obsessive Compulsive Checkers	- Learning about OCD and fighting back
- Metacognitive Therapy (MCT)	

[COUNSELLING PROGRAM]

• *Conclusion*

Drawing inspiration from the counseling programs of the studied centres, I settled on providing the following *types of therapy at the proposed Counseling Centre for Anxiety Treatment*:

- *INDIVIDUAL COUNSELLING/THERAPY* – Cognitive Behaviour Therapy

- *ACCEPTANCE AND COMMITMENT THERAPY* - Individual counselling
                                       - Group therapy

- *WORKSHOPS* – aimed at solving an array of issues such as
                                       - Procrastination
                                       - Public Speaking
                                       - Self-esteem

- *ART THERAPY* – providing a creative outlet to deal with anxieties

- *SPORTS THERAPY* – Yoga & Pilates - providing a physical outlet to deal with anxieties

- *GARDENING THERAPY* – providing a sense of satisfaction of a productive activity and a better connection with nature

- *MEDICAL COUNSELLING* – providing help to reach the right medical treatment

- *CHIROPRACTOR* – providing assessment and base treatment (massage and physical exercise)

- *LEGAL AID* – providing patients with help and information regarding legal issues

-*EDUCATION COUNSELLOR* – providing help managing school work and/or administrative issues
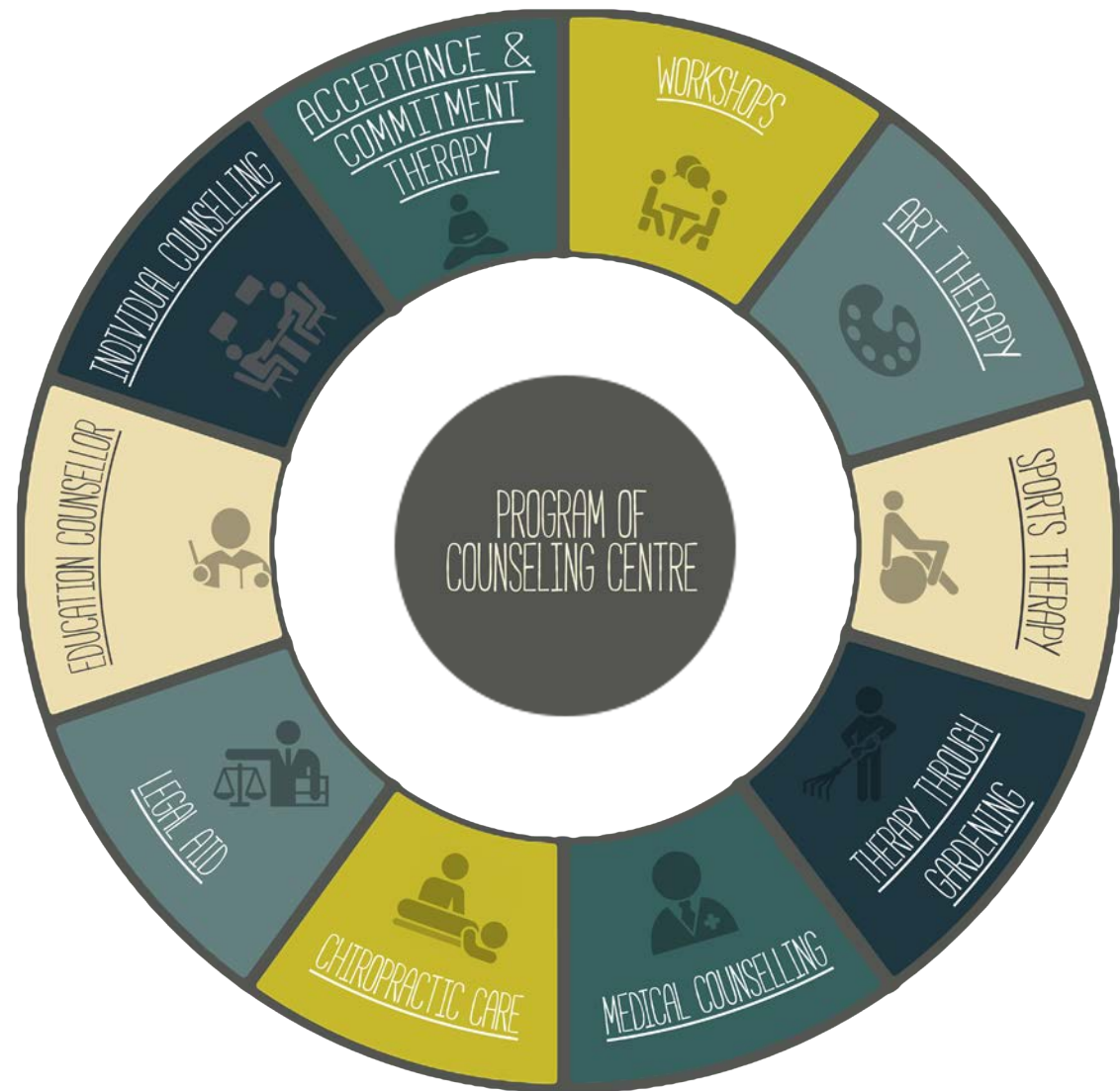
AND HOW DOES THAT MAKE YOU FEEL?

When dealing with the subject of counseling centres, I realized I had to look into the different approaches that architects take when dealing with healing spaces. More so, what are the new strategies of healing and whether those strategies have echoes in design guidelines.

Healing environments are structured in many different ways depending on individual needs and perspectives. "The Samueli Institute coined the term Optimal Healing Environment (OHE) in 2004 to describe a healthcare system that is designed to stimulate and support the inherent healing capacity of patients, families, and their care providers. An OHE consists of people in relationships, their health-creating behaviours, and the surrounding physical environment."[21]

• *Salutogenesis*

To begin with, the concept of salutogenesis must be addressed, a principle that "unifies all dimensions of healing and human flourishing, regardless of the framework used to organize the principle".[22] Salutogenesis is the *process of healing and health creation* as opposed to pathogenesis where the focus is on the diseases, illness generation and breakdown of function. The emphasis on prevention as opposed to just treatment is a new shift in healthcare.

Aaron Antonovsky initially presented the salutogenic term and concept to the scientific world over 3 decades prior. His idea was to focus on people's ability to heal, rather than focus just on risks and disease. [23] Antonovsky's salutogenesis was portrayed essentially as a psychological construct and as an asset to moderate anxiety, connecting to what he called the *sense of coherence*. SOC permitted the individual to keep up and move toward well-being even amidst injury and can be characterized as a "resilience" factor.

In "Salutogenesis: The Defining Concept for a New Healthcare System", the authors consider that "salutogenesis is better used in a broader, more holistic context to apply to the general process of healing in all dimensions of a person—body, mind, social and spirit.

From this context, our definition of healing is *"the processes of recovery, repair, renewal, and reintegration that contribute to a whole person's (physical, mental, social, and spiritual) health and well-being."*[22]

With this definition, healing processes can be separated intro 3 typologies:
- Preventive (help retain health and build resilience)
- Restorative (accelerate and facilitate recovery)
- Palliative (maximize function and well-being)

Healing is a development that materializes from the whole person and is boosted when the practices and environments are present to support it. The authors call these *healing-oriented practices and environments* (HOPE). When HOPE elements are carried out and combined with biomedicine, one has an *optimal healing environment*, or OHE.

• *Optimal Healing Environments*

In "The Business Case for Optimal Healing Environments", an OHE is defined as *"one in which the social, psychological, spiritual, physical, and behavioural components of health care are oriented toward support and stimulation of healing and the achievement of wholeness."*[24]
Wayne B. Jonas, M.D., the founder and director of the Samueli Institute noted the following core components of an OHE:

- Conscious development of intention, expectation and belief in healing
- Transformative self-care practices that facilitate personal cohesion, wholeness and well-being
- Techniques that foster healing based on compassion and interconnectivity
- Development of listening and communication skills that foster trust between practitioner and patient
- Instruction and practice in behaviours that change lifestyle to support self-healing and the development of social support;
- Responsible application of integrative medicine via collaborative practice supportive of healing processes
- The physical space in which healing is practiced. [21]

OPTIMAL HEALING ENVIRONMENTS

Surround the individual with elements that facilitate the innate healing process.

INTERNAL	INTERPERSONAL	BEHAVIORAL	EXTERNAL
HEALING INTENTION	HEALING RELATIONSHIPS	HEALTHY LIFESTYLES	HEALING SPACES
PERSONAL WHOLENESS	HEALING ORGANIZATIONS	INTEGRATIVE CARE	ECOLOGICAL SUSTAINABILITY

• *The Internal Environment*

The internal environment is made up of our own personal thoughts, desires, expectations, feelings and beliefs. It is crucial to healing because our interior lives have a significant impact on health creation and healing.

- *Healing intention* is a conscious and benevolent mental activity purposefully directed towards healing for one's self or another. "Patients demonstrate healing intention through sharing their hopes and beliefs and demonstrating motivation to change."

-*Personal wholeness* is "the congruence of body, mind, and spirit experienced through relationship with self and others, resulting in completeness and well-being."[21]

• *The Interpersonal Environment*

The interpersonal environment deals with the relationships a patient harbours on a personal, professional and organizational level.

- *Healing relationships* are the basis of the healing process, emphasizing on the connection between healer and healed. "Healing relationships develop deliberately and require skilful communication, emotional self-management, attention to the power gradients inherent in clinical relationships, and the ability to be truly present in the encounter." [21]

- *Healing organizations* have the mission to advance healing and health creation. They offer suitable structure, procedures and resources to fortify and bolster recuperating through intention, relationships, strategic planning and shared decision-making.

• *The Behavioural Environment*

The behavioural environment represents the conduct one has in order to create health and promote healing by backing the process of healthy lifestyles and the application of integrative healthcare.

- *Healthy Lifestyles*: "An OHE provides education, training, and support for healthy lifestyles, attending to the needs of patients, family members, and staff. " [21]
- *Integrative health coaching* (IHC) is an inclusive method of promoting a healthy behaviour change which takes a holistic approach, backing them up during the entire journey.

• *The External Environment*

It's represented by the physical space in which one lives and the impact it has. The purpose of external environments is to create a positive physical condition that supports the mind, body and soul in order to discover peace, rest and liveliness.

- *Healing spaces* are mainly defined by their ambient qualities such as light, colours sound, air quality and temperature. Physical environments depend on their qualities when managing the stress of the users. Healing environments must support the involvement of its occupants internally, interpersonally, and behaviourally. The design research looks primarily at supporting a pathogenic model of symptom management for the physical environment supporting health.[21]

The integration of nature through gardens or views to gardens has been demonstrated to reduce stress and help with healing, as in Roger S. Ulrich's influential "View through a window may influence recovery from surgery." In the paper, Ulrich suggest, through direct observations of patients in a hospital, that views of nature can reduce the number of days of convalescence. [25]

- *Ecological resilience* represents healthy interactions with the physical environment. By mindfully using the planet's resources, the impact on both human and planetary health is positive.

Whilst the External Environment falls rightfully under our jurisdiction, the other types of environments must be also taken into account when designing healthcare facilities.

[EVIDENCE-BASED DESIGN]

As defined by The Centre for Health Design, *Evidence-Based Design* (EBD) is the process of basing decisions about the built environment on credible research to achieve the best possible outcomes. Evidence-based design aims at empowering the participation of users in the planning and design process. It originated in the USA in the 1980's as a reaction to the dehumanizing atmosphere of the "machine-for-healing" hospital and it aspired to put the patient in the middle of the design.

Evidence points to the fact that the physical environment impacts patient stress, patient and staff safety, staff effectiveness and quality of care provided in hospitals and other healthcare settings. Evidence-based design means healthcare facility planning and design decisions depend on this evidence to achieve the best possible patient, staff and operational outcomes. [26]

• *How EBD works*

1.IMPROVING PATIENT SAFETY THROUGH ENVIRONMENTAL MEASURES

a) *Reducing Hospital-Acquired Infections*: EBD can help prevent the spread of hospital-acquired infections by carefully analysing the three major transmission routes—air, contact, water – and designing against them.
- Use effective air quality control measures
- Install alcohol-based hand-rub dispensers in accessible locations to increase hand-washing compliance and reduce contact transmission.
- Select easy-to-clean floor, wall, and furniture coverings, and employ proper cleaning and disinfection procedures
- Design and maintain the water system at the proper temperature and adequate pressure
- Provide single-bed rooms with private toilets to enable separation

b) *Reducing Medical Errors*: Medical error stem not just from mistakes of the individual but also from the environment they work in. Factors like noise, light and acuity-adaptable rooms must be taken into consideration.

c)*Reducing patient falls*: Several studies have indicated that most patient falls occur in the bedroom, followed by the bathroom. Also, falls occur during patient transfers or by moving from one room to the other. Slippery floors, poor placement of rails, inappropriate door opening are all causes of such falls. Some design measures found to work could be better unit configuration and providing correct bed rail placement.

2.IMPROVING OTHER PATIENT OUTCOMES THROUGH ENVIRONMENTAL MEASURES

a) *Reducing Pain*: Attention should be given to provide nature views in procedure spaces, treatment rooms, and waiting areas where pain is a problem. [25] Art and technology can also have a beneficial effect on pain mediation. Building orientation and site planning in healthcare projects must also be taken into account in order to avoid other building from blocking light or views.

b) *Improving Patients' Sleep*: Sleep is an important part of the healing process therefore extra efforts must be done in order to offer patients the chance of good sleep.
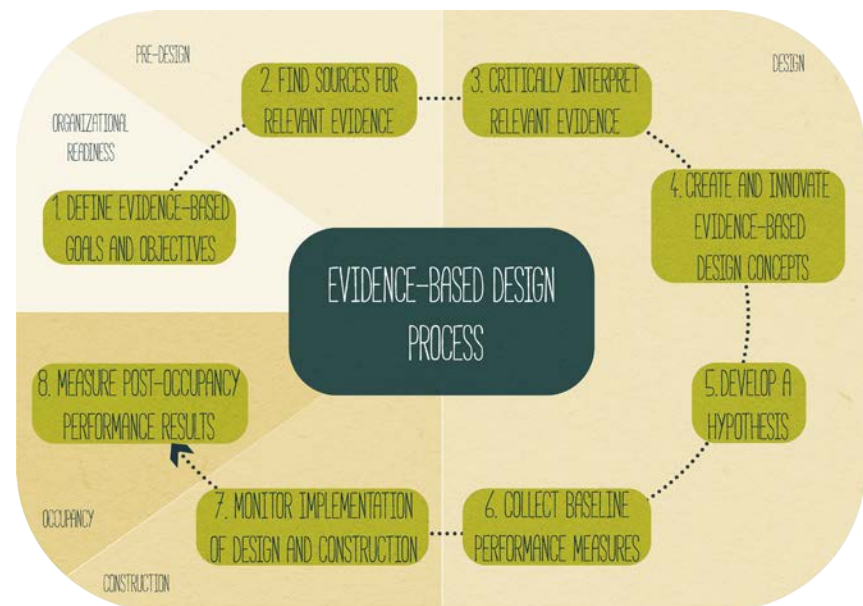
c) *Reducing Depression*: Although research is not definitive on the subject, light, most specifically natural light as opposed to artificial, has a strong impact on depression treatment.

d)Reducing Length of Stay
- Sunlight
- Views of Nature
- Comprehensive Programs

e)*Reducing Spatial Disorientation*: The interiors of hospitals are often confusing for patients and family who find it too stressful to navigate. Thus, hospitals should provide integrated systems that include coordinated elements, such as visible and easy-to-understand signs and numbers, clear and consistent verbal directions, consistent and clear paper, mail-out, and electronic information, and a legible physical setting. [27]

f) *Improving Patient Privacy and Confidentiality:* Environmental approaches to protect speech :
- Privacy Space partitions
- Single-bed patient rooms
- High-performance sound-absorbing materials

g) *Improving Communication with Patients and Family Members*: Communication amongst patients, family and staff bring social support to patients and facilitate healing, thus, building design should facilitate social interactions

3. IMPROVING STAFF OUTCOMES THROUGH ENVIRONMENTAL MEASURES

a) *Decreasing Staff Injuries*: Studies have shown that the majority of injuries that medical staff suffer from in the work place have to do with patient handling. Therefore, certain strategies have to be taken to avoid such injuries:

- Repositioning
- Comprehensive Patient Handling Programs
- Specialized Devices

b) *Decreasing Staff Stress :*

- Increasing Staff Effectiveness
- Unit Configuration
- Noise and Distractions

c) Increasing Staff Satisfaction:

- Natural Light: Medical staff often have to work night shifts and the lack of daylight can cause imbalances and depression amongst workers.

• *Biophilia theory*:

Wilson's biophilia hypothesis (1984) holds that humans have a partially genetic tendency to respond positively to nature. [28] This theory implies that humans still have the genetic capacity to get stress-reducing responses from exposure to nature as opposed to build or artefact-dominated environments.

