Program

Center for Treatment of PTSD

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Aalborg University
September 2021

Project title Center for Treatment of PTSD
Semester MSc04 - Architectural Thesis 2021
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Institution Aalborg University
Department Architecture & Design
Project period 01.09.2020 - 01.09.2021
Pages 136

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Abstract

This report entails a sketch proposal for at treatment center for Post-Traumatic Stress Syndrome, caused by sexual assault, situated in the region of Brittany in France. The report consists of four chapters, Program, Presentation, Process and Appendix. The project will focus on well-being, embodiment of the senses and social and environmental sustainability.

France has a high rate of sexual assaults each year. The public treatment offers are not sufficient for the victims to regain a well-functioning everyday life in society. This treatment center offers a holistic perspective on treatment, where both bodily, mental, and social aspects of healing is being considered. This is through embodiment of the senses via materials, light and movement as well as through functional and technical measures. The center aims to reset the circadian rhythm and regenerate awareness of bodily signals.

Being located in France on a hillside, the project has a contextual approach through the landscape, atmosphere and culture, seeking enhancement of the sense of the place.

The project has a focus on social and environmental sustainability, through Life Cycle Assessment and passive strategies and active strategies.

In order to achieve a holistic and integrated design proposal, the Integrated Design Process has been combined with Maher's Model of how to navigate between problem space and solution space, in order to make design decisions.

Table of content

Introduction

Sexual assault is a tabu in society. Nevertheless, sexual assault is happening too often in our western society in Europe. After such an experience, the victims will often be dealing with post traumatic issues mentally and physically, and as the assaults brings with it a stigma of the victims, many are not coming forward getting the needed help. Though, the right help can make a difference for their well-being and their ability to function in the society. Along with an arising focus on mental illnesses and stressors in society, the field of architecture is developing the norms for treatment facilities. This is based on new knowledge from evidence-based design, and with an aim to fulfill both the environmental, economic and social sustainability. The sustainability in the building industry today, has been taking a big step towards a strategy to reduce the pollution through legislations and new technology, in co evolution with the economic sustainability. The social sustainability is less quantitative and more qualitative and could benefit from a higher priority in buildings design.

The center is working with people dealing with PTSD from sexual assault. They have a fragile mind and body, where the surroundings will have an important role in their personal processes. This entails architecture for the whole body and full experiences combined with knowledge regarding the influence of architecture on the mental state. For this the nature location of the site in Brittany in France, will be an important asset. Brittany is a unique Region, with a unique people, in the western France. Building in a foreign context involves having an open mind towards a different culture, foreign atmospheres and architectural tendencies.

Motivation

Our world is currently undergoing radical changes. The poles are melting causing water rise, the weather is increasingly extreme, the biodiversity is less diverse. This can challenge where we live and how we live there. People in the western society today, are being precious about our one short life, and exploiting it fully in regard to our values. But by doing so we can forget to protect our earth, as the home for the next generations.

The attention to the environment has developed the last couples of centuries, both on governmental, organizational and private level. It was set off with the Brundtland Report "Our Common Future" in 1987 (Bæredygtig udvikling, 2020), by our community in the United Nations. The knowledge and ambitions have developed and today resulted in 17 concrete global goals to transform our world from 2015 to 2030. The goals are a holistic palette including 'Good Health and well-being', 'Reduced Inequality' and 'Climate Action' (United Nations, 2020). For the individual citizens, movements have been opening our eyes to what we each can do and take responsibility for to help this global confront. However, even with good intentions about sustainable living, it can be challenging to really make changes when we live according to the established norms of the society we've created. The consumer habits and everyday behavior drives the economic growth and boots innovation, but it has an environmental and well-being price. So maybe the norms should change. Humans have always been increasing the development of society and technology with an exponential rate, so why shouldn't we be able to interfere with the orientation of this curb? Not to a less innovative or forward going direction, but to innovate in a better direction. As an architect I feel a responsibility to lead a direction in my field along with my colleagues, as the building industry is responsible for 40% of the energy consumption and 36% of the CO_2 emission in Europe (European Commission, 2019). To influence the building industry to work more sustainably, the possible areas to touch can be the building process including the energy consumption, the materials and assembly of the building, or the use of the building including maintenance, reuse and the consumer behavior. This responsibility is supported by legislations from the European Union to construct Nearly Zero Energy Buildings, to withhold the Paris agreement from 2015 to combat the climate changes (United Nations, 2020, 2).

Today we people are surrounded by a build environment, except when we actively seek a break and find nature areas. When observing our build surroundings through the eyes of a citizen, but also through the education at Architecture and Design at AAU, it seems to be going on a discourse, where the building environment is based on economy, return of interests and political calls. This opened the eyes to how architecture is structured with distance to the context, oppressing the sensuous experiences meant for people and the lack of holistic design thinking. As a new generation of architects, we should not be afraid to trust our competences and set a direction with base in the developed knowledge generated by a generation before us, like a new generation is setting new ambitions in many other fields. Yet, the market should be respected and known to get the architecture through. Adding the social and sensuous perspective to the quantifiable elements as sustainability and construction, in relation to the context, all in an integrated design, is with what architects can contribute.

"Architectural work is not experienced as a series of isolated retinal pictures, but in its fully integrated material, embodied and spiritual essence"
(Pallasmaa, J., 1996, p. 12).

We see an arising focus on the mental issues in society, as more and more people are getting diagnosed, feeling the pressure from expectation in both professional, private and public life. This is a movement where architecture can have an effect by creating spaces to be well. Therefore, are these qualitative elements in architecture especially important in a center for psychological challenged persons, being more sensitive to stressors. Hospital architecture is undergoing a revolution noticing the impact of the architecture on the human health. In psychological facilities, the building can be a part of the healing process if done rightly, or a part of the mental challenge if done wrongly.

France is a country with a different style of living than in Denmark, a country where too many are undergoing sexual abuse, a country with another type of architecture, a country where the indoor climate could benefit from higher standards, and a country where they have many beautiful gifts in nature and in social values. An interesting setting to integrate the themes of sustainability, mental well-being and sensuous experiences in architecture.

Field of Study

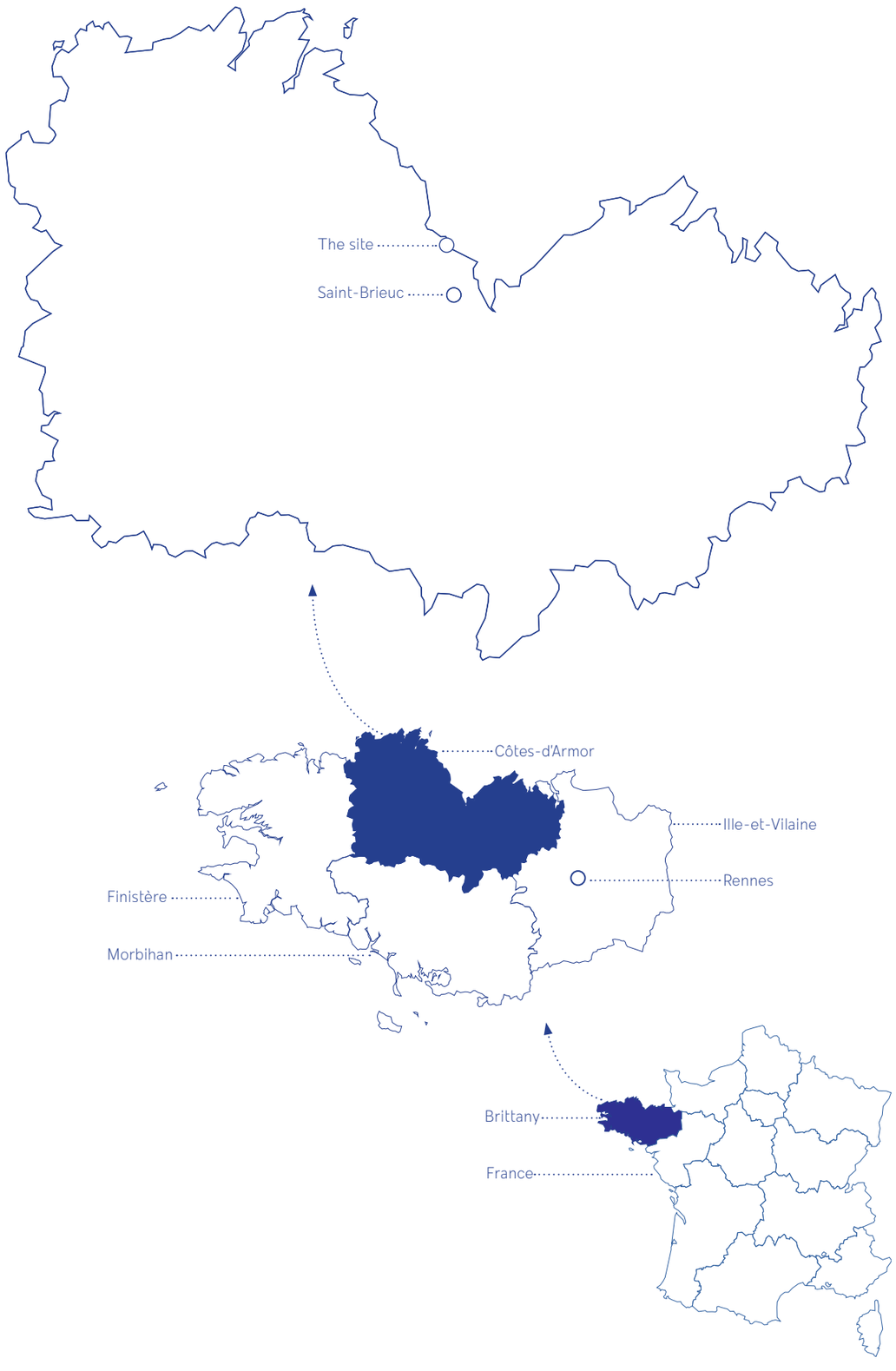
This thesis will focus on sustainability, healing architecture and embodiment of senses as the driving forces for designing. It will end up in a sketch design proposal of a center for treatment of PTSD caused by sexual assault, for the region of Brittany.

The center will offer various treatments as considering healing a holistic process. Therefor the center must contain different facilities for different treatments and various staff members. The center will furthermore have the possibility to run treatment programs for longer periods of time, which requires residential functions for the members and overnight staff.

The center is located in connection to the CIDFF (Centre des Information des droits des femmes et des families) in Saint-Brieuc in France, on the northern coast of Brittany. This entails French building regulations and a contextual approach in an oceanic climate. The center will aim for a connection to the nature surroundings for the purpose of well-being.

The gross area of the center will aim to not exceed 700 square meters and must be a Zero Energy Building. Sustainability will be approached in the energy demand through passive strategies and renewable energy, in the life cycle assessment of materials and in life cost of the building. Furthermore, the social sustainability will be considered in relation to the indoor climate, functions and interaction between people.

The site in France is chosen because of my current living and working situation for the football club En Avant Guingamp in Brittany. It gives me an opportunity to work and explore a foreign setting and architectural culture, and permits me to visit and study the location.



Ill.1 Map de France, Bretagne, Côte d'Armor

A Site by Saint-Brieuc

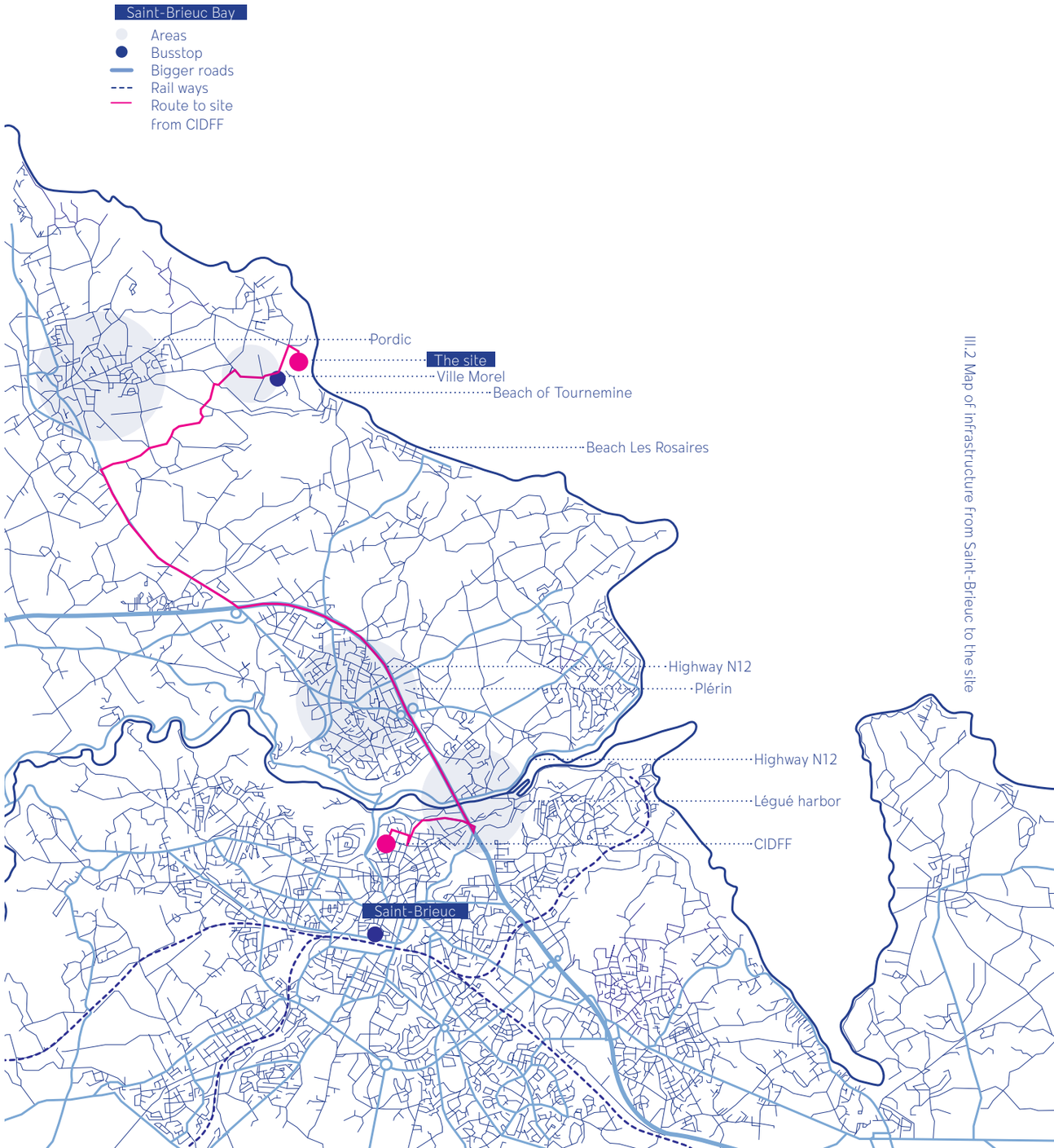
Saint-Brieuc is the capital city of the Department Cotes-d'Armor, in the northern Brittany. Saint-Brieuc has a population on 44.000 people, but as many French cities, the villages are closely connected and with the suburbs, Saint-Brieuc counts 172.000 people. This is seen during the day when people come into the city to work or do their errands on the markets Wednesday and Saturday mornings. Earlier, Saint-Brieuc was an industrial city especially in regard to fishing, but have been undergoing a modernization, to a study and commercial city, by their 6 faculties of studies. The local powers are making an effort to keep the small businesses in Saint-Brieuc, by installing certain measures. For example, the local banks will open an account in your name on 50€, as a support to rent for the shops, which will be paid back when the account one day will be closed (Credit Agricole, 2021).

A bit geographically disconnected from Saint-Brieuc, the harbor 'Port Légué' has also been evolving to a modern urban area, with cafés, restaurant, bars and night club, with a maritime view to the boats in the marina. The two sides of the river Gouët (Saint-Brieuc and Plerin), was connected by establishing the highway N12 in 2002, and suddenly Saint-Brieuc could thrive as a transit key point in Cote-d'Armor (Rancourt, É. 2020).

Cotes-d'Armor is a department who takes care of their citizens with actions for elderly, handicapped and addicted people, which is seen in the creations of many commissions established through the city counsil (Ville de Saint-Brieuc, 2020, Ville de Saint-Brieuc, 2020, 2). The high concern from public instances towards the citizens of Cote-d'Armor, communicates a willing community. The relatively high standard of living makes the area grow, and the villages and sites near the coast are becoming popular and quickly occupied. here you get an amazing ocean view, the fresh air, and are still close to a bigger city. Though, the nature nearest the coasts is respectfully protected.

In Saint-Brieuc center is the head office in Côtes d'armor of the 'Centre d'information sur les droits des femmes et des familles' (CIDFF, Center for Information about Women and Family's Rights). Here women can come and seek help when they have experienced violence or sexual abuse. The center will help them with an acute place to stay, with eventual medical attention, with information about their possibilities and rights, and where to seek psychological help (CIDFF, 2020).

The treatment center will have a connection to the CIDFF and work together about the women in need for deeper treatment. Therefore, the site is located close to Saint-Brieuc in the commune Pordic. In France the distances are great, and the public transport is lacking to cover the land, so a high percentage of the citizens has a car to commute. To the site it takes 13 minutes by car, but it is also possible to take a Tub (Bus) to the Ville Morel, or call a flexible Proxibus by reservation, which is available from Monday to Saturday from 06.30 to 20.00 (Tub, 2020) (See illustration 2).



III.2 Map of Infrastructure from Saint-Brieuc to the site

Brittany

Brittany is a mystical and proud region in the western France, housing many tressures, histories and distinct cultural behavior. The Brittan people see themselves as more Brittan than French. Brittany is a peninsula, consisting of 3,3 million people divided into four departments: Cotes-d'Armor in the north, Finistère in the west, Morbihan in south and Ille-et-Vilaine in the east, with the city Rennes as the region capital (See ill. 1 at page X). It's a region with a simple lifestyle, where there is an overrepresentation in the professions of agriculture, food and jobs at sea (Insee, 2014).

Brittan culture

In Brittany small villages are covering the land, one ending where another one begins. Here you will run into older people dressing up in their folk costumes, maybe going to a village party. At the family gatherings on the Sundays, you can experience them dancing some of their 640 folk dances, to music played on a Brittan version of a bagpipe, harmonica or oboe (infobretagne, nd). You may also observe the game of Boule-Breton, the Brittan version of petanque. To play the Boule-Breton, a pitch or covered stadium is being found in every village or backyards of the homes, more often than a football pitch. Homemade galettes and crêpes will often be served for dinner with a glass of locally produced beer or cider in a cup. The French pancakes are originated from Brittany and now adapted as a part of the French culture, but expressively in Brittany you will experience Creperies on every corner. Food has a big importance in Brittany and other eating are mussels and scallops, which are being sold fresh on the morning markets. Some Brittan's harvest scallops themselves, by following the withdrawal of the ocean at low tide, marching over the ocean ground, and gathering their dinner (Illustration 3). (Rasmussen, O., 2017)

Why is Brittany so much their own?

The Brittan people are decedents from the celts, who escaped to the Brittan peninsula when Great Britain was invaded by Jutlanders, Anglers and Saxons in the years of 400-500. This was at the same time as the Franks, from where the French people have descended, came to France from Germany. The Britain king Arthur fought the wars in Great Britain and became a hero also in the Brittan stories. Other honored stories from that time period is the one about the wizard Merlin, and another one is about the galls Asterix and Obelix and the druids, which has become known cartoon figures. In the year of 800 the French king Karl created an empire from Hamburg to Barcelona, but the Brittan region stayed independent. This was up until the French king in 1488 forced the eleven-year-old princess of Brittany to marry the French prince. Brittany kept their Celtic culture and their language Breton, until the French revolution in 1790, where Brittany also culturally became an integrated part of France, though it was reluctantly. The Breton language can still be seen written below the city names on the road signs, and spoken in some part of Brittany, as a strong symbol on their identity. (Rasmussen, O., 2017)

Ill.3 Local collecting mussels at low-tide

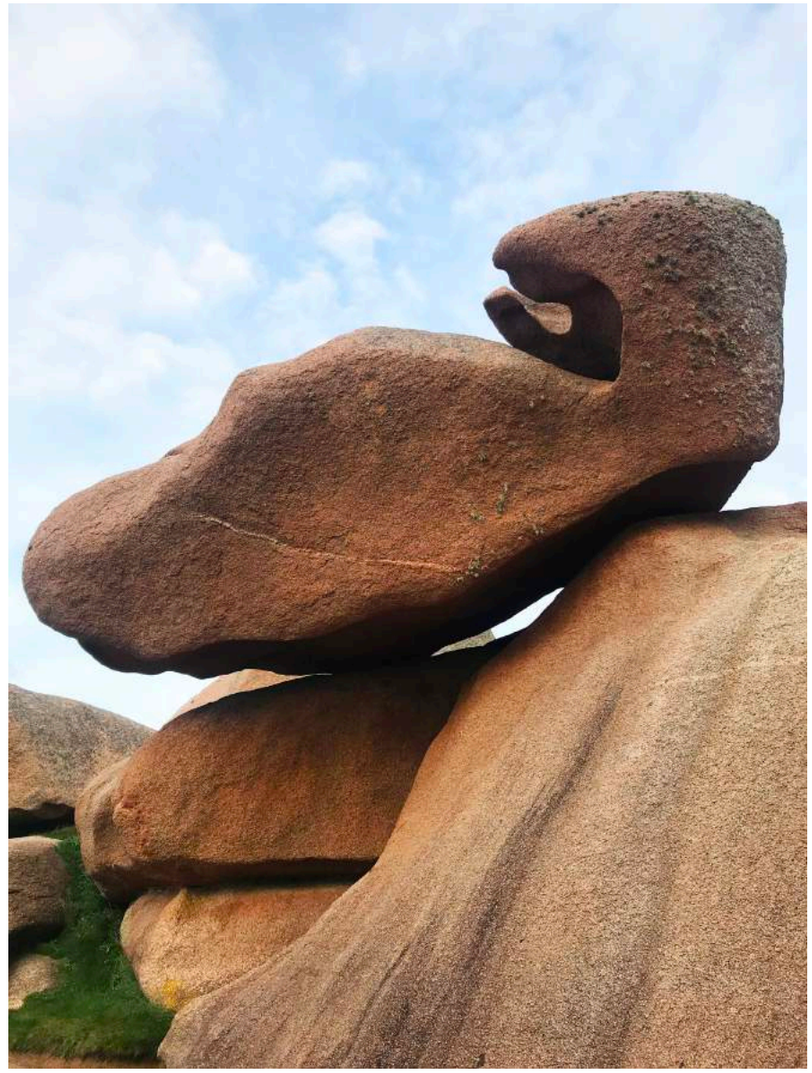
Ill.4 Collage of Bretagne

Brittany today

Brittany has stayed a relatively poor region with high agricultural and seafood production. But during 1970's the Brittan people went through a revolution to a cultural region, yet still the region with the highest ranking of agriculture in France (Insee, 2016). Small evolutionary business arose exploiting their local resources, and the capitals of the departments were renewed and modernized, and Rennes, as the capital of Brittany, became known as a university and industrial city, especially in the areas of electronic and communication (Pouplier, E., 2000).

Brittany is popular

Next after Paris and the region Provence, Brittany is the most visited Region in France, as it is a temperate coastal climate, not too hot and not too cold for the French people. The tourists come to experience the historical buildings such as the cloister of Mount Saint-Michel on the border to Normandy, or the city of Dinan known as one of the most beautiful cities of France. They come to visit the many culinary experiences at Michelin restaurants, specialized in seafood. They want to enjoy the watersports offered in the west. They want to experience the great nature of Brittany from the forests in the center, to the golden cost in the south, and to the red cliffs in the north. Especially the red coastline in the department of Cotes d'Armor (the love coast), where the red granite rocks have been shaped by the tireless ocean, is a grand attraction for both tourists and local afternoon striders (illustration 5) (Rasmussen, O., 2017). The coastline experience is very enhanced by the phenomena of the tides which are highly outspoken in Brittany and Normandy with the biggest ocean height difference in Europe, on an average difference on 12 m in the bay of St. Malo (St. Malo tourisme, 2020). Feeling the everchanging coastal landscape and distinct colors, makes it a unique experience.



Ill.5 Côte de granite rose, Côte d'Armor


ARÈS

Post-Traumatic Stress Disorder

PTSD

Imagine being so unlucky, that you experience a such horrible situation, that it will change the way you commit to life. Without any fault of your own. Something life-threatening or even just gives the impression of being life-threatening. It's not actually important weather or not the threat is real, but simply how the brain is reacting and dealing with the situation. Depending on your mental sustainability, the characteristics of the abuse, and the length of time before getting help, this can result in Post-Traumatic Stress Disorder (PTSD). According to the psychiatry in Region Midtjylland in Denmark, such a situation can typically happen to; soldiers in war, refugees on the run, survivors from severe accidents or catastrophes, and employees as rescuers, social-workers or bank personnel. So many different kinds of people are exposed to developing this mental charge. In the private life, the most frequent reason to PTSD, is sexual abuse or violence inside the four walls of the home. The place that should feel the safest. (Psykiatrien Region Midt, 2020).

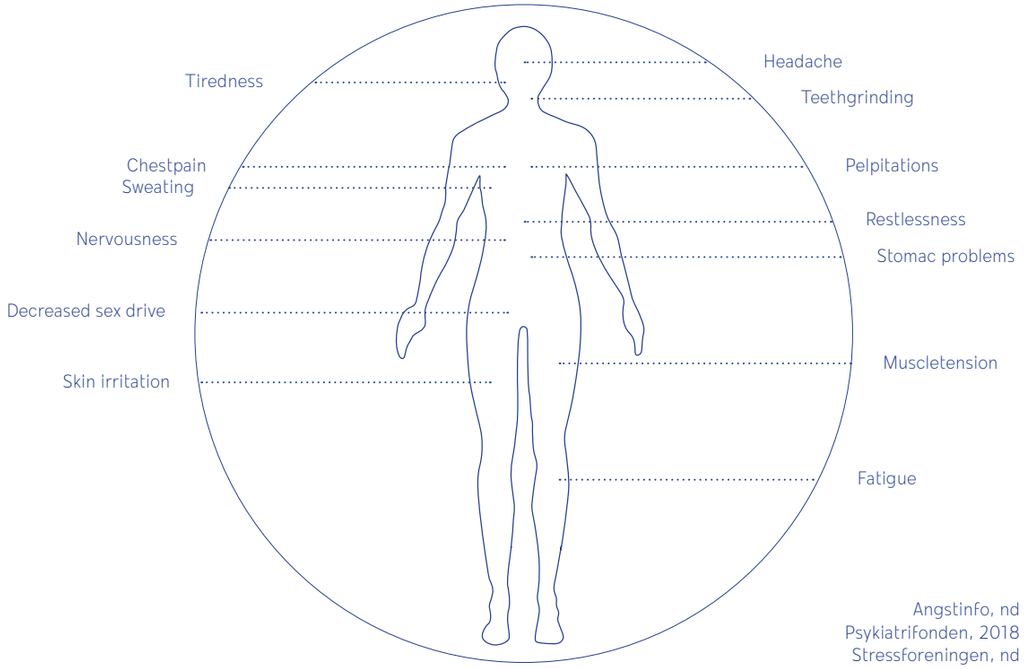
The issue of sexual abuse became a theme of debate in many societies, when the movement 'Me-Too' shed light on the extent of cases. Immensely many people were giving support to the forerunners by posting the hashtag, revealing themselves as victims and showing vulnerability. In France a following movement called 'NousToutes' (all of us) was born. A group of voluntary women started to organize manifestations and recruiting organizations to support them, in the fight towards sexual abuse (Valeurs actuaelles 2019). Hereafter, the severeness of sexual abuse in France became more visible (Hamel, C., 2016).

In France?

In France, a big investigation of the frequency of sexual violence based on gender, was carried out in 2015, in considerations to the recommendations of the European Convention for the Elimination of Violence Against Women. The investigation revealed that around 580.000 women and 197.000 men, between the age of 20-69, are experiencing some kind of sexual abuse each year in France. It corresponds to 3,93% of the population. In a life-long perspective, 4,99% of all women in France has once in their life experienced rape, attempted rape or being unwillingly touch sexually. Horrifying is it that above 80% of both men and women who are experiencing the sexual abuse from inside the family or social cycle, are having such an experience before the age of 14. (Debauche, A., et. al, 2017) (Hamel, C., 2016). This indicates that the risk of suffering from PTSD from these attacks are higher, as potential symptoms of PTSD will develop later in life, and hereby also the seek for help. These numbers are showing horrible realities which France as a country has to handle.