4. CONCLUSIONS & DESIGN RECOMMENDATIONS

Summing up the research, the following graph will show what most discussed design criteria are influencing.
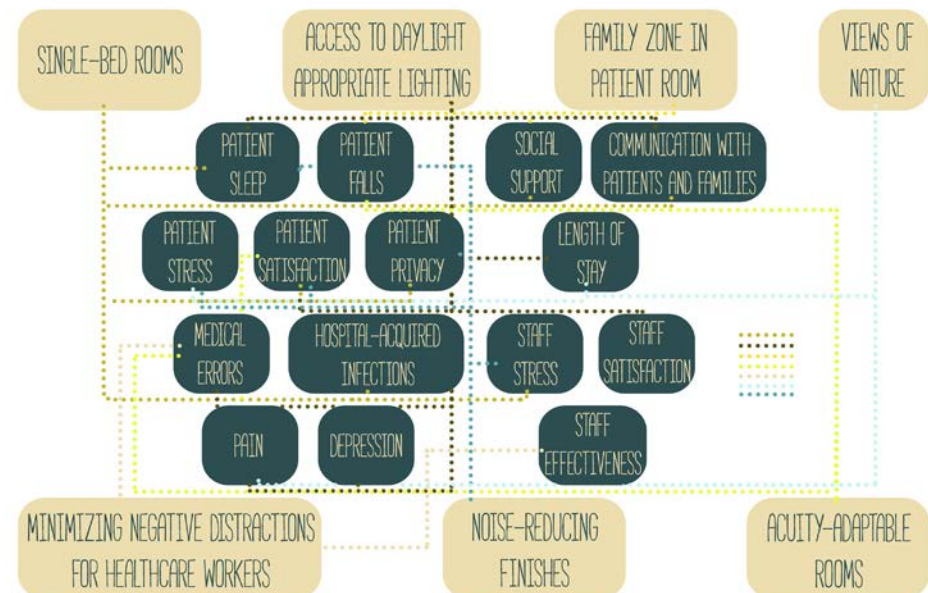
More than just an aesthetic and technical aspect, *colour* has deeper links to our psychological, physiological and social reactions. *Colour choice* is often influenced by one's geographical or cultural background, by one's personality, by the activities performed or the characteristics of the space.

Although the first impression is that there are well-defined, concrete guidelines for the use of different colours, with intended outcomes, so far research has been fragmented, sporadic, conflicting, anecdotal, and loosely tested. The connections between colour and behaviour, the value of colour in therapy and the existing empirical guidelines are constantly questioned in healthcare architecture. Unfortunately, much of the knowledge we have regarding the use of colour in healthcare environments comes from highly biased observations and pseudo-scientific assumptions.

In "Colour in Healthcare Environments - A Research Report"[29], the researchers summarize the reviewed literature on the topic as following:

- There is not enough evidence for links between certain colours and health outcomes of patients, for a causal relationship between the colour of an environment and the recuperation of the ones who inhabits that space.
- Results so far have not proven that using particular colours in order to influence emotional, mental and behavioural outcome is effective. "Spaces do not become "active", "relaxing", or "contemplative" only because of their specific colour."
- Some perceptual impressions of colour have been observed to affect experiences and performance in people, however, it was mainly due to the brightness and darkness of the colour and less due to the hue. Spaciousness is rather influenced by contrast effects. Therefore, lighting is mostly relevant when assessing colour.
- Some colour-mood relations have been observed but, rather than a fixed one-to-one relationship between a given colour and a mood, the perceptions are more likely cause by cultural references and associations."Clearly, colours do not contain inherent emotional triggers."
- The psychological responses to colour have been oversimplified in the press and the design community in order to attempt to formulate universal guidelines for appropriate colours in healthcare.

- Studying colour in healthcare environments is a difficult endeavour since it has to take into account the context of relevant settings and situations.
"When people are exposed to a colour in a certain setting, their judgment is a result of a reciprocal process that involves several levels of experience. People first acquire direct information through their visual perception. This input is analysed against their background of cognitive information regarding that environment and that particular colour which they have obtained from their culture. The consequence of this process is dialectical because cultural standards modify perceptions and these perceptual inputs, in turn, modify a human's aesthetic response."

Relevant to my research, the study of colour tries to answer the question of whether colour does indeed possess arousing or calming effects. For that, physiological and psychological responses to colours have been looked into with some results showing that some colours might arouse and calm individuals, however, researches have warned against generalizations.

A study by Jacobs and Suess [30] showed that red and yellow might produce higher levels of anxiety when subjects were shown colour slides in red, yellow, green and blue. Out of the test, the subjects associated red light with anxiety whilst blue and green represent feelings of calm, orange evokes a stimulating arousal and violet mystical feelings. Generally speaking though, the experiments showed that, more than just colour, other factors, such as light, perceptions of the space and novelty of the situation contributed more to the subjects' states.

Thus, existing research points out that "arousal effects of colour are neither strong, reliable, nor enduring enough to warrant their use as a rationalization for applying "high" or "low" arousing colours to create "high" or "low" activity spaces".[31]

When it comes to the sense of spaciousness the conclusions are not definitive. What was previously thought that warm colours bring objects and spaces closer to the viewer, while cold colours push them back is not substantiated by any evidence.

Still, Beach, Wise & Wise concluded that "spatial impressions are most influenced by contrast effects, induced by saturation and, particularly,

brightness differences between objects and background"[32] and that "spaciousness is enhanced by increasing lightness of the enclosing surfaces, and decreasing the contrast between elements that intrude into a space and their background". [33]

When it comes to healthcare environments, again, studies have been inconclusive and fragmented. The general consensus is that such spaces must be therapeutic, calming and health-promoting but there's little evidence that colour comes into play.

One of the most common myths regarding colour and healthcare is that the colour green is advantageous for the healing process. Fehrman and Fehrman discussed this: "After spending hours in surgery visually focused on red blood, surgical staff would experience green flashes on the walls of the operating room, caused by the *after-image* phenomenon. Hospitals replaced the white of operating room walls with light green to minimize these after-images. It was then incorrectly inferred that a colour used in hospitals as a visual aid must also beneficial in other environments. Based on the false assumption that green is restful, it was selected for use in redecorating the main cell block and solitary confinement area at Alcatraz Prison. From there it went on to coat the walls of libraries, classrooms, and public spaces. The indiscriminate use of green as a calming agent proliferated until the myth became established as a fact."[34]

Although there's a lack of evidence-based colour recommendations, some design guidelines have been traced . Author Frank H. Mahnke listed *general design objectives for colour and light design for healthcare facilities*:

a)The facility must retain a dignified appearance, yet also be attractive

b)Colour specifications must play a psychological and aesthetic role by:

- Promoting the healing process by guarding the physiological and psychological well-being of the patient

- Being an aid in accurate visual medical diagnosis, surgical performance, and therapeutic and rehabilitation services

c) Enhancing light, visual ergonomics, supporting orientation, supplying information, defining specific areas and improving working conditions through visual means

d) Lighting must be chosen with respect to function, psychological reinforcement, visual appeal, colour rendition and biological concerns. [35]

More specific for *mental health centres and psychiatric hospitals* are the following recommendations:

a) Colour specifications for mental facility corridors, patients 'rooms, and examination rooms should follow the guidelines for other medical facilities in general. However, the emphasis must be on eliminating the "institutional look" even more than in other medical facilities. The designer should strive to create a more "ideal-home" atmosphere.

b) Recreational areas, lounges, and occupational therapy rooms should be in "cheerful, stimulating colours" selected specifically to serve the function of each area. Some imagination should guide design choices in recreation areas—especially for children and adolescents.

c) Quiet rooms should not look like punitive environments. If a patient is to be isolated, he or she should be in a cosy, inviting, sparsely and safely furnished space. This does not mean it should be barren—just simple and uncluttered. The room should give an impression of refuge, protection, and recuperation—not punishment. Sensory overload should be avoided and relaxation furthered by cool colours. Choose your colours carefully, so that they won't look institutional. Lighting should be on the warm side. Avoid lighting that is too uniform, that doesn't produce shadows. Shadows are a natural experience in the environment and help define the three-dimensionality of items.[36]

Finally, although it has been stated numerous times that colour is not proven scientifically to have a conclusive impact on people's health, if one takes into account the generalized personal perceptions of the general population, some conclusions could be made:

- Colour *could* influence healthcare either positively or negatively
- Colour can make healthcare settings appear less institutional
- High-contrast colours *define* volumes, forms edges
- Too much of a colour leads to *monotony*
- Elderly people experience change of vision
- Wight and volume *can be altered* by colours – warm colours make objects seem heavier, cool colours make objects seem lighter.
- Cool colours are relaxing, warm colours are stimulating
- *Colour choices are based in empirical research*.

The color wheel (reading the segments):

- LIFE|GROWTH|NATURE|NURTURING|HEALING|CONCENTRATION|VISUAL ACUITY
- OPTIMISM|CLARITY|CREATIVITY|SOCIALIZATION|ENERGY|UNSETTLING|ILLUMINATION|ASSOCIATED WITH DISEASE|SICKNESS|ATTENTION
- LESSEN EYESTRAIN USED TYPICALLY IN MEDICAL ENVIRONMENTS
- EMOTION|EXPRESSION|WARMTH|ENERGY
- SKY|OCEAN|RELAXATION|SERENITY|QUIET|CONCENTRATION|BEAUTY|VALUES|MEDITATION
- ENERGIZING|PASSION|EXCITEMENT|CREATIVITY|SOCIALIZATION|CAN BECOME TIRING|ATTENTION
- SPIRITUALITY|CALMNESS
- NEUTRALS CONCENTRATION RELIEF
- PURITY|CLEANLINESS LUMINOSITY|CLARITY SEPARATION OF SPACES MONOTONOUS
- LEVELS OF CONTRAST GIVE DEFINITION TO OBJECTS

Colour has been described as a subjective visual sensation produced by *light*. Therefore, *transmission of light is one aspect of colour*. Because of the interdependent relationship between colour and lighting, the two ought to be investigated with equal regard for their mental and technical features.[29]

Light is important for human health and performance as it *facilitates visual tasks*, it *controls the body's circadian system*, it *affects moods and perception* and it *enables important chemical reactions*.

Higher levels of lighting enable better performance and, by controlling the circadian system, light can be beneficial to the management of depression and is critical in the metabolism of Vitamin D in the body. Better lighting has been shown to decrease the length of recuperation in patients and shorten their stay, control agitation amongst dementia patients, ease pain, and improve adjustment to night-shift work for medical staff. Windows in the workplace and access to daylight raise satisfaction in the work environment.

"Sunlight provides a balanced spectrum of colours with elements in all parts of the visible wavelength range. The actual wavelengths present in daylight vary over the day with latitude, meteorological conditions, and seasons."[37]

Artificial electric-light sources, like cool white fluorescent light and incandescent lights, are composed of wavelengths of light that are limited to area of the visible light spectrum.

When it comes to performance of visual tasks, there is no evidence that natural light is better than artificial one, however, the health benefits of natural lighting make for an overall better experience.

- *Light impact on human health and performance:*

a) Facilitating performance of visual tasks – Higher levels of light account for better performance of tasks. Activities can be performed both during natural daylight and artificial light, however daylight is preferred when colour discrimination is needed for the activity done.

b) Controlling the body's circadian system – "Light falling on the retina and being transmitted to the hypothalamus controls the body's circadian rhythm (biological events that repeat themselves at regular intervals), which are responsible for synchronizing the body's internal clock to 24 hours."[37]

By controlling the circadian system through light exposure, the health of a person can be strengthened:

- Depression is reduced among patients with seasonal affective disorder
- The length of stay in hospitals is significantly shortened
- Sleep is improved
- Dementia patients are less agitated
- Pain is eased
- Medical staff adjust better to night shift work

c) Affecting mood and perception – People's moods are affected by lighting conditions, and these changes can affect behaviour and performance at work. It has been shown that people prefer daylight to artificial light and will always be looking to sit next to a window.[38] Heerwagen and Heerwagen found that office workers preferred daylight over electric lighting for different reasons : psychological comfort, office appearance, general health, visual health, colour appearance of people and furnishings, work performance, and jobs requiring fine observation.

d) Assisting direct absorption of critical chemical reactions in the body Light is absorbed by the body directly through the skin, stimulating chemical reactions in the blood and other tissues. The implications of light absorption to the health of the individual are:

- Support of vitamin D metabolism
- Prevention of jaundice

The writers of "The Impact of Light on Outcomes in Healthcare Settings" summarize their indications into how light should be used in healthcare environments as following:

- Provide windows for access to natural daylight in patient rooms, along with provisions for controlling glare and temperature.

- Orient patient rooms to maximize early-morning sun exposure.

- Assess adequacy of lighting levels in staff work areas.

- Provide high lighting levels for complex visual tasks.

- Provide windows in staff break rooms so staff has access to natural light.

• *Light therapy* can be a very effective way to treat seasonal affective disorder (SAD), something that affects many people in Nordic countries. SAD is a type of depression that occurs at a certain time each year, usually in the fall or winter. Light therapy requires the use of a light therapy box placed in proximity of one's work place, on the desk, or somewhere in close vicinity.

The lightbox emanates a bright light that mimics natural outdoor light. The lightbox can also be used in treating other ailments such as depression unrelated to season change, jet lag, sleep disorder, adjusting to a night-time work schedule and even dementia. Light therapy can cause some minor side-effects such as eye-strain, headache, nausea and irritability but the effects are usually mild and short lasting.

For light therapy to be effective it must have a proper combination of intensity, duration and timing. The recommended intensity for the treatment of SAD is 10 000 lux, with a recommended duration of about 20-30 minutes per day. Usually, light therapy is most effective in the morning right after waking up.[39]
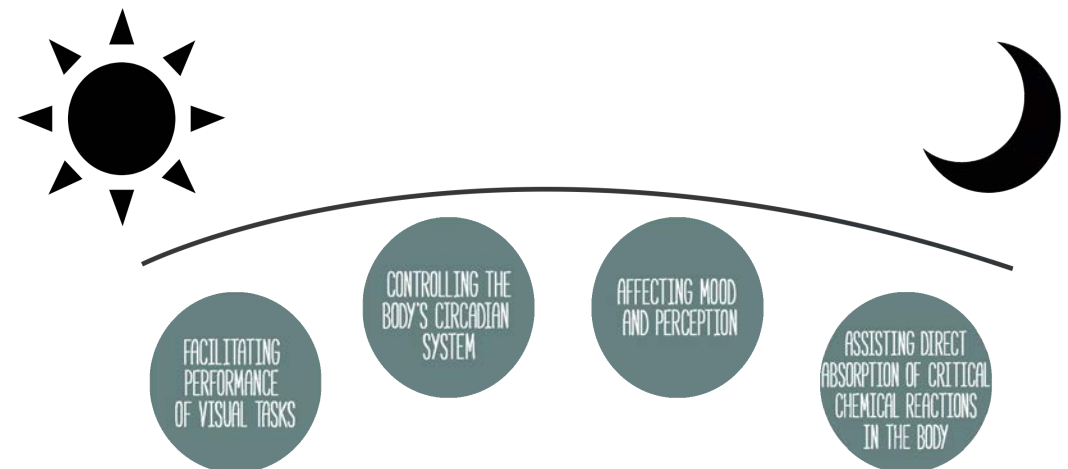
• *Indoor air quality* [IAQ] is another defining feature of healthcare environments that affects both patients and staff. Indoor air quality comprises of different factors from *temperature, humidity, quantity, presence of contaminants* to *quality of outdoor air used in ventilation*.
Improving IAQ has to take into account the elements that affect it:
- Patients – IAQ is both for them and influenced by them, as they could be the source of some contaminants;
- Staff – medical and cleaning staff come in contact with contaminants and their hygienic routine makes the difference in the spreading of contaminants;
- The building – dirty ductwork or moisture from HVAC humidification can bring in contaminants and produce mould;
- Outdoor air – since it's brought from the outside in order to ventilate the interiors, outdoor air also can also affect IAQ due to conditions such as humidity, temperature and pollution.

• *Methods to maximize IAQ:*
- The fresh air delivery system begins with the entry point that must be situated in such a way that it prevents contaminants from getting in.
- Filtering in the next step done through chemical or electronic air filters. UV radiation also works as filter, especially in regards to disinfecting from fungal contamination.
- Humidification and temperature control are essential for IAQ. Heating and cooling coils are used in the case of temperature control, while humidification is achieved by "clean steam" injections.

A study by R.M. Smith and A. Rae concludes that *in hospitals, temperatures of 20-22 degrees Celsius are preferred by anaesthetist and nurses*. [40]

- Distribution of air inside the building must take into account not just quantity but also space pressurization. When designing, air quantities must be balanced so that air travel between clean spaces to the dirtier ones in ensured.