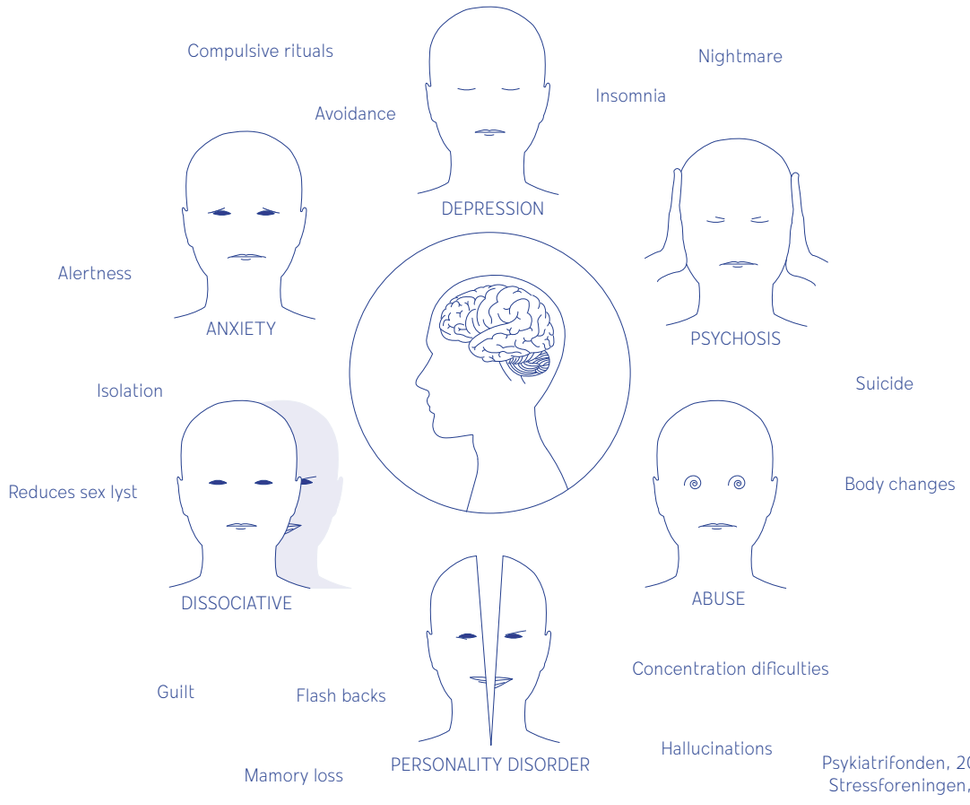
The symptoms

As stated, PTSD can be developed from very different experiences, and even from similar experiences of sexual character, the symptoms will vary from person to person. For some light symptoms for others severe. If the difficult feelings from a traumatic incident doesn't disappear after one month, the first symptoms of PTSD will show themselves after one to six months, but it happens that symptoms are released several years



Angstinfo, nd
Psykiatrifonden, 2018
Stressforeningen, nd

Ill.7 bodily symptoms



Psykiatrifonden, 2018
Stressforeningen, nd

Ill.8 Mental symptoms

after the trauma. According to the psychiatry of Region Midtjylland (2020), the PTSD will become a chronic state for about a third of the PTSD victims, especially if not seeking professional treatment.
What happens in the human brain to cause PTSD, is that during danger, our reptile brain will release hormones to activate one of three survival instincts; fight, flight or act dead. A natural reaction to prepare our body to perform optimal in the situation. A trauma happens when one isn't able to exit this state of mind, because the brain can't understand the rational signals that the danger has passed. This person will be in constant alertness.

PTSD is differentiated between 'simple PTSD' and 'complex PTSD' where the complex PTSD represents a complication of the physical and psychological sicknesses. When you suffer from PTSD the physical symptoms can span from headache to chest pain (Illustration 7), and the psychological symptoms can be from sadness to suicide thoughts, and (Illustration 8). (Psykiatrien Region Midt, 2020)

Current Treatment
To treat PTSD there is no easy solution. After a thorough diagnosis, the treatment goals are to decrease the psychological and physical symptoms and establish a base of support for the future (Psykiatrien Region Midt, 2020).
If we look at the 'Center for Seksuelt Misbrugte' in Denmark (CSM) (Center for seksuelt misbrugte, 2020) they refer to surveys suggesting that long-term psychological treatment have a great effect on survivors of childhood sexual abuse, especially with focus on avoidance attachment, emotional coping style and social support (Elklit, A., et. al. 2017).
Another study of veterans with PTSD, shows that a ten-week nature-based therapy, showed great results in the veterans' insight into and mastering of their condition (Poulsen, D. V., et. al. 2018). A treatment program can hereby typically include a combination of conversations, education, psychotherapeutic treatment, medical treatment, physiotherapeutic treatment, social counseling and pedagogic guidance (Psykiatrien Region Midt, 2020).

In France
To fight sexual abuse in France, there is a public acute phoneline to call if victim of sexual abuse, and an organization CIDFF (Centre d'Information sur les droits des femmes et familles), with one center in each Department. The center will help with an acute place to stay overnight, with information about legal rights for women and families, and can help with a health check. Also, the organization will educate the society about how to prevent sexual abuse (CIDFF, 2020). There is a various of other associations, mostly voluntary-based, where you can seek help to see a psychologist, have group sessions and find communities with other traumatized people (Gouvernement Francais, 2020). But even with the existence of these organizations, the sexual abuse in France has been relatively stable since 2006 (Ministre de L'interieur, 2017, p. 151).

To suffer from PTSD, you must learn to accept your condition and learn how to live with your limitations. Today, far from enough people get the needed help. The treatment needs to be versatile, adapted the specific symptoms and during the needed time-period, to get the maximum result. Insufficient treatment results in unhappy people, sick leaves from work and passive citizens in our society. Studies has shown that it is possible for a person suffering from PTSD to regain well-being, but too little has been done to actually achieve it.

"I remember it as was it yesterday. The episode has robbed me a lot – not least my believe in the good in people. Now it is nearly three years ago the assault happened. Therapy, hospitals visit, and medication have gotten me on the right track. Yet, my emotional register has burned out."

- 37 year old danish woman, victime of rape (Psykiatrien Region Midt, 2020)

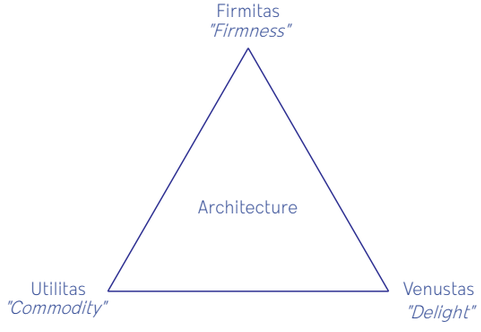
Problem

A focus is arising on well-being in society, but can it be integrated in the architectural work through the activation of senses and creation of the right atmospheres? How to create a center for treatment of PTSD caused by sexual assault, which encourage healing and gives the patients a sensation of self-worth, while it accommodates a good working environment for the staff? How to deal with the holistic aspect of sustainability through relation to the settings and the use of materials in a French context?

Method

Vitruvius
Since Marcus Vitruvius Pollio from before the birth of Christ, architecture has been understood as the comprehensibility between firmitas, utilitas and venustas (firmness, commodity and delight) (See illustration 10). Three elements required for well-designed architecture. Since then, the understanding of architecture has been challenged by the different architectural movements, but all with a base in the Vitruvius triad. Today the knowledge of the different peaks of the triad have been progressing, adding layers to each corner. (Steemers, K., 2015)

Alongside, our society is developing, leaving us with both problems to solve and new solutions to do so. This is raising the demands of architects, designers and engineers to be visionary and take responsibility in their respective fields to learn and utilize knowledge and create to push the world in a better direction. But how to gather the different fields so good sustainable architecture can be created and we can live up to our responsibility as architects and engineers?



Ill.10 Vitruvius Triad

The Integrated Design Process
Projects created at Aalborg University are based on a motivation for creating a solution to a contemporary real-life problem (problem-based learning), which is being developed in the problem phase. Here research, such as literature studies, will be used to define the problem, as the offset for creating a center for treatment of women suffering from PTSD of sexual assault in France.The literature studies can create a scientific grounding and insight in existing knowledge and insight in tendencies, which can enable discussions of well-being architecture through argumentation, and support finding solutions through theory. Here it is important to be critical about the selection of sources, due to quality and the time-perspective (Eriksen, T., 2016).

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Analysis
In the following analysis phase, the problem will be investigated by different analysis tools to enrich the understanding of the problem and highlight the possible areas of solution. During this phase, both pragmatic and phenomenological philosophical approaches will be used, as it is essential to consider the project from two somewhat opposing angles to ensure a holistic design. The pragmatic approach, as the project should reach certain accomplishments versus the climate crisis and in the exploitation of the local environment. As a treatment facility, the center should also reach certain standards of quality of the indoor environment. The phenomenological approach will create an understanding of the atmospheric and sensuous aspects of the project and the unique opportunities of the surroundings. It will also allow an understanding of how to create for a subjective experience through the body for all user groups. Already in the analysis phase, the design process is starting, by the choice of which analysis' and tools to use.

James Corners 'mapping' will be used to enable an interpretation of the landscape and environment by 'la ville Morel', and hereby construct the unconfirmed. This method is an efficient way to investigate selected elements, as infrastructure, type of landscape, topography and typology, and will result in an overview of the content and potentials of the site and connections to the surroundings (Corner, J., et al., 1999).

Empirical data will be collected and analyzed to understand the environmental challenges of Brit-

tany and the coastal climate, which will act as an indicator of which aspects to be aware of or exploit in the building design.

Phenomenological analyses are methods to clarify the emotional and sensuous responses in a certain site and can highlight certain effectful elements. It will supplement the more measurable method of mapping (Marling, G., 2018). 'Atmosphere' is a phenomenon investigating the relation between subject and object to describe the site based on feelings and experiences (Böhme, G., 1998). Another method is 'Urban Tomography' which is a subjective tool to present a large number of perspectives and samples of the same phenomena, as the variation of façade-materials and detailed facade openings used in Brittan architecture (Krieger, M. et al., 2011).

Attempting to get know the various user groups, as the members struggling with PTSD, the caretakers, the therapists and the managers of the center, qualitative semi-structured interviews will be performed with representatives of the user groups. This is so that the facilities, the functionality and day rhythm for the users can be considered. This method is subjective as the informant states own points of views, which makes it important to have a critical approach to the selection of informants and the formulations of the questions (Larsen, A. K., 2010).

To investigate more aspects of a specific concept, pre-studies will be performed in regard to LCA (Life Cycle Assessment), energy performance, ventilation strategies, acoustic rule of thumbs and sunlight radiation. These studies can give a technical standpoint to select or de-select some design solutions with justification and quantitative measures.

Cases studies works as an empirical investigation of, and provides information about, a phenomenon, and also works as inspiration about best-practice (Ågaard, D., 2014). Projects of Peter Zumthor and the concept of the Maggies Centres, will be investigated in relation to embodiment of senses in architecture and elements of healing architecture.

Sketching

The sketching phase is where the results of the analysis' will be shown. This phase invites creative ideas and facilitates the combination of architectural and engineering fields in an iterative process (Knudstrup, M. A., 2005). During sketching the pragmatic and phenomenological approaches will be used as focal points, to ensure elaborated outcomes in each domaine, for afterwards to be able to identify and combine the outcome in a holistic solution.

To kickstart this part of the design development, inspiration- and mood boards can provoke and concretize ideas. The boards will show potential design elements and associations to acoustic elements, niches, organic and geometric building shapes and daylight intake (Bejder, A. K., 2017).

During the sketching phase different sketching tools will be utilized depending on the phase and what to communicate, such as 'reflection-drawing' to visualize initial non-existing thoughts. It can be combined with 'designing by drawing', as one captured idea will produce more (Steinø, N., 2018).

To supplement the 2D sketching, volume-studies can provide a better understanding of the initial ideas and to sense the volumes. Further along in this phase, digital tools will demonstrate the next step in the design. Another method to choose which concept to develop further, is the evaluation scheme. Here the best solution to the stated problem will be the main evaluation point.

Synthesis

The Synthesis phase is where the building finds its final form, and where the demands in the aims and the program are met. The different building components are being optimized and the building performance is calculated and documented (Knudstrup, M. A., 2005).

Here simulations and calculations can be helpful in getting closer to the target energy consumption, indoor climate, building cost and CO2-emission. In this phase it can be necessary to return to one of the previous phases to investigate a phenomenon, to be adjusted in the final design.

Presentation

Finally, the project is being presented and the problem formulation is answered through a presentation folder, illustrations, architectural visualizations, models and diagrams, in such a way that all qualities are clear. The presentation should clearly state how aims, target values, and design criteria for the project have been accomplished.

One-man army
This interdisciplinary process can ensure a use of different tools and orientation towards different aspects of building design, but when working alone it can be challenging to exploit this intention of combining the different disciplines.

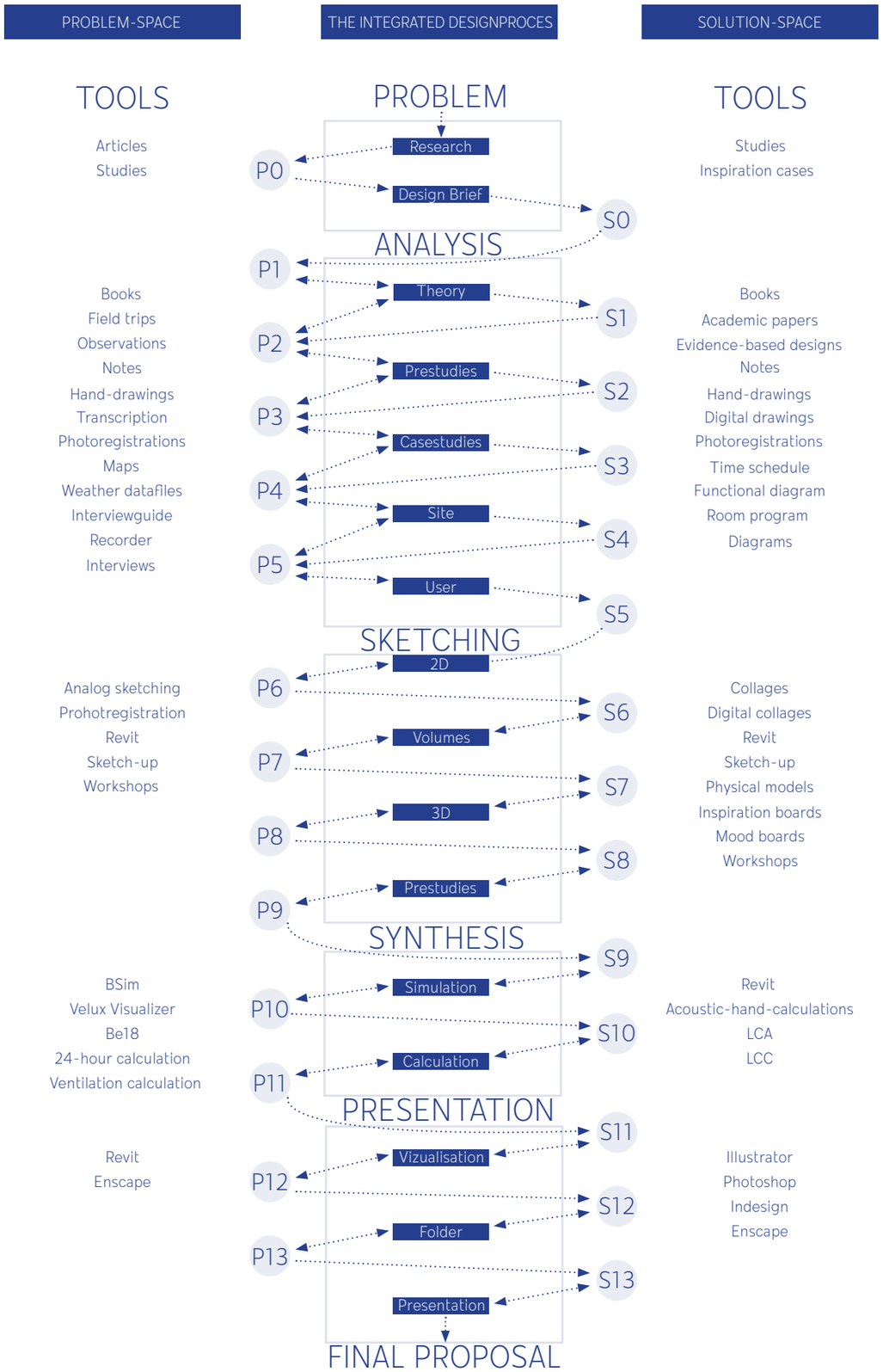
During the education on Architecture and Design at Aalborg University, different tools and methods to solve a problem has been mastered in order to solve complex design matters. This has been in groups constituted of members with different head-competencies who are communicating in a mutual language, which is an advantage using the IDP (Knudstrup, M. A., 2005).

When working alone, how do in ensure that all the different parameters are being considered in design choices when I am both the architectural and engineering representant? How do I realize that I should take a loop back in the process when no group members can ask the critical questions?

To ensure a forward-going and integrated process, I am utilizing Maher's model evolved by Dorst and Cross, on a concrete level, to make design decisions. The design process sheds light on the so-called 'creative-leap', which designers see as the happening of a significant event, which gives a sudden insight in the design solution. To create that 'aha-experience', Dorst and Cross points out that the problem-solving aspect of design can be described as the co-evolution of the problem- and solution-space, with interchange information between the two, illustrated by Maher's model (Dorst, K. Cross, N. 2001). After each step in the process, Mahers model will help the realization of the developed problem which hereafter can be further developed or unraveled.

"*The more time a subject spent in defining and understanding the problem, and consequently using their own frame of reference in forming conceptual structures, the better able he/she was to achieve a creative result*".
(Dorst, K. Cross, N. 2001, p. 431)

By twisting the model to exist within the Integrated Design Process, by actively develop the problem-space in coherence with the solution-space, or by creating sub-problems relating to the overall problem, the process can guide this thesis to a holistic design solution. (See illustration 11).



Ill.11 Method and tools used for the thesis

The prologue introduces a thesis aiming to meet sustainable goals, as a part of taking responsibility towards future generations in this society. The project will take place in a special context with a both rough and beautiful expression and a certain lifestyle to consider. The center will focus on people who suffers from severe traumas which needs to be handled with assiduity and which can allow investigation and development of contemporary ways of designing psychiatric facilities.

The thesis will be guided through an iterative process, controlled by a focus on the co-evolution of the problem- and solution space.

Theory

This section will investigate concepts through literature, gathered knowledge and studies. Sustainable architecture, where the concept of Zero Energy Buildings and passive strategies and life cycle assessments of materials are included, will seek to find possible solutions to the requirements of sustainability and a good indoor climate, which further in the process can be used to exploit the location of the site and handle the energy consumptions of the center.

How to design for a target user group of patients suffering from PTSD, will be examined through the concept of healing architecture, with base in evidence-based design. Furthermore, this will be connected to the effects of embodiment of senses in architecture, through literature studies and examples from fieldtrips.

Sustainability

Our world, as we know it, is undergoing immense pressure from global warming because of us humans draining the Earth. During the last century we have been evolving our technology and quality of life with an excessive speed, and with eyes set merely on the new possibilities. Only now, when we start to see the consequences of our evolution, we know that we need to turn this self-destroying direction. This realization started with the Brundtland Report "Our Common Future" in 1987 (Bæredygtig udvikling, 2020). Since then, the climate changes have put many fields under the scope to minimize the impact of greenhouse gasses. Our transportation is going from coal to electric, our cloth is being branded as sustainable as a label of quality, and our food industry is seeking to find new types of nutrition sources. The building industry is responsible for 36% of the CO_2 emission in Europe, so we need to follow this wave of new thinking (European Commission, 2019).

The definition of the term sustainability in the Brundtland Report is; "Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (Brundtland, G. H., 1987). This is divided into three core areas; environmental-, social- and economic sustainability. The social aspect is considering people's well-being on a long term basis, the economic sustainability is about considering the societies' economic growth, while the environmental part is about looking after the planet we are living on, as we are living within our natural resources (Circular ecology, 2020).

For me, it is not enough to just not 'compromise the ability of the future generation to meet their own needs'. What we build today should be visionary enough to enhance the quality of the environmental- the social- and the economic environments, the future generations will live in and with. Modern architecture should create a new platform of benchmark to develop from in the future, so it will permit the evolution to move exponentially in a more sustainable direction.

Of course, this is easier said than done, as we need to learn and develop knowledge and competencies while we're building for the future. Building sustainably involves considerations to all the different processes. From the extraction of materials, to transportation, to the construction and conditions for the workers, to the use of the building in relation to consumption and sustainability related user behavior, to maintenance of the building and ending with deconstruction of the building and depletion of the materials.

To hold the designers accountable and as a tool to monitor all the aspects, such as minimum requirements for energy consumption, construction and indoor climate, these aspects have been quantified to become building standards in Europe. The demand for energy consumption in Europe is now the classification of "Nearly Zero Energy Building". Further, an increasing bias of certification standards of environmental assessment methods, have been developed, such as DGNB, LEED and BREEAM. These has different main focal points, but all aim to quantify and heighten the holistic quality of the design (Schmidt, A. 2012). Other tools as LCA and LCC can investigate the environmental impact of the materials and calculate the economic in a holistic perspective. The principal of 'Designing for Disassembly', and verbs as 'mitigation' and 'adaptation', are other suggested strategies (Sustainability for all, 2018). All these tools and methods are developed to support the complex task of designing sustainably.

But what about the mental well-being? The aspects difficult to quantify as the emotive sensations, affirmative relationships and bodily sentiment? As the sustainable materials and processes, the energy demands, the physical health and the circular economy has reached this level of development, the mental area is the next one to be pushed. Our qualities as architects and engineers are that the spatial, social and cultural aspects are being considered within the field of construction.

This project will primarily focus on the social and environmental sustainability. The care- and hospital facilities are experiencing an intervention. Building this center can contribute to the tentativeness of the psychological difficulties in society, and by designing it to promote a good working atmosphere where social interaction can be enhanced, this center can set an example for other care facilities to come. By designing it to meet the environmental requirements and create awareness towards these elements, environmental design can become an integrated part of our thinking, which is needed if the current status of environmental challenges shall change.

Zero Energy Building

As the building industry is the largest energy consumer in Europe, it has an enormous responsibility for decreasing the pollution. Thus, the European Union has stated that all new buildings from 2021, and public buildings since 2019, have to be nearly Zero Energy Buildings (nZEB). This means that the building has to have a very high energy performance, and the low energy requirements that are left, should be covered by renewable sources, including sources produced near and on-site (European Comission, 2021). Numeric thresholds are not defined, so how to reach this goal is left for each country to define, depending on their climate, primary energy factors, ambition, calculations methods and building traditions.

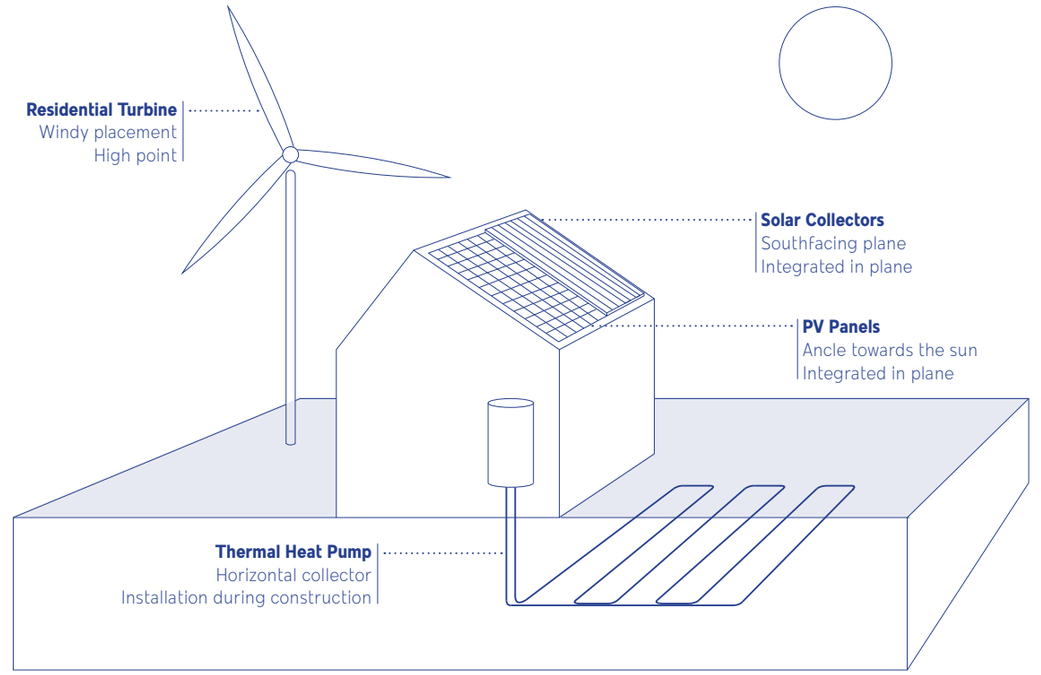
In France, to construct new buildings, the construction must follow the RT2012 regulations (Règlementation Thermique from 2012), as the RT2020 is not yet put in place. It determines a maximum energy consummation on 50 kWh/m2/year in primary energy including heating, cooling, lighting, hot water and auxiliary equipment (pumps and fans) (Ministre de la transition écologique, 2020). In Denmark the tool Be18 is used, which permits an addition of renewable energy on 33,0 kWh/m2/year, which means that the energy consumption has to be reduced to maximum 33,0 kWh/m2/year, to be able to reach a ZEB standard. To reduce the energy consumption and reach a ZEB, various passive strategies can be used (see page 42-45). Renewable energy is how the building will fulfill its low energy demand. The renewable sources, sun, wind, waves, soil and biowaste, are getting exploited to produce clean energy which can displace the energy from fossil sources.

Photovoltaic panels are an efficient way of producing electricity, and easy to install in houses and connect to the grid. New types of pv panels and new expressions are developed, which gives more opportunities of integration in the building design. There are different kinds of PV panels. Monocrystalline is the most efficient, converting 15% of the suns' rays into electricity, but usually more expensive. Polycrystalline has an efficiency on 12% but usually cheaper to produce than monocrystalline. Furthermore, there are different types of thin film pv panels, with a low efficiency on 6% but very flexible as the cells are thinner. The different types have different expressions which needs to be considered. (National Energy Foundation, nd).

A wind turbine can be an alternative to PV panels, can be residential wind collectors. Here the noise from the turbine has to be considered especially for traumatized people (Energy Saver, 2020).

To heat, cool and for hot water, for new buildings it has become more and more common to use heat pumps. The type of heat pumps depends on the location. The heat pumps types are from air to air, which is the most common, and from geothermal, from either a water or ground source, which is more efficient and reliable. The geothermal pumps can cost more to install, and the soil type has to be considered (Energy Saver, 2020, 2).

An alternative for domestic water heating can be by the use of solar heating collectors exploiting the heat from the sun. For domestic buildings, there are flat plate collectors and Evacuated tube collectors, (The Renewable Energy Hub, 2018).



Ill.12 Solutions of renewable energy sources

Passive Strategies
Energy Reduction

The passive strategies integrated in the building design will have an influence on the energy consumption, the indoor climate, operational costs and lifetime of the building. The strategies will have a big influence on the building proposal, as it will be expressed in the design and has to exploit the possible natural resources. Therefore, are some strategies being investigated further.

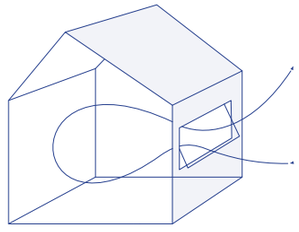
Ventilation strategies
Single-sided ventilation: When there is one window in one wall of a room. For single sided ventilation to have the acquired effect, the width of the room has to be smaller or equal to 2,5 times the height of the window opening. The orientation of the building will also play a factor. (Walker, A., 2016)

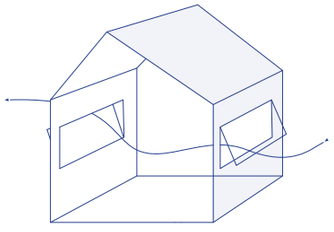
Cross ventilation: The fresh air will have an inlet in one side of a room and exhaust on the other side of the room. This strategy can create a higher pressure than single-sided ventilation encouraging a better ventilation performance. This strategy will have an effect on the room layout to ensure a crossing path of air. (ibid.)

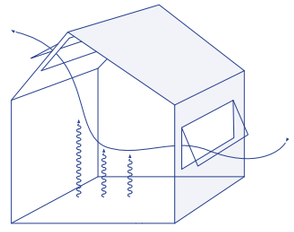
Thermal Buoyancy: The thermal buoyancy can for example be exploited through height differences or solar chimneys. The method is relying on natural driving forces. When air gets heated, the air expands and the atmospheric pressure will be lower than the cold air entering which will enter from below, forcing the heated air upwards and out through an outlet. The difference in temperature from the inlet to the outlet and the difference in height, are the factors which can affect the ventilation rate. The solar chimneys can be seen in the building volume, which can create awareness on the passive principal. (Khanal, R., Lei, C., 2011)

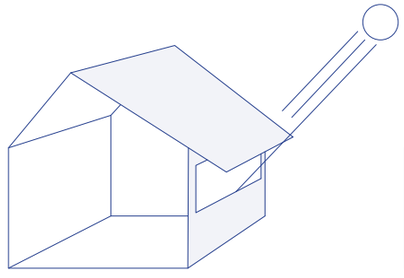
Thermal comfort
can be reached with the help from thermal masses, which is high density materials as concrete, bricks and tiles. A thermal mass can store heat gain during the day and re-radiate it during night, moderating internal temperatures by averaging out diurnal extremes. To use this strategy properly, a right amount of glazing should direct the sunlight to hit a thermal mass. Used improperly the thermal mass can absorb all the heat generated during cold winter, or radiate heat during a warm summer night. Further to obtain thermal comfort, the glazing area in the building envelope should be balanced in relation to infiltration, the amount of sunlight entering the building should be considered, as well as the insulation, cold bridges and the high-density materials. (Greenspec, 2021)

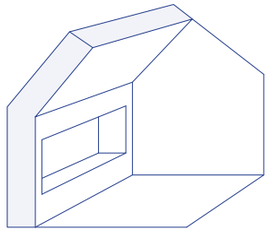
Besides acting as contributors to thermal comfort, the design principals of shadowing, the thickness of the building envelope and the choice of high-density materials, can be exploited conceptually as design elements. For example, can an extended roof for shadow create a protected outdoor space and visually extend certain lines. A thick building envelope can permit creation of niches where windows are inserted, and the material choice have an influence on the acoustic, tactile experiences and creation of ambiances.

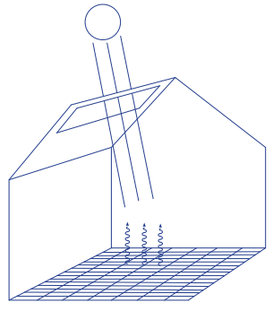

Single sided natural ventilation


Cross ventilation natural


Thermal Buoyancy


Sun shading


Well isolated building envelope


Thermal comfort

III.13 Passive strategies

Passive Strategies
Indoor Climate

A well indoor climate is good for both the occupants of the building and the building itself and should sustain no matter the outdoor climate and no matter the time of year. BR18 describes all legislations and requirements for new buildings (see the highlighted numbers). The thermal climate is having the biggest influence on the perceived indoor climate. In addition to previously mentioned passive strategies, the right strategy for the thermal comfort is also depending on the activity and the type of clothes worn.

A bad acoustic environment can be a great annoyance. The acoustics can be regulated by the room size, displacements in the surfaces to break up the sound waves, acoustic panels, sounds absorbing instead of sound reflective materials.

Light has an enormous influence on the well-being. The relationship between the glazing area, orientation and time of year has to be considered to not obtain a too warm or too cold an indoor climate, as the u-values of the glazing are relatively high. Sufficient daylight will also affect the circadian rhythm and hereby sustain the natural hormone regulations in the body (Hauge, B., 2015).

The very essence of a ventilation system is to remove air pollutants and smell that inevitably arise in an occupied space. The ventilation system has to be carefully designed not to cause draught or noise. People perceive the velocity and air flow differently depending on its turbulence and temperature. Hydroscopic materials, such as brick, wood and concrete, can help absorb moist from the air (Kesik, J. T., 2016). (Illustration 14).

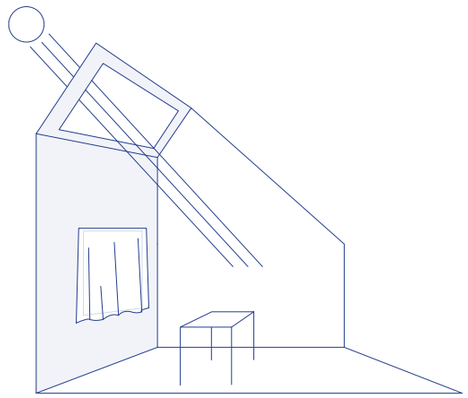
Thermal Comfort
Max hours above 26 degree: 100
Max Hours above 27 degree: 25

Visual Comfort
Sunlight: window/floor area ratio: 10%
Lux demand 50% of the day: 300 lux on 50% of the floor area

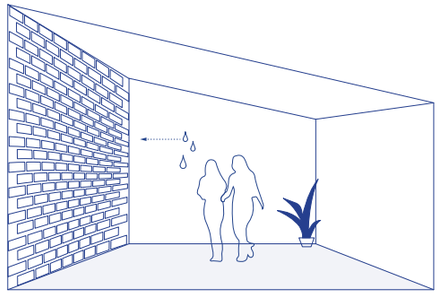
Recommended reverberation times
Common areas with group work: 0,4s
Common areas without group work: 0,6s
Stairways: 1,3 s

Atmospheric comfort
Ventilation rate pr. Adult: 5,0 l/s
Ventilation rate pr. Squaremeter: 0,35 l/s
Max co2 concentration 1000 ppm

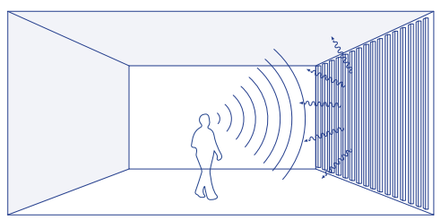
(Bygningsreglementet 2020)



Visual comfort



Atmospheric comfrot



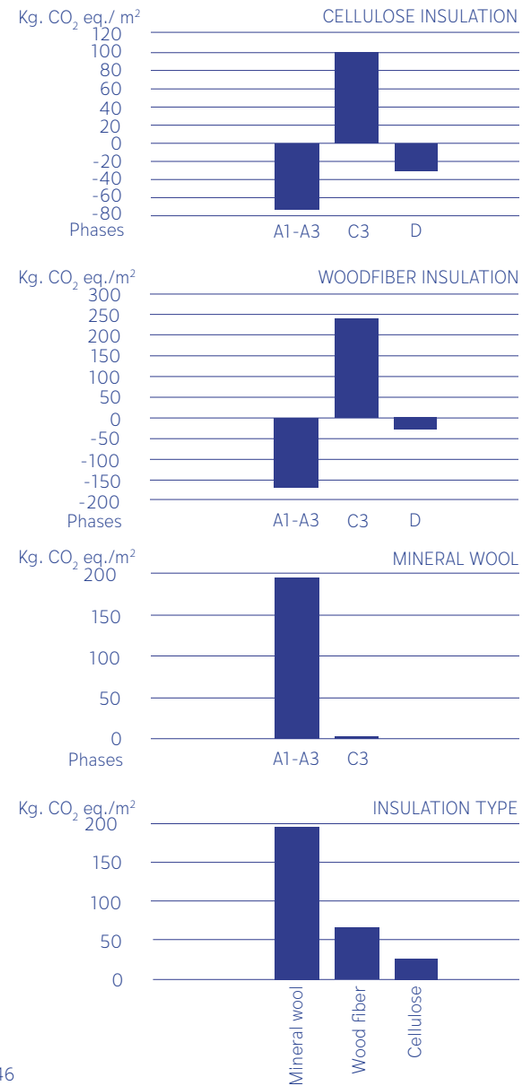
Acoustic comfort

Life Cycle Assessment

To reduce the CO_2 consumption of the building sector, we must consider the consequences of every aspect of our building design.

Life Cycle Assessment is considered a potential influencing part in building sustainably. It's a process to evaluate the effect a certain material or construction has on the environment over its entire living period (European Environment Agency, 2020). This tool can be used to consider resource-use efficiency and decreasing liabilities. The LCA program will calculate the different loads of materials on the environment in relation to the lifetime of the building, categorized in phases of the life cycle of the materials. Phase A1-A3 is the creation of the product, A4-A5 is the transportation and construction, B1-B6 is the use of the product including renovation, C1-C4 is the demolition and finally, D is after end life, for example possibilities for reuse (LCAbyg, 2020).

The program LCAbyg has been utilized to investigate one m^2 of different insulation materials. It is seen that the cellulose and wood fiber insulation have negative values in the introductory phases. As they both originates from wood, amounts of CO_2 has been absorbed throughout the lifetime of the tree, and is still restored in the insulation. If these types of organic materials after lifetime will be burned, the CO_2 will be released into the atmosphere. If they are reused, or composted, the CO_2 will stay bound. The mineral wool produces a bigger amount of CO_2 during production. (Illustration 15).

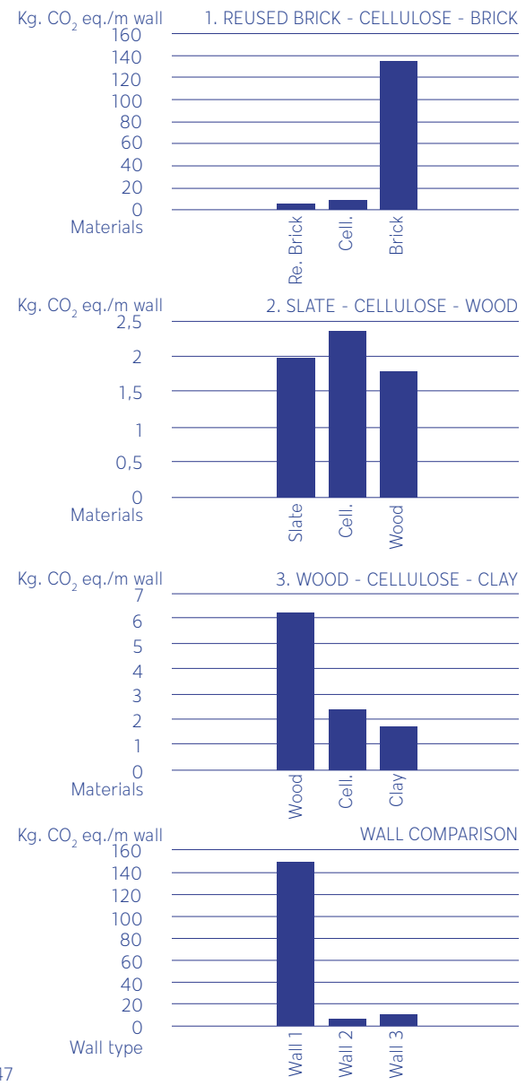


Ill.15 LCA of insulation materials

Secondly LCAbyg has been applied to compare different types of walls on one meter with comparable u-values on approximately 1,0 W/m^2*K (See u-value calculation in Appendix 1). This is to be able to consider the different processes of the materials and environmental aspects. To simplify the results, it has been chosen to focus on the CO_2 pollution and not the other polluting gasses calculated in LCAbyg.

For the wall comparison the CO_2 consumptions are divided into materials to get an overview of the most polluting elements of the wall constructions. Cellulose is used as insulation as it is the least polluting material from the insulation study.

Bricks are here the most polluting construction element, whereas reused brick are barely polluting as the production phase is the polluting phase in relation to brick. Slate is in general more polluting than other materials, but the small amount needed for façade cladding reduces the CO_2 pollution. When using slate, it's important to be aware of the need for screws and wood to fasten the slate on, which is considered in the LCA calculation, but not in the U-value calculation. Also, a factor to consider is that slate can be extracted in Brittany so transportation pollution is reduced. Clay has little pollution and can be decomposed after the building's lifetime. Furthermore, clay will, as brick, absorb moist in the room and can contribute to a good indoor climate through passive strategies. The other organic materials contribute to very little polluting wall constructions, yet not CO_2 neutral. (Illustration 16).



Ill.16 LCA of wall types

Healing Architecture

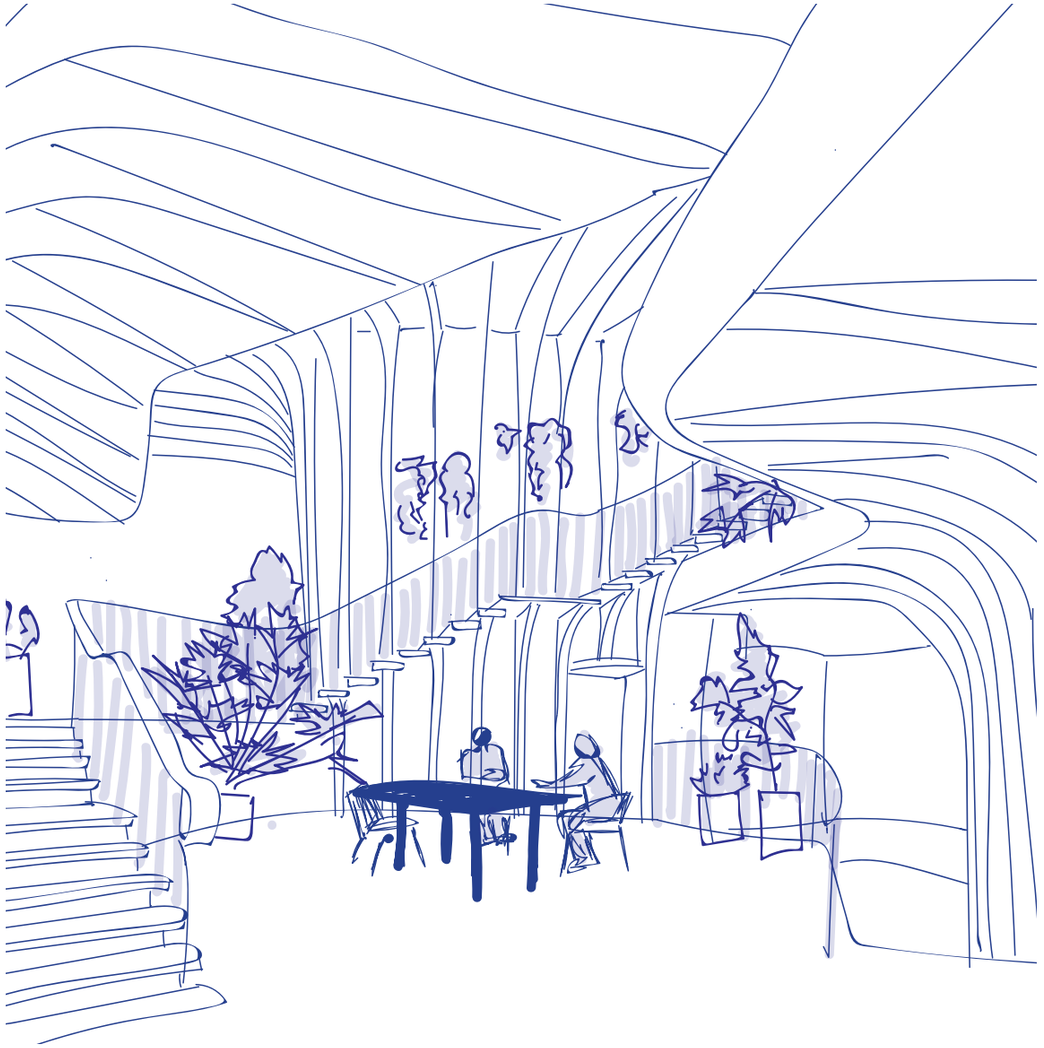
The world health organization, WHO, defines health as "*a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity*". Whereas well-being is defined as "*a state in which every individual realizes his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community*" (WHO, 2020). This complex definition of well-being is expressing that the state of well-being, is not merely for one-self, it will affect your relations and even the community we live in. The mere necessity for a definition, points to the increasing general awareness and acceptance of psychiatric conditions in society, which has entailed research on the subject in a various of fields the last 25 years. In architectural environments it accelerated once Roger Ulrich published his study 'View Through a Window May Influence Recovery from Surgery', which gave evidence that environmental aspects of the hospital design can influence the convalescence period (Ulrich, 1984). This was developing new requirements for future psychiatric care and changes how we design and organize the physical framework for psychiatric treatment.

Our societal pressure, our everyday obligations, our built environment, the never-ending stimuli and stressors, infuse our human existence with high expectations to our 'directed attention' compared to how attentive we are to our 'spontaneous attention' (Svend Brinkmann, 2020). This never-ending demand for attention takes a significant toll, resulting in mental fatigue (Sullivan, W., 2011). We spend 90% of our time indoors, and the last 10% is most likely to be surrounded by buildings, so the build environment seems like a suitable place to intercept the journey of making the world a place to be well (Tvedebrink, T., 2018).

The built environment can be designed to promote or hinder healing. To heal is a personal process including individual mindset and relationships. Positive change, finding meaning and realization of wholeness, occur in our surroundings in the home, community and in nature.

"*The environment cannot cause healing to occur but can facilitate engagement in behaviors and emotions that support healing; the environment can induce physical and emotional responses such as happiness, joy, and relaxation; and the built environment can enhance individual control and functionality — all of which are antecedents to healing.*" This is stated by Dubose et. al. (2018, p. 46) in their literature review investigating the concept of healing spaces.

The architecture critic Charles Jencks created the Maggie's Centres in the United Kingdom, for cancer patients and their relatives to find support and advice. Jencks similarly touches the question if architecture can have a direct influence on the patients' health, or if it's more an overall satisfaction of the environment and atmosphere, which promotes a positive mindset, which hereby can influence well-being. Here the effect is also directed towards the caretakers, so they will feel attended to in the architecture and will be more engaged in their actions towards the patients. The point here is to support and not hinder the role of the center



Ill.17 Maggie Centre Leeds

or the caretakers themselves. (Jencks, C., 2012)

At the Maggie's Centres, the same strict design brief has resulted in very different but all qualitative building designs, by different prominent architects. This supports that there is not one simple recipe of how to construct healing spaces, but certain principles can have a general affect. In the Maggie's Centres, the architectural effect on patients is indirect, but significant. The architecture enhances a welcoming and nurturing feeling because of a friendly atmosphere and gives the patients dignity and presence to their situation. This is for instance done by simple elements such as placing the kitchen and kitchen table in close connection to the entrance, so it's easy to enter and discuss informally with the other patients or caretakers without commitment (Jencks, C., 2012). Other elements which can have an effect are to not have a secretary desk, which automatically empowers the person behind the desk, but instead a personal greeting is promoted. This entails an open room layout so there is an overview of the people entering the center. Another element is a readable plan layout, so the people doesn't feel unnecessary stress. To obtain this argument, sliding doors can be used so you know not to knock on a door if it is closed, and can see the free space is not in use. One of the most addressed elements about the Maggie's Centres is the atmosphere of a home. This can be touched through an open kitchen as the heart of building, warm materials as wood, greenery both inside and outside and controlled acoustics.

To get further into how to program and create a psychological treatment facility which promotes healing, Dubose et. al. suggests a categorization of the personal process of healing, into healings domains; Internal, Interpersonal, Behavioral and External. Hereunder are healing constructs which can be motivated by architecture; Psychological, Self-efficacy, Social and Functional (Dubose et. al., 2018) (See illustration 18).

We see that creating healing and well-being architecture is not a simple task but requires impacts in a lot of different areas of architecture to impact both mental, physical and social aspects of the human mind. Different studies suggest different successful parameters to have influence on the feelings of stress, annoyance and anxiety (Sullivan, W., 2011). Some of such places can be characterized by its restorative effect. Restorative environments hold our focus to the present place and time or forces us to engage, which lets us destress (Hauge, B., 2015). Successful ambience in psychiatry treatment facilities, needs an adequate range of requirements of transparency vs. protection and activation vs. privacy (Fricke, O, et al, 2019).

For Charles Jencks, another theory has emerged, that throughout history there has been a connection between architecture, religion and health, or put in a contemporary way; monuments, spirituality and hospitals (Jencks, C., 2012). This is an interesting connection to the integration of stimulation of senses in architecture, which can connect a person to a place and the present, which for some is a spiritual effect (Pallasmaa, 1996).

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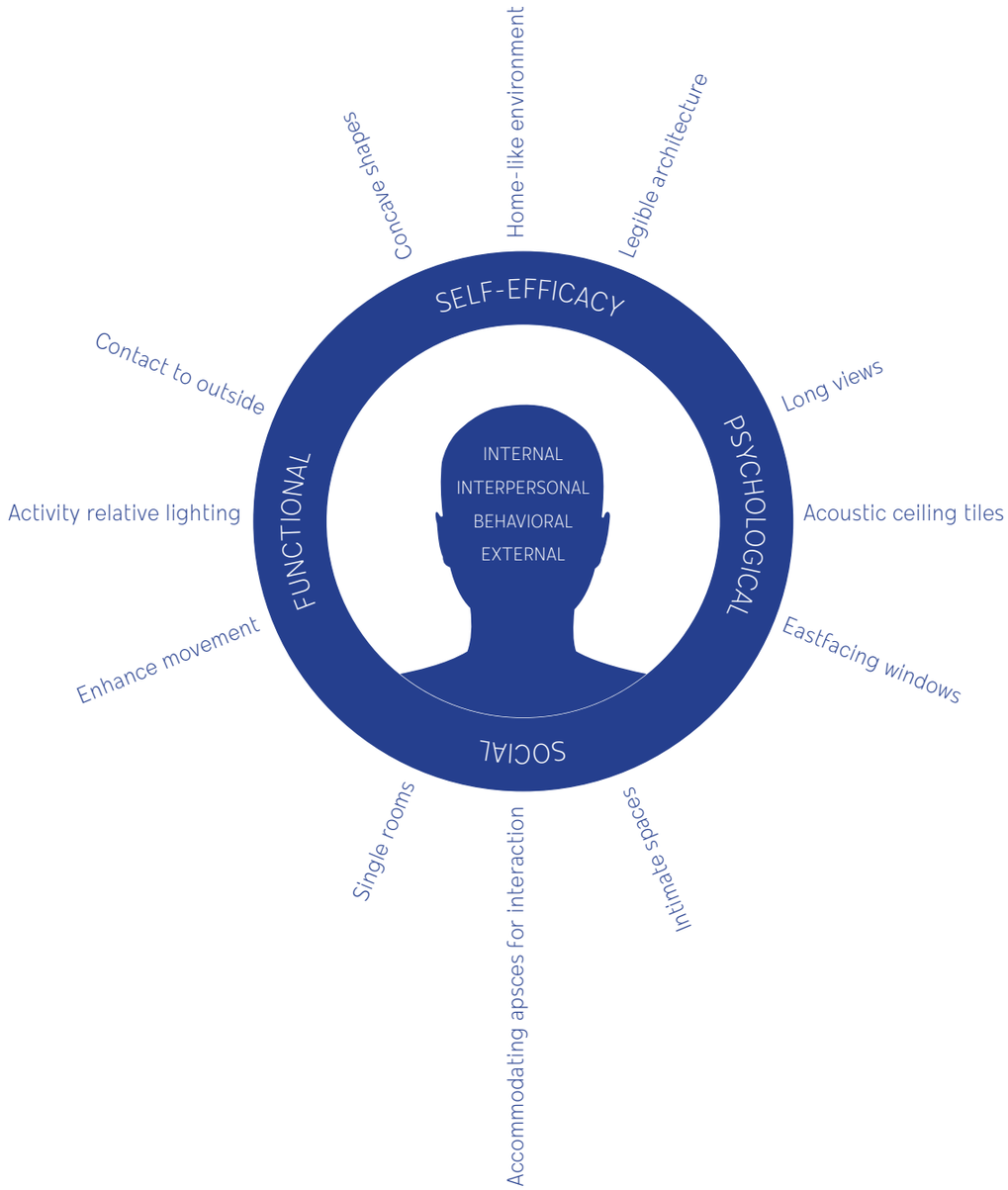


III.18 Architectural elements of healing architecture

Our Senses and Atmosphere

"Significant architecture makes us experience ourselves as complete embodied and spiritual beings. In fact, this is the great function of meaningful art." - Juhanni Pallasmaa, 1996, p. 11

In the world of art, it is understood that good art is the experience of the interaction between subject and the environment (Shusterman, R., 2010). It makes you feel. The difference from art to architecture is that the function has to follow. This is restricting the art, but this element is also an opportunity to reach the person even more through phenomenology, as the senses are expanded with the scale and new areas of possible senses to touch opens up.

Modern architecture today is being accused of emotional coldness, restrictive aesthetics, and distance from life, because, roughly speaking, the senses have been forgotten. The criticism suggest that architects are forgetting to align our buildings with the realities of life and the human mind but are instead drawn by a formalistic attitude (Pallasmaa, 1996). However, we are in the world and we are constantly interacting with our surroundings. The environment passing on messages to our body, and our body passing messages to the surroundings. It's an unconscious coherence as my world cannot exist without my interpretation of it, and my body is projected onto my world and affecting it. Once's sense of reality is reinforced and articulated by this constant interaction (Pallasmaa, 1996). Activating our senses is also a way to connect with the past, and hereby create a closer contact to the place we are in, since we remember through our bodies as much as through our nervous system and brain. For example, is the sense of smell known to be a powerful generator of memories. With one sniff from the nose, there can be created a link between the past and the present (Rushika, H. P., 2018). For the Swiss architect Peter Zumthor, architecture is about the meeting of the body and its sensory-motor functions, and form is the easiest element to develop and can be done in the end. Zumthor is working with atmospheres enhancing the vision of the place, because he believes that architecture can influence people's state of mind, giving them an experience through bodily interaction with architecture (Frearson, A., 2013). Being capable of being in the present in our bodies and heads, are a vital part of regaining self-understanding and development for people suffering from PTSD, which is an affect the center should provide.

I will be investigating atmospheres through embodiment of the visual, haptic and the auditory realms in relation to architectural elements in places I've visited.

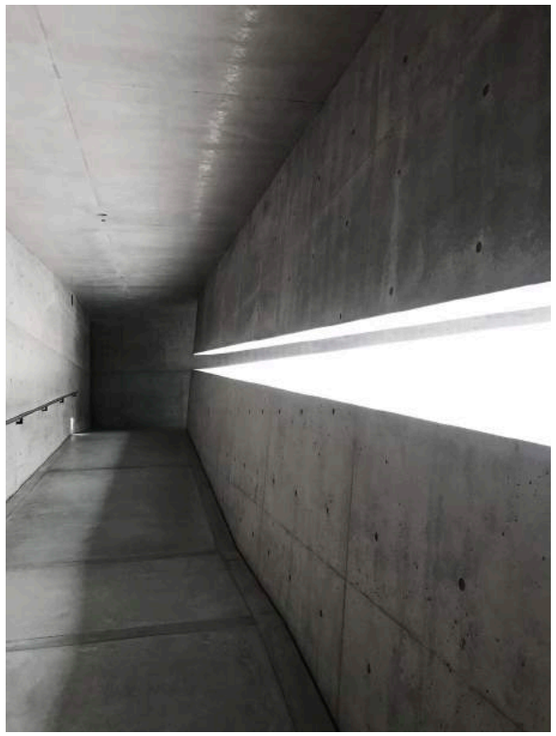
"When architecture is strengthening the experience of being in the world, it is essentially strengthening the experience of self." - Pallasmaa J., 1996, p. 41

Ill.19. Reading garden, Kyoto, Japan

Visual experiences

In western culture, sight was historically considered the sense above the other senses. Also, the classic Greek philosophers Plato and Aristoteles considered sight as humanity's greatest gift (Yalniz, G., 2017). Vision has continued its development towards being the most dominating sense of our time, as it's considered the prime channel for spatial perception. This have been making aesthetics the prime factor in buildings, forgetting the auditory, haptic, or olfactory realms. Hereby arises the critic of emotionless buildings and strict design.

However, benefiting from the visual realm doesn't necessarily mean a rejection of other senses. The eye can invite and stimulate muscular and tactile sensations and also evoke emotions through architectural references. Even Juhani Pallasmaa, a great critic of the status of the vision in today's architecture, acknowledges Corbusier's way of enhancing tactility through the sense of vision, as the primary sense of Corbusier (Pallasmaa, 1996). *"Architecture is the masterly, correct and magnificent play of masses brought together in light."* — Le Corbusier, 1959, p. 31.

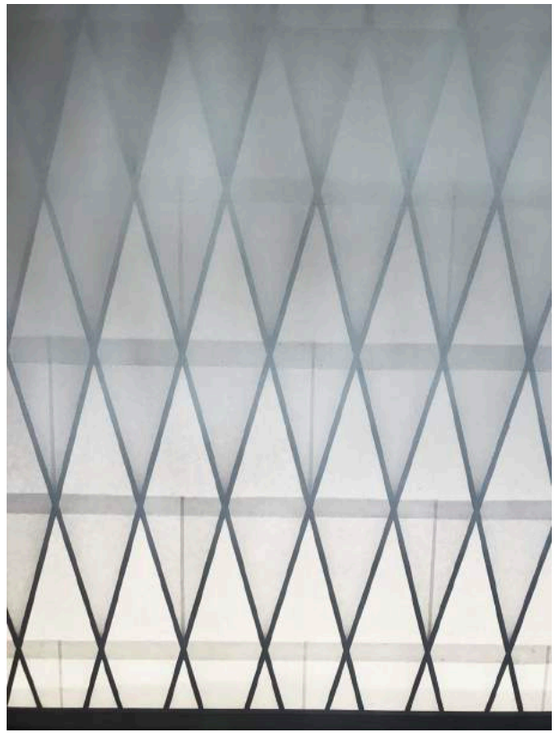


Light is one of the most important elements of sight and modern architecture. It creates focal points and directs movement in space and divides spaces. Tadao Ando has a tendency to peel off unnecessary functions, and then use light, shadow and contrast to guide the visitor and set the mood. When visiting Chichu Art Museum, I was guided by the light, but noticed the hardness of the concrete and its cold colors, while I could hear my footsteps echo from the other end of the aisle coming towards me. My eyes unable to look anywhere else but the direction laid out for me.

◀ Chi Chu Art Museum, Tadao Ando, Naoshima, Japan.

Light can enrich a tactile sense, even with a distance from the subject to the object. This can be done by enhancing the sense of the materiality as transparent douche light, showing the shadows in the texture by enlighten the material from the side, or showing its hardness by the use of contrast. At Kengo Kuma's Cake-shop in Tokyo, I simply had to touch the wall material, but very carefully, being aware of its fragility.

▶ Sunny Hills Pastery, Kengo Kuma, Tokyo, Japan.

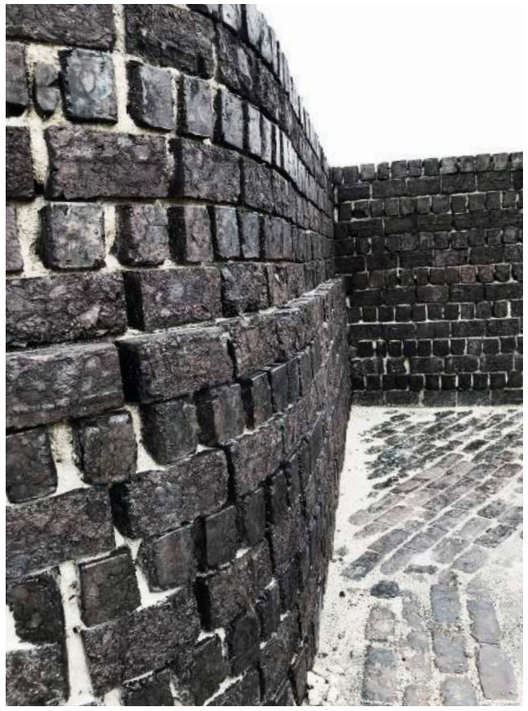


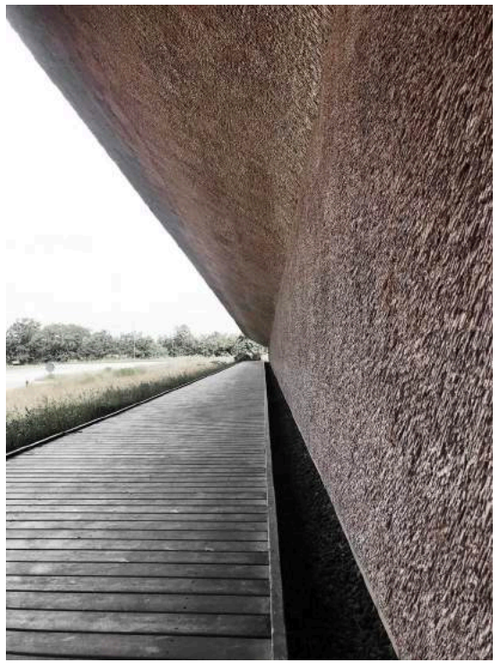
I had to touch

In the book 'The Eyes of the Skin' (1996), Juhani Pallasmaa is emphasizing the importance of the touch, as the title expresses. This is since the skin is the biggest organ and possessing this sense, holding it up against the small 'eye'. The vision is for distance whereas the haptic realm is for closeness, intimacy and affection. With the eyes we observe and investigates, with the touch we approach and feels (Pallasmaa, 1996). Texture, temperature as well as the heaviness of materials, can affect our emotions and actions. This is how hard concrete is considered brutal and rejective compared to organic materials as wood, which is considered warm and welcoming. The perception of the details will vary depending on your movements along the surfaces. The touch can also create a connection to the past by preserving impressions from earlier meetings (Burnard, M.D. and Kutnar, A., 2015).