When designing healthcare facilities, architects must take into consideration that clean fresh air must be ensured and that maintenance must be done within specific parameters of temperature and humidity so as to promote health and help with recovery. [41]

• *Conclusions:*
- Installing high-performance sound-absorbing ceiling tiles;
- Removing or reducing loud noise sources;
- Enclosing patient examination rooms and treatment areas;
- Decentralizing nurses' stations to limit staff conversations and support a more soothing setting;
- Building shorter hallways, which can prevent noise from traveling down corridors and into patient rooms;
- Moving headwalls to keep sounds from carrying between rooms with shared headwalls.[42]

• *Adequate acoustics* is another intuitive design feature contributing to healthcare environments, which, if gotten wrong, can have a negative impact on the users.

Unsuitable acoustics in learning environments affect students by leading to cognitive fatigue, disrupting attention, disturbing speech and language skills, increasing anxiety and leading to poor learning outcomes.[43]
As with learning environments, healthcare environments also require better regulation of acoustic design parameters.

The authors of "Sound Control for Improved Outcomes in Healthcare Settings" claim that t*he four aspects of sound that impact patients and staff in healthcare environments* are as following:

a) *Noise*: Simply put, healthcare environments are,normally, very noisy. Sometimes, in hospitals, noise levels have been shown to exceed the World Health Organization guideline values with number often being as high as 90 bd(A) more than double of the recommended value peaks.[44]

Noise has a negative impact on recuperating patients, studies even showing some evidence to the idea that wound healing is prolonged and thus stays at the hospital are longer also. [45]

"Much of this noise [...]is unnecessarily loud. The problem is exacerbated by the prevalence of hard, sound reflecting floors and ceilings that cause sounds to reverberate, linger, and propagate over large areas into patients' rooms and staff areas." [46]

• *Impacts of high noise levels on patients:*

- Annoyance
- Sleep disruption and awakening
- Decreased oxygen saturation, elevated blood pressure, increased heart and respiration rate among neonatal intensive-care patients
- Decreased rate of wound healing
- Higher incidence of re-hospitalisation
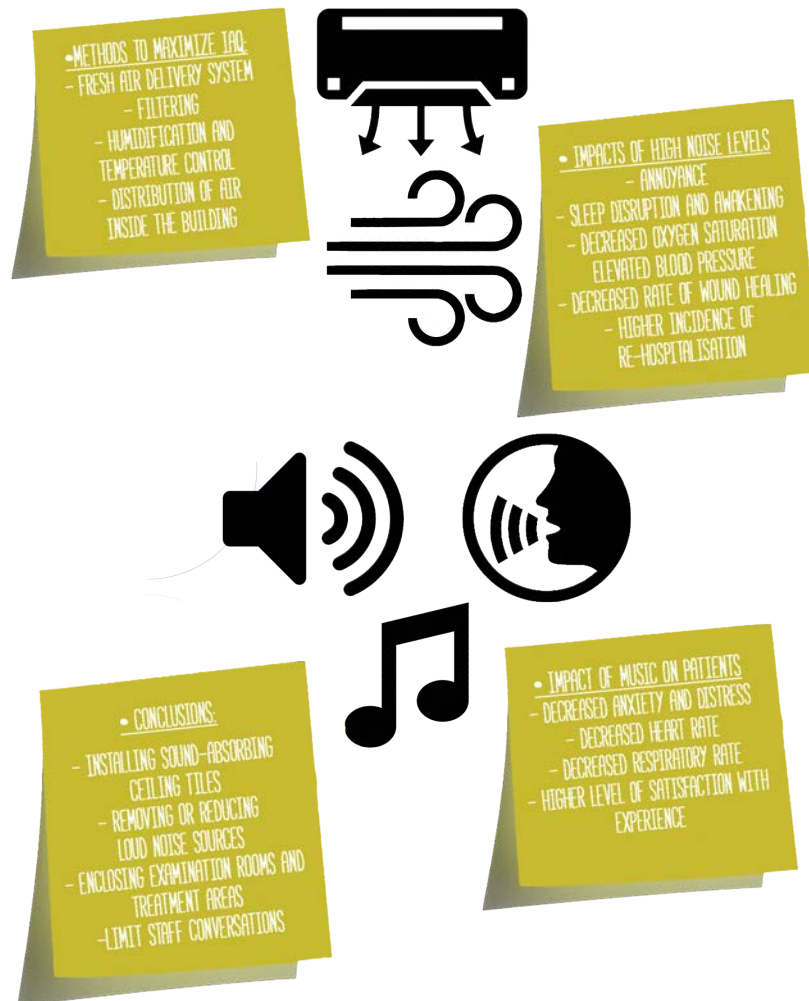
• *Impacts of high noise levels on staff:*
- Increased perceived work pressure, stress, and annoyance
- Increased fatigue
- Emotional exhaustion and burnout
- Difficulty in communication possibly leading to errors

b) *Speech privacy and patient confidentiality*: The design of healthcare environments is such that sometimes privacy is not always assured. Conversations can be overheard and such experiences stress the patient even more. In order to increase the level of patient privacy and confidentiality some solutions can be implemented:

- Wall-enclosed examination areas;
- Private discussion areas;
- High- performance sound – absorbing ceiling tiles
- Blocking sound transmissions through a combination of high-performance ceilings and wall and furniture layout.

c) *Speech intelligibility* : Speech intelligibility and speech privacy are related, however, the objective is to expand speech coherence between individuals who need to talk with each other and to limit the discernibility and clarity of their discussion to unintended audience.

d) *Impact of music*: Some music can produce feelings of relaxation and positive response, reducing activity in the neuro-endocrine and sympathetic nervous system, and, thus, decreasing anxiety, heart rate, respiratory rate and increased temperature. Music therapy has also used in healthcare promotion and it has proven to be very effective in settings of oncology, maternity and paediatric, intensive care and coronary care.

• *Impact of music on patients:*
- Decreased anxiety and distress
- Decreased heart rate
- Decreased respiratory rate
- Higher level of satisfaction with experience

Music selection for music therapy:
- Music should ideally be selected by patients based on their preferences.
- Generally, sedative music used for music therapy tends to have no accented beats, no percussive characteristics, a slow tempo, and smooth melody.

[MATERIALS IN HEALTHCARE ENVIRONMENTS]

When selecting materials for healthcare facilities, architects have great responsibility in understanding the characteristics of the materials they use. Parameters as functionality, aesthetics, availability and cost, social and economic concerns must be taken into account. This is particularly important since many of the materials commonly used for interiors might emit volatile organic compounds which affect the indoor air quality of the environment. [47]

Healthcare associations should focus on setting up a series of steps that ensure the improvement of the impact on health of the materials utilized in design. In "Creating Safe and Healthy Spaces: Selecting Materials that Support Healing ", the authors detail these steps as followed:

- Firstly, purchasing policies must be adopted that demonstrate preference for green materials that are protective of health and maintain the highest standards of patients care.
- The incorporation of green materials must be done soon in the project.
- The Plastics Environmental Preference Spectrum should be used as a guide when specifying plastic-based products. The use of polypropylene and polyethylene plastics that do not contain hazardous additives and sustainable-sourced bio-based materials should be encouraged.
- Materials with low Volatile organic compounds (VOCs) should be used.
- Suppliers should be required to disclose chemical and material contents of products.
- Materials that contain highly hazardous chemicals should be avoided.
- Materials and products with high recycled content and end-of-life recycling programs should be preferred.
- Developers should partner with suppliers who develop and produce products using green materials.
- Transitioning to greener materials.

Flooring is very important in healthcare facilities as the careful choice of materials could make difference when trying to reduce medical errors, reduce stress in patients and staff and improve effectiveness of the treatment.

In healthcare environments, natural materials and views are responsible for better health outcomes, when dealing with recovery times, lower pain perception and positive disposition. Because of that, the use of *wood* in healthcare environments is encouraged.

• *Wood* brings nature inside care facilities in very practical ways.

Firstly, it can come as a replacement of natural views and natural light, by bringing warmth and a degree of exposure to nature. Wood is versatile and can be used both as an aesthetic or structural element.

Finally, it is a "green", renewable and recyclable material which has mostly positive effect on the environment. The move towards a more significant use of wood in healthcare environment is a critical and functional step in reconnecting patients, family and medical staff within the beneficial frame of exposure to nature.

RECYCLABLE SOUNDPROOF CEILINGS

SUSTAINABLY HARVESTED WOOD

LOW-EMITTING PAINTS & WALL COVERINGS

HYPOALLERGENIC WALLS

When undertaking the task of finding the links between nature and medical recuperation, Roger Ulrich's "View through a window may influence recovery from surgery" proves to be a deceptively simple starting point. Further literature in the matter accentuates and adds to the original point of the article which is that views of nature can induce better healing capabilities with patients in recovery.

"Interaction with a natural environment has a positive effect on patients' feeling of well-being, which in turn has a salutary effect on their physical health." [48]

One common theme that healthcare design theory tackles is that, as is the case of most of our urban settings, healthcare facilities often tend to disregard the disconnection that people feel from nature, and how that lost link could actually be a significant issue to be improved on for the benefit of medical recuperation. The importance of nature in therapy is resurging through many ways in design. I've already discussed how natural materials, particularly wood is an effective strategy to bring nature into the healing process. I will be now looking into other methods to incorporate nature in design, from the importance of outdoor spaces, to the therapeutic value of environmental psychology and ecopsycology.

Anna Bengtsson, in her paper entitled "From Experiences of the Outdoors to the design of Healthcare Environments", sets out to find the relationship between environmental qualities and design concepts regarding the outdoor in healthcare environment. She claims that "*for the environment to cause well being and positive emotions, designing in order to prevent inappropriate environmental demands is not the only important dimension. […] restorative effects of experiences in the outdoors are obviously fundamental.* "[49]

Bengtsson mentions three theories on restorative environments as a backbone to her research.

a)*The attention restoration theory*, by S. Kaplan [50] is based on the premises that humans' attention is separated into *directed attention*, used to focus against distraction, and *fascination*, which supports restoration and recovery. Natural environments are good at restoring attention fatigue, and, in combination with soft fascination are the makings of a good restorative environment.

b)*The psycho-evolutionary theory* is also based on evolutionary features that connect the evolution of mankind with the natural environment that it has been surrounded with. According to Ulrich's writings, "*views of nature can produce substantial restoration from psychological and physiological stress within a few minutes.*"[51] From an evolutionary standpoint, it makes sense that being in natural environments triggers positive actions in us.

c) *The supportive environment theory* is represented in the diagram of the triangle of supporting environments which illustrates the way in which one's relationship with the environment relies upon one's executive
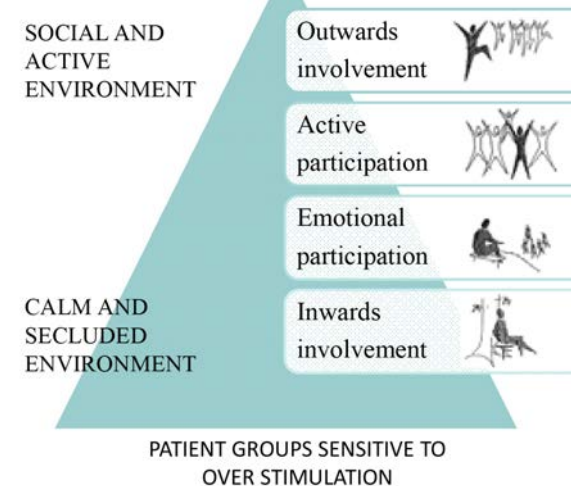
If the diagram is read from a stress-related disorder stance, one could observe that individuals who are at the bottom level of the triangle experience low wellbeing and high sensitivity to the environment. *Their engagement is directed inwards and require environments in which they are alone*. At the second level we have those who can manage emotional engagement, *who prefer being alone but desire visual contact with other people, from a distance*. Thirdly, there are the ones who *engage actively in social and active environments and take part in group activities*. On the fourth level there are those who can *engage on an outward direction, have high executive functions and can handle different environments.* [49]

The healing process in nature-based rehabilitation for people with stress-related disorders can me separated into four stages. Firstly, the patients relearn how to interact with the physical surroundings by just being in a safe and secure environment. Then, they can realize their own existential crisis and evaluate their state of mind. After that, patients' state start improving and finally, they come to terms with their illness. [52]

• *Aspects of how to be comfortable in the outdoor environment*
- Closeness and easy access;
- Enclosure and entrance;
- Safety and security;
- Familiarity;
- Orientation and way finding;
- Different options in different kinds of weather
• *Environmental qualities of "access to nature and surrounding life"*
- Joyful and meaningful activities;
- Contact with surrounding life;
- Social opportunities;
- Culture and connection to the past;
- Symbolism/reflection;
- Prospect;
- Space;
- Rich in species;
- Sensual pleasures of nature;

In "*GARDENS IN HEALTHCARE FACILITIES: USES, THERAPEUTIC BENEFITS, AND DESIGN RECOMMENDATIONS*", the authors make the following design recommendations:

a) *Locational, Site Planning, and Way-Finding Recommendations*:

- Exterior environments should provide a contrast to the interior space, in order to facilitate a sense of "getting away";
- Design with particular awareness of issues of mobility and microclimate;
- Design for a sense of security and safety, with easily readable pathways and clear designations;
- One outdoor space should be visible from the main entrance or there should be clear and prominent directions as to its location.

- Where there is sufficient room, divide the space so that there are sub-areas of varying size and levels of privacy;
- The layout of the garden needs to be easily "readable," to minimize confusion for those who are not functioning well.

b)*Planting, Seating, and Detail Recommendations:*

- Provide sensory stimuli;
- Facilitate physical and psychological movement with pathways and vistas;
- Create areas for safe seclusion as well as social interaction to help think and work through issues;
- Lush, colourful planting that is varied and eye-catching so as to suggest the image of a garden;
- Contrast and harmony in texture, form, colour, and arrangement of plant materials;
- A water feature can provide this pleasing and soothing sound.
- Select paving surfaces that are smooth enough to accommodate wheelchairs and gurneys;
- Arrange entrances to the garden and width of pathways so that volunteers or family members can easily bring a patient on a gurney or in a wheelchair out into the space.
- Night-time lighting;
- Seating arranged for social interaction;
- Increase the seating options available with movable seating so that users can meet their own particular needs;
- Wind shelters, heat-reflecting surfaces— or alternatively, shade-producing trees —and other structures and planting help to mitigate the climate make sure that some seating faces that direction to facilitate psychological movement out of the space;

c) *Policy and Maintenance recommendations*

- Considering a garden as an essential element within the therapeutic milieu of a facility;
- Quality maintenance contributes to the health of the plants, which in turn provides the maximum therapeutic benefit;
- Encouraging the medical staff to promote the use of exterior spaces;
- Scheduling events and meetings in the garden;
- Keep gardens open;
- Consider approaching volunteers or a local garden club to raise money for, and/or to maintain, a hospital garden. [53]

A very interesting story I came about is the story of Canadian architect Kiyoshi Izumi of experiencing a psychiatric ward under the influence of LSD and the design conclusions he drew from that.

"Psychiatrists talk one language and I talk another. They knew what they wanted but someone had to translate their wishes into architecture. To me there was really no other way. If I were to really understand the fears and problems of the schizophrenic, I would have to look at things the way they did." - Kiyoshi Izumi

Izumi took part in a structural and patient survey that lasted from 1954 to 1958 where he was tasked with assessing psychiatric wards in the Canadian province of Saskatchewan. He was a member of a federally granted team of visionaries which included British psychiatrist and psychedelic researcher Humphry Osmond and Canadian biochemist and psychiatrist Abram Hoffer. Their goal was to develop a plan to modernize psychiatric wards around Canada and address the influence of clinical environments on patients. For that, they had to get inside the heads of the mentally ill by mimicking the psychomimetic experience.

"A true, honest understanding of the at times cripplingly intense psychic distress of schizophrenics, namely, meant taking a good, hard look at the psych ward as only schizophrenics could. It meant occupying, so to speak, the minds and bodies of the committed as a way of forging an eye-to-eye rapport, and to empathize with how certain physical spaces dizzied their psychic boundaries, and stoked their anguish and fears."[54]

Kiyoshi Izumi, under the guidance of Osmond and Hoffer, decided to immerse himself in the asylum experience in order to understand the struggles of the patients and how they can be mitigated through design features, ambient peculiarities, colour schemes, light play and generally obvious features that took a completely other dimension when applied in a mental institute. And he did that by taking acid and "touring" various Saskatchewan's aging mental hospitals.

Izumi experienced nauseating feelings from the endless array of identical tiles, utility closets towered menacingly over him, barred windows gave him a sense of despair and the beds felt torturous.

"There were no clocks, no calendars; time, to say nothing of his or any patient's temporal bearings, simply did not exist, which made remembering when to swing through the nurses station, a pill counter-turned police station, damn near impossible. There was no privacy, no moment that didn't feel like standing center stage, naked, alone, and with no clear exit; at his every entrance and turn, heads turned. And the hallways! The mirrored hallways. It was as if they did not end. They shot straight past infinity, obliterating Izumi's constancy of perception."[54]

Izumi's observations were put together and resulted in a plan for an improved typology of mental hospital, that rested in the principles of what the architect and Osmond called "socio-architecture". He designed the Saskatchewan Hospital at Yorkton, Saskatchewan following this established design features.

The first design for the psychiatric center featured a semi-circular, single-story building which had three types of areas, satisfying the needs for privacy of the patients. The inward, large area would benefit larger groups and socialization, the second area would benefit smaller groups who desire a degree of privacy and, lastly, the retreats would benefit people when they wanted to be completely isolated. The choice of which area they wanted to be in, belonged completely to the patient. [55] Unfortunately, his design had to be change due to building regulations.
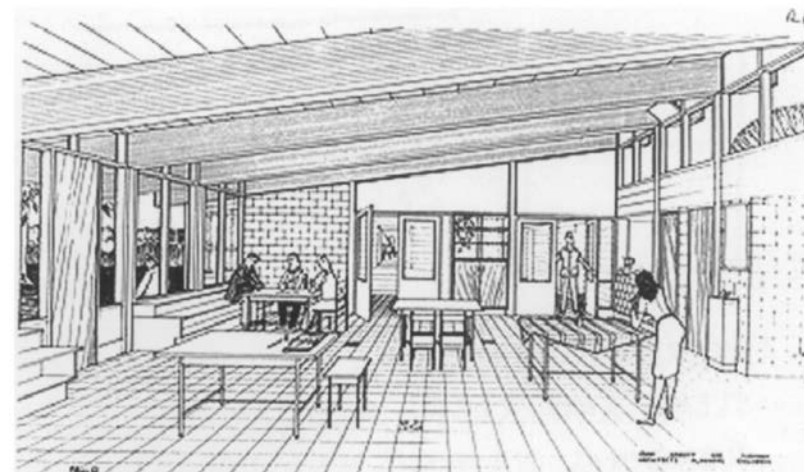
Preliminary sketch of the common room (Archives, Province of Saskatchewan, Regina RB 4917)

Izumi's design criteria helped create a functional, clean and clear space. Cool, flat colours were used for the rooms and hallways, cabinets were discernible and windows were unbarred. Social spaces were provided but the doorways and thresholds to those areas were specially designed to beat back the stressful of feeling on stage.

"Heat, light, and sound sources were designed to avoid creating confusion" Izumi continued in LSD and Architectural Design, *"The combined [light fixture] fittings that are used quite commonly in commercial buildings were not used in the psychiatric hospital. In selecting illumination type and distribution, we tried to avoid creating silhouettes of faces and bodies."*

• The design considerations that follow have been extracted from Part II, Section 10 of FACILITIES FOR MENTAL HEALTH SERVICES, Canadian Building Standards and Guide Material for Hospital and Mental Health Facilities. Department of National Health and Welfare, Canada, 1965.

"There are not enough definitive studies of this nature to permit of rigid conclusions but based on the observations of psychologists, nurses, psychiatrists in existing mental hospitals and some architects, and research projects among mentally ill patients, assisted by experience simulated through drugs such as LSD, the following is a suggested list of design considerations to be kept in mind:

C-2. To avoid certain types of architectural design which lead to ambiguity:
2.1 The design of doorways where the size, proportion and treatment of the side light is indistinguishable from the door itself.
2.2 Use of panelling in proportion and pattern in such a fashion to make doors, cupboards and other closing panels indistinguishable from the adjacent wall.
2.3 Use of trim, paint lines, hardware and other elements placed to simulate adjacent shelf or drawer when in fact these do not exist.
2.4 Built-in closets and other features, particularly in patient's private rooms, which give the illusion of hidden spaces behind....
C-3. To avoid qualities of finish that tend to heighten illusions....
C-4. Proportion and scale of spaces and form should be commensurate with the human body. Monumental entrances, lobbies and other features should be avoided. The texture of materials, colour and other architectural elements should be carefully considered so that they complement or are subordinate to the human element. "[56]

THREE LEVELS OF SOCIAL RELATIONSHIP

UNLIMITED NO. OF PEOPLE

LIMITED NO. OF PEOPLE

PERSONAL
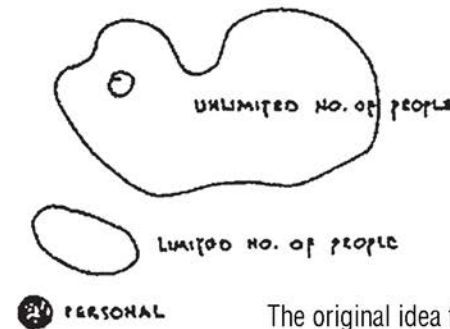
The original idea for the design (Archives, Province of Saskatchewan, Regina, RP 69.1019, p. 15)

ARCHITECTURAL COUNTERPARTS

Translation of the idea into design (Archives, Province of Saskatchewan, Regina, RP 69.1019, p. 15)

ACTIVITY
PING PONG
SHUFFLE BOARD
DANCING ETC.

"PARLOUR"
CONVERSATION, MUSIC
CARD GAMES ETC.

"RETREAT" PERSONAL ACTIVITIES
SLEEP AND REST, MEDITATION
READING WRITING

Circular plan (not built) (Archives, Province of Saskatchewan, Regina, RP 69.1019, p. 15)

landscaped outdoor area

entrance

service rooms

visitors

retreat

small group area

large group area

KYOSHI IZUMI'S RECOMMANDATIONS:
• AVOID CERTAIN TYPES OF ARCHITECTURAL DESIGN WHICH LEAD TO AMBIGUITY, E.G.:
−DOORWAYS WHERE THE SIZE, PROPORTION AND TREATMENT OF THE SIDE LIGHT IS INDISTINGUISHABLE FROM THE DOOR ITSELF.
−USE OF PANELING IN PROPORTION AND PATTERN IN SUCH A FASHION TO MAKE DOORS, CUPBOARDS AND OTHER CLOSING PANELS INDISTINGUISHABLE FROM THE ADJACENT WALL.

−USE OF TRIM, PAINT LINES, HARDWARE AND OTHER ELEMENTS PLACED TO SIMULATE ADJACENT SHELF OR DRAWER WHEN IN FACT THESE DO NOT EXIST.
BUILT-IN CLOSETS AND OTHER FEATURES, PARTICULARLY IN PATIENT'S PRIVATE ROOMS, WHICH GIVE THE ILLUSION OF HIDDEN SPACES BEHIND.
• AVOID QUALITIES OF FINISH THAT TEND TO HEIGHTEN ILLUSIONS...

• PROPORTION AND SCALE OF SPACES AND FORM SHOULD BE COMMENSURATE WITH THE HUMAN BODY. MONUMENTAL ENTRANCES, LOBBIES SHOULD BE AVOIDED. THE TEXTURE OF MATERIALS, COLOR AND OTHER ARCHITECTURAL ELEMENTS SHOULD BE CAREFULLY CONSIDERED SO THAT THEY COMPLEMENT OR ARE SUBORDINATE TO THE HUMAN ELEMENT.
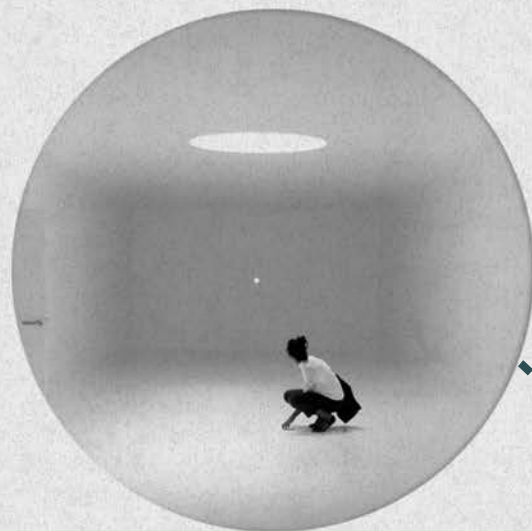
# [PROJECT 1: CENTRE FOR CANCER AND HEALTH / NORD ARCHITECTS]

The Centre for Cancer and Health is designed by Nord Architects Copenhagen close to the Copenhagen downtown area and Rigshospitalet. It's a striking, white-clad centre made up of various individual, yet interconnected by a typical multifaceted rooftop houses, which 'provide the space needed for a modern health facility, without losing the comforting scale of the individual.'[17]

When visiting the Centre, the first striking sensation was given by the lighting inside the building which, even if it was during a cloudy Danish noon, created a sense of cosiness which moved the centre away from the sterile feeling of a healthcare facility. The striking white walls where warmed by the wooden furniture and cladding of the interior courtyard.

The interior courtyard has a lot of potential to be used during warmer season as it was completely disconnected from the rather busy surroundings of the building, allowing the patients to escape in the middle of the city. Natural lighting poured from the courtyard, preventing the artificial light from overpowering the interior.

The building is planned around this interior space, the rooms at the opposite end from the common room being the most secluded and intimate. That is where individual physical and psychological therapy took place.

The exterior of the building is quite striking but does not stick out. The white cladding combined with vertical wood gives the building a light, slender look. Next to the Centre there is a small park and a climbing wall which add an exterior dimension to the building.
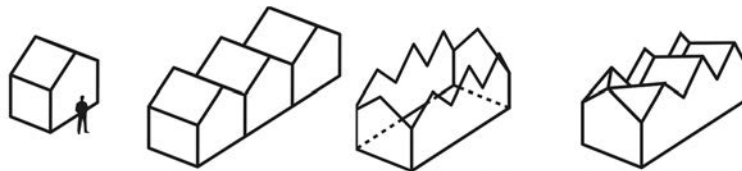
HARD VALUES

ARCHITECTURAL EXPRESSION
interconnected houses by a typical multifaceted rooftop
functions are thematically clustered in "houses"
human scale

SPATIAL SOLUTION
built around an interior courtyard - functions clustered
privacy gradient - from group/public up front to
individual/private in the back
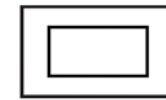
MATERIALITY
INTERIOR: white walls | light wood flooring

EXTERIOR: white tile | light wood sliding

LIGHTING
natural light through interior courtyard
warm glow at night from inside lighting

SOFT VALUES

perceived as RETREAT
WELCOMING
creates AWARENESS
inspires COMFORT
fosters CONTEMPLATION
initiate REVITALIZATION

[PROJECT 2: LIVSRUM - CANCER COUNSELING CENTRE / EFFEKT]

The centre is designed as a cluster of seven small houses around two green outdoor spaces, each house gathering similar functions."The houses offer a wide range of rooms for informal advice, therapy and interaction with a focus on the user's comfort and well-being" the architects explained. [18]

The unique character of the building is given by the difference in roof heights and materials used, distinguishing the Counselling Centre from other healthcare facilities. With the building located close to the hospital's cancer ward, it is set for a better coordinated effort between clinic staff and the Danish Cancer Society.

What the architects also aimed for was the creation of a cosier environment, where the sterility of a medical facility is exchanged with feelings of familiarity and comfort.

To promote a sense of human scale and variation, the architects divided the centre's programming into seven house-shaped buildings arranged to enclose the green courtyards. All rooms face the two central courtyards. Since the centre accommodates patients of different ages and needs, the architects designed each space in the structure individually according to function. Each building is clad in white fibre-cement boards and punctuated by glazed openings that let in natural light.

Similar to the Centre for Cancer and Health, the Livsrum Centre utilizes the idea of the interior courtyard and doubles it, whilst adding sustainable practices such as urban farming and gardening which have been proven effective when treating mental distress.

HARD VALUES

ARCHITECTURAL EXPRESSION
cluster of seven small houses around
two green outdoor spaces
each house has its own specific function
human scale

SPATIAL SOLUTION
seven house-shaped buildings enclose the green courtyards.
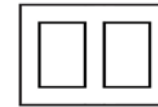
MATERIALITY
INTERIOR: white walls | light wood flooring

EXTERIOR: white tile | light wood sliding

LIGHTING
natural light through skylights

SOFT VALUES

HUMAN SCALE
inspires COMFORT
creates WELL BEING
encourages INTERACTION
helps with COLLABORATION between
hospital staff and Danish Cancer Society
promotes SUSTAINABILITY through GARDENING

From the architect: The kindergarten aims to create a small village setting for children that break away from the traditional, large scale institutional daycare environment. The small scale village atmosphere at Frederiksvej Kindergarten is achieved by dividing the building into 11 small houses joint together with different orientation. The various play programs in the kindergarten are centred around two winter gardens that resulted in these small, individualized spaces where children can establish their own play niches within the building.

The small houses are all slightly offset from each other in order to allow for better lighting and the creation of different small playgrounds on the outside. The two main atriums, towards which circulation and other rooms open up, allow for the informal meetings of children, parents and teachers. They also feature small wooden niches where the kids can choose to play or be alone in, thus, establishing different levels of socialization within the kindergarten.

The design of the houses mirrors the abstraction of architecture in a child's mind. Often, the typical gabled-roof structure is the first image we draw and associate with architecture and buildings. Clustering up all these houses with their particular functions pushes the idea of a small village, of activity within the community,

Personally, I find the black and white pallet to be suiting in this case, as it allows for the creativity of the children to be put on display in this very neutral, but inspiring space.
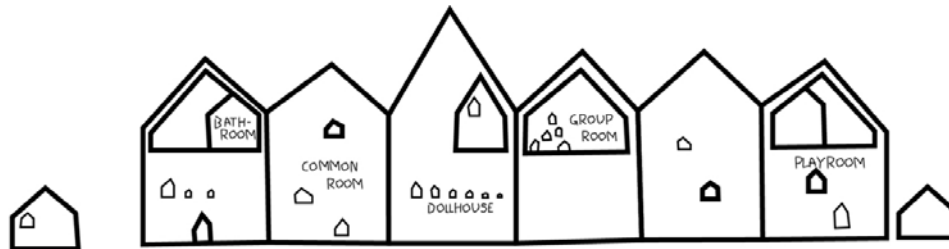
HARD VALUES

ARCHITECTURAL EXPRESSION
dividing the building into 11 small houses joint together with different orientation
archetype of "the house" used to reference a small scaled village

SPATIAL SOLUTION
11 separated and offset buildings
built around 2 main atriums

MATERIALITY
INTERIOR: white sliding | grey flooring | light wood | protective wire

EXTERIOR: dark & light wood sliding

LIGHTING
natural light coming through roof windows
lighting the atriums

SOFT VALUES
enables a feeling of COMMUNITY
encourages INTERACTION
creates the choice between
PRIVATE and GROUP interaction
inspires CREATIVITY & GROWTH

[PROJECT 4: COMMUNITY CHURCH KNARVIK / REIULF RAMSTAD ARKITEKTER]

From the architect: The new Community Church in Knarvik, located on the scenic west-coast of Norway north of Bergen, is built on a privileged site overlooking the cultural landscape and local town centre. The building is carefully adapted to an existing hillside between built and natural environment, providing the church with an inspiring context of the surrounding heath landscape. Its distinctive and innovative character and central location makes it a landmark in the community, to be inviting and inclusive for all people to cultivate their faith throughout the week.[19]

The church's design does a great job of signalling it's function with a simple, geometric shape, the high spire and ascending roof planes. The two functions inside the church, the sacral and the administrative are connected by a common atrium, allowing for a better connection and use of space.

The feature I found most interesting is the use of light wood all throughout the building, both on the outside cladding and the inside walls. It offers the church unity, warmth and lightness and it contrasts the stark scenery, strengthening the idea of the landmark,

The use of artificial lighting is also enforcing the idea of a warm, welcoming space. As the location of the church means that it cannot base itself solely on natural lighting, neon lights have been used through the building. Their effect, however, is not a harsh one, but rather delicate, diaphanous, adding to the sacredness of the building.
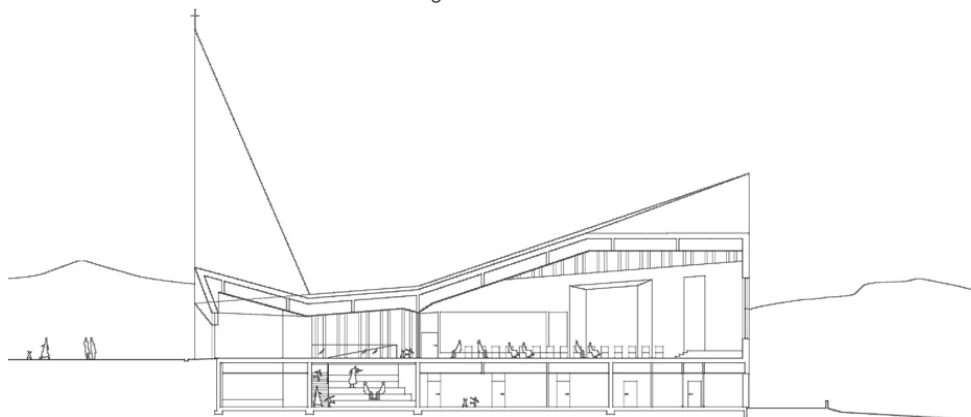
HARD VALUES

ARCHITECTURAL EXPRESSION
adapted to the environment
landmark
sacral typology
clear and elemental geometries, materials and constructions

SPATIAL SOLUTION
compact building volume split into two stories on a rectangular plan, separating the sacred spaces above from the cultural and administrative functions below

MATERIALITY
INTERIOR: light wood flooring and sliding

EXTERIOR: light wood sliding | mirroring window panes
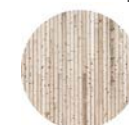
LIGHTING
small glowing artificial lights
warm glow at night

SOFT VALUES

fosters CONTEMPLATION
WELCOMING
encourages INTERACTION
brings COMMUNITY TOGETHER
SACREDNESS

[PROJECT 5: 1:1 AT THE ROMANIAN PAVILION – UNULAUNU]

In 2010, the Romanian Pavilion at the Venice Biennale was represented by 1:1 a project that dealt with the population density of Bucharest. The exhibition space encloses a 94 square-meter box taking up most of the space inside the pavilion, with one visitor admitted to its interior at a time.