Dorte Mandrup is playing with the senses in Vadehavncentret, where she by choosing straw as a wall material, first connects the visitor to the present by getting the material close to them, and secondly connects them to the surroundings and the history in the symbolism. Being there you can't help yourself reaching out and feel the surface. But gently because it seems fragile, yet hard enough to sustain the harsh weatherly environment. When you get close enough to touch, you can also smell the dust from the straw. The attraction of the tactile straw is combined with the sharp lines, dragging you to follow the surface to the end.

▸ Vadehavscentret, Dorte Mandrup, Ribe, Denmark.





A simple wall alive. The pattern in the bricks, the various nuances, the curved wall, I had to touch it. It recalled a historical sentiment with the burned surface, and a radiation of strength as it was still standing there strongly. My body curved with the corner as I rounded it. The wall is ruins converted into an Art Museum. Inujima Seirensho Art Museum.

◂ Seirensho Art Museum, Hiroshi Sambuichi, Inujima, Japan.

What the sounds said

Sound perception in architecture is complex. Every building has a sound. Pallasmaa says that sound is multidirectional. That the ear is closer than the eye. "*Eyesight isolates the object, while sound invites it to contribute*" (Pallasmaa, 1996, p.38). Without the sense of hearing, the room have a certain distance to the subject. Like a movie without sound. The eye reaches, and the ear receives. Awareness of sound can be more or less selective. It's about where you direct your sense, and here architecture can help pointing in a direction. Depending on the reflection of the soundwaves in the architecture, the eye and the ear can battle about who is right in where it comes from. The senses complement each other. A sense which is underestimated in architecture is the smell. But the olfactory realm can play an important role, as the smell often can be the most significant part of an association to an experience. It is telling you the truth as you don't realize it before you smell it (Rushika, H. P., 2018).

The loudest sound experience I've had, was also the most silent one. At Teshima Art Museum. Being present in that museum was like meditation. Every sound was clear and precise. I could with my ears follow the drops of water on the ground searching for the water pound, and I could hear the other visitors breathing, following the same rhythm as I. I could hear the size of the room when my eyes were closed.

▲ Teshima Art Museum, Ryue Nishizawa, Teshima, Japan.

Contrast can be an important factor in the work with sound. Many times, one doesn't notice the sound until it disappears. At Blåvand on the danish west coast, the weather is windy and the environment harsh. Tirpitz is a bunker museum by BIG. When walking into the core of the museum from the windy environment, the sound of the wind disappears, but you can still see the bushes wave and you know it's there. The silence continues as you enter the museum going underground, which enhances the feeling of bunkers, and you feel a pressure connecting you to the WW2 soldiers you are there to visit. The smell of dust tells you that you are in a museum and the taste of salt in the air tells you that you are present in Blåvand.

▲ Tirpitz, Bjarke Ingels Group, Blåvand, Denmark.

The studies show various ways to implement strategies for a healthy building and utilization hereof, which can set lines to architectural concepts. Sustainability is a holistic aspect which needs to be considered early in the process to be able to integrate renewable energy sources as it can constitute a rather defining element in the design outcome. The study of Life Cycle Assessment allows knowledge and consideration of organic materials in the material choice, alongside considerations of the indoor climate and atmosphere creating aspects.

To create healing architecture is an indirect process of multiple elements acting together. Elements such as a home-like atmosphere and gathering intimate as spaces can be implemented in the functional layout and be combined with the activation of the bodily senses.

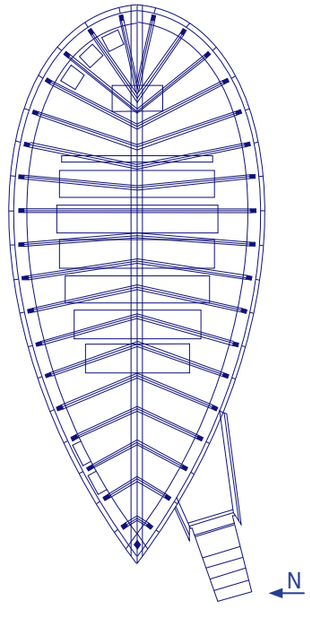
Case Studies

Case studies is a method to investigate how certain qualities can be executed in building design. As an expert in embodiment of the senses Peter Zumthor has done examples of how to create a pursued atmosphere and spiritual feeling, for both a single person experience in small details, and a greater layout for multiple people. The Maggies Centres are likewise being investigated as a concept of functions and atmosphere in the layout, in relation to a healing environment and the effects of simple measures. Here the center in West London is investigated.

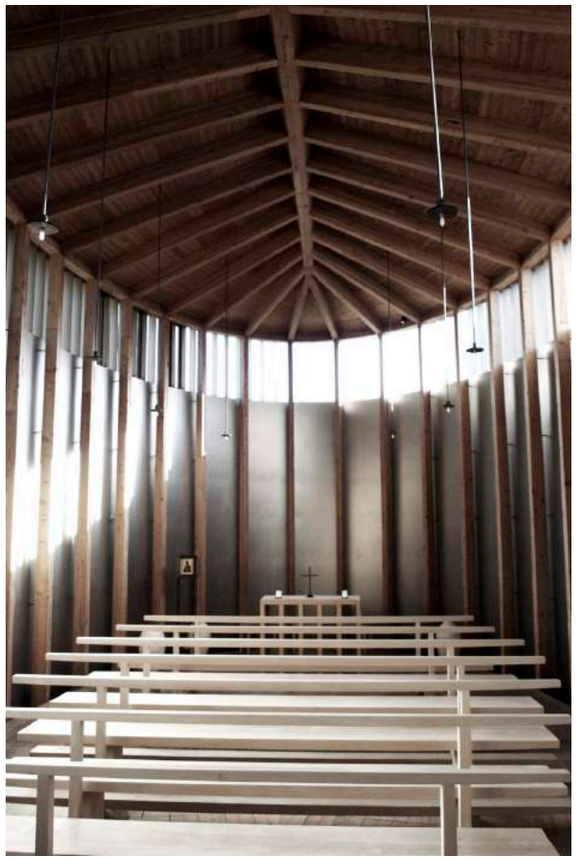
Casestudy
Peter Zumthor

Name Chapel Saint Benedict, 1988
Architect Peter Zumthor, Swiss, 1943
Location Sumvitg, Switzerland

The chapel of Peter Zumthor is a thorough architectural piece where space meets material. In small scale projects you can often more clearly reed the architects sincere meaning with architecture: "*When I start, my first idea for a building is with the material. I believe architecture is about that. It's not about paper, it's not about forms. It's about space and material.*" - Peter Zumthor (Achute, 2020). Here it is seen that the material plays an important role in the chapel. The shingles chosen for facade material, permits the curved shape and outlines the single line in the pointy end, as a detail breaking the shape and anchoring the chapel to the cliffside (ill. 23 and 27). The shingles refers to the other buildings in the context and the rough but detailed nature surrounding it (ill. 25). Inside the chapel wood is also used both in construction and interior furnishing, creating a cape around the visitor. Trails from Zumthors background as a carpenter apprentice (Archisoup, 2020). It is highlighted by being in contrast to matt metal on the interior walls. The floor detail with the distance to the columns and the embracing roof structure, gives an impression of being isolated in the space. The space is an other prioritized element of Zumthor, which is human scaled, once more contextually well-proportioned (ill. 24). When entering the chapel, the ambience is moving. Your eyes are directed towards the sky by the highly placed windows. The shape is highlighted by the columns where the distance between each will appear to vary depending on your ancle of vision, keeping the interest of the visitor. The light coming in from the windows highlights the columns by creating shadows behind them, moving with the stroll of the sun in the sky. This space is surrounding you with warmth and light. The continued highly placed windows, let in the light all day long and enhanced by the shadows, it connects the visitor with the time of the day and of the year. The present. As the light is the main element entering the building from the outside, its role becomes rather significant. When the time passes, the space will change. The simplicity. A spiritual setting making you concentrate about you.



Ill.23 Plan of Chapel Saint Benedict



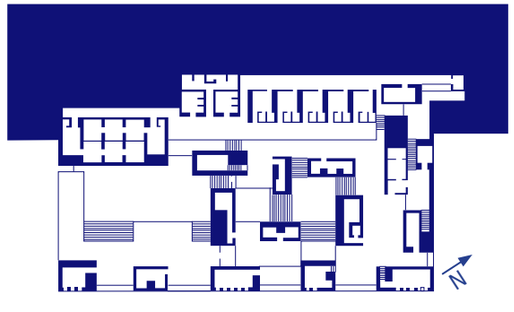
Ill.24 Inside Chapel Saint Benedict

Ill.25 © Rory Hide, Eastern facade of Chapel Saint Benedict

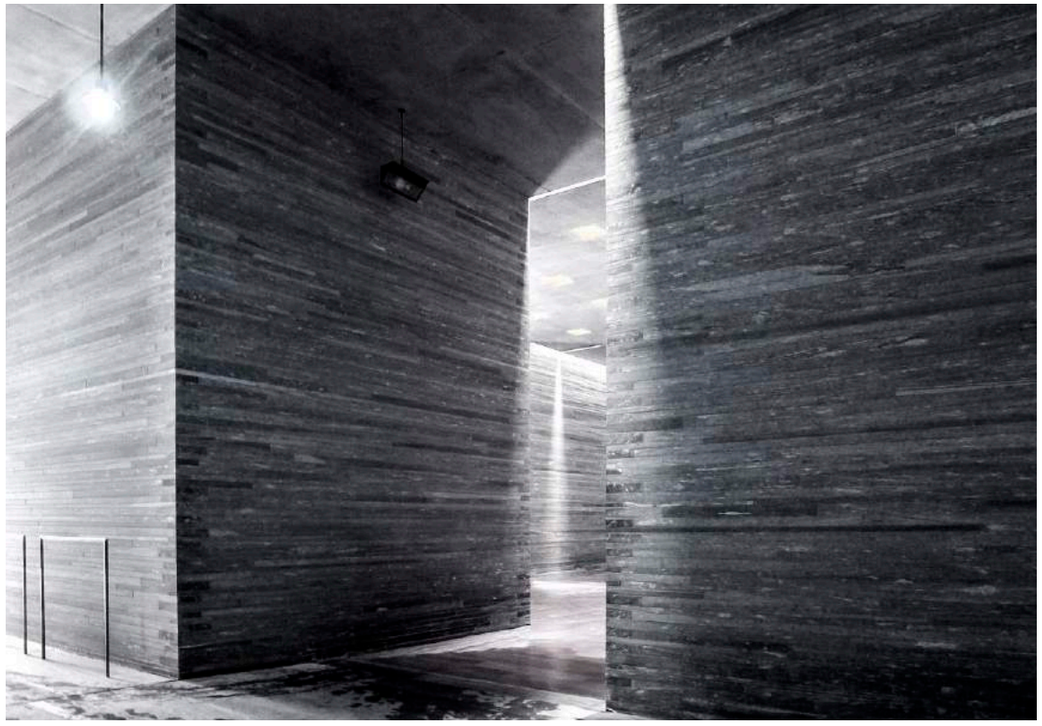
Casestudy
Peter Zumthor

Name Thermes Vals, 1996
Location Graubünden, Switzerland
Function Hotel and spa
Architect Peter Zumthor, Swiss, 1943

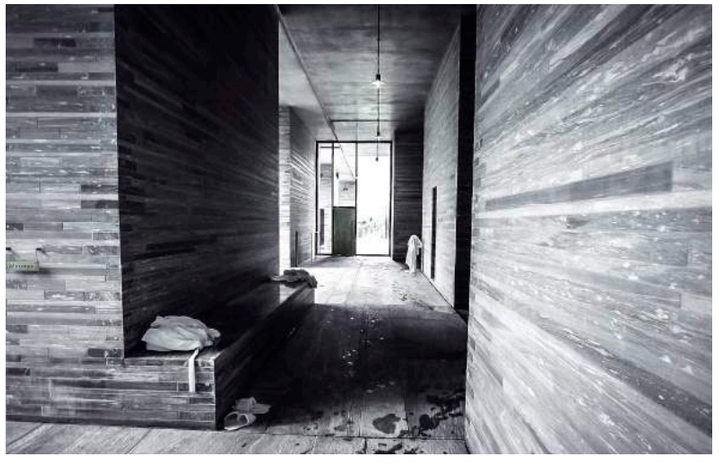
The spa is seeking to make visitors rediscover the benefits of the ancient way of bathing in the springs. The spa is created in coherence with the mountainside, with grass on the roof and half carved into the mountain, giving a cave-like sensation and of being one with the mountain and the raw nature. "*Mountain, stone, water — building in the stone, building with the stone, into the mountain, building out of the mountain, being inside the mountain — how can the implications and the sensuality of the association of these words be interpreted, architecturally?*" Peter Zumthor (Archdaily, 2020) (ill. 30).
Again, the material has a significant part in the building concept. The spa is constructed of Valser Quarzite slabs, which are guiding the direction horizontally by its long lines. The natural material and the playful variations in the color, makes the strict stone volume seem organic and lively. The strong and sharply designed walls of the slabs thrive in the contrast to the light floating water. The water being the point of meeting while the stonewalls are creating the paths to the treasures. About the concept, Peter Zumthor explains: "*The meander, as we call it, is a designed negative space between the blocks, a space that connects everything as it flows throughout the entire building, creating a peacefully pulsating rhythm. Moving around this space means making discoveries. You are walking as if in the woods. Everyone there is looking for a path of their own.*" (Archdaily, 2020). The negative spaces are giving an opportunity to explore (see plan layout on illustration 26). The visitors will feel like they found their own private corner, to where you suddenly feel connected. The sensation of mystery and the circulation are created by purposely either giving a long line of view or closing of the view with a wall forcing you to turn the corner, making you wonder what will be behind it (ill. 27 and 28). This effect is also a way to feel private as you will not meet many people in one place, while knowing other people are sharing the experience. When entering a bigger room or a longer aisle, the acoustic will change highlighting the difference in the spaces, even when using only one wall material. The heavy stone walls are put in contrast to the light from effectfully placed facade opening, or artificial lighting. The light guides the people and decides where the guests will stop up and take notice. Some places Zumthor opens op the cave and frames the nature in a strict square, adding a picturesque effect to the Swiss nature, something already so picturesque (ill. 29).
By simple elements Zumthor creates effectful spaces, letting each person have an intimate experience, in the same room.



Ill.26 Plan of Thermes Vals



Ill.27 Kazunori Fujimoto Cave adventure



Ill.28 Views to the outside

Ill.29 © Kazunori Fujimoto, framing nature

From Zumthor to Maggie's

Zumthor
The chapel of Saint Benedict is a space made for one experience you enter intimately, embrace, and leave a bit richer. The Thermes Vals is also created as a space for recreation, but for multiple people going on a sensuous journey, individually but side by side. Both projects of Peter Zumthor expresses his love for materials and atmospheric spaces while giving something extra to the context. (Ill 30 and 31)

Maggie's
The Maggies Centres was created by the architecture critic Charles Jencks, which is mentioned in the chapter about Healing Architecture. Because of the healing aspects incorporated in the Maggies Centres, it is chosen to investigate the functioning hereof to support the sensuous elements of Peter Zumthor.

Ill.30 © Timothy Brown, Integration in the landscape of Thermes Vals

Ill.31 © Rory Hide, Context integrationg of Chapel Saint Benedict

"As soon as I went to Maggie's, I realised that you can come here and talk if you want, and on days that you don't want to talk – there were times when I wanted a quiet place to cry – you're given the space to do that too."

"I love architecture, so I really appreciate what a beautiful building Maggie's is. The fact that somebody thinks I'm worth this beauty and attention to detail is wonderful."
- Bami, cancer patient at Maggies, Maggie's, 2019

Casestudy
Maggie's Centres

Name Maggie's, West London, 2008
Location London, England
Function Centre for cancer patients and relatives
Architect Rogers Stirk Harbour + Partners

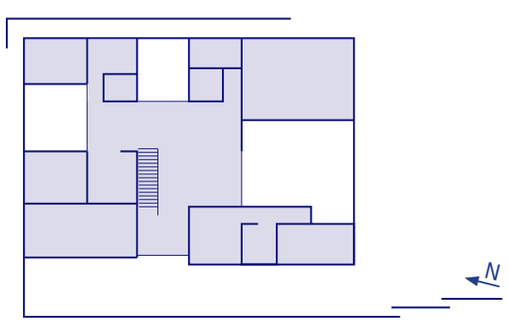
The Maggie's centre has been making a different in people's lifes, by simple but qualitative elements.

The design brief is the same for all the centers and aims to translate the patients' needs into architecturally designed spaces. Each center is designed by different prominent architects. In the design brief are aspects mentioned as; obvious and welcoming entrance; a safe, welcoming and homelike atmosphere; a clear layout; build as light as possible; Toilets private enough to cry in undisturbed; increase connectedness; not too much noise; designed towards raising the spirit; ownership of the building, through a defined style. The design brief allows very different designs yet ensures quality in the intention of the spaces.

The Maggies Centre in London is designed by Rogers Stirk Harbour + Partners and build in 2008. The center has a clear heart in shape of the dining table in the center of the building, as the anchor of the family traditionally was the dining table and the family meals. To protect the heart, a membrane unfolds itself protectively around the center, gently but committed guiding people in, while protecting them from outside glances, noise and pollution from traffic (ill. 33). You arrive directly in the common room where it's easy to calmly sit down and have an unformal introductive conversation with the caretakers or other members. From the heart-space, more private rooms are available for intimate contact or workshops. There is also a connection to outdoor spaces (ill. 34), letting light in the building yet still shielding from glances (ill. 32). The lifted roof contributes with light through a clerestory, making it float and gives a spiritual sense. The light ambience, the unformal and intimate spaces let the patient identify with the building, feeling it like their own. Furthermore, soft interior elements like pillows and blankets are decorating the space.

The clear orange color gives the building a characteristic and non-hospital like vibe. It is claiming Maggie's right in the city and works towards breaking the tabu, showing the patients that they should no longer hide.

"Cancer has taken a pretty good shot at my self-esteem, but coming to Maggie's has gone a long way to restoring it."
- Bami, cancer patient at Maggies, Maggie's, 2019



Ill.32 Plan Maggies West London

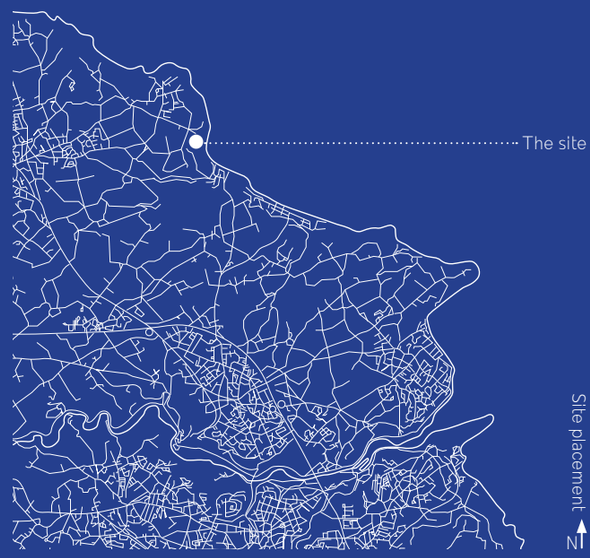
Ill.33 © Nick Turner, Entrance and iconic style

Ill.34 © Designing Buildings Ltd. 2021, courtyard

Peter Zumthor elegantly demonstrates how simple elements can create a spiritual atmosphere through thoroughly chosen openings and material choices. The Maggies centre in West London confirms the knowledge gathered in the chapter of Healing Architecture, about the placement and connections of the functions. Protected from the outside, the members get a feeling of belonging through distinct architecture and a casual feeling. The positive responses of the centers are worth considering.

Site

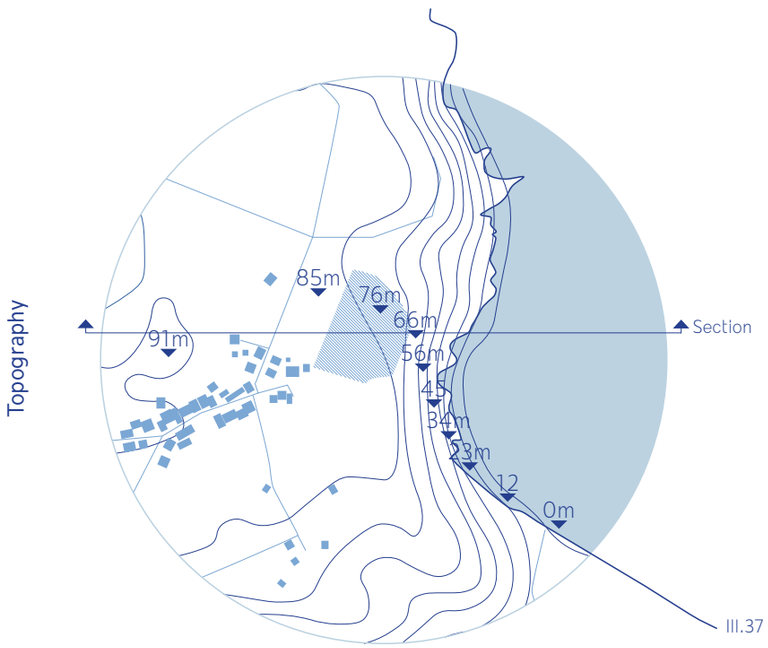
This section will elaborate the qualities and challenges of the site, through interpretations of the surroundings via the method of 'Mapping'. Furthermore, empirical data will be collected to gain an overview of the microclimate around the Ville Morel. With a mind on the landscape and climate, the quality of the atmospheres and views are investigated, followed by the ambience of the build Brittany and how architecture is interpreted in this Region.



Welcome to the site...

Topography

A remarkable quality of the site is the typography. The site is placed on a high point overlooking the beach of Tournemine and the beach of Les Rosaires. From there, the slope is steep until it hits the water (ill 38). This gives an overview and a special effect of being isolated and on the top of the world. The view will change regarding the tides in the bay of Saint-Brieuc, keeping it interesting to observe. The site is a little shielded from the west, by being placed on a little lowered part of the field than the beginning. It creates a curve, protecting the site like a basket (Ill. 37). (Topographic maps, 2020)

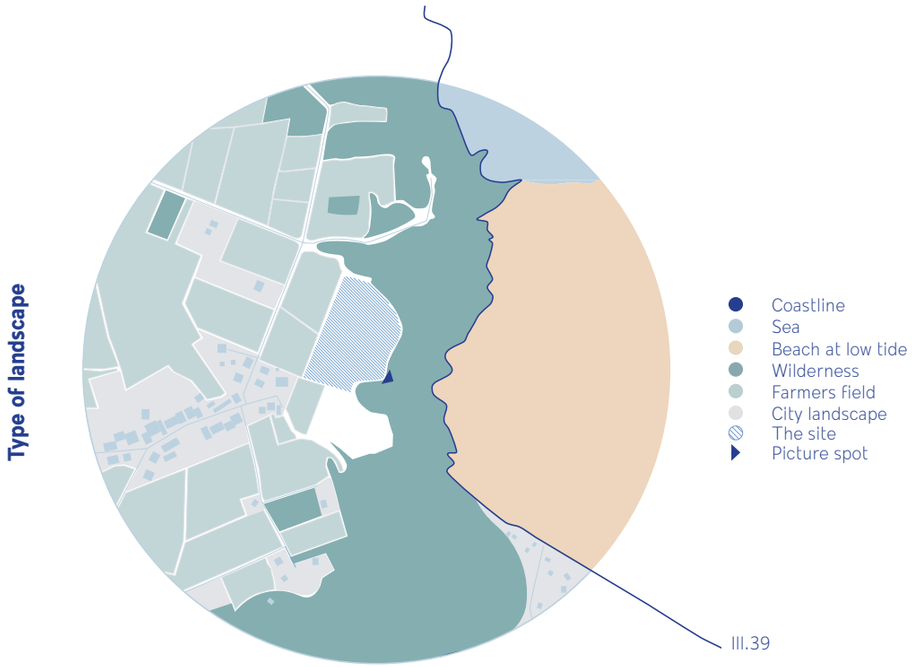


Ill.37

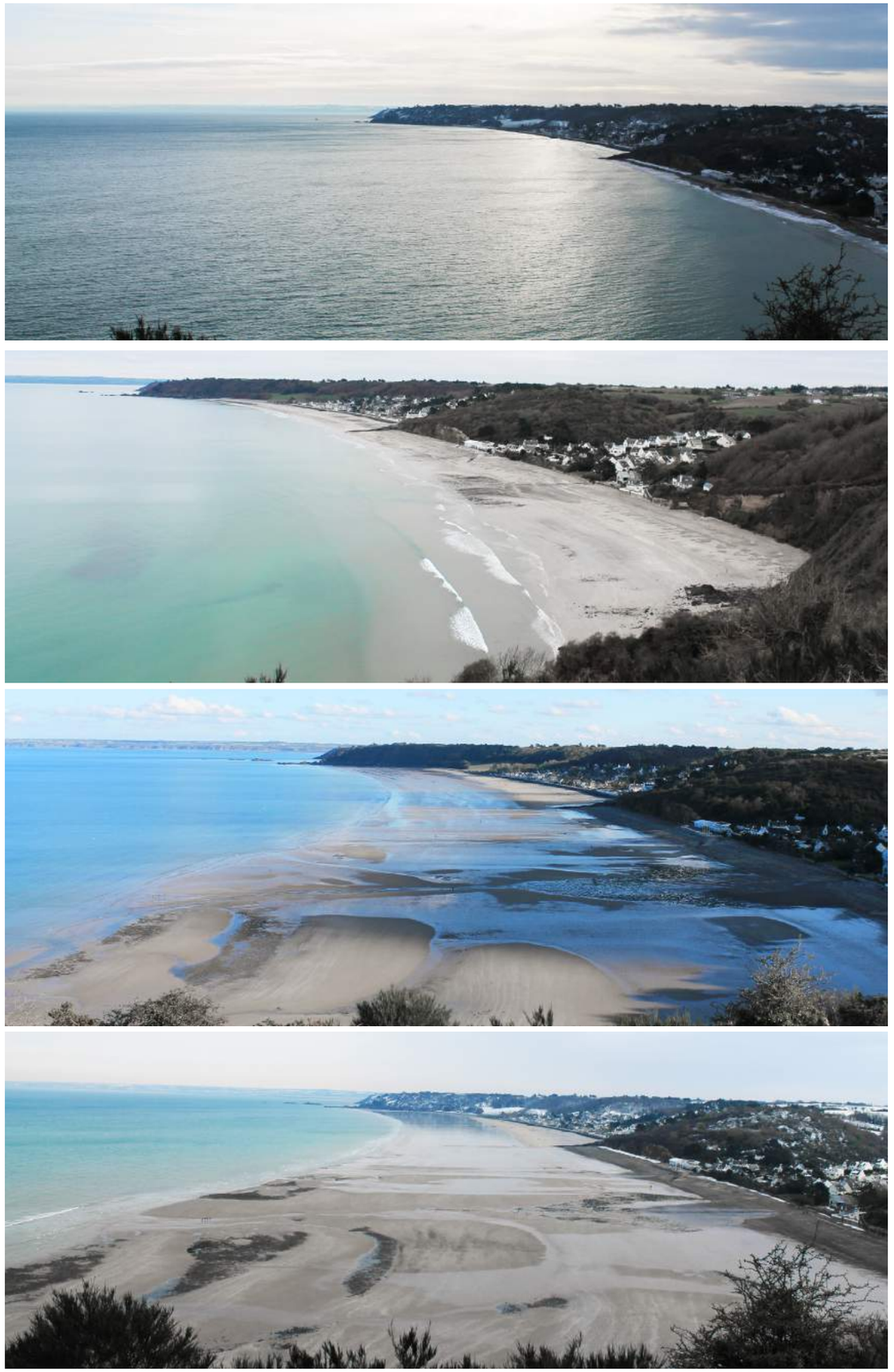
Ill.38 View to site from the beach Tournemine

Mapping
Type of landscape

The site is overlooking a protected and untouched wilderness covering the cliffside planted with harsh bushes in both yellow, red and green nuances. The expression of the beach viewed from the site is very much affected by the tides which makes the ocean go all the way up to the wave racking quay, and other times you will have to walk nearly 400 meters to reach the water depending on the time of day, time on the month and time of the year (ill. 40). The activities at the beach will change in relation to the contidions. You can almost see the tides rise or drop for each wave hitting the beach. It is a reminder of forces of the nature, and a meditating movement, ensuring a changing landscape. To the west, small farmers have occupied the earth with small fields growing different vegetables such as corn, leeks and beets, but some of the fields aren't being planted and stands as a wild piece of land (ill. 39). The coastal near surroundings are seeked to be left rather untouched.



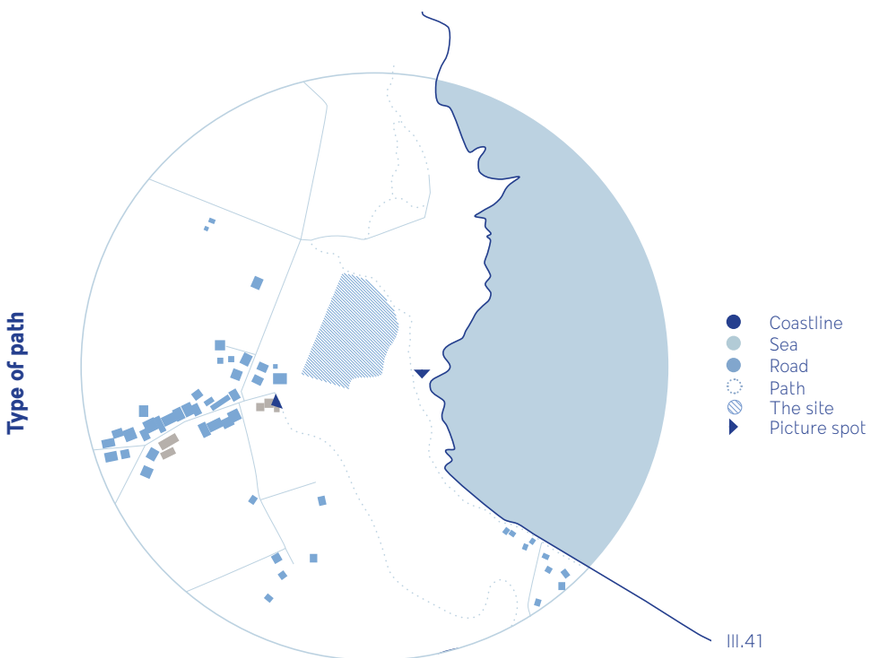
III.39



III.40 Tides, view from site

Mapping
Type of path

Small roads are covering the landscape, and in some areas, it can be difficult to pass with two cars. Here is it an advantage that the French drivers are used to drive on difficult roads and to be aware of blind turns (ill. 45). Yet, it is possible for campers to drive past the site on a search for beautiful views. From Rosaires to Morel, walking trails are connecting the two villages, and furthermore, a trail covers the steep cliff side in the wilderness (ill. 46), for people on the lookout for a rougher stroll. This path on the eastern side of the site, is hidden behind 2,3 m high bushes, shielding the site from views and directing the attention of the strollers towards the water. A way to keep privacy at the center, but to still interact with people, as they are sharing this nature-close location.