From the architects: "The concept is to "exhibit space" and, by doing so, to explore its various instances. A specific and quantifiable fact is related to the idea of "space": 94m2/person is the population density level in Bucharest, and its representative for the urban condition in Romania."[20]

The experience was as an exercise in socialization and isolation, as, queuing to enter the white box would provide people with the opportunity to talk to each other and, once inside the room, the person would be isolated with just his thoughts, taking in the quality of the space. Visitors queuing in the gap between the enclosure and pavilion walls can glimpse the enclosed space through three peep holes. The interior is illuminated by a large circular hole in its ceiling.

Once inside the room, you are taken aback by the amplitude of the space, how fresh and crisp it all looks due to the whiteness of the walls. One is enthralled by the light that pours in through the opening in the ceiling. Whit this aimed social game in mind, and the fantastic qualities the room had, due to the light, colour and volume, this project came to my mind when trying to find inspiration for the types of rooms I would like to include in my design. As isolated, calming rooms are what I'm interested in, 1:1 is a project that I will draw inspiration from.

The city, Bucharest
The area
215 987 000 m²

The collective
Population
2 288 000

The individual
Density
94,4 m²/person

Exhibiting space
Scale
1:1
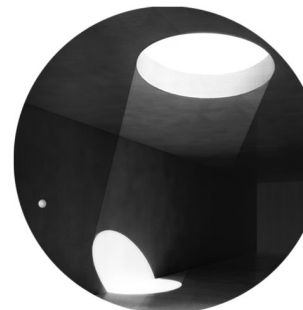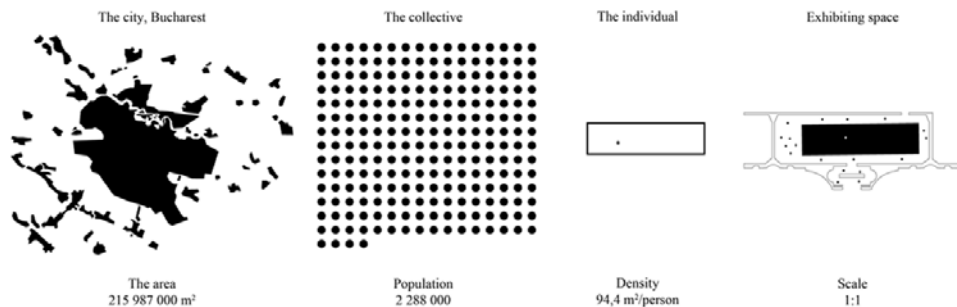
HARD VALUES

ARCHITECTURAL EXPRESSION
the rectangular box made of wood inside the exhibition space makes for a minimalist intervention
colour & light
social vs. intimate
"peeping" windows

MATERIALITY
white finishing | white wood sliding | dark concrete floor

LIGHTING
natural light through window above
artificial light at night
light & contrast created part of the artistic intention
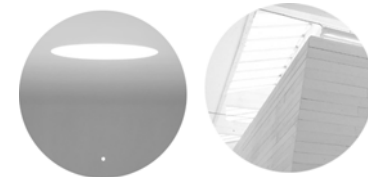
SOFT VALUES

encourages SOCIALIZATION
perceived as RETREAT
creates AWARENESS
fosters CONTEMPLATION

[CONCLUSIONS]

SOFT VALUES

perceived as retreat
fosters contemplation

welcoming
inspires comfort
creates WELL BEING
initiate revitalization

creates awareness

encourages INTERACTION
enables a feeling of community
brings Community together
encourages socialization

creates the choice between
PRIVATE and GROUP interaction
inspires CREATIVITY & GROWTH

HUMAN SCALE
LANDMARK

promotes SUSTAINABILITY through GARDENING

When choosing projects for inspiration, firstly I looked into thematically similar buildings, such as the cancer counselling centres. Then I looked into projects which had elements or evoked atmospheres similar to what I had in mind for my project.

The qualities that these projects have in common, revolve around the creation of spaces that have a good *gradient of privacy* throughout. They bring people together but also allow the choice for a more private experience.

The design aims to be recognizable and assuring, the spatial solutions focus on *interior gardens* and how functions are built around them.

Materials are light and airy, focusing on wood in order to bring warmth to the buildings and natural lighting is, in my opinion, the strongest feature that the projects focus on.

HARD VALUES

ARCHITECTURAL EXPRESSION
the archetype of the gabled-roof house
functions are thematically clustered in "houses"
houses are directed towards an interior garden
break away from sterile medical architecture
human scale

SPATIAL SOLUTION
built around an interior courtyard
functions clustered
privacy gradient - from group/public up front to
individual/private in the back
providing areas for groups and also niches for privacy

MATERIALITY
white finishings | light wood flooring | white tile | light wood sliding

LIGHTING
natural light through interior courtyard
warm glow at night from inside lighting
small glowing artificial lights
natural light coming through roof windows

[STUDYING THE SITE]

CHALMERS CAMPUS

JOHANNEBERG SCIENCE PARK

CHALMERS EKLANDA

MOSSENS IDROTTSPLATS

SP TEKNISKA FORSKNINGSINSTITUT

FORREST

SITE

FYSIKEN GIBRALTARGATAN

GIBRALTARGATAN CHALMERS STUDENTBOSTÄDER

DOKTOR FORSELIUS GATA
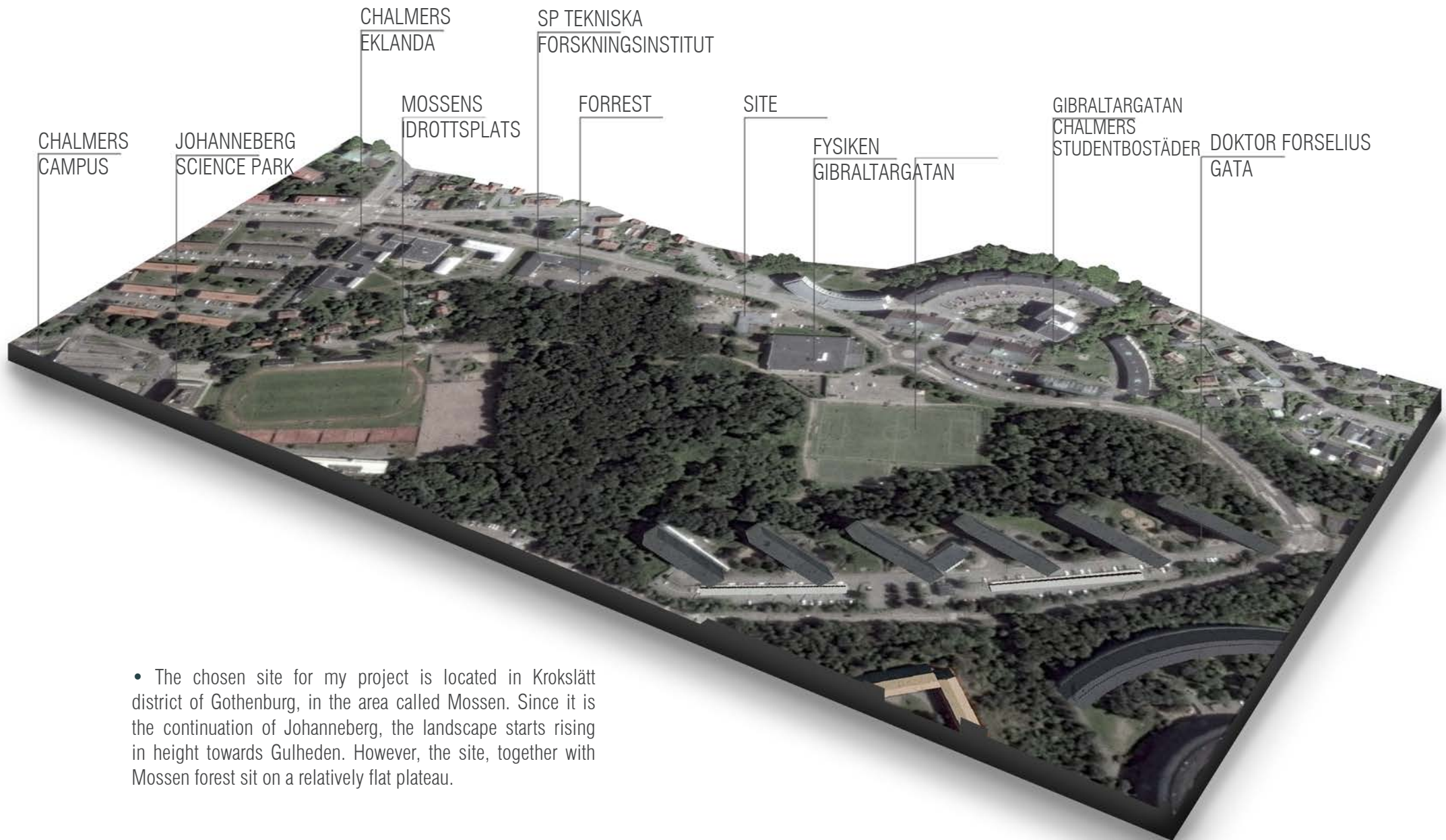
• The chosen site for my project is located in Krokslätt district of Gothenburg, in the area called Mossen. Since it is the continuation of Johanneberg, the landscape starts rising in height towards Gulheden. However, the site, together with Mossen forest sit on a relatively flat plateau.

[CONTEXT]

Fridkullagatan - individual homes, built in a traditional style; wooden clad; low hight; some apartment buildings, low , maximum 4 levels.

Fysiken Gym - Metall clad; low hight; football stadium; silhouette of high appartment buildings define the area.

Eklandagatan X Gibraltargatan - apartment buildings,6-7 levels; buildings from this decade; materials - wood, stone, metal cladding, decorative brickwork.

Forest - site sits next to a small forest; a trail cuts through, allowing access dirrectly through Chalmers; very quiet and secluded.

Gibraltargatan - collective housing becoming predominant; student housing; 6 levels; newly built.

Gibraltargatan Student Housing - SGS student housing; 6 to 10 levels; red decorative brick cladding; very busy;many students.

• *Height considerations:*

-The buildings in the area surrounding the chosen site have a variation of heights, from 1-2 story individual homes, to apartment buildings ranging from 4, 6 and 9 levels.
-In the immediate vicinity of the site, there is a 6 story building, across the street, and a 2 story gym.
-Taking into consideration that the site is already higher than the street level (with approximately 2m) and that the gym is going to be the closest building to reference from, I decide to settle for a 1, maximum 2 story high building, with a height of maximum 5,5 m at the base of the roof.

45
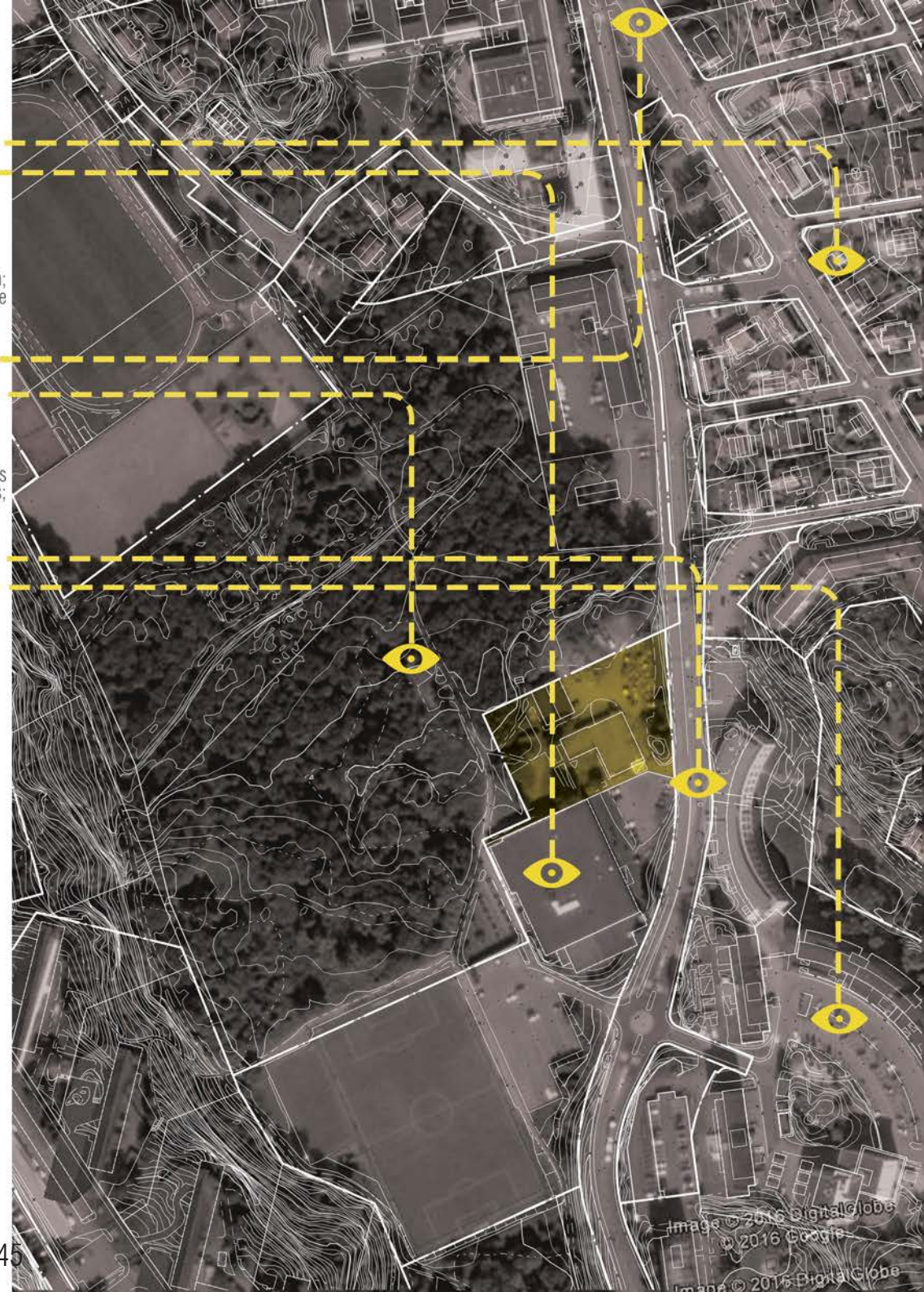
[FUNCTIONAL ANALYSIS]

In the area, housing is predominant with small, single-family dwellings, low-rise apartment buildings and some student housing. The forest that borders my site is a great asset and contributes to its appeal.

• *Architectural expression:*

-Stylistically, there's not much cohesion in the area, having both more traditional, wooden, 1,2 story houses, to the newer, higher apartment buildings.
-Consequently, there is no stylistic expression I have to follow.

• *Materials:*

-From the buildings: corrugated metal sheets, white finishing, dark grey tiles, red finishing, grey finishing, white tile, wood sliding, decorative brick
-From the forest: birch bark, moss, dirt road, etc.

• *Accessibility:*

-By car:
Coming on Gibraltargatan, the entrance to the site is easy to access and features a shared parking lot with Fysiken.

-By bus:
The site sits between two bus stops, Pilbågsgatan and Mossen, with buses 18, 19 and 52 going through.

-By foot:
Coming from Chalmers, the pathways passing through the forest connect the campus to the site through a 10-15 minute walk.