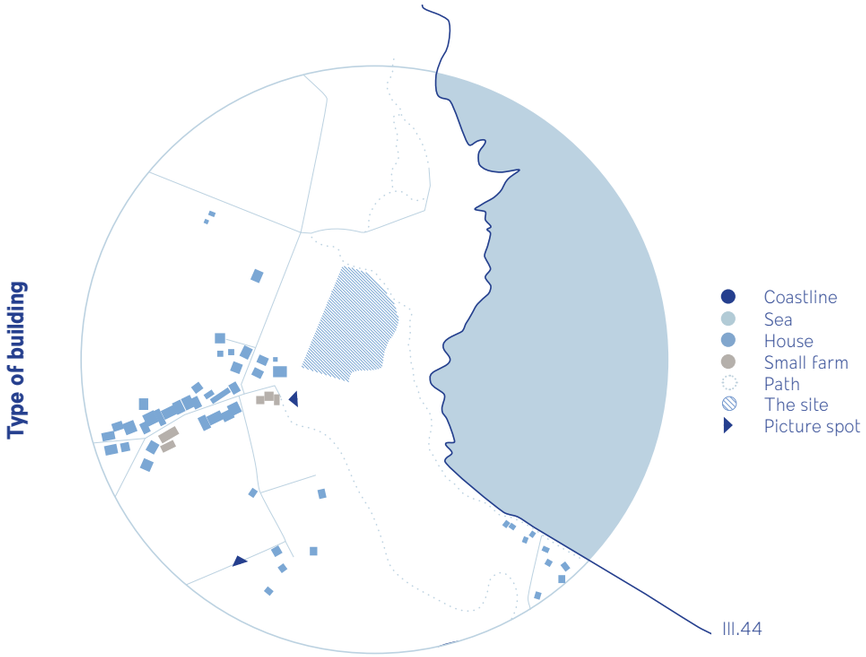
III.41

III.42 Road section Ville Morel

III.43 Path

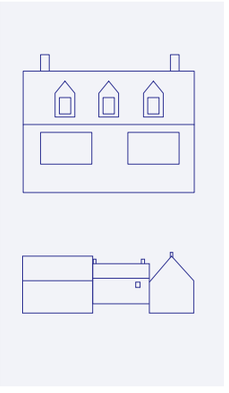
Mapping
Type of buildings

To the east of the site, along the beach are the villages of Tourmenine and Rosaires, build close to the water up against the hillside. The buildings are more contemporary and plastered white as often seen near the coast. To the west, is the little Ville Morel, which consists of only one road taking a bend. Here there are mostly private country houses of granite, some plastered white, with small gardens. There are also a few small farms, or former farms, now acting as country houses (ill. 42). There is a contrast between the older houses of patinated granite, and the newly constructed houses of white plaster and shist roof, and with fences around the front yards. Yet, it's understandable why the little village have gotten new buildings, as the site has long view lines to each direction (ill. 43).



Ill.44

Ill.45 Little farm in Ville Morel



Ill.46 Outside Ville Morel

Views

North
To the North, a wilderness is creating a boundary towards a view to cliffs and the ocean. On the other side of the wilderness, a path is following the cliffside, but as the bushes start in a height of 2,3 meters, the site is hidden from views from the strollers in a natural way.

South
Towards the south the field is expanding, being crowned by a typical white urban house with granite framed corners and window openings. The topography is descending towards the north creating a little pot, but otherwise the view doesn't meet any obstacles.

East
Looking east, the eye will be treated with a view over the beaches Tourmenine and Les Rosaires. This view will change a lot during time on the day and time of year, as the tides are expressive in Brittany. Also, the weather and the strength of wind will change a lot throughout the day, from blue sky to cloudy, but never too extreme. This creates different types of light reflected in the water and absorbed by the different types of waves created by the different type of winds and tides.

West
The view to the west expresses a more romantic calm landscape of the field taking a curve and getting perspective from the trees in the background. In these trees and the straws on the field, the weather will be articulated in the movements.

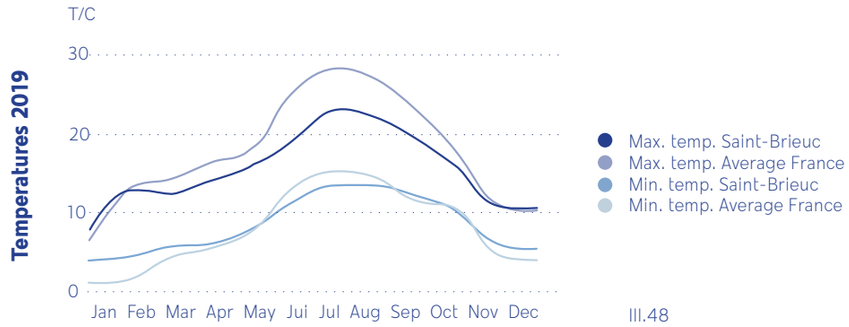
Ill.47 Views som site

Micro Climate

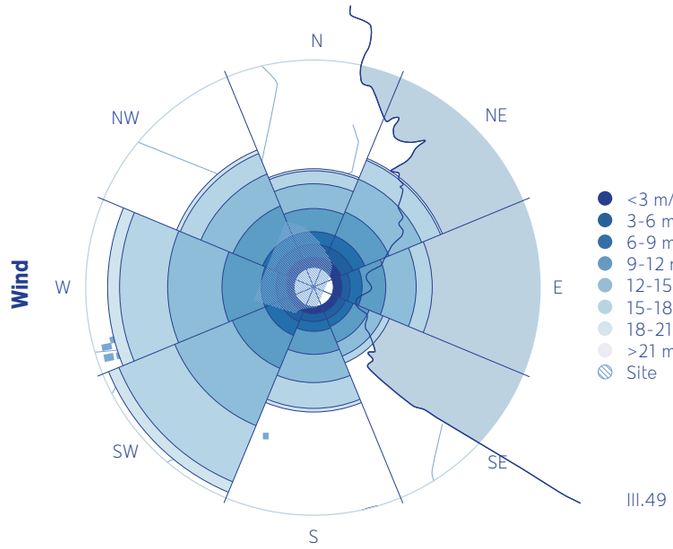
Climate
The site by the village Morel is located in a coastal climate, affected by the Golf Stream, which generates clouds over the land, holding on the heat but also shading for the sun. In general Saint-Brieuc has fewer sunlight hours than the average city in France and more millimeters of rain than the average in France. But the coastal climate also ensures a more even difference in temperatures between seasons. In the year 2019, the lowest temperatures were -0.7-degrees C, and the highest 35.9-degrees C, compared to the greatest difference in temperature in France from -11.2 to 44.4 degrees C (Meteo Bretagne, 2020) (Ill. 48). This entails a smooth climate on a yearly basis, but with several small variations in the local climate on a day-to-day basis, when the clouds and the wind will change with the heating of the earth compared to the water throughout the day.

Wind
The sunrose (Ill. 49) is from the point NEXTRA placed in the ocean approximately 45 km towards north from the beach les Rosaires with a height on 57,73 m. The windrose is showing a yearly average measured from 1988-2009 (Gouvernement Français, 2018). It is revealing a strong wind coming from the west and southwest. The wind is a bit harder especially during winter and fall. To see the wind roses for each season, go to appendix 2. (Gouvernement Français, 2018). As the site is placed with only a little slope and few trees as wind barriers for wind coming from the west, creating sheltered spaces should be considered in the building concept.

Sunpath
At illustration , it is seen that the path of the sun in Saint-Brieuc, is varying from winter to summer season because of the location on the northern part of the globe. At summer solstice we see a long period with sunlight on 16 hours, whereas at winter solstice the sun is giving a day with sunlight for 8,17 hours. Otherwise, the sun does not meet many obstacles shining on the site as it is located on a high point without many shading objects, which makes it exploitable for sun heating and creation of renewable energy by solarpower. (Gaisma.com, 2020)



Ill.48



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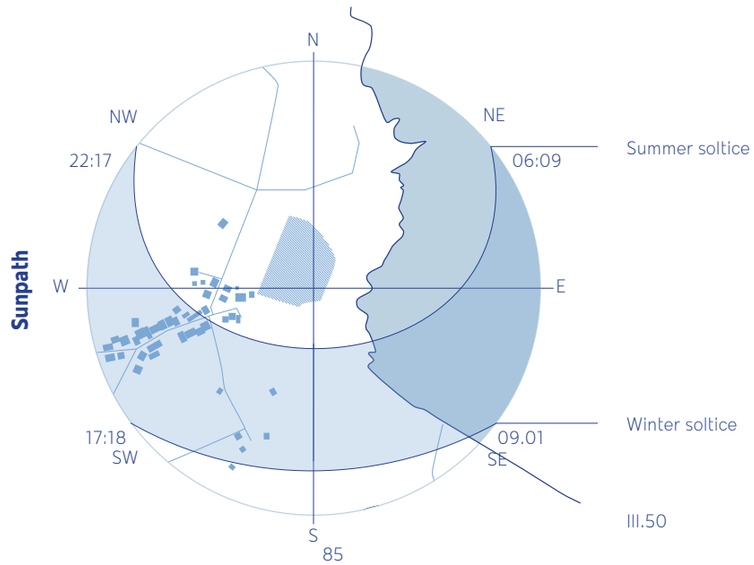
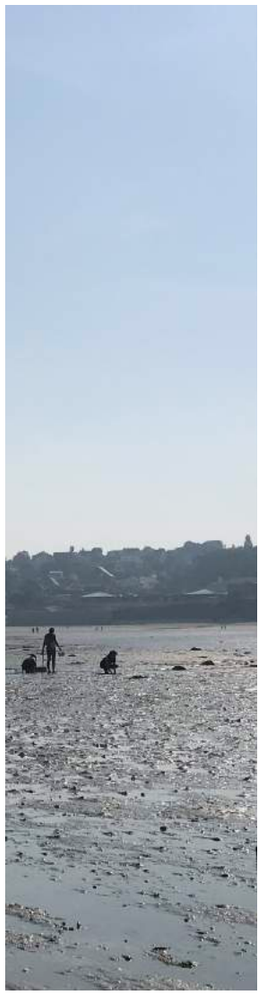


Ill.50

Skylight Around the Site



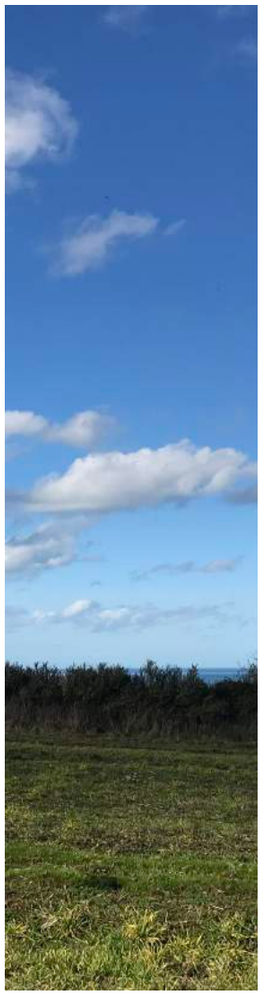
The dusty light

The grey light

The dark light

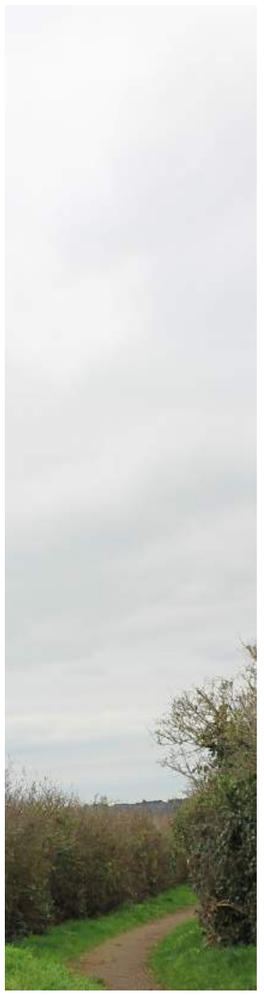
The breakthroughs

The warm light



The shadows

The clair light

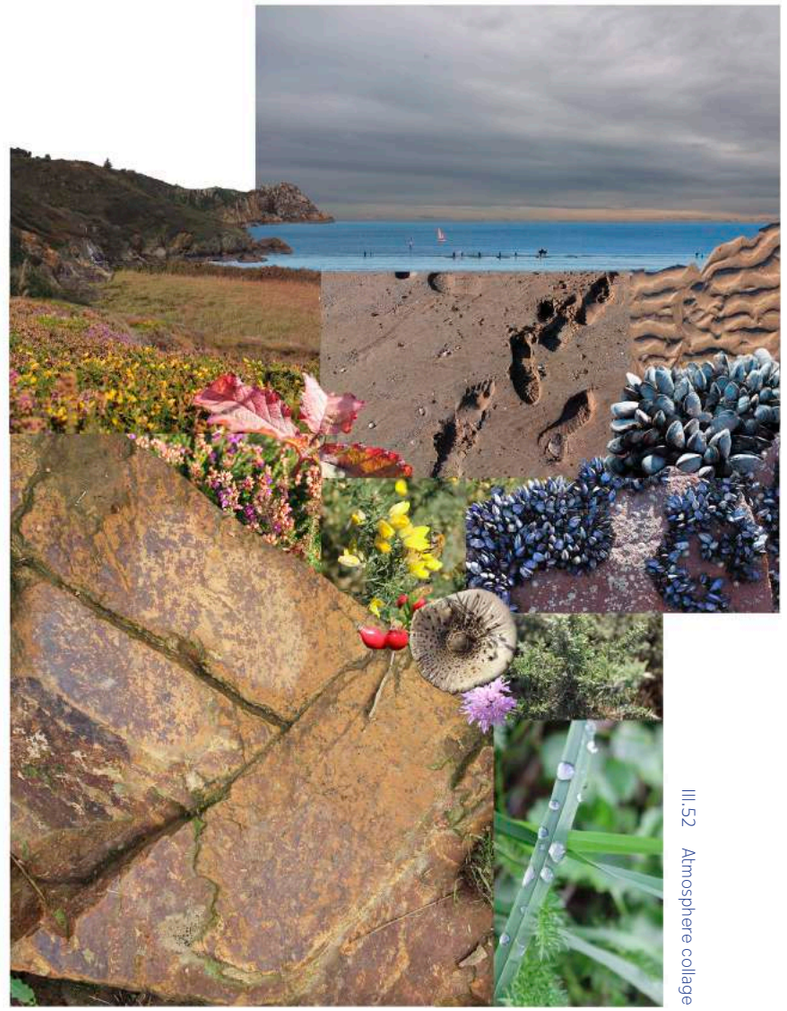


The diffuse light

Ill.51 Different types of light near the site

Atmosphere

The wind is kissing my chin and lifting my hair. Gently, not roughly. The clouds are moving on the sky. They seem to have a blast dancing together. They like I here. I feel close to them here on the top of the cliff. I look down on the water below. Then at the horizon. The meeting point. I'm in between the two big blue. Today it is low tide. But not the lowest I've seen. People are walking on the ocean floor. Hand in hand. Some dragging out their windsurf boards. It seems like a long walk to reach the water. Especially with board and sail on the shoulder. A little boy is drawing in the sand with a stick. I wonder if he knows that in two hours the water will be washing it away. I hope not. They all seem calm. Moves in slow-motion. Or maybe it's to the rhythm of the waves. They cannot see me, but I can see them. My eyes get caught by a motion. Close by. A bird was taking off from a bush, leaving it to bounce. I move. But not too close to the pointy bushes. They protect themselves. I can hear the straw crunching underneath my feet. Sometimes a crack from a stick. The stick is from a berry bush. Red leaves unfolding over the field. It matches the burned colors of the fall. The fall seems to fit this place. A bit harsh but colorful. Like the people.



Ill.52 Atmosphere collage

"Every time i feel a little down, or it's going bad at training, or i miss my home in Montpellier, I come here and take a stroll and think. It makes me feel good again"

Margaux Bueno, 25 years old
Beach les Rosaires at low tide

The Build Brittany

Looking at the build environment in Brittany, you will mostly be guided towards medieval architecture. From small city centers, to cathedrals and city walls. Most of the houses are constructed of local materials as granite as wall materials and schist as roof materials. In many houses the red color from the special Brittan ground gives a glove to the build environment. When strolling in the historical city centers, the many romantic details of the facade openings will catch your eye and create a special ambience. The varieties in the natural material of granite, the pattern and choice of joint type, gives every house its own unique expression. There is also a bold use of strong colors which the Brittan's use to lighten up the dark expression of the granite façades (see the tomography on page 96-97). It is expressed that the cleaner and more detailed the stones are cut, the higher status the houses have. Modern architects in Brittany have been introducing plastered facades with Zink roofing, in the classic French creamy colors, and white colors near the coast. A modern expression with flat roof and wooden façade materials are gaining its dominance in new buildings (ill. 54). Another tendency is to re-event the function of the material schist, as for example to use for façade materials.

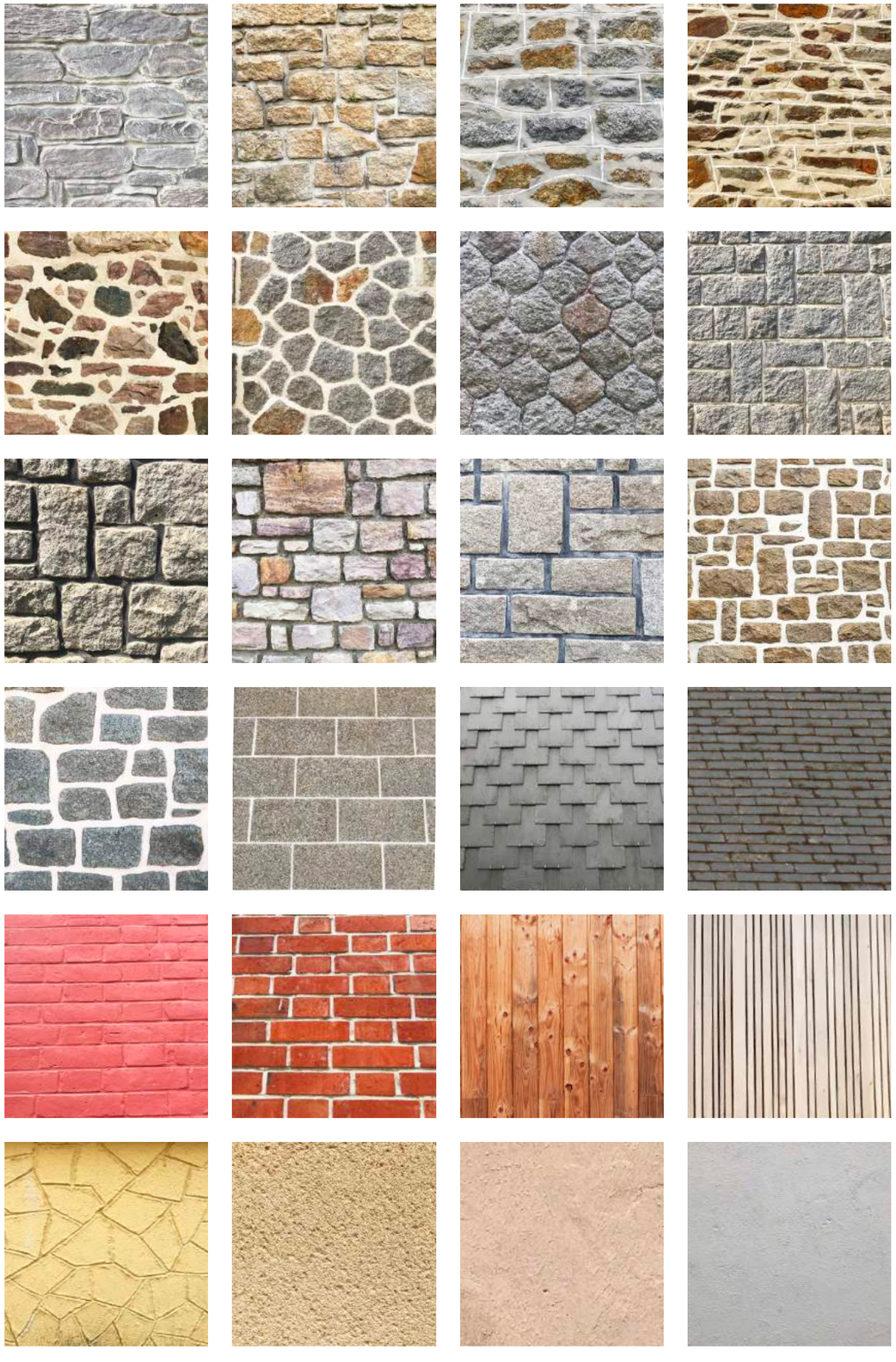
Ill.54 Michelin Restaurant au Pesked, Saint-Brieuc

Ill.55 Street in Dinan, France

Ill.56 House of SEA Architecture

Architects in France have developed a common understanding of constructing new buildings, developed throughout the architectural educations in France and integrated in the architectural culture. The commune development plans are respectable towards nature surroundings dividing the construction fields into relatively small building plots and preserving the beautiful nature area as public spaces. The local plan has also integrated a defined height up to 6 meters unless it's technical spaces, and sloped roofs in certain areas (Ville de Pordic, 2021). The Brittan architects are aiming to modernize the building style to a more contemporary expression, but with respect to the context. It is for example expressed through the scale of the buildings, traditional shapes but with a modern twist, or the use of traditional materials such as slate and granite used in a modern way. (André, A., 2020)Here an example of how granite have been used in a modernistic expression. The building has had focus to raise connections in all directions and get light intake throughout the day. The architect wanted to create a fading line between inside and outside through big clean window openings and displacement in the façade creating outdoor spaces (Il. 57).

Ill.57 View and shelided spaces



III.58 Urabn Tomography

The site analysis' reveals a unique location yet typical for Brittany. A nature spot with a view to the beach out over the cliffside. The climate is challenging in relation to wind, especially from the west, but has an even temperature throughout the year compared to the average France. The sun light is unshielded from the south, but the light can change a lot throughout the day and the seasons depending on the clouds provoked by the costal climate.

The architecture in Brittany is characterized by unique details in the materials highlighted by patina. The contemporary architecture is incorporated with respect to the traditional materials and scale, though wood and harder geometrical shapes are implemented.

Users

This section will outline the different functions of the treatment center, based on the knowledge gained throughout the program regarding which challenges to consider as a psychiatric care facility. The treatment methods will be understood together with the needs and the everyday life of the different target groups, to enable a design caring for the individual needs in a wholesome project designed for everyone. This will both be a pragmatic and atmospheric approach. The needs will be interpreted in functional diagrams of each user group, to develop a tool easy to translate into design aspects.

The center

The functioning
The center will greet the patients in a nature close environment, where they will feel a change in state of mind and find courage to focus on themselves and their issues.

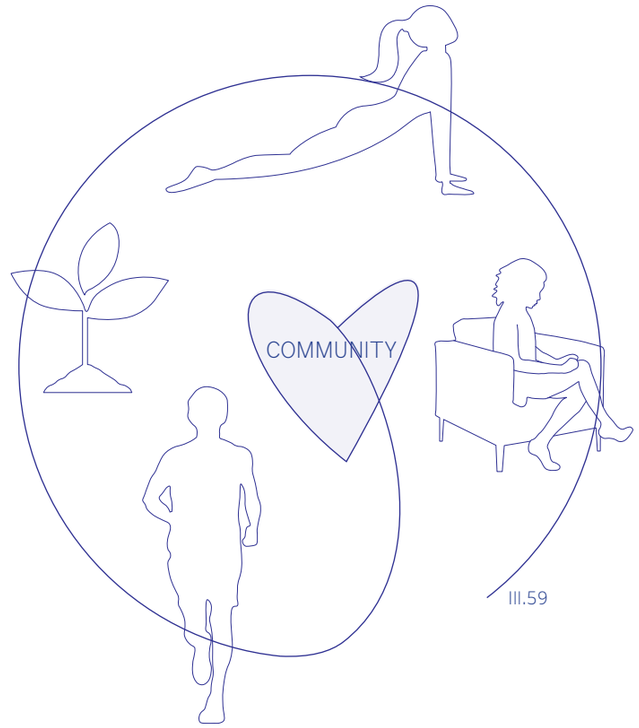
The people will come with different traumas. They will immediately get in touch with a qualified staff member, with whom they can vent and will plan a personalized strategy for their road to become well. The stay at the center can differ between a daily visit or a longer period on the five weekdays, where in between the patients will be home adapting to their lives with new coping techniques, before eventually coming back to the center for the next phase of treatment.

At the center there will day and night be a caretaker. Each day a psychologist, a caretaker with secretary responsibilities, kitchen staff and cleaning personnel will be present. The different therapists will show as needed. Besides the individual treatments and group therapies, the center will facilitate socialization between people in similar situations, creating a community where they can spare with each other and feel support.

The center will provide overall stress and depression preventing activities such as nature walks, gardening and light physical activities. At last, the architecture will play a role in the well-being of the people utilizing the facility.

Thus, the center will accommodate 18 members and 7 staff members, plus 5 to 10 members coming to be and for the community during the day.

Provided therapies
The patients are seeking the center because they have difficulties overcoming their issues through the standard methods proposed to them. As healing is a personal and holistic process, and as they will each respond differently to different methods, the center will provide treatments in the three categories: CBT (Cognitive Behavioral Therapy), physical treatment and mind & body treatment. Ecotherapy and food therapy will be integrated in the everyday functioning of the center, when the patients will harvest the garden and be cooking their meals.

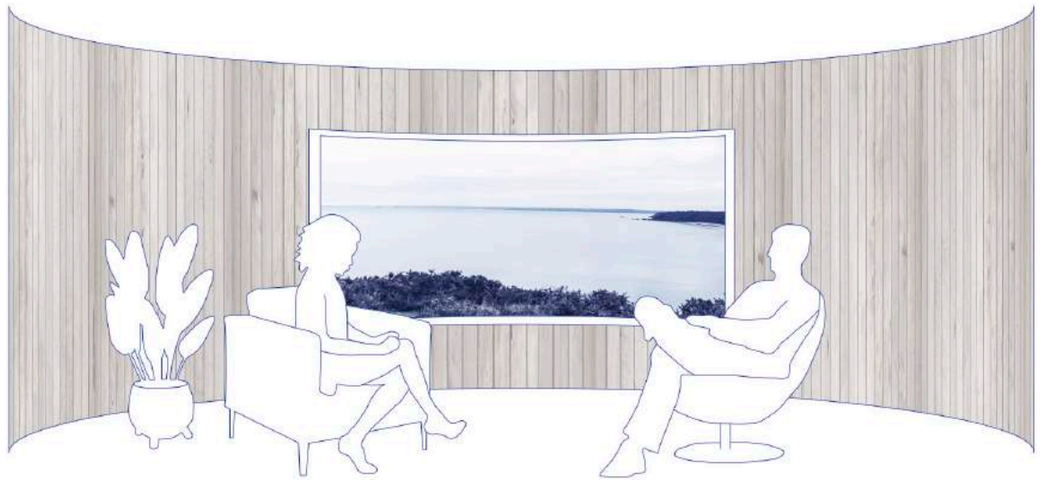


III.59

Cognitive Behavioral Therapy

Cognitive Behavioral Therapy
The CBT will be provided by a psychologist licensed to prescribe medication, or a psychotherapist who can perform psychoeducation. The CBT is a goal-oriented therapy through problem solving. The goals are to clarify the negative thoughts and explore them, so the unhealthy behavior and patterns in a wide range of personal issues can be changed. CBT is performed by focusing on the thoughts, images, beliefs and attitudes, and how these elements relates to the behavior in dealing with emotional difficulties. The hope is to find a new way of thinking about one-self and one's values. Hereafter develop new strategies to tackle the problems, which can be applied when needed throughout the life (Psych Central, 2020). The therapy can be practiced both individually and as group therapy.

Spacial needs
- The members will beforehand need a space to wait for the appointment
- The environment during treatment should aim to be a relaxing atmosphere with a good acoustic and shielded from views from the outside
- The furniture must be good for sitting and able to be moved so the space can be taking in by the users (Appendix X3)



Ill.60 Example of CBT room

The Physical Therapies

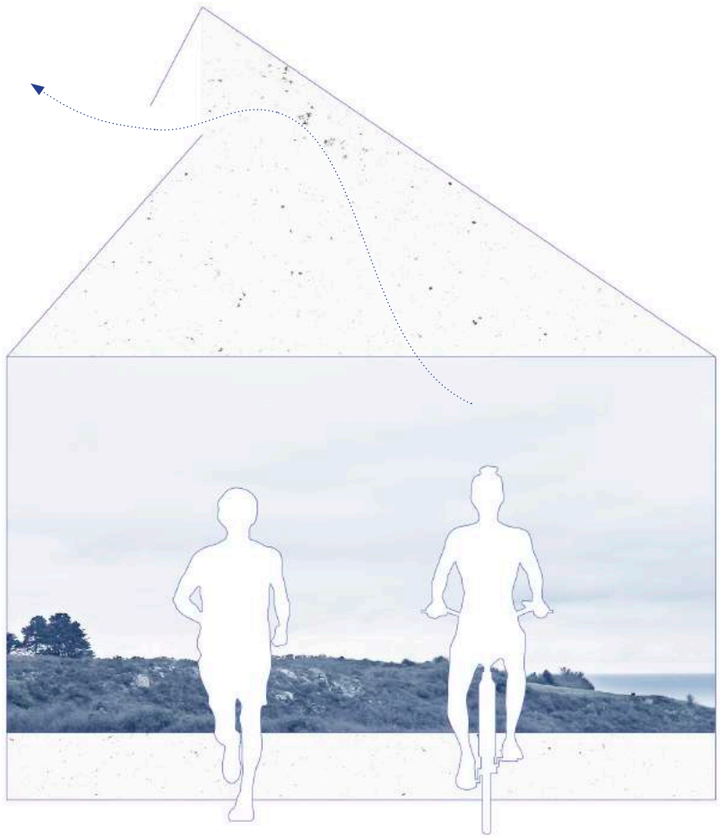
The physical treatment will entail physical activity, acupuncture and massage.

Physical activity
Physical activity has shown to reduce the symptoms of PTSD for patients with subsyndromal symptoms or resistant to standard treatment (Lauren, M., Oppizzi, 2018). The general health condition also has an overall effect on the mental health by reducing fatigue, activating the nerve system, improving concentration and can improve the mood. In general, when the body feels better, so does the mind (Anxiety and Depression Association of America, 2020). To battle their challenges, the members will have to face improving their well-being, and for this, physical strength can be a psychological empowerment.

Acupuncture
Acupuncture used in combination with other treatments has shown positive results for treating PTSD patients (PTSD UK, 2020). The treatment involves inserting needles in different points in the medians, which will trigger the nerve system connected to the organs, and hereby ensure an energy flow in the body. Stress can activate the sympathetic nervous system, while acupuncture will activate the opposing parasympathetic nervous system, fighting the stress accumulated in the body (East West Health, 2020).

Massage
Massage comes in different types adapted for the issue. It should be considered a complementary treatment to evoke feelings of deep relaxation and reduce stress, pain and muscle tension. Moderate pressure massage can improve attention to the body's immune response by increasing the activity of the natural killer cells. It is also seen that changes can come in the emotion regulating part of the brain, hypothalamus, and reduce the stress responses (Psychology today, 2020). Another contributor of massage is that it can produce feelings of caring, comfort and connection, but it has also shown physical benefits on digestion, headaches, insomnia and anxiety (Mayo Foundation for Medical Education and Research, 2020).

Spatial needs
- For the physical activity, larger spaces for movement are needed, with sufficient air ventilation to deal with the moist, and with surfaces which can withstand the attrition both indoor and outdoor
- Furthermore, a dressing room in connection to the activity room is needed for both the instructor and the practitioners
- To facilitate acupuncture and massage, calm and quiet spaces with dim light can be shared for the therapies
- The atmosphere should be intimate and relaxed (Psychology today, 2020)



Ill.61 Element for physical activity room

The Mind and Body Treatments

The mind & body treatment consists of yoga, mindfulness and meditation.

The mind & body

The mind & body treatment consists of yoga, mindfulness and meditation.
Mindfulness is about being aware. Waking up to the life you have right this moment, in a way where you are kind to yourself. In mindfulness you are working with your attention and the accept of what you see and what is here, as not everything is to like, but should be dealt with. The goal is to be present in the present, and not tend to be complaining. This way the members can learn how to not condemn who they are, or their situation. Different small techniques and tools can help in the everyday life, but it is not a cure in itself. (Shapiro, E. and D., 2017)

Mindfulness

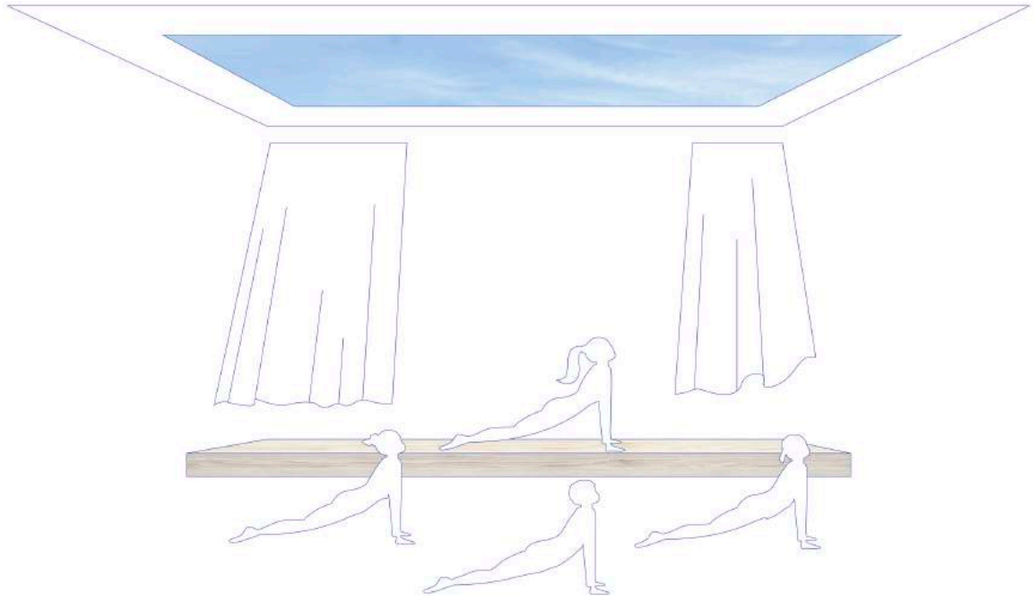
Mindfulness can be described as a 'clear mind' meditation style, and other types of mediation can also be helpful. Some meditations are aimed at developing a clear and focused mind, other to embrace kindness, compassion and forgiveness, which can be personal issues the members can have a hard time to concur. The body can be a mean to meditation, such as yoga or walking, just as sounds and singing can. (Psykiatrifonden, 2020)

Yoga

Yoga is about bringing together the mind, the body and the spirit. It entails stretching the body and forming poses while breathing slowly and controlled. Yoga can contribute with reduction of stress and anxiety, sound sleeping, reduced cortisol level and lower blood pressure, as well as improved physical strength and flexibility. As for physical activity, strength and bodily well-being from yoga can give strength to deal with issues.

Spatial needs

- The three treatments can share some spaces for the teaching and treatment
- The room should be able to contain multiple people with possibility to move and have a well-balanced stimulus
- The atmosphere will benefit from being calm and spiritual, a feeling which can be attempted reached through the stimuli of the senses through light, tactility, and acoustic
- The healing and spiritual aspects of the treatments can benefit from being oriented towards nature views. This is an element aimed to be implemented in the overall concept of the carecenter (Howell A. J., et al. 2011)



III.62 Ambience for mind & body room

Members

The center is created to help adult women suffering from trauma caused by sexual assault. People needing help from such a center are people in all ages, in all layers of society and with very different backgrounds. For many the symptoms of trauma will show later in life and not directly after the assault. This is often when a change in life is happening, so that the way of coping with the experience will no longer work. It can also be when taking on a new role or going into a new period in life, as becoming a parent, or when the coping strategy is simply being too tiring to carry out. (Appendix 4)

When the person finally realizes the need to seek help, it can be a factor for the final step, that the center can be entered discretely, so that it will not contribute to the feared stigma about being a victim of sexual abuse. When entering, the environment should attempt to express a safe atmosphere. Many patients prefer to sit in small niches so they can watch the door. (ibid.)

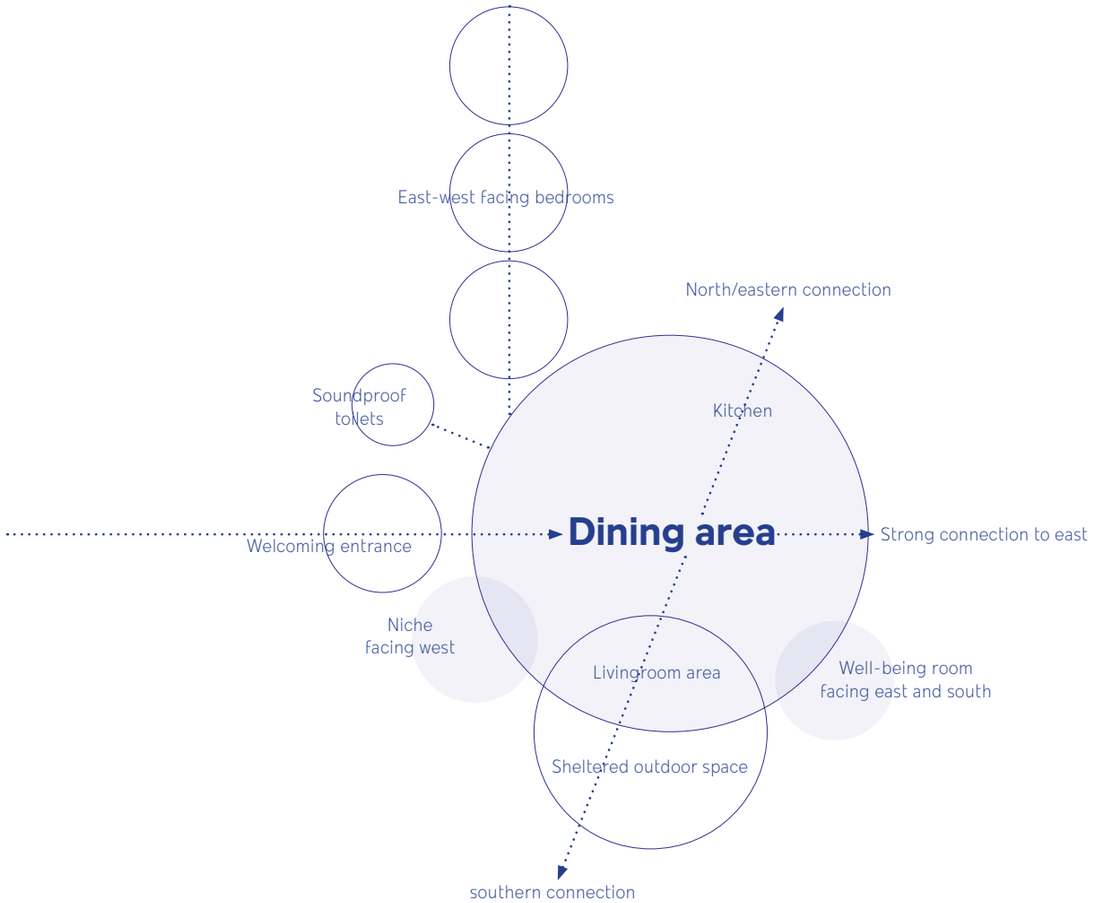
The acoustic can play an important role. Some PTSD victims can have a hard time being in a loud space and still take in what is happening. Yet, the buzzing sound of people being close, can give a safe feeling. Some can need a safe space to take a nap, as resting properly can be a great challenge when suffering from PTSD. This is also an effect which can be challenged by being exposed to other people's glares from the outside. (ibid.)

The patients will need single rooms to have their own safe space when staying for a treatment period. Some will need double rooms to get visits from spouses, or to work on relations with relatives. The rooms need to be in a calm environment, but in connection to caretakers' rooms so that the help is near. (ibid.)

For the members, it is important to acknowledge their condition in order to take action to feel better, starting with gaining self-worth. This begins by showing them through quality architecture and furniture, that they are valued. That there has been done an effort for them. (ibid., Jencks, C., 2012)

Spacial needs

- Homelike environment in the common room to feel safe and at ease (Appendix 4, Dubose et al., 2018)
- Niches to feel protected (Appendix 4)
- Good acoustic to calm the users (appendix 3 and 4)
- Long views to get an overview of the dangers and localize escape route (Dubose et al., 2018)
- Reduce glares from the outside to not feel watched (Appendix 4)
- Single rooms in relation to caretakers' room (Appendix 4, Dubose et al., 2018)
- Flexible furniture so they can take in the space as theirs (Appendix 5)



Ill.64 Functional diagrams for the members

Therapists and Caretakers

To make a difference in the members' lives, the therapists and the caretakers have a great responsibility, so this center is created just as much for them as for the patients. For them to have the ability to give their attention to these vulnerable people, it is vital that they feel well in the surroundings and have a good work ambiance.

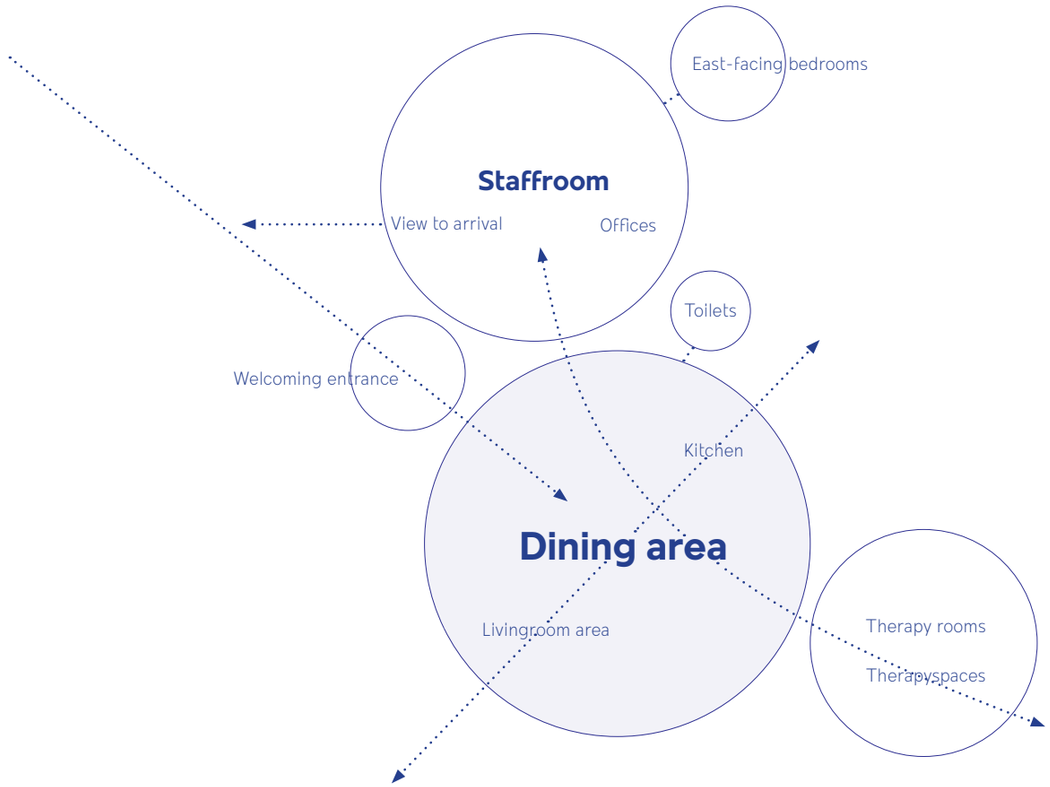
The treatment at the center should attend to the holistic person. Therefor the center has occupied a doctor, a psychologist, a psychotherapist, a body therapist, a social worker, a nurse and a pedagogue.

The therapists will all need spaces to perform the treatment for both individuals and group sessions. Some facilities can be flexible to use for different types of therapy, for example can different types of group sessions share location as treatment not necessarily happens every hour. The doctor and psychologist will both need private rooms for private conversations, but also to store files, prepare and digest seances. (Appendix 3 and 4)

To ensure an atmosphere where the therapists and caretakers can vent and help each other in their professions, they need a staff room to meet. This needs to be with a certain distance to where the patients are, so they can prepare to once more give attention to people who needs it. For some therapists it can be difficult to release themself from the patients once off from work as conversations and problems can be difficult to forget. For this, restorative spaces can be implemented to pull the therapists out of their work by forcing them to be in the present and destress. (Appendix 3)

Spatial needs

- Single office (Appendix 3 and 4)
- Bigger flexible treatment rooms (Appendix 5)
- Staff room with distance to patients (Appendix 3, Dubose et al., 2018)
- Room for the nurse to stay overnight (Psykiatrien Region Midt, 2020).
- Restorative spaces (Dubose et al., 2018)
- Good acoustic (Appendix 3 and 4)
- Good sitting furniture, not too soft (Appendix 3)
- Relaxed atmosphere (Appendix 4 and 5)



III.65 Functional diagram for therapists and caretakers

Management Staff

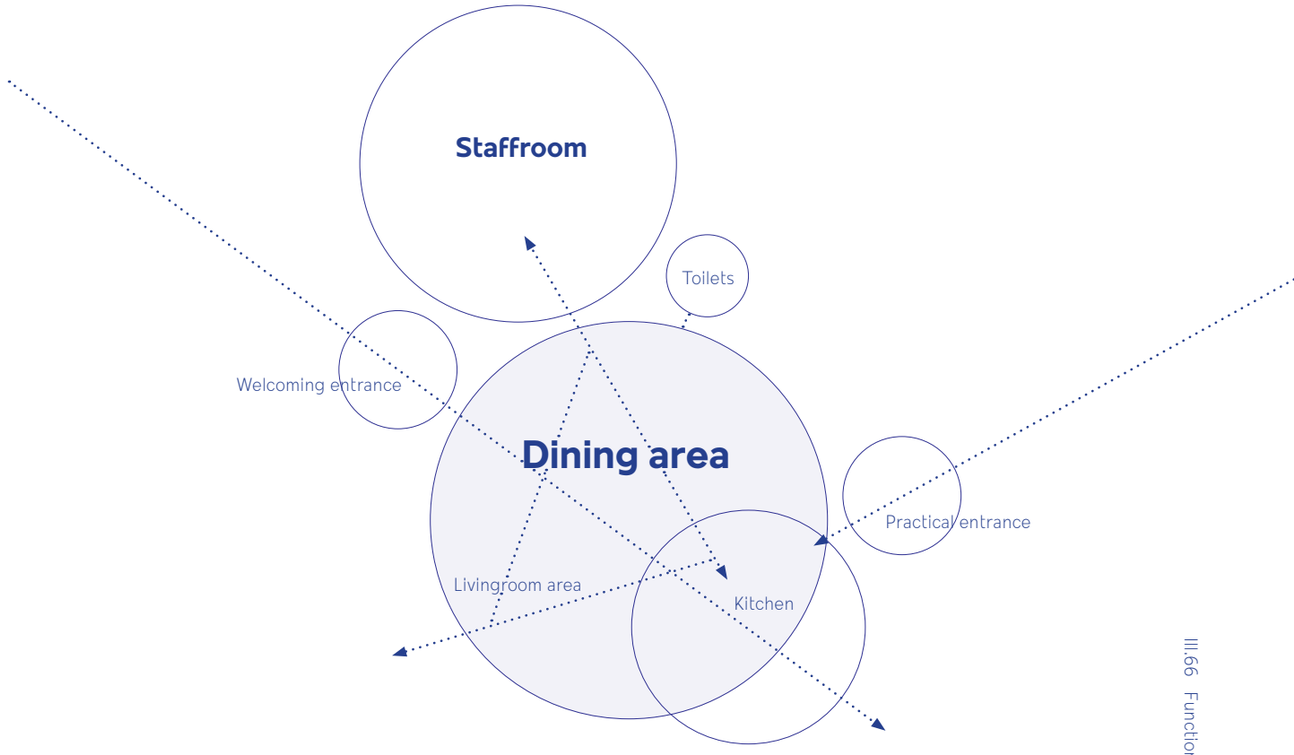
The management staff consists of multiple roles. Firstly, a coordinator who will have the responsibility to organize the activities at the center in cooperation with the therapists and caretakers, coordinating the functions as kitchen, cleaning and maintenance, and do the purchases for these sections. Secondly a person head of the kitchen, who together with the members, will cook for the three meals a day, using vegetables grown in the kitchen garden, supplemented by qualitative foods following the nutritional advices. The garden will be maintained by a gardener in collaboration with members, as a part of ecotherapy, where they will get reconnected with the nature. The gardener will also be looking after parts of the center as a janitor. A cleaning staff will be responsible for the cleaning.

The management staff have many responsibilities to fill. The aim is to give the staff and the members a sense that the center is theirs and that they have an influence on the place, in order to create a homelike atmosphere which can enhance a feeling of security. The intention is to fill the tasks as a team, where the roles are flexible, and they can use each other's expertise. Depending on what the members can overcome, the intent is to incorporate chores or small errands to do throughout a day, in order to learn how to act in an everyday life and raise self-esteem.

In order to achieve theses purposes, the staff members need working spaces which enhances cooperation and promotes a good working environment.

Spacial needs

- Well litt (Dubose et. al. Dubose et al., 2018)
- Easy to maintain (Appendix 6)
- Good acoustics (Appendix 6)
- Staff room to socialize (Appendix 6)



III.66 Functional diagram for management staff

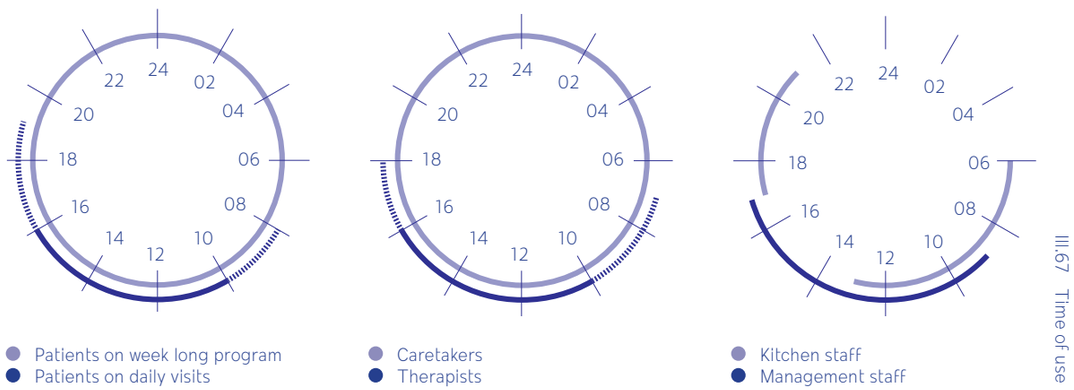
Time for Use of Center

To get an understanding of how to dispose the different rooms and to get an idea of the everyday activity in the center, the present hours of the different user groups are displayed.

The center offers treatment programs for multiple weeks if intense work is needed. The members will stay overnight and live at the center throughout the day. During the day other members will come visit the center and use it as meeting place and a community. Hereby the center will be occupied every workday 24 hours a day but with different workloads. This requires also different types of working hours for the caretakers. A CBT therapist can see approximately 20 members a week with a duration of one hour, but should also permit time to the preparing work, restorative breaks and socializing with coworkers (Appendix 3).

The management staff will need to come early in the morning to prepare the meals. After the lunch it will be possible for the kitchen staff to have a long break, before preparing the late dinner, as the habit in French eating culture. The gardener and the secretary will work half time, but with flexible hours.

The center aims to welcome those who needs it and create relations amongst the members, the therapists and the staff, in a center which feels like theirs. Therefore, it can be a factor that the center is used the whole day, as it will always seem warm and open. There will be different loads of people throughout the day, dividing it into periods with different activities, yet the same rhythm each day. This can bring the members closer to stimulating and safe everyday life.



Ill.67 Time of use

Ill.68

This chapter has outlined the functions which the center has to consider. Both in relation to specific elements enabling the different treatment methods, but also atmosphere creating elements and connections supporting the objective of helping the members. A challenge can be to give all the aspects of good intentions the same level of priority without compromising some elements.

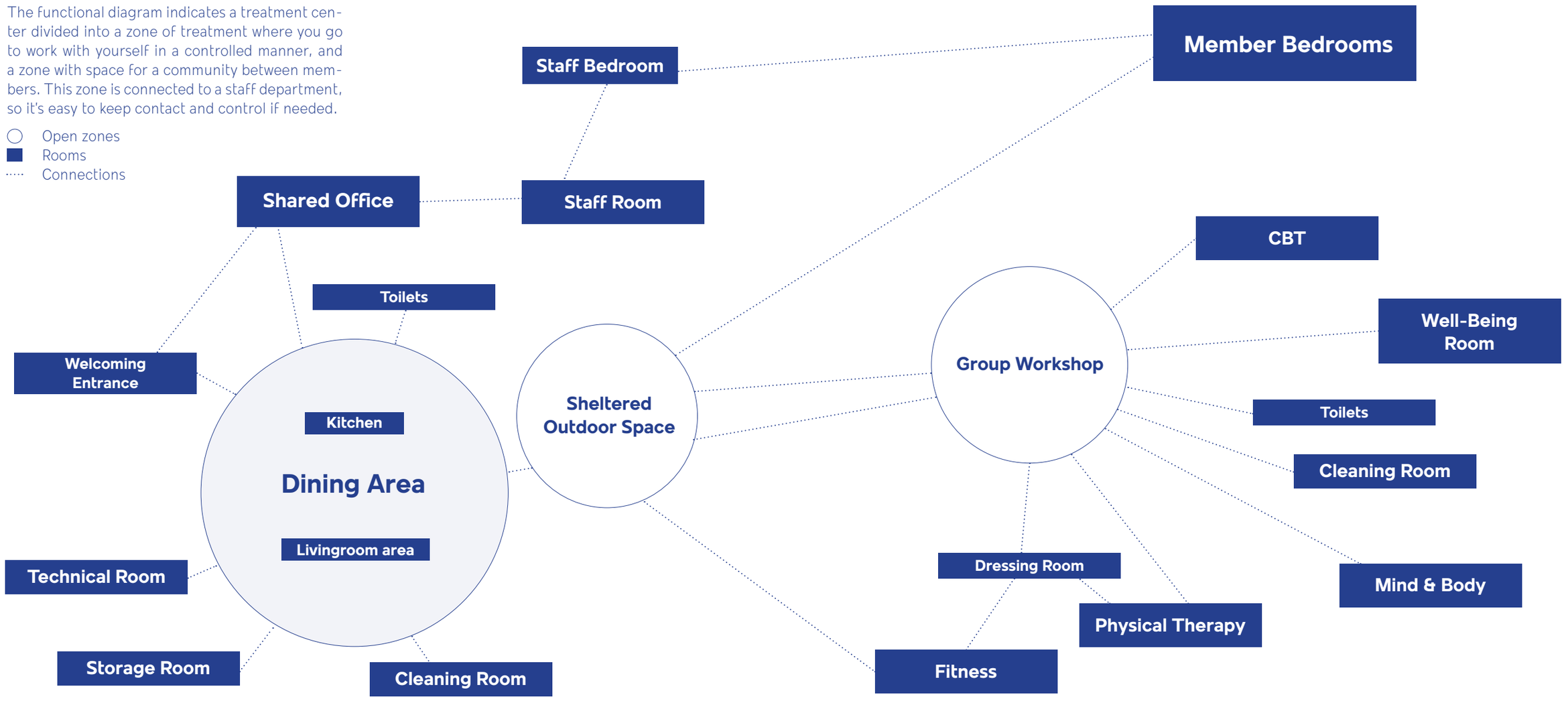
Outro

The program has been a tool to investigate the problem through different analysis' and methods. To illustrate the founding's in a translatable approach, a functional diagram, room program, design criteria and a vision are used as communication tools.

Functional Diagram

The functional diagram indicates a treatment center divided into a zone of treatment where you go to work with yourself in a controlled manner, and a zone with space for a community between members. This zone is connected to a staff department, so it's easy to keep contact and control if needed.

- Open zones
- Rooms
- Connections



Room Program

SPACE	AMOUNT	AREA m^2	ORIENTATION	ATMOSPHERE	SOCIAL EXPOSURE	NOTES
ENTRANCE	1	10	W	WELCOMING	SEMI	Avoid institutional feeling
DINING AREA	1	40	E/W	HOME-LIKE	HIGH	Gather peple
COMMON ROOM	1	30	S/W	SAFE	HIGH	Zones with various activities
KITCHEN	1	20	N/E	OPEN, LIGHT	HIGH	Connection to outside
GROUP WORKSHOP	1	30	N	LIGHT	HIGH	Possibility to extend space to the outside
MIND & BODY	1	30	E/W/N	OPEN SPIRITUAL	LOW	Strong connection to nature
CBT	2	12	N/E	LIGHT, CALM	LOW	View to outside, no glances from outside
PHYSICAL THERAPY	1	15	N	FOCUSED, SAFE	LOW	Close connection to fitnessroom
FITNESS	1	40	N	CLEAN	LOW	Possibility to extend to outside, easy to clean
WELL-BEING ROOM	1	10	E/W/N	INTIMATE, SPIRITUAL	LOW	Spiritual and sensual
SHARED OFFICE	1	25	N	INCLUDING	HIGH	Connection to entrance
BREAK AREA FOR STAFF	1	20	-	WARM	HIGH	Distance from the collective areas
BEDROOMS, MEMBERS	1	14	E	HOME-LIKE	LOW	Connection to outside, one for disabled members
BEDROOM, STAFF	18	14	E	HOME-LIKE	LOW	Connection to bedrooms and to staff area
TOILET	1	5	-	PRIVATE	NONE	Private and soundproof
STORAGEROOM	4	3	-	PRACTICAL	NONE	
CLEANING ROOM	1	10	-	PRACTICAL	NONE	
TECHNICAL ROOM	1	12	-	PRACTICAL	NONE	

Vision

In France, too many people are experiencing sexual assault. Following, the victims are trying to deal with the mental and bodily challenges of Post-Traumatic Stress Disorder. A treatment center will be created for those with severe difficulties handling their lives and not succeeding in progressing through the standard help. The center of Brittany is located in connection to the department capital, Saint-Brieuc, in the commune of Pordic. At the center, members can come and stay th-roughout a period of time during weekdays. Here, various of expertise will be offered, so a holistic and constructive treatment program for the individual members can be performed. Furthermore, the center is open for members using it as a place to be during the day, whe-re they can find a community and support from other members and through a competent staff. The center will express a welcoming and home-like feeling and at the meantime have a strong identity, which will allow the members to feel that the center is theirs. The design will embrace embodiment of the senses through different atmospheres, via the work with tactile materials, acoustic, light and views. From an 80m high point, the treatment center has a view over the beach of Les Rosaires facing east, where the members of the center can dwell at the movements of the water. The unblocked sunlight from east and south will be exploited in the design, so that the light can play a factor in the healing process. For the choice of material, the impact of CO2 on the environment plays a role in a step towards a sustainable future. The center will take responsibility in a holistic interpretation of sustainabi-lity, considering renewable energy sources, the indoor climate, social aspects of design and life cycle assessment.