• *"Accidents":*

-Instead of the built stairs, people have "created" their own path to reach the site.
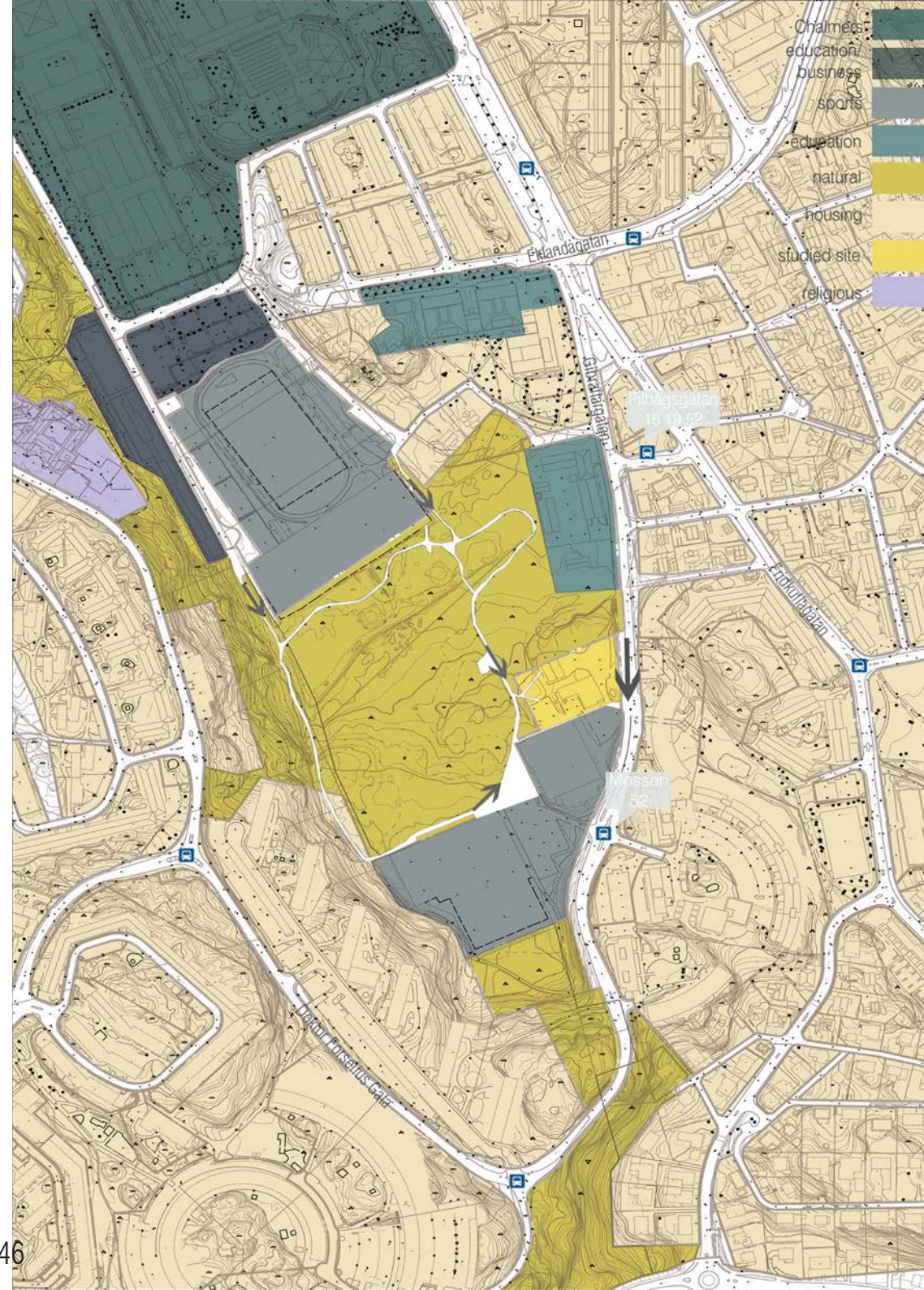
• *Current area: 4 487 sq m*
  Proposed area total: 6 414 sq m
• *Why I'm choosing this site:*
- Closeness to Chalmers: As students and young adults are the main benefactors of the proposed project, the site, situated in walking distance from Chalmers campus, would be a good choice.
- Closeness to Gibraltargatan student housing: The rather large housing complex is home to many students who would benefit from the counselling centre.
- Closeness to Fysiken Gym and other sports amenities: The gym attracts numerous people from outside of Chalmers also, raising awareness of the proposed centre.
- Closeness to nature: The forest next to the site is the strongest feature, as it reinforces the centre's role as a retreat, it creates a connection between the building and nature, and it pushes therapy out of the centre and into nature. The path leading from Chalmers to the site can be considered part of therapy itself, as it is a relaxing, energizing passage from the worries of school, to the nurturing centre.
- Relatively underdeveloped site with much potential: At the moment, the site is not being used at its full potential. I consider the current structure not to take enough advantage of the site.
- Well connected, with good number of bus stops nearby.

3 m outside the planning area
usage limit

site of interest

proposed addition to site

access to site

[SITE PICTURES]

[SUN STUDY]

MARCH 9 AM   MARCH 12 PM   MARCH 3 PM   MARCH 6 PM

JUNE 9 AM   JUNE 12 PM   JUNE 3 PM   JUNE 6 PM

SEPTEMBER 9 AM   SEPTEMBER 12 PM   SEPTEMBER 3 PM   SEPTEMBER 6 PM

DECEMBER 9 AM   DECEMBER 12 PM   DECEMBER 3 PM   DECEMBER 6 PM

• The sun study reveals that the site is not affected by shadows from the neighbouring buildings, except for winter, when the long shadows from the gym fall onto a corner. It is, however, not recommended to build that close to the gym hall so, ultimately, the shadows do not constitute a relevant issue.

[CONCLUSIONS]

Mossen forest is a great asset for the site as it is a pocket of nature in the middle of the city. It's a quiet, reinvigorating area, popular with joggers and people training. It offers the possibility of numerous activities which can be connected to the program of the counselling centre.

• *Why I'm choosing this site:*

- Closeness to Chalmers: As students and young adults are the main benefactors of the proposed project, the site, situated in walking distance from Chalmers campus, would be a good choice.

- Closeness to Gibraltargatan student housing: The rather large housing complex is home to many students who would benefit from the counselling centre.

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- Relatively underdeveloped site with much potential: At the moment, the site is not being used at its full potential. I consider the current structure not to take enough advantage of the site.

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[TOOLBOX]
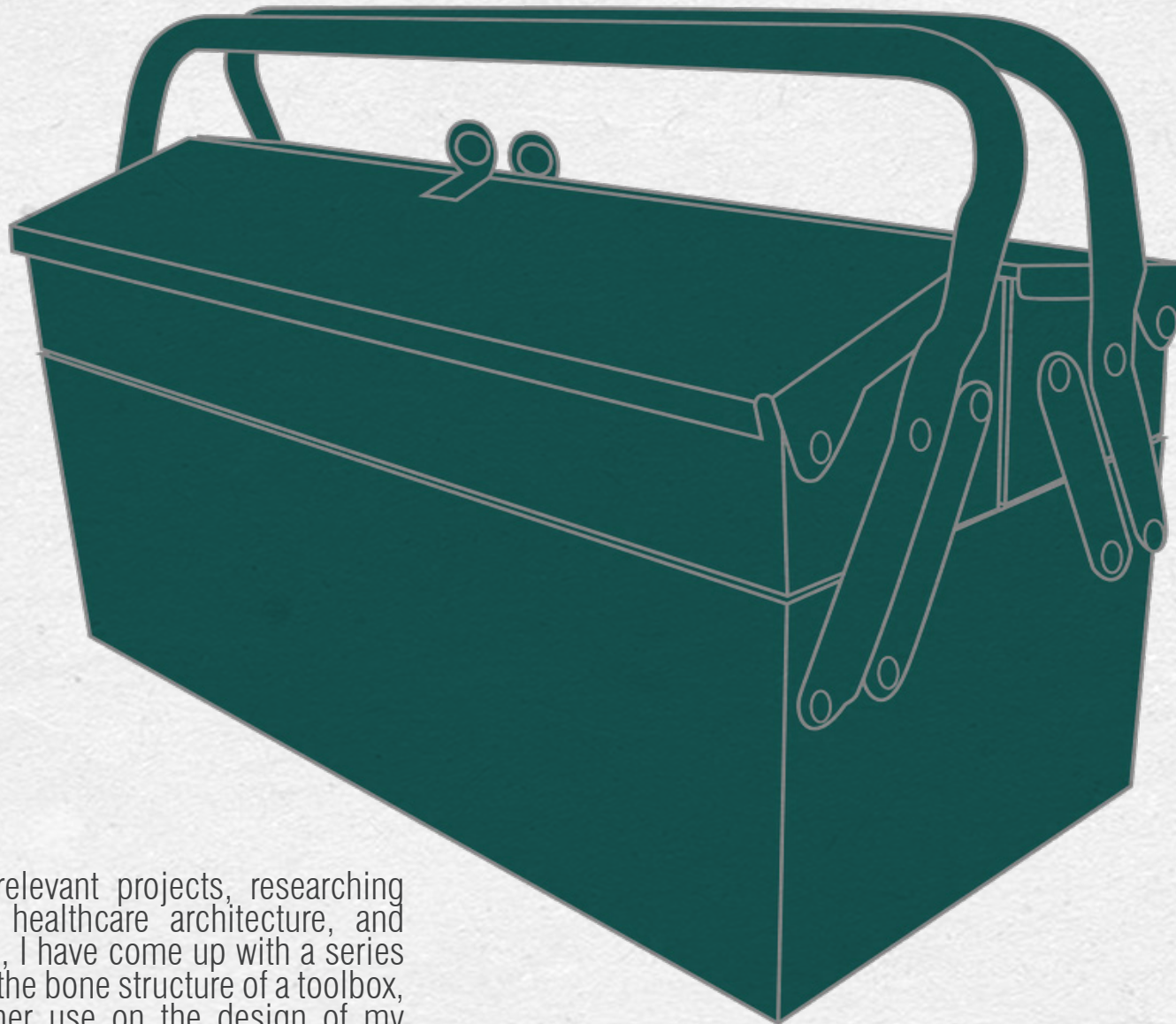
After assessing relevant projects, researching the literature of healthcare architecture, and analysing the site, I have come up with a series of design criteria the bone structure of a toolbox, which I will further use on the design of my Counseling Centre.

PRIVACY GRADIENTS

• Providing different levels of privacy allows for a better use of the space, at all times, by different types of patients

• The three main levels of privacy are private - semi-private - public

• A good distribution of privacy within the design, is essential for a healthcare environment
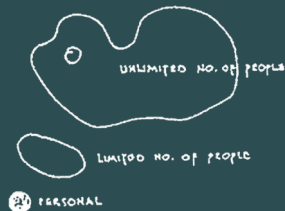
INFUSION OF NATURE

• Bringing nature into the design contributes to the therapeutic effect of healthcare spaces

• Interior gardens should be provided and closeness to nature should be taken advantage of

• Open the building to the forest on site

• Use the forest as inspiration for materials

• Views of nature help with recovery and mood

COLOUR

• Use neutrals and pastels which don't cause eye-strain

• Avoid strong colours or those that have strong connotations

• Avoid using too much of the same colour in order to prevent monotony

• Use stimulating colours to get away from the institutionalized aspect of the centre

• Use colour as a "canvas" for the users to manifest themselves on

LIGHTING

• Access to lighting is important for the circadian circle and absorption of critical chemical reactions in the body

• Lighting aids activity

• Avoid uniform lighting, allow shadows as they are a natural part of the environment

• Provide as much natural lighting as possible

SUSTAINABLE MATERIALS

• Use wood – not only is a regenerative, "green" material, it can also be a surrogate of nature in an urban setting

• Use sustainable and/or locally produces materials

• Avoid emissive materials at all costs

• Avoid the use of linoleum for its association with hospitals

ARCHITECTURAL EXPRESSION

• The archetype of the gabled-roof house

• The functions should be thematically clustered in "houses"

• Houses are directed towards an interior garden

• Break away from sterile medical architecture

• Human scale clear geometry

SPATIAL SOLUTION

• Interior courtyard should be an important design element

• Functions clustered

• Privacy gradient - from group/public up front to individual/private in the back

ACCESSIBILITY ON SITE

• Provide users with clear paths to and from the building

• Create public meeting spaces or pathways

•Take the sites accessibility into account as intimacy levels can depend on it

[DESIGN PROCESS]

[SPATIAL PROGRAM]

MEDITATION ROOMS
PRIVATE AREA
47 SQM

INDIVIDUAL
OFFICES
100 SQM

CHIROPRACTOR
26 SQM

INTERIOR GARDEN
123 SQM

KITCHEN & DINING
85 SQM

CHANGING & STAFF
55 SQM

GARDEN
142 SQM SQM

COUNSELLING
53 SQM

WINTERGARDEN
40 SMQ

READING AREA
75 SQM

SEMI-PUBLIC LOUNGE AREA
135 SQM

LEGAL AID
18 SQM

INTERIOR GARDEN
33 SQM

GAMES AREA
105 SQM

LEISURE/COMMON AREA
250 SQM

ADMINISTRATION
90 SQM

LOUNGE AREA
70 SQM

GROUP AREA
210 SQM

RECEPTION
80SQM

GROUP THERAPY
70 SQM

YOGA &
PILATES
35 SQM

WORKSHOPS
95 SQM

The spatial program started as an expression of the counselling centre's therapy program,which I detailed earlier.
I based it on elements of the toolbox which were relevant at this stage in the process.
Finally, I decided on approximative areas for each function, as a starting point for my design.
I also clustered functions of similar nature together and opened them up towards two major gardens.

SEMI-PRIVATE COURTYARD –
CONNECTED TO THE FORREST
FUNCTIONS AS AN EXTENSION OF THE BUILDING,
THROUGH ACTIVITIES
EASY TO GET TO THE OUTSIDE,
HARDER TO COME FROM OUTSIDE

PRIVATE COURTYARD –
SERVING THE INTIMATE AREAS OF THE BUILDING,
OPENED TOWARDS NATURE
SECLUDED

CONVERGENCE AREA
WHERE PATHWAYS ON SITE CREATE A COMMON AREA,
TO BE USED AS POINT OF ENTRANCE/
PUBLIC SQYUARE

INDIVIDUAL/INTIMATE

SEMI-PRIVATE
BUFFER ZONE

RECEPTION

GROUP/PUBLIC

VERY PRIVATE

PRIVATE AREA

INDIVIDUAL THERAPY

SEMI-PRIVATE

GROUP THERAPY

LOUNGE

VERY PUBLIC

RECEPTION

GABLED-ROOF ARCHETYPE
FUNCTIONS CLUSTERED

Concepts

● *Studying the site for pathways and points of interest* can show how people interact with the area and give away information that can be used in the planning of the building.

● *Privacy gradient* - I categorized each cluster of functions based on the engagement those certain activities would require from the patients and ordered them from most public to most private. I also took "buffer zones" into account for smoother transitions between areas.

● *Gabled-house archetype* - The gabled roof is probably one of the strongest and most expressive symbols for a home. Its familiar shape can evoke feelings of comfort and familiarity to the patients of the counseling centre.

● *Clustering functions* around an interior garden is also a feature that promotes the idea of community and closeness.