The center will allow the members to find ease to work with themselves and create a collective in close relation to nature. This, in collabora-tion with the staff who will be able to give, as they navigate in a good working ambience.

Design Goals

Sensuous	The center must activate the bodily senses of the haptic-, olfactory-, auditory- and visual realms
	Daylight intake will aim to affect the circadian rhythm
	Daylight intake so light and time can be followed throughout the day
	Tactile and warm materials
	Permit long views
	High acoustic quality
	The building must contribute with a sense of worth for the members
Functional	Welcoming entre
	Honesty in materials use
	Nature surroundings to be integrated
	Entre closely connected to common room
	Spaces for mild social interaction
	Intimate spaces with a safe feeling
	Easily accessible for everyone
	Room facilities with distance to common rooms and therapy facilities
Environmental	Passive strategies will aim to be integrated in buil-ding concept
	Reach Zero Energy Building through renewable energy sources
	The building materials must leave a low CO_2 print

We Can Move...

Peter Zumthor describes in his book Atmosphere, his walk cross a square... (Zumthor, P., 2020, p. 17)

"So what moved me? Everything. The things themselves, the people, the air, noises, sound, colours, material presences, textures, forms too - forms I can appreciate. Forms I can try to decipher. Forms I find beautiful. What else moved me? My mood, my feelings, the sense of expectation that filled me while I was sitting there. Which brings that famous Platinic sentence to mind: 'Beauty is in the eye of the beholder.' Meaning: it is all in me. But when I perform an experiment: I take away the square - and my feelings are not the same..." "...It's quite logical really. People interact with objects. As an architect that is what I deal with all the time."

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Illustration List

All illustrations not mentioned below, are own illustrations.

Ill. 24 Inside Chapel Saint Benedict
William,https://www.flickr.com/photos/heyitschili/5001411742/in/photolist-8dwJYK-8dAfxY-8dwUwa-8dwN3H-8dwHyD-8dwG2v-8dzS8j-8dwztR-8dwM7X-8dwEZg-8dA6yf-8dwSpM-8dA51S-8BXxtf-8BXxsW-8BXxty-bo6gZL-bB13bt-bo6koA-bB17di-8hAZtB-4z8DDq-bAZSkz-bo68cf-bo6d79-bB1bPt-bo6bzL-bB1dvB-bAZXKK-bo6a3j-bo64xu-bB11ya-bo5Z21-bAZWZp-bB1eMB-bo67bN-bAZV6V-bB1aTc-bo6fWj-bB14D2-bo6eb7-4z4ker-4z4iQz-8BXxsA-8BXxss-4z4mEg-4z4q3r-4z4uvR-4z4rP8-4z8Cjh

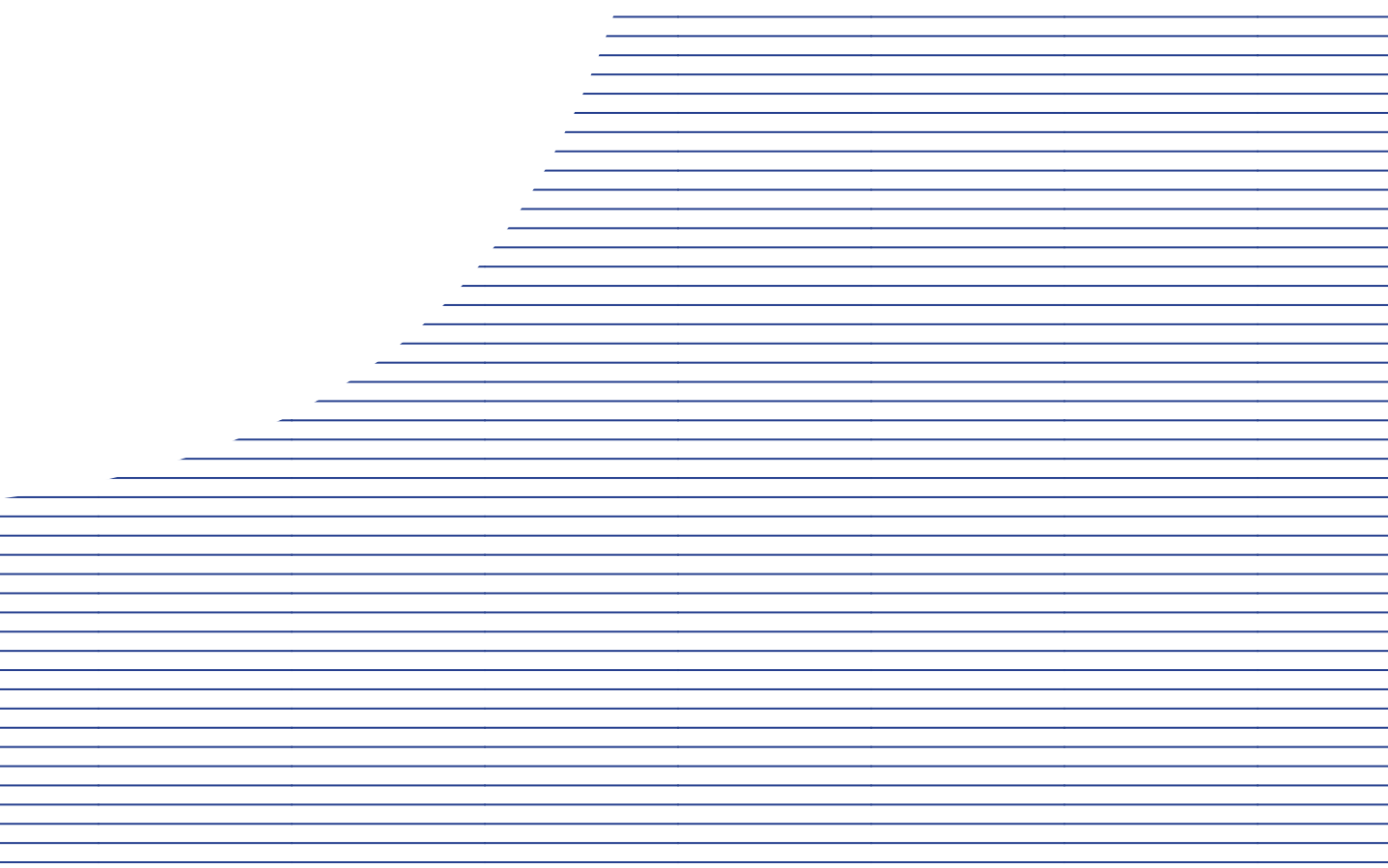
Ill. 25 Eastern facade of Chapel Saint Benedict
Rory Hyde, https://www.flickr.com/photos/rory-rory/2458139497/in/photolist-4KdBet-4KhSz1-4KhSjA-4KdBg6-4KhSKu-4KdBcD-4KhSuS-4KdBta-4KhSB7-4KdBk4-4KdBvF-4KdB9B-4KdBAR-8dwD3M-8hAZpc-8dwyvc-8hAYgF-8dAdAA-8dAgBq-8dA7rS-8dwYjF-8hEgsb-8dzTjb-8dwLcV-8dAcod-8dA5Pf-8dwJYK-8dAfxY-8dwUwa-8dwN3H-8dwHyD-8dwG2v-8dzS8j-8dwztR-8dwM7X-8dwEZg-8dA6yf-8dwSpM-8dA51S-8BXxtf-8BXxsW-8BXxty-bo6gZL-bB13bt-bo6koA-bB17di-8hAZtB-4z8DDq-bAZSkz-bo68cf

Ill. 26 Integration in the landscape of Thermes Vals
Timothy Brown, vhttps://www.flickr.com/photos/atelier_flir/2658328787/in/photolist-2jiewCF-53YS3m-53UCca-53UCWV-53UCwX-53YRtA-53UCJH-53UBC2-53YRFS-2jihq6p-zsrcRv-p1Rh6g-2jiexot-W3yMPs-WCNZP2-aWWAbX-aWWB3i-2jievY9-aWWADi-24PVkRY-WnScjh-WrbV8T-KrKKBh-zq8785-W3yAtb-VpidBv-W3zDrU-WrbeLB-VphcW4-VpjHU6-VphVbD-W3yaDw-WCMPh2-WzdFUb-2jieuXX-27vkG6j-WCQrTz-2k4JKid-WCMCr4-WrarpZ-2k4JKaC-WCQyVR-gynFbV-yvxJAx-2k4P9t2-27vm8oo-2k4JQ5T-2k4NA3z-2k4JPNv-2k4NySD

Ill. 27 Context integrationg of Chapel Saint Benedict
Rory Hide, https://www.flickr.com/photos/rory-rory/2458140291/in/photolist-4KdBta-4KhSB7-4KdBk4-4KdBvF-4KdB9B-4KdBAR-8dwD3M-8hAZpc-8dwyvc-8hAYgF-8dAdAA-8dAgBq-8dA7rS-8dwYjF-8hEgsb-8dzTjb-8dwLcV-8dAcod-8dA5Pf-8dwJYK-8dAfxY-8dwUwa-8dwN3H-8dwHyD-8dwG2v-8dzS8j-8dwztR-8dwM7X-8dwEZg-8dA6yf-8dwSpM-8dA51S-8BXxtf-8BXxsW-8BXxty-bo6gZL-bB13bt-bo6koA-bB17di-8hAZtB-4z8DDq-bAZSkz-bo68cf-bo6d79-bB1bPt-bo6bzL-bB1dvB-bAZXKK-bo6a3j-bo64xu

Ill. 31 framing nature
Kazunori Fujimoto, https://commons.wikimedia.org/wiki/File:Therme_Vals_(Peter_Zumthor).jpg

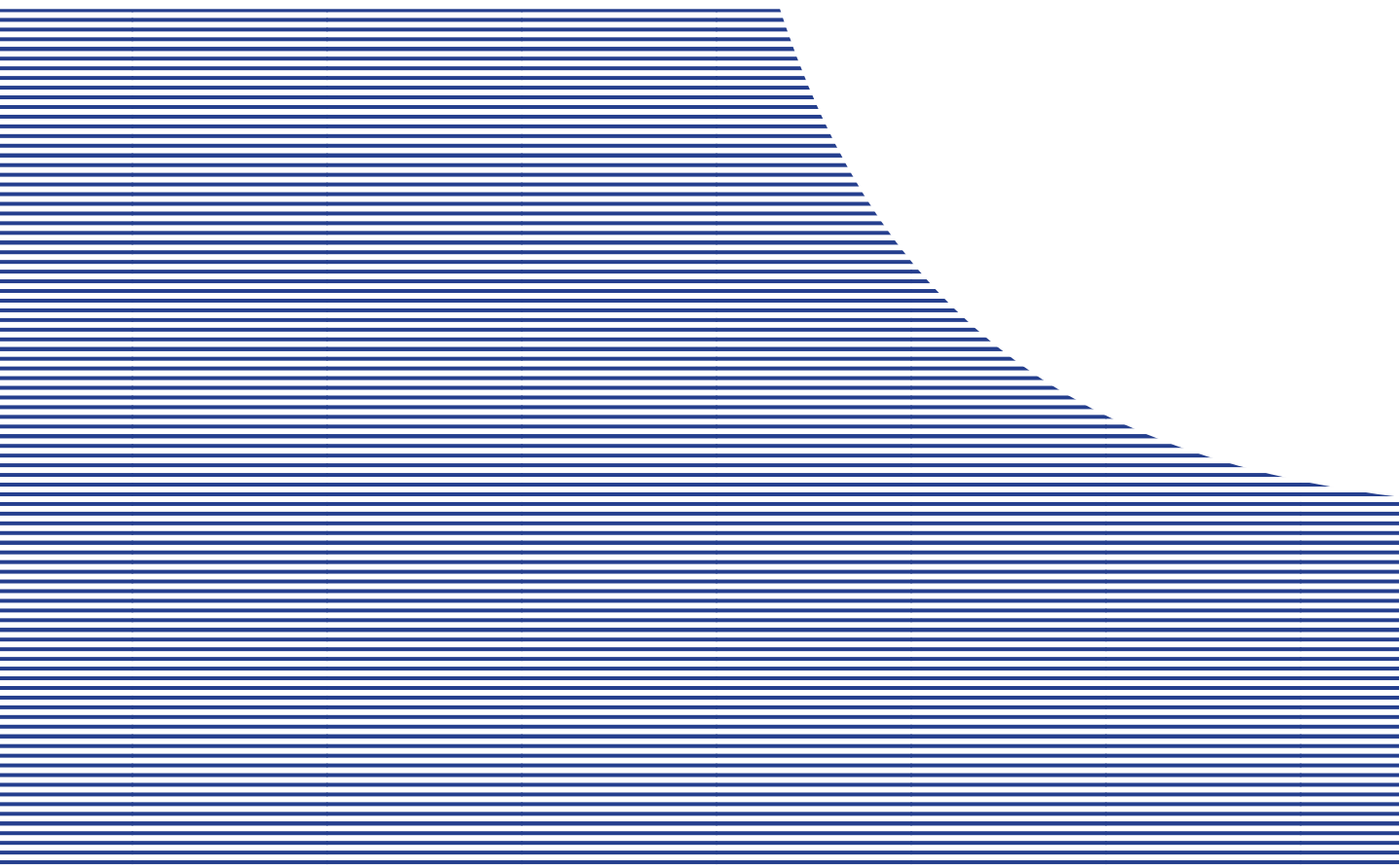
Ill. 33 Nick Turner, https://www.designboom.com/architecture/maggies-centres-blueprint-for-cancer-care-new-york-school-of-interior-design-03-07-2014/



Presentation

Center for Treatment of PTSD

Master Thesis by Luna Nørgaard Gevitz
Architecture and Design
Aalborg University
September 2021



Project title Center for Treatment of PTSD
Semester MSc04 - Architectural Thesis 2021
Main supervisor Tenna Doktor Olsen Tvedebrink
Institution Aalborg University
Department Architecture & Design
Project period 01.09.2020 - 01.09.2021
Pages 94

Author Luna Nørgaard Gevitz

Table of Content

Merci à les architectes de S.E.A — La Serre D'Expérimentation Des Ars, Alexandre André et Glenn Desury, pour me faire comprendre l'architecture français, et me donner un espace pour les études, pendant mon temps en Saint-Brieuc.

Problem

A focus is arising on well-being in society, but can it be integrated in the architectural work through the activation of senses and creation of the right atmospheres? How to create a center for treatment of PTSD caused by sexual assault, which encourage healing and gives the members a sensation of self-worth, while it accommodates a good working environment for the staff? How to deal with the holistic aspect of sustainability through relation to the settings and the use of materials in a French context?

Welcome

The Center for PTSD is located in characteristic surroundings on the coast of Le Baie de Saint-Brieuc with an enchanting view overlooking the beach of Les Rosaires. PTSD can reveal itself in various ways and to different people. Here these people suffering from Post-Traumatic Stress caused by sexual violence, can meet and together work towards being a well-being and well-functioning member of social constellations and society. The center aims to help those in the region og Brittany, who doesn't respond to the standard measures provided by the public system. This is by offering treatments in a holistic perspective, where both bodily, mental and social aspects of well-being is considered, through embodiment of the senses, healing architectural elements and connection to like-minded.

The Center is resting on the hill, playing with the curves of the landscape both vertically and horizontally. The local and domestic materials of the region are coming to life by exploiting their qualities. The harsh and heavy rock of granite becomes soft and organic when curving with the landscape like a movement, yet expressing a steady and heavy look. If the rock can move, so can the members. Likewise, the slate arises an awareness of tactility when bended, as every individual sheet of slate, together creates a soft surface, where the details of the material can be seen.

Ill.1 The center from south-east

Siteplan

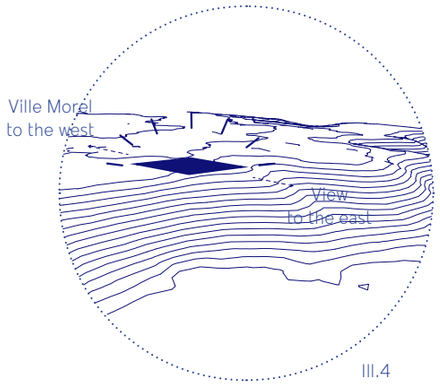
Arriving at the center after passing by Ville Morel, the building will gradually arise from the wild field. The visible part of the center, will in material and height relate to the scale of the domestic surroundings. Leaving the car at the parking space to the north, a path will guide the visitor to the center through the field, giving them time to prepare and sense the place through views, smell of plants and sea and feeling the wind on the skin. The path is connected to the public trail following the coast, which is highly visited in the weekends, yet the view from strollers is shielded by the wilderness and the hillside.

The path continues through the opening of two curved buildings volumes, leading you in and indicating a change of atmosphere by reveling a sensual enclosed garden. To the left a common room can be spotted and the entrance to the center is to find. If the member already has a room, the entrance to the room volume is at the right.

Ill.2

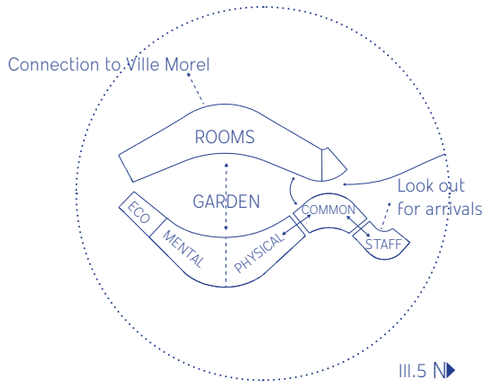
Ill.3 The center from north-west

Conceptual Influencers



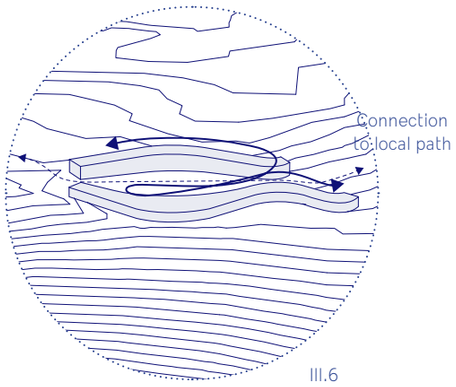
III.4

1. A unique location
This location calls for a building enhancing the sense of the place



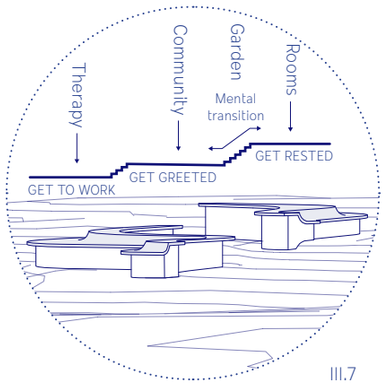
III.5

2. Division of the functions
Clear division of when home in the rooms and when participating in activities. The common area reaches up and links the the volumes socially and physically.



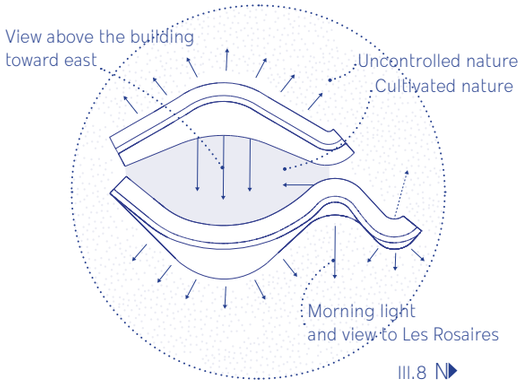
III.6

3. Move with the landscape
Being at the center is a process. This is being expressed by moving with the landscape throughout the center. Furthermore it enhances the embodiment of the place.



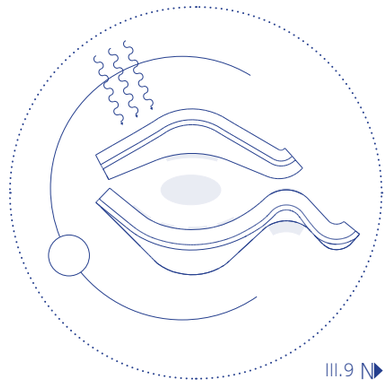
III.7

4. Work with the hill
Down the hill, down to work. Up the hill, up to rest. The movement builds a bodily understanding and transition.



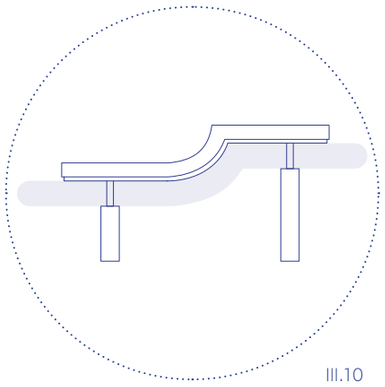
III.8

5. Your green scenery
The views to nature will differ in the rooms and plans, giving them a individual character.



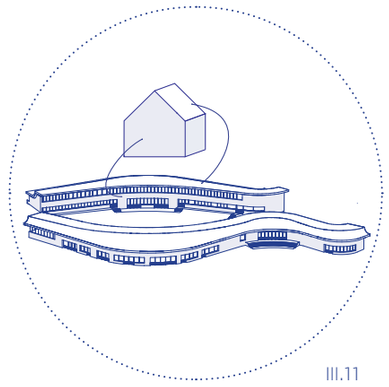
III.9

6. Throughout the year
The volumes creates outdoor spaces for every season and for various activities and sensations.



III.10

7. Heavy vs Light
A spiritual and uplifting sensation obtained through light. The curved roof gets lifted from the heavy granite. Facilitates natural ventilation.



III.11

8. Similar to home
Using local materials from domestic brittain architecture, creates recognition.

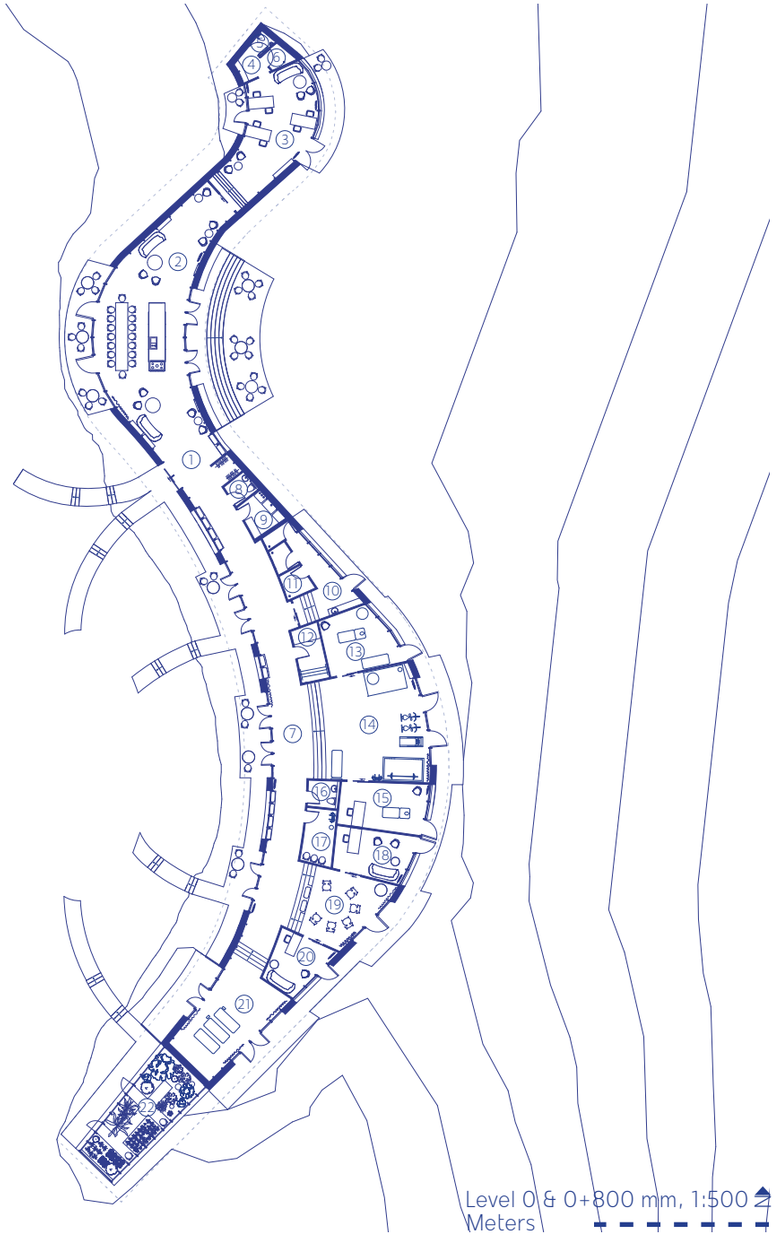
Ill.12 Movement of the aisle enhanced by light and wooden frames

Plan Solution

The plan solution is divided in six zones in two volumes; in the treatment volume is the common room, therapies and staff section, and in the living-volume you find the rooms and common spaces. The healing garden connects the volumes, acting as a dwelling and transitions space. The zones are indicated by a change of direction of the curved wall or by a change in level. The rooms are facing the therapies and the eastern view from a higher level. By overviewing the therapies, the members can create expectations regarding their upcoming work with themselves and percieve the building as something safe, as the therapy section gives a submissive expression. The common room is in level connecting the volumes and function as a graduation between resting and therapy, but i planview positioned to the site, where there is less activity and can be an active choice.

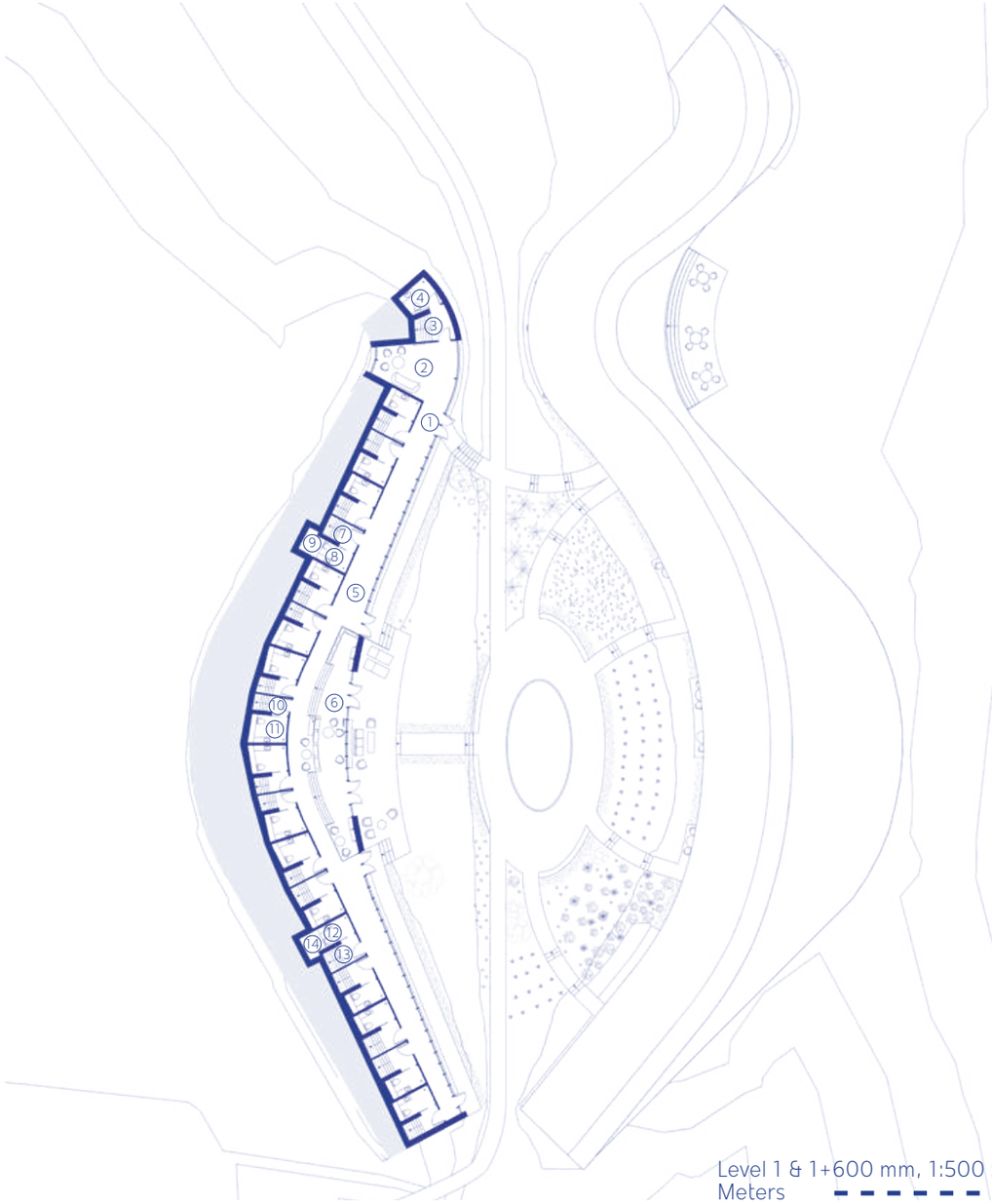
Suffering from Post-Traumatic Stress Disorder, the body can be in a constant alert mode. To help the members control their fight-or-flight instinct, there are visible flight routes from every room and long view-lines to the outside. This way they can relax and focus on being present. Hereby are the fire safety routes insured (Bygningsreglementet, nd). Furthermore, you can follow the outer wall when moving around in the center and be lead with the flow created by the frame construction.

①	Entrance	8 m²	⑫	Laundry & cleaning	8 m²
②	Common space	112 m²	⑬	Physical therapy	24 m²
③	Staff room	47 m²	⑭	Gym	69 m²
④	File cabinet	4 m²	⑮	Acupuncture	24 m²
⑤	Toilet	2 m²	⑯	Toilet	5 m²
⑥	Shower	3 m²	⑰	Storage	10 m²
⑦	Therapy aisle	106 m²	⑱	CBT single	21 m²
⑧	Toilet	4 m²	⑲	CBT group	32 m²
⑨	Food storage	8 m²	⑳	CBT single	16 m²
⑩	Changing room	18 m²	㉑	Mind&Body	43 m²
⑪	Shower*3	3 m²	㉒	Orangery	40 m²



Ill.13

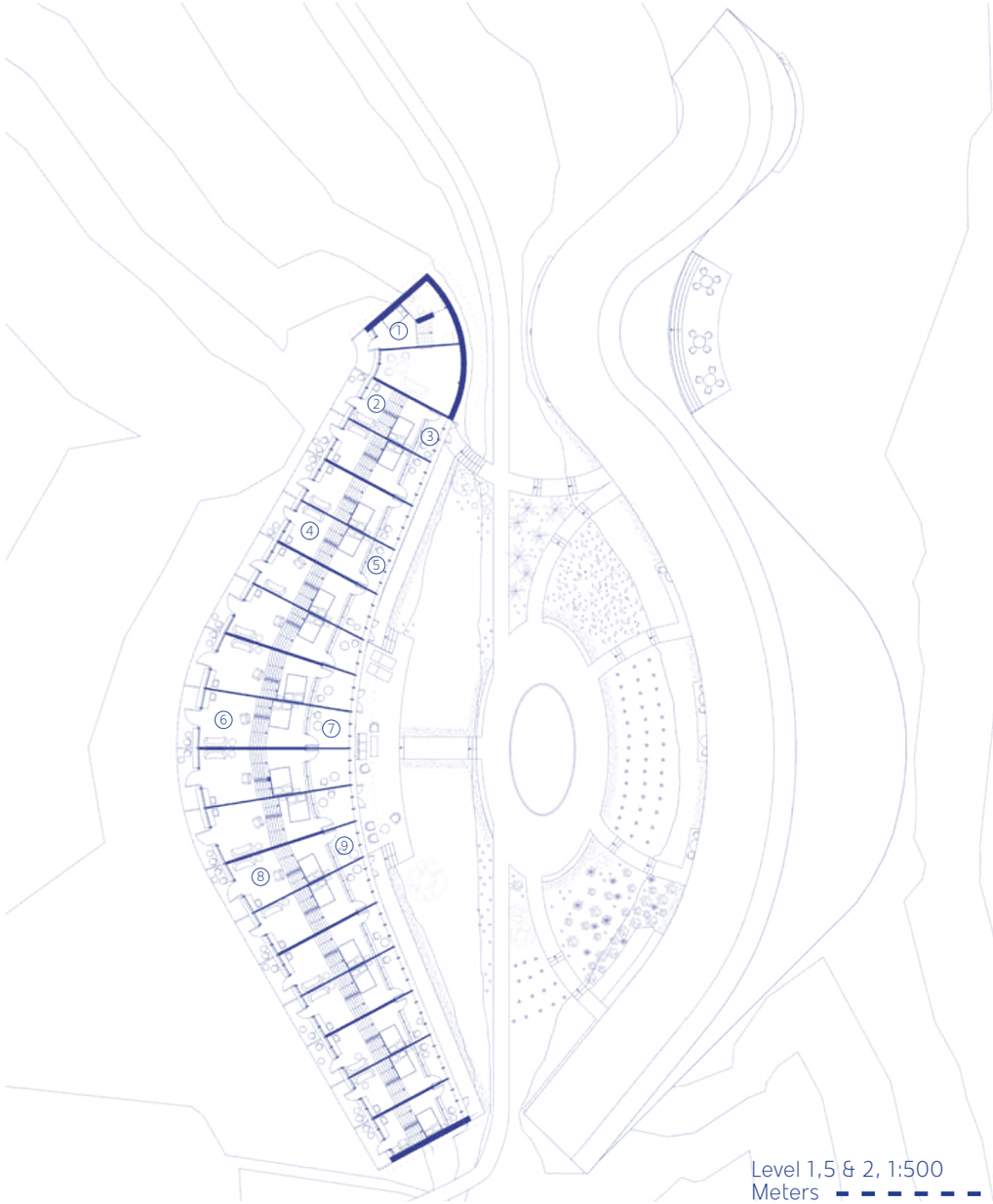
①	Entrance	4 m²
②	Common space	24 m²
③	Staff room entrance	6 m²
④	Staff room bathroom	6 m²
⑤	Room aisle	102 m²
⑥	Common room	43 m²
⑦	Room 1 entrance	5 m²
⑧	Room 1 bathroom	5 m²
⑨	Heatpump	3 m²
⑩	Room 2 entrance	4 m²
⑪	Room 2 bathroom	7 m²
⑫	Room 3 bathroom	5 m²
⑬	Room 3 entrance	5 m²



Level 1 & 1+600 mm, 1:500
Meters

III.14

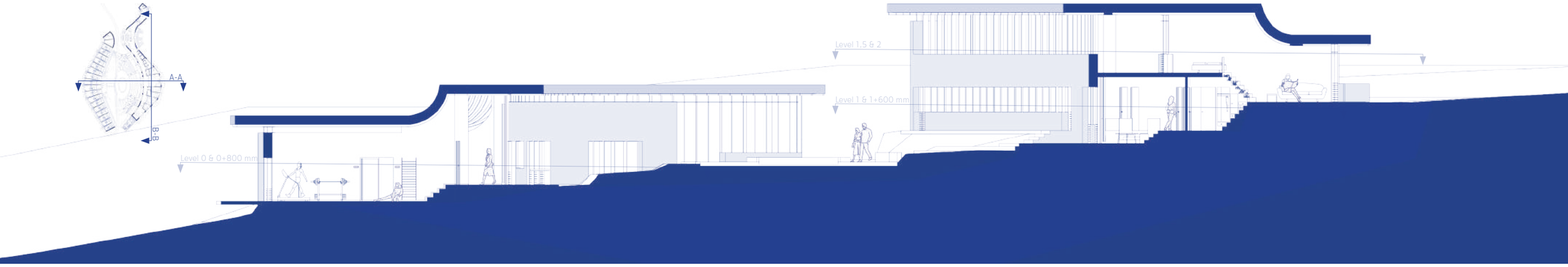
①	Staff room	8 m²
②	Room 1 level 1,5 & 2	18 m²
③	Room 1 level 2 terrace	5 m²
④	Room 2 level 1,5 & 2	24 m²
⑤	Room 2 level 2 terrace	6 m²
⑥	Room 3 level 1,5 & 2	32 m²
⑦	Room 3 level 2 terrace	10 m²
⑧	Room 4 level 1,5 & 2	27 m²
⑨	Room 4 level 2 terrace	7 m²



Level 1,5 & 2, 1:500
Meters

III.15

Sections



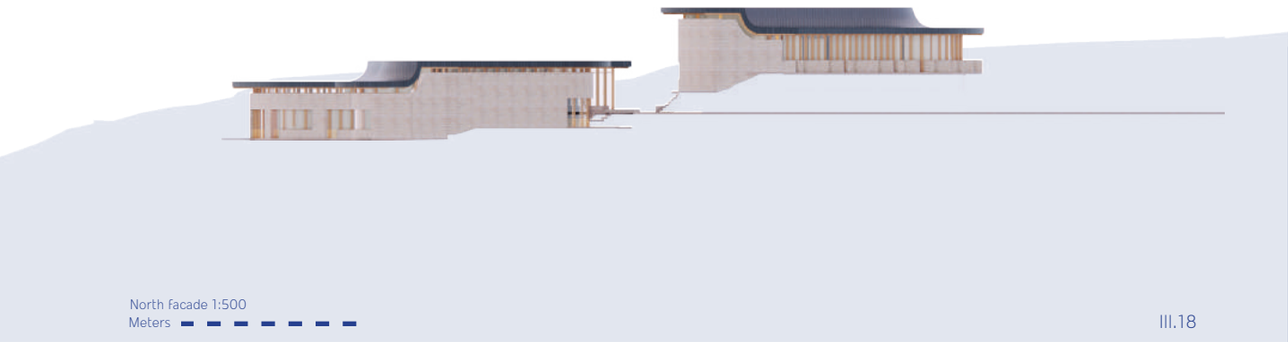
Section A-A: physical - healing garden - common room - room , 1:200
Meters

III.16

Section B-B: CBT and Physical treatment, 1:200
Meters

III.17

Facades



North facade 1:500
Meters

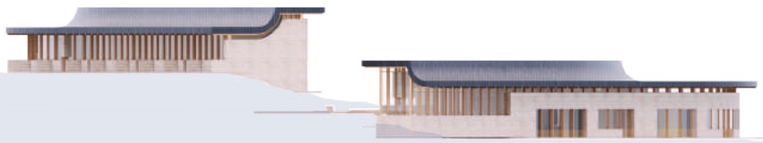
III.18

East facade - Treatment volume 1:500
Meters

III.19

East facade - Living volume 1:500
Meters

III.20



South facade 1:500
Meters

III.21

West facade - Living volume 1:500
Meters

III.22

West facade - Living volume 1:500
Meters

III.23

Ill.24 Arriving at the center from the north

Materials

Materials have a high influence on the atmosphere of a building. Each material has a certain expression, a certain tactility, a certain association, and certain technical parameters. The materials of the center act together and makes the building come to live.

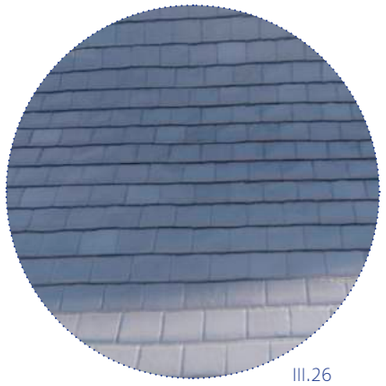
Two materials with great conceptual influence, is granite and slate. The granite is steady, heavy, and hard, but by combining it with an organic shape, movement it created. It has a warm reddish tone matching the ground of Brittany and creates associations to the traditional Brittan homes. The impression of the tactility changes with the light. Feel free to touch. Likewise, the material of slate matches the roof of the surrounding houses. Plate by plate, the material is able to create a curved surface. This highlights the material and its capabilities. The two local stones will patinate beautifully and sustain through many years in the harsh weather. If the rocks can be moved, so can the members.

The wood used for flooring and beams, softens the cold stones, and contributes with a warm feeling and color. The curtains stand in contrast to the granite along with the white partition walls. The distinction between the two types of walls, can help the understanding and reading of the building.

The technical considerations of the material choices will be expressed further from p. 72.

III.25

Granite - Facade cladding, outside/inside
The cladding is modulebased, with no visible joints, as a modern contrast to the traditional use of granite.

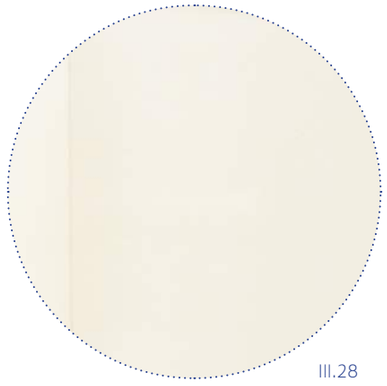


III.26

Slate - Roof cladding
The standard roofcladding in brittany. Easy to switch individual tiles if broken.

III.27

Glue Laminated Timber - Frame construction
GLT allows curved beams. The timber has been giving an oil to sustain the climate. Window frames and shutters, are of wood in the same color tone.

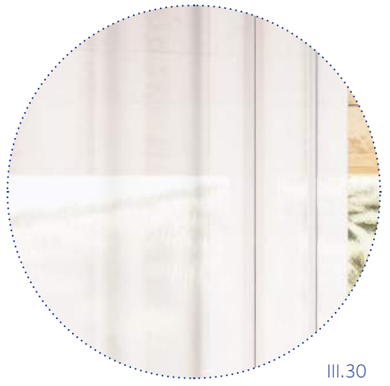


III.28

Clay - Paint on partition walls
The paint on clayboards, is without chemicals. It contributes with a warm surface and is moist absorband.

III.29

Oak - Florring
Lightend oak florring, can sustain the wear. A qualitative materials gives the members a sense of worth.



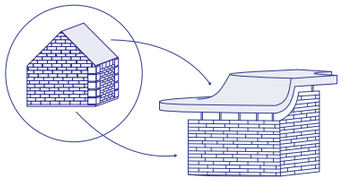
III.30

Cotton - Curtains
Besides shielding for the sun, the textile is a soft contrast to the granite wall, and adds a sense of home.

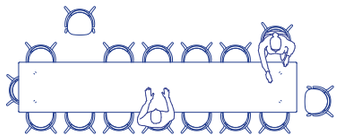
Healing Architecture

Healing architecture is a discussed matter and has been getting more attention as well-being and mental health has become a societal concern. State-of-the-art research has investigated several elements of architecture with the purpose of healing. It is understood that some environments can foster healing, and some can contradict healing, but the concrete element affecting the process, are difficult to prove.

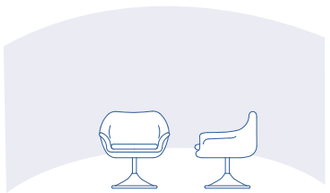
The center believes that when integrating design elements aiming at creating well-being physically, mentally and socially, the effect of the holistic perspective and the multiple integrated elements, can promote well-being and healing. This is a principal also embodied in the treatments offered at the center. Certain elements of healing architecture have been selected and integrated in the design and in the concept of the treatment center (ill. 31-42).



Home-like materials III.31

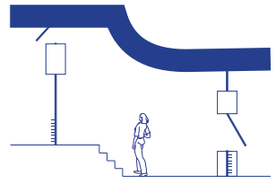


social interaction III.32

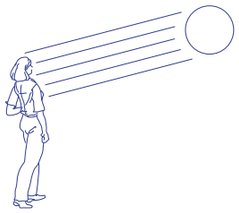


Niches with back shielding III.33

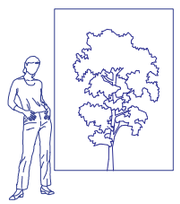
Movable furniture III.34



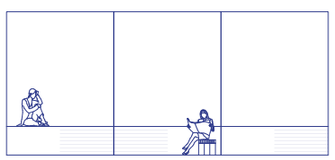
Well indoor climate III.35



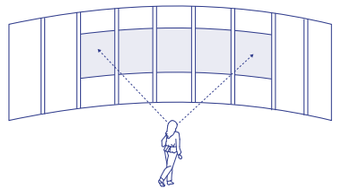
Daylight III.36



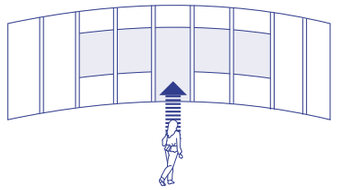
Connection to nature III.37



Private rooms III.38

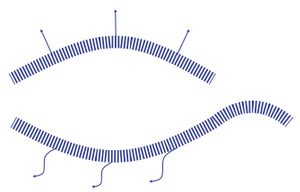


Long viewlines and orientation III.39



Clear escape routes III.40

Concave shapes III.41



Readable flow III.42

Sensual Daylight

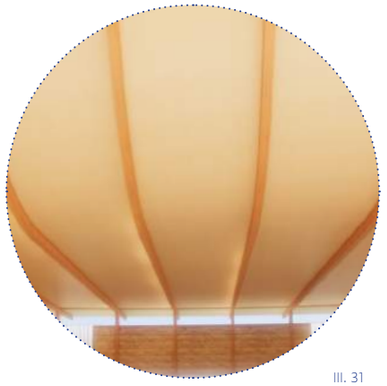
Daylight is an important factor for healing and well-being. Everything that lives, is dependend on light. Plants, animals, humans. Throughout time, daylight and the sun have had a healing and symbol effect for people, praising the sun as a good. The circadian rhythm is regulating the hormone melantonin, which regulates when body is awake or going to sleep. When this balance is out of rhythm, it can be difficult to overcome even the smallest challenges of a normal day. When not having the energy to work for it, it can be hard to regain well-being. The the light is the base.

Light has many aspects. In the center, there is a high daylight factor throufhout the center, matching the activities. (see p. 79). Light is also being used sensually. Contrastful light creates curiosity and attraction. In the center, the beams will create a run leading to movement (ill. 30). Soft light comforts and feels safe. It is used as a transition to therapy by being dragged down via the curved cieling (ill. 31). The colors of the light has different atmospheres. Where the cold light is expressing activity, warm light nudges towards calm (ill. 32-33).

Light is mainly percived through vision, but can also be felt through the skin. Vision, together with the sense of touch, the sense of smell and the sense of hearing, the center embodies senses, reconnecting the members with themself.

ill. 30

Contrastful



ill. 31

Soft

ill. 32

Cold

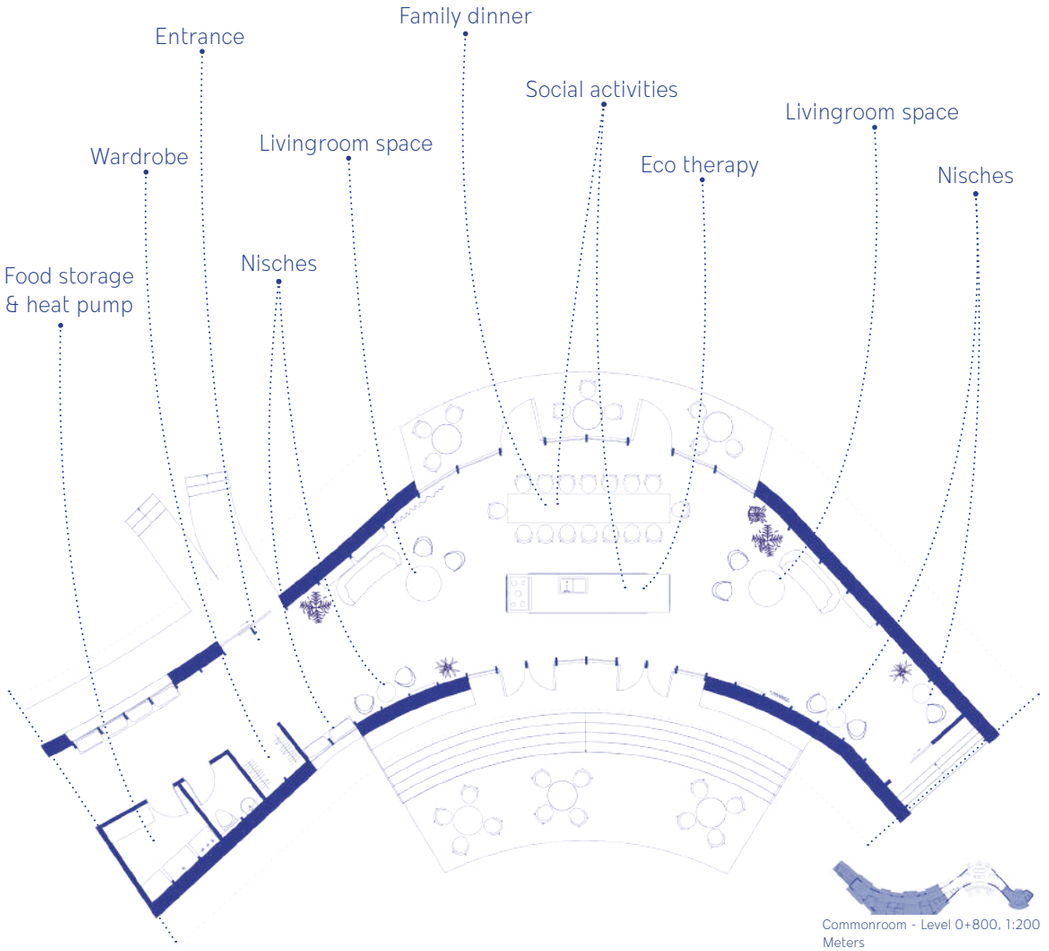
ill. 33

Warm

Ill.43 Terrace by the common room, facing east

Community

The common room is greeting the newcomers and linking the members softly to the therapy department. The common room is positioned on level 0+800, between the rooms and the therapies. The position to the side, makes it a calm area with a distance to treatment. When entering the center, you can be oriented by looking straight ahead to the unique settings through a window. You can hang your overclothes and choose to access the therapy department or the common room. By a change of direction of the curved facade, the common room distances itself from the therapies and staff sections, while facilitating an easy transit between the zones. The common room facilitates a space for a community to develop. The members and staff will meet in an informal manner, without hierarchy between the groups. Here they will talk, spare with each other, connect through games, relax with a book or simply sit, observe and belong.



Commonroom - Level 0+800, 1:200
Meters

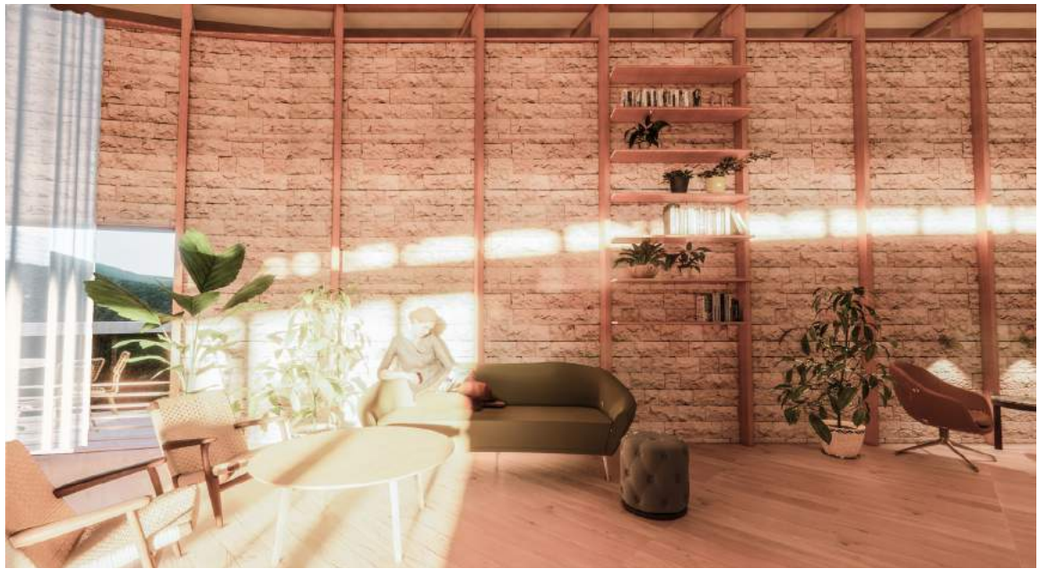
N▶ III.44

The light
The frames and the curved roof, are guiding the view towards the scenery over the beach of Les Rosaires. Here they can follow the rise and withdrawal of the tides, and observe the people utilizing the beach in various ways. The eastern light will enter the common room during morning till midday, which is an important element in relation to hormonal resetting through the circadian rhythm. During evening, the western terrasse can be utilized in the atmospheric afternoon light. (ill 46-47).

Niches
Smaller niches and seating areas creates possibilities for members and staff to connect in more intimate settings. This is while being in a room with other people which can create a connection between the users, without active interaction. The movable and light furniture allows the users to intake the room in their own way, enhancing a homelike sensation. (ill 46).

The family dinner
The community table symbolizes a family dinner. The meals will be important points on the day, where the members have to sit down together. Making it an activity can invite some to come forward. The ritual of the dinner can be a vulnerable aspect for members who have experienced sexual abuse in their home. The smell, the sounds, the interaction. To support the management of a healthy life outside of the center, the associations should be reset to something positive. (ill. 45).

Eco therapy
The kitchen will facilitate a part of the eco therapy through cooking from the vegetables from the kitchen garden. the kitchen island will allow several people working together. A food chamber is located in relation to the kitchen.



Ill.46

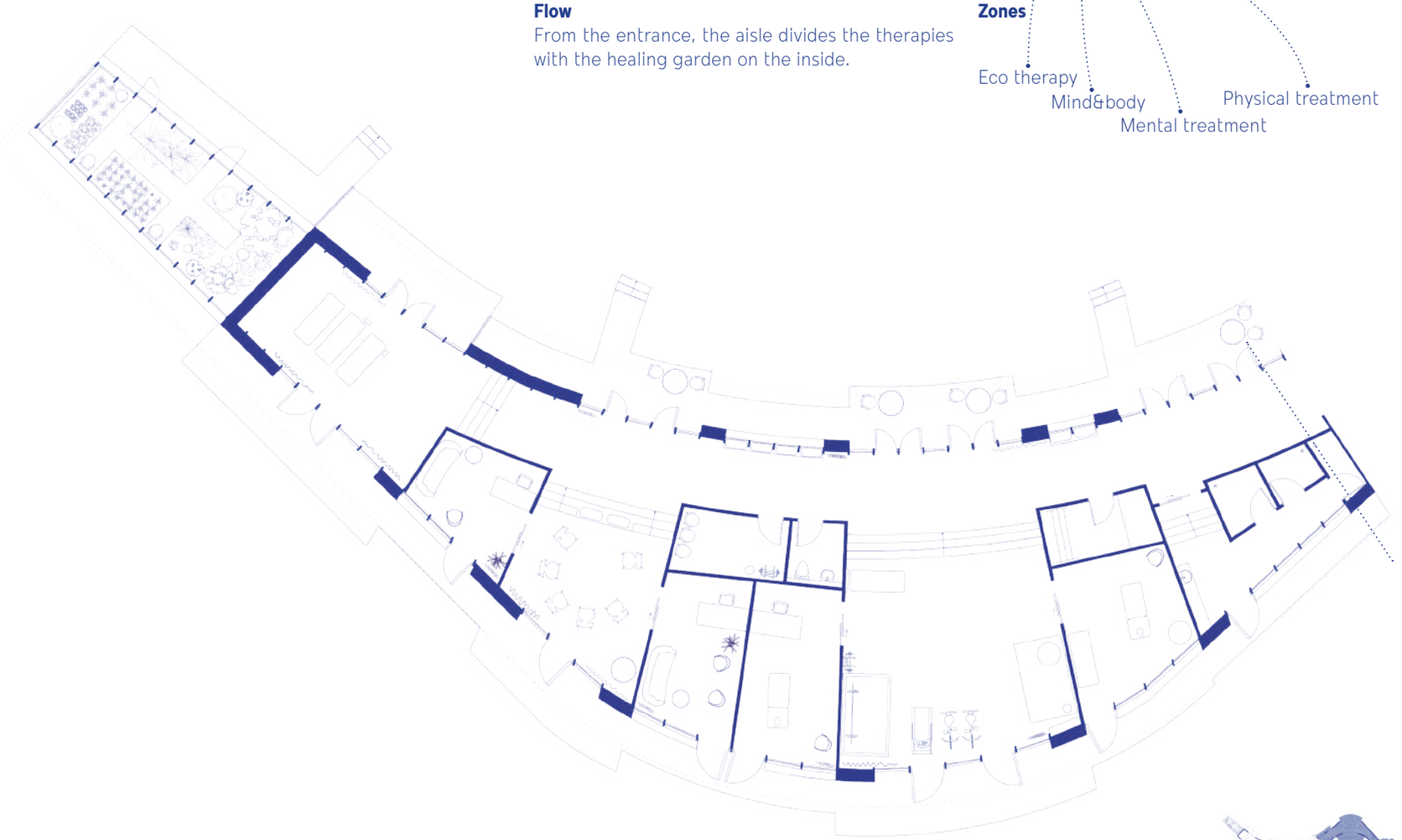
▲ In the common space, the variations in the light can be followed throughout the day as the light traces from the window row will move with the sun and adapt to the sky. The changes in color from the morning and evening light will be noticed when it enters through the large windows facing east and west. The different types of daylight will result in multiple variations of tactility shown in the rough granite stone.

▼ The kitchen and dining table are central points in the common space and aspects of creating a community atmosphere. The common room opens up in the center of the room through regulations in the length of the frame structure, and with more intimate zones in the ends of the common room. The wooden frames enhances this attention on the kitchen and leads the views towards the panorama view over the sea. The morning light is an important aspect of releasing the hormones of melatonin, so the circadian rhythm can be reset, and the daily activities match the bodily signals.

Ill.47

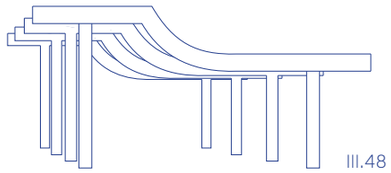
Therapies

The members are here to get better. This entails a holistic approach to therapy where both the bodily, mental and social well-being is considered. The therapy section is extended from the common room, where the curved isle and the wooden frames will guide the users in a movement towards therapy. With the accessible garden on the inside and view to the rooms, the trip feels safe. The therapies are divided in sections of physical, mental, mind&body and eco therapy, to ensure an understanding of the upcoming focus. The isle will firstly open up to the physical zone facing east, where the curved roof will lead you in and down four steps towards the unique view and wild nature on the other side of the center. From the gym you can choose to enter the acupuncture- or physical therapy, to either the right or the left. The soft switch in direction in combination with the change of level, will foster a change of mindset. Ready to work. Throughout the session, a visual connection is kept with the garden and the rooms. The long views and access to flight routes, will help contain the instinct of fight or flight, when the stress level is rising. If a break is needed during the various therapies, terraces and fresh air is accessible. Between therapies, the members can meet on the community-level, either in the niches of the aisle, or the outdoor spaces in the garden, where the effort of concentration can be released. Stepping in and out of the therapies. Further down the aisle, the mental zone offers a group therapy space, from where two single rooms for cognitive behavioral therapy can be entered. In the end, the mind&body therapies as yoga, mindfulness and meditation can be executed with view to both sides and an atmospheric opening to the orangery. In the orangery the eco-therapy will take place, along with the kitchen and the garden.



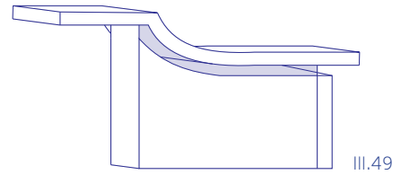
Therapies - Level 0+800, 1:200
Meters

III.52



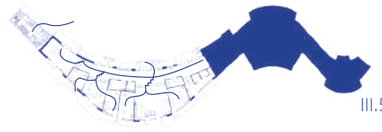
III.48

Move with the frames
The frames creates a run, leading the users down the aisle. Helping the members if the task can seem overwhelming.



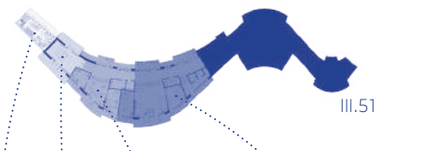
III.49

Division walls
The division walls have continued the window row, bringing light to the compact treatment rooms and continuing the cieling surface between the rooms.



III.50

Flow
From the entrance, the aisle divides the therapies with the healing garden on the inside.



III.51

Zones

Ill