[DESIGN PROCESS]
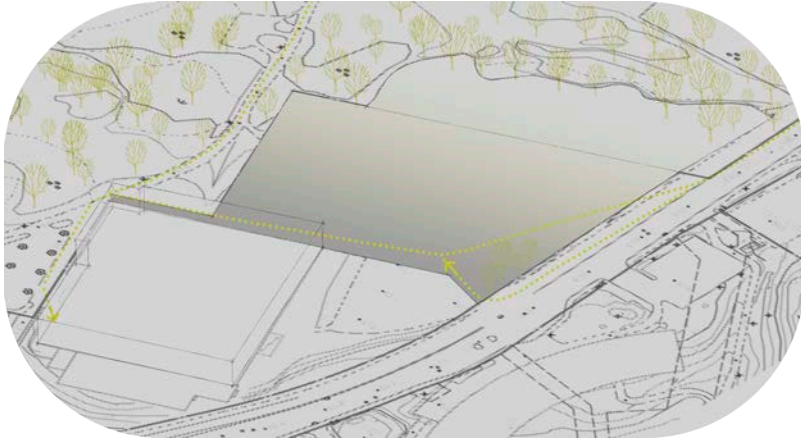
1. Exploring how the current site is being used and what are the points of interest
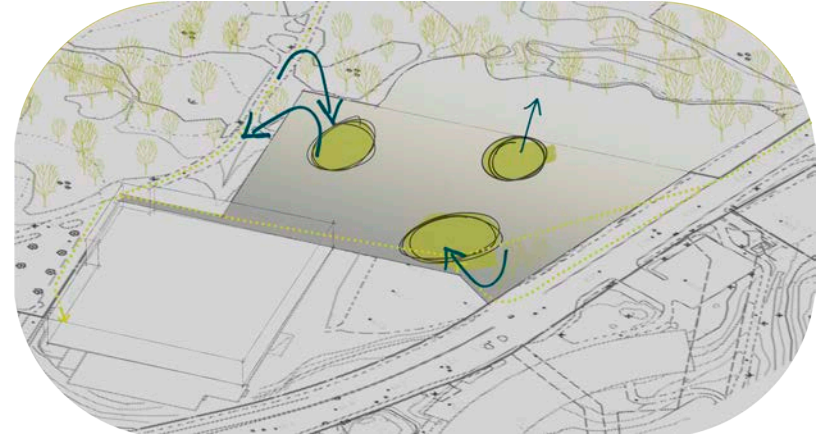
2. Deciding where the gardens should be, in regards to their orientation and interactions
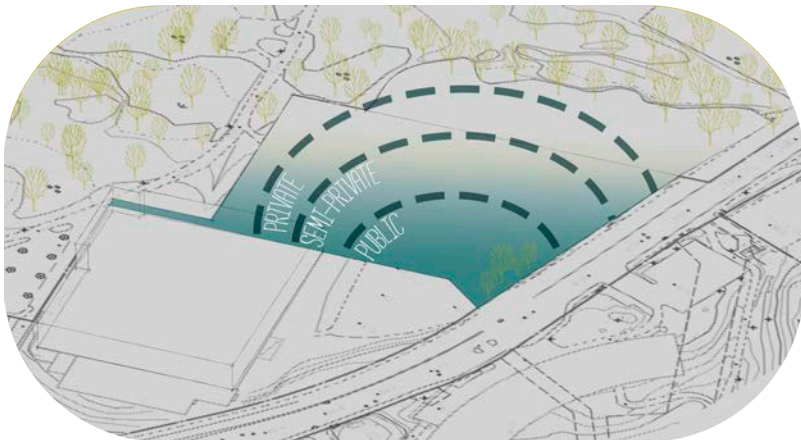
3.Applying the privacy gradient on site
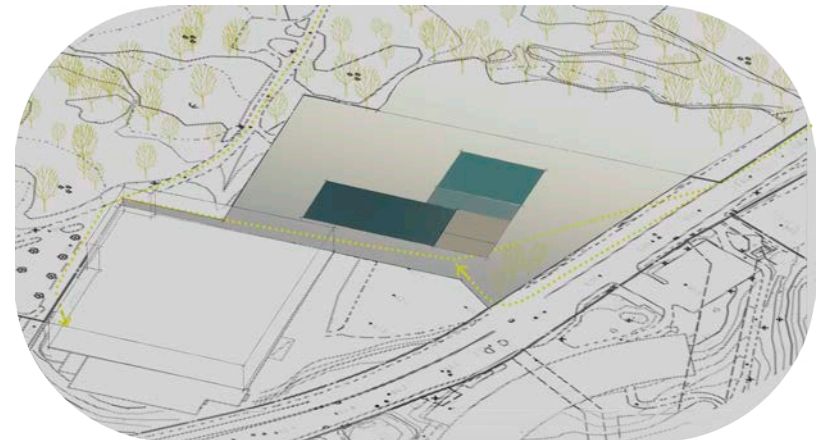
4. Placing the main function clusters on site
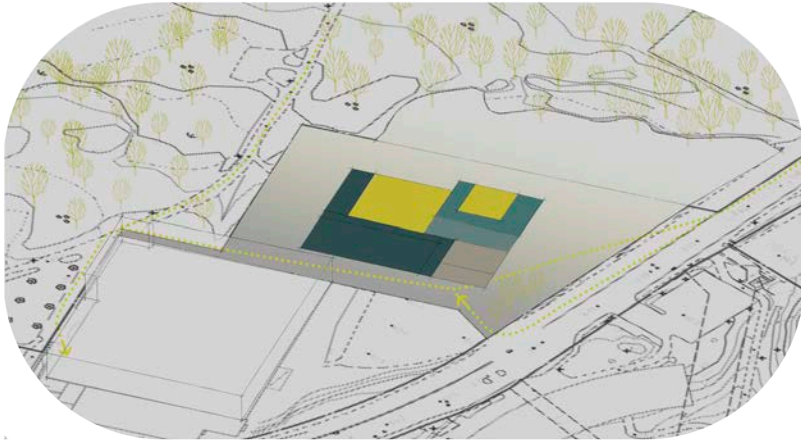
5. Building around the gardens
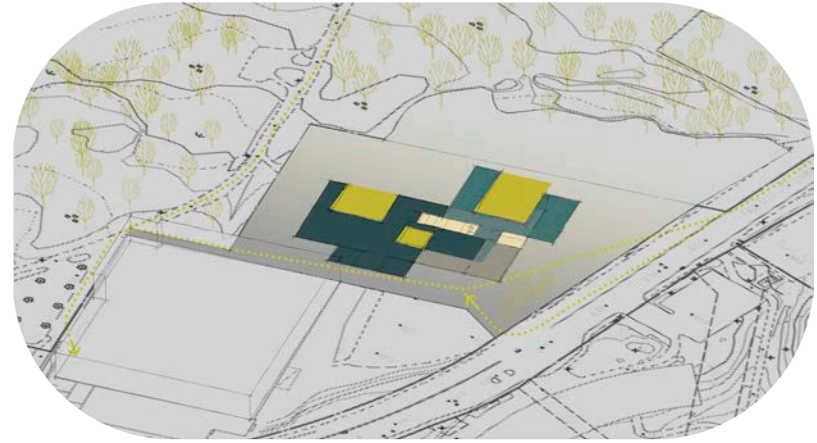
6. Adding circulation and detailing the spaces
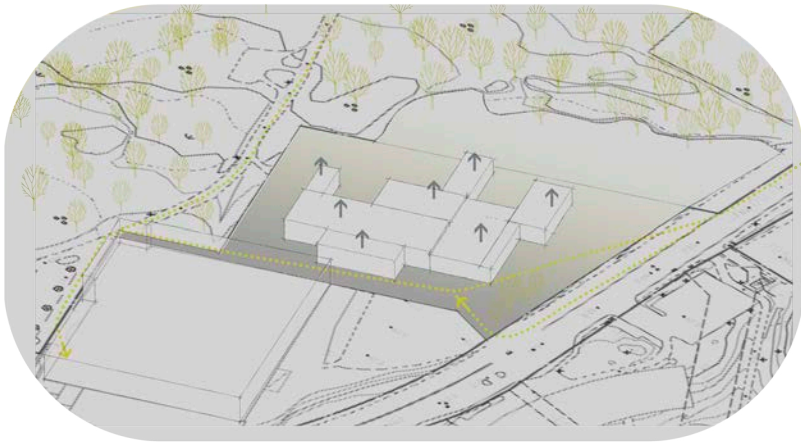
7. Lifting the volume

8. Roof building according to previous concepts

[SITE PLAN]

0 5 10 20 30 N

54.60

Meditation
Meditation
Meditation
Meditation
Meditation
Meditation
Meditation

Individual Counselling
Individual Counselling
Individual Counselling
Individual Counselling
Individual Counselling

Winter Garden

Kitchen & Dining

Nurse

Semi-private Area

Changing Room
Technical
Changing Room

Lounge Area

Interior Garden

Reading Area

Changing Room

Administrative Area

Workshop Area

Games Area

Reception

Windfang

Storage

Yoga & Pilates

Group Therapy

0   5   10   15

[EXPERIENCING THE COUNSELING CENTRE]

5. WINTER GARDEN/PUBLIC GARDEN

The winter garden is the farthest objective from the main entrance and functions as a buffer zone between the public neighboring areas and the building itself. Whilst being an area for group interactions, it has a more secluded characteristic, and a higher level of privacy than lounge area. The public garden allows for a connection to the neighboring areas, without strongly inviting for outsiders to some in.

For those who feel run dow... environment to pick themse... offers the possibility to ... quarters, where they would... professional counselling.

3. COMMON AREA/ 4. WORKSHOP AREA

The "social" part of the building is characterized by separation intro different areas of activities. There's the gaming area, the lounge area, kitchen & dining, customizable workshop area, and a connected group therapy area. Users of the centre who wish to engage in different activities and conversations have the possibility of choosing how they experience the space themselves.

For those who fee... more openly, who ... activities, the cent... workshops to simp... a stimulating enviro...

n and need a calming
elves up in, the centre
retreat in the private
d meditate or receive

6.MEDITATION/ 7.THERAPY AREA

The two private & individual functions in the building have a separate area for them. The user who wishes to be by themselves will have the option of a more secluded path to this part of the building. There is a buffer zone, meant for small scale socialization or waiting. Provided are 7 meditation rooms and counselling offices where therapists make appointments. A more private garden, sheltered from surroundings, serves this area of the building.
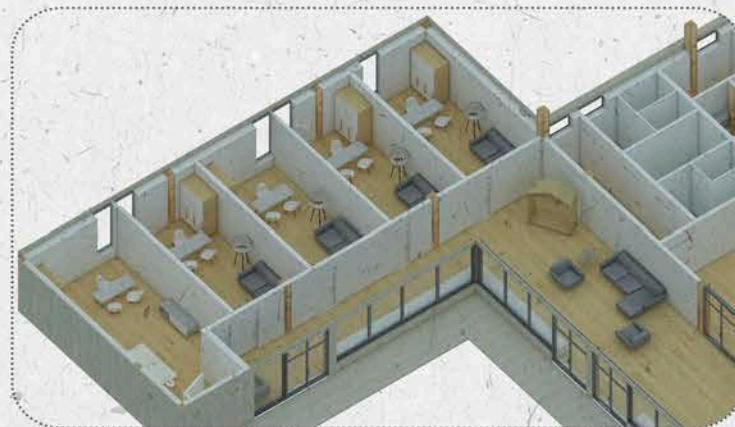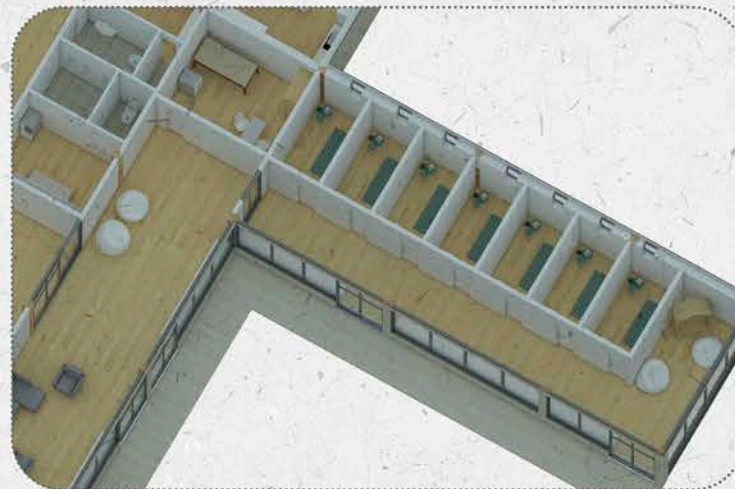
1.RECEPTION/ 2.READING AREA

The main entrance to the building offers the visitors the posibility to chose which scenario they want to take part in.
The reading area can act both as a part of the common, more public space,and also as a buffer zone towards the more intimate quorters of the

el the need to express themselves
thrive on social interactions and
er also offers many choices, from
ly spending time with their peers in
onment.

65

[EXPLODED STRUCTURE]

4. SHEET METAL ROOFING

3. GLULAM ROOF STRUCTURE

2. GLULAM BEAMS AND COLUMNS

1. WOODEN AND GYPSUM BOARD WALLS

[MATERIALS]

Timber cladding provides a durable external finish which is renewable, reusable, biodegradable and contains, minimal embodied energy. The material birch wood planks aim to set the building in the context of the neighboring forest, mostly made of birch trees.

The textiles used in the interiors are neutral colored and with simple patterns. The materials have to be sturdy and darker as they will be worn intensely.

Inside, a glulam structural system; gives warmth and character to the spaces. The warm tones on the glue-laminated pine planks pop out from the neutral walls and give more definition to the interiors. I chose glulam beams and pillars because they - are-strong and sustainable solutions for a small-scale structure.

I decided to add small splashes of teal around the interiors,more as a personal prefference than a scientific reason.

Similarly, the floor decked with pine planks, a durable and heavy-duty material which usually takes high numbers of people on it.
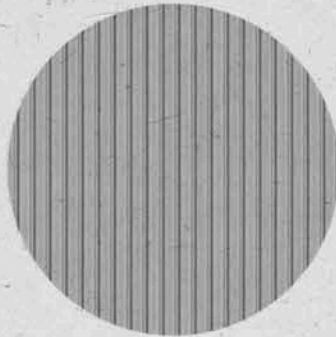
Sheet metal roofing was chosen since the weather in Gothenburg requires a water-resistant material on roofs to protect from heavy rain.
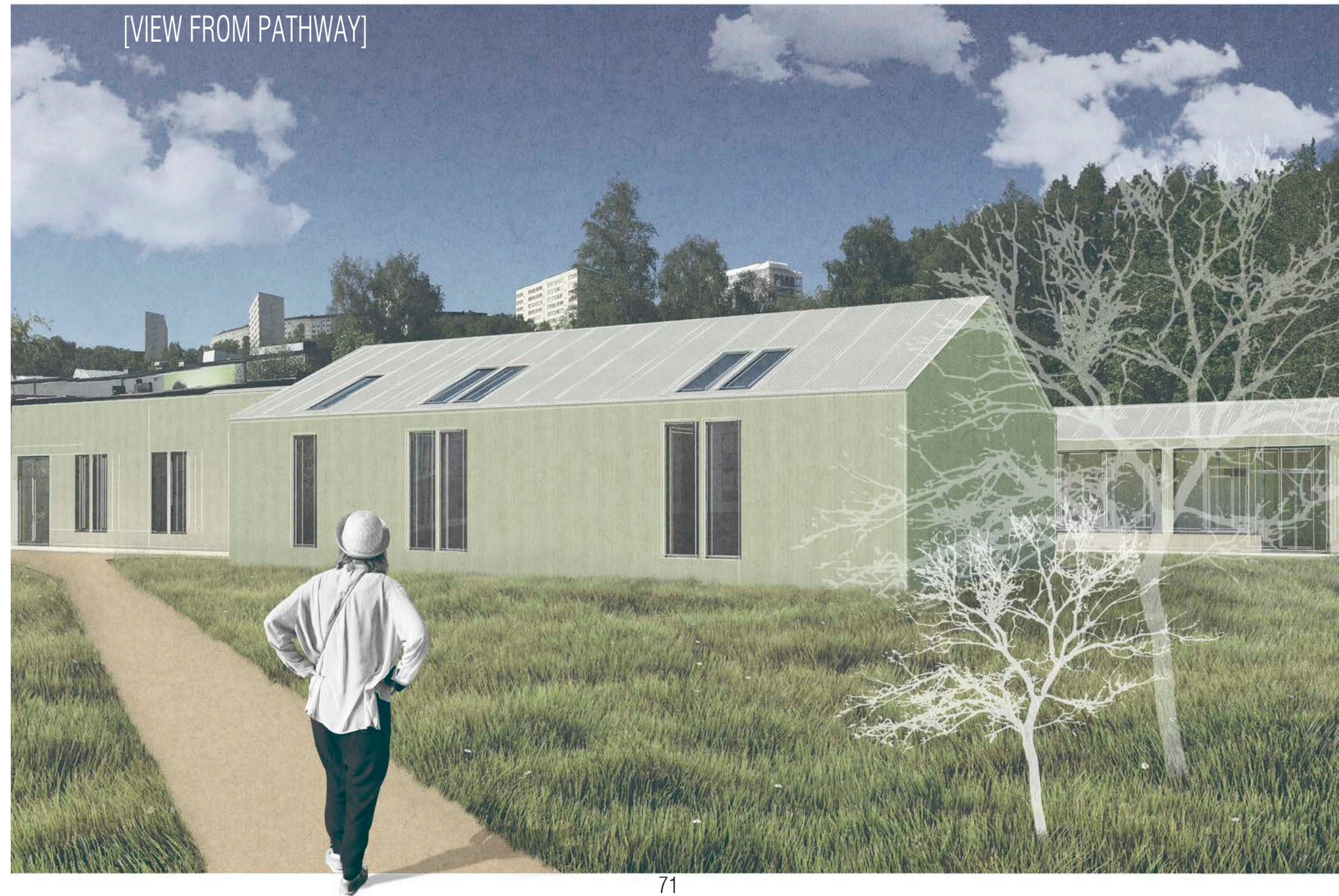
The interior walls are made of gypsum board drywall, painted in a neutral color. It allows for a "blank canvas" :for the patients to the center to work with, whilst it also contrasts with the warmth of the glulam structure.

+5.00

+5.50

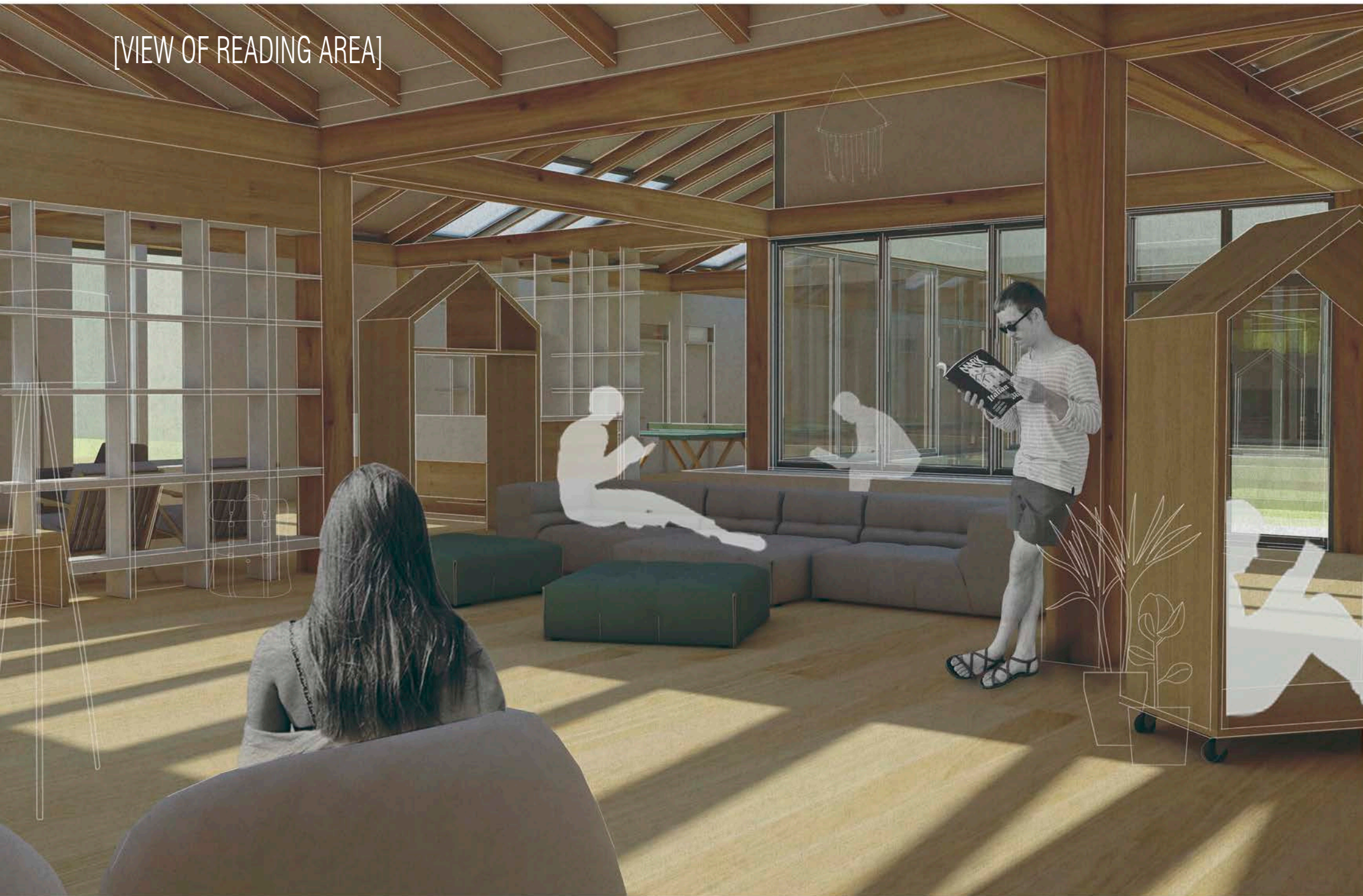SECTION A-A'

+5.00

+3.32
+3.00

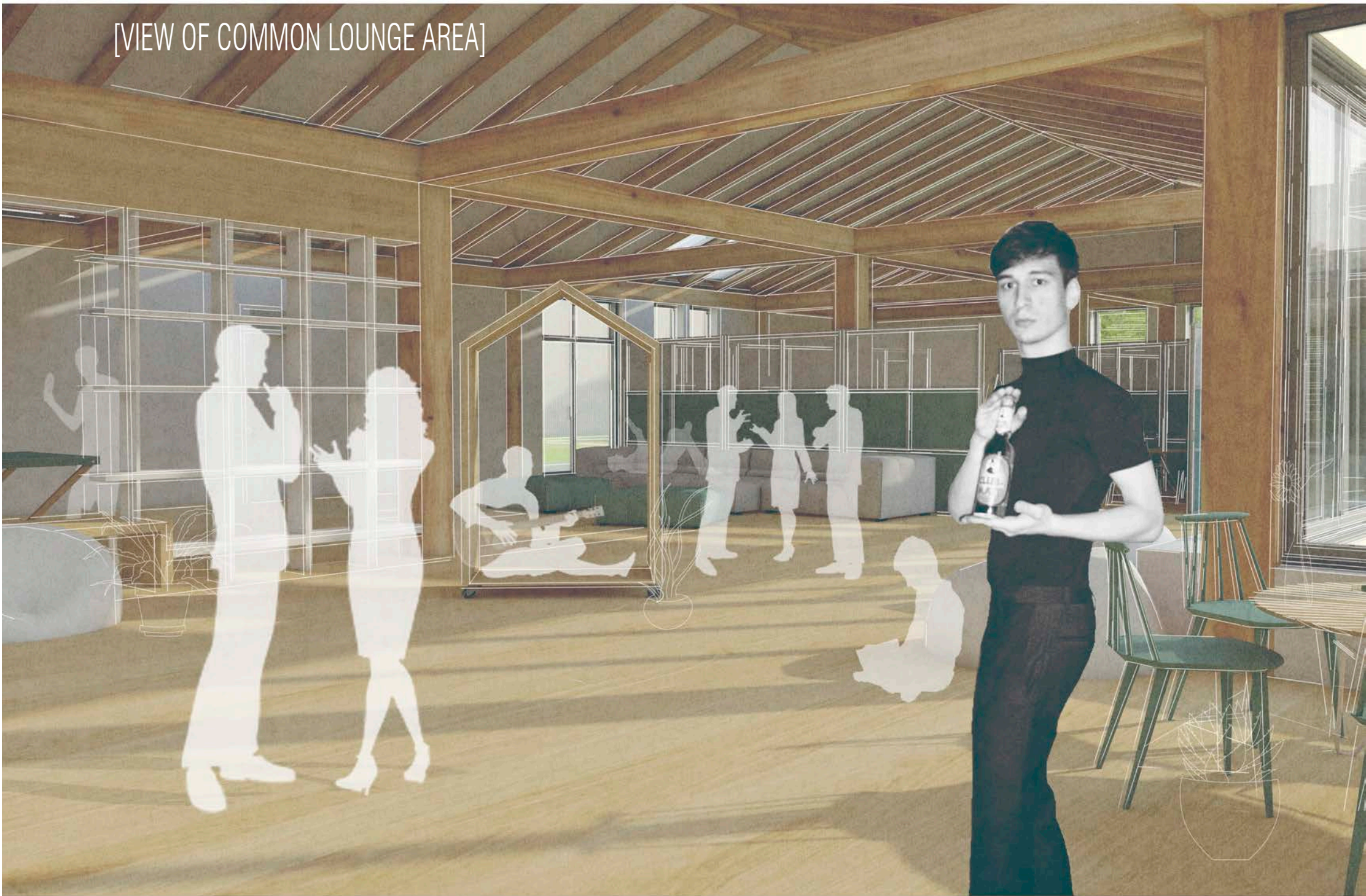+0.50

SECTION B-B'
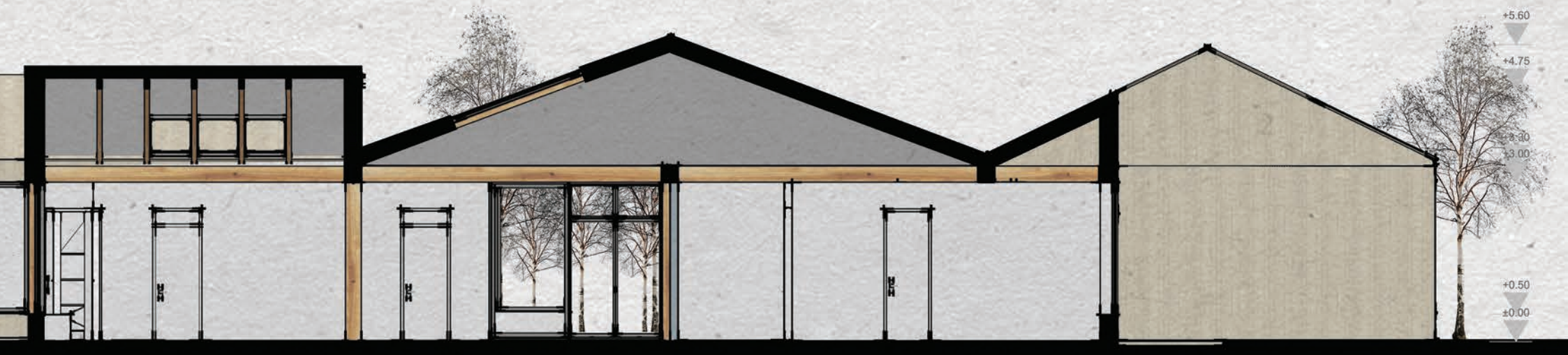
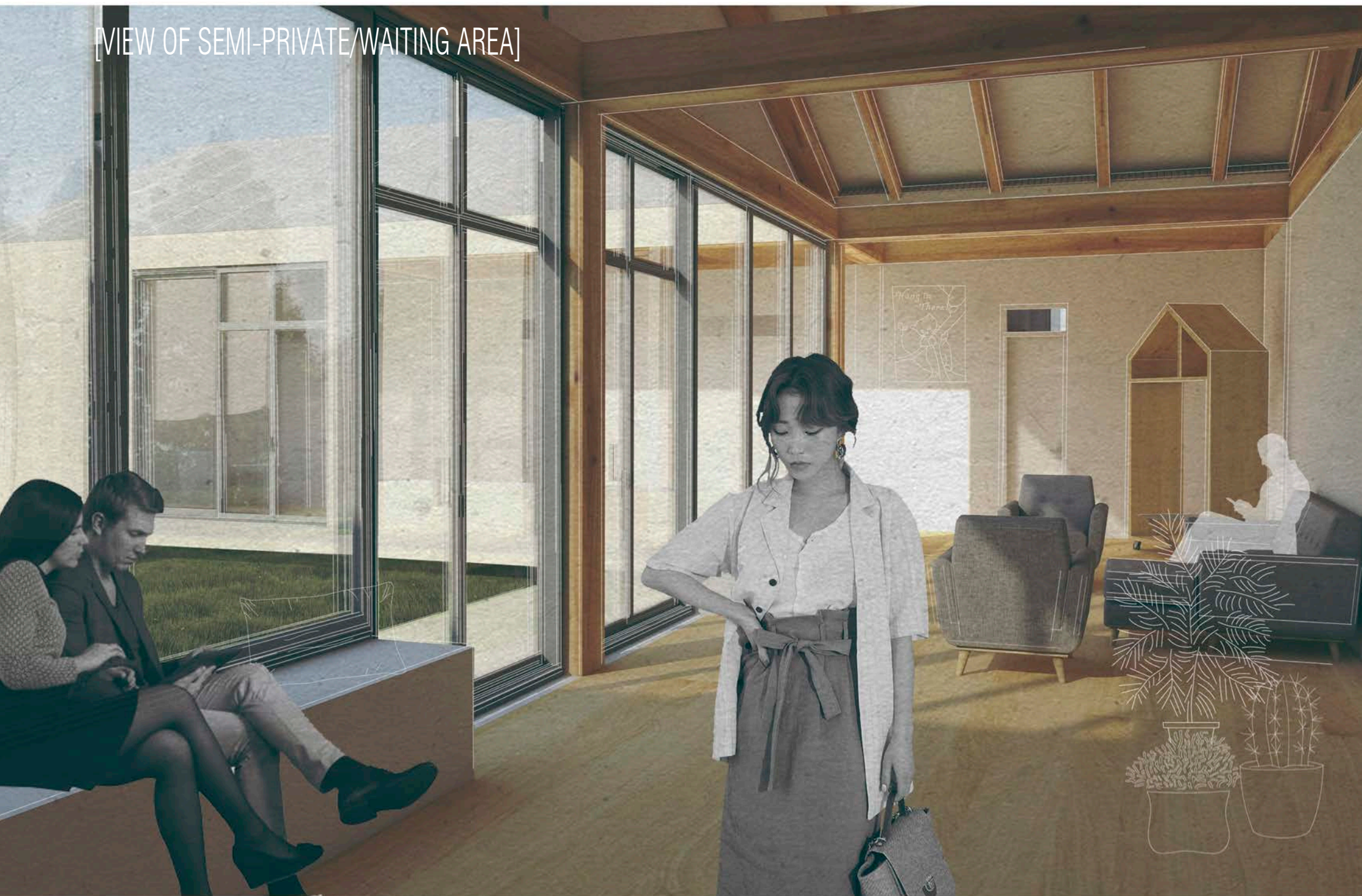[VIEW OF MAIN ENTRANCE]

[VIEW OF RECEPTION]

[VIEW OF READING AREA]

[VIEW OF SEMI-PRIVATE GARDEN]

[VIEW OF COMMON LOUNGE AREA]

[VIEW OF SEMI-PRIVATE/WAITING AREA]

Hang in There!

[VIEW OF A MEDITATION ROOM]

[CONCLUSIONS]

After a while, looking back on the project gives me a bitter-sweet feeling. Whilst I know that the task I've given myself was too broad to be realised within a single semester, I can admit to having some topics left uncovered. There would have been more left to discuss regarding the psychology of spaces, however,I feel that that would have been the subject of a completely different master thesis.

As far as the design goes, even if I hadn't made as many iterations as I has initially planned, I am quite content with what I came up with and I trust the designs I employed in my master thesis will be utilized in future projects of mine.

In the end, the entire process of the master thesis proved tricky but enjoyable, tedious at times, nerve-wrecking but ultimately, deeply satysfying.

And as for finding a "solution" for anxiety...I think I've given myslef more reasons for being anxious than before, with this project!

BREATHING INTENSIFIES

[THANK YOU!]

...FOR NOW

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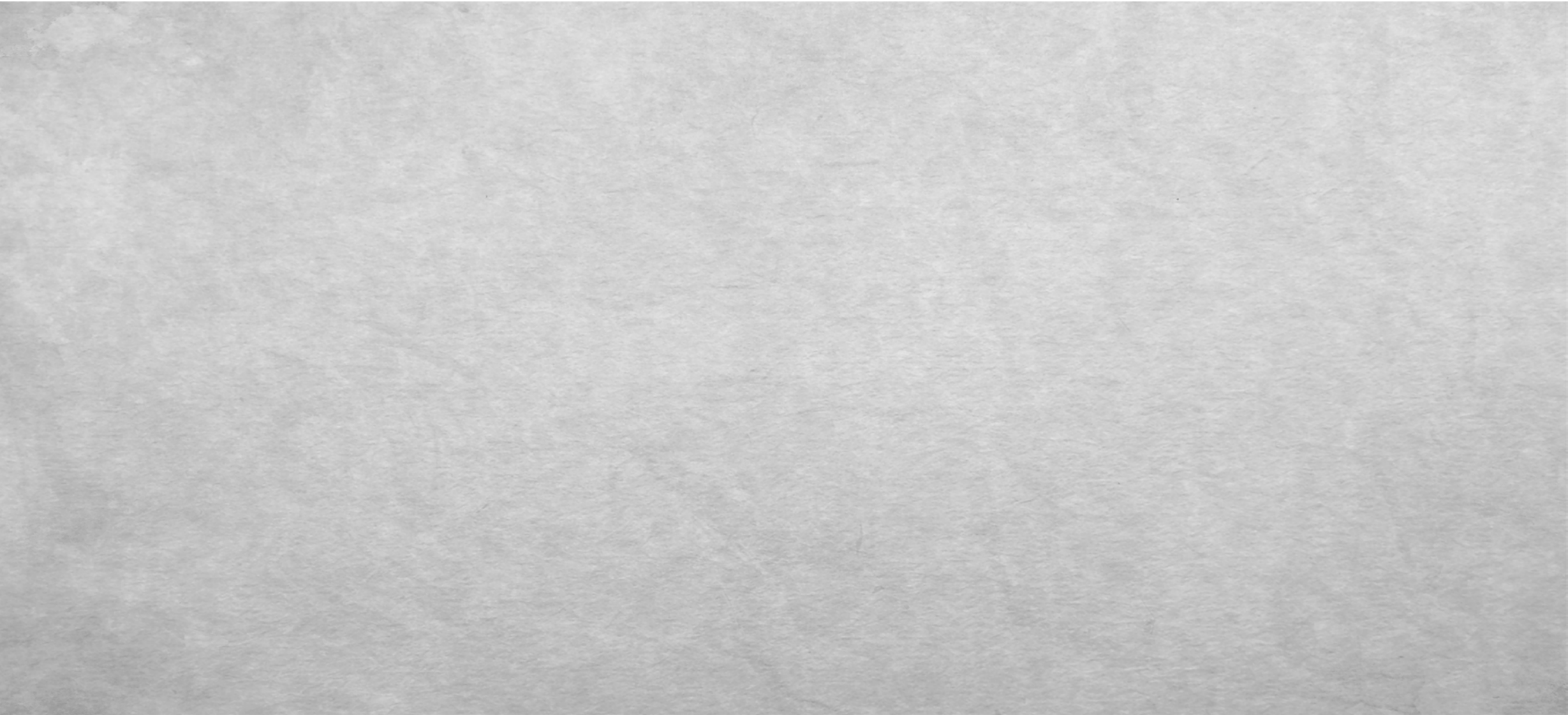
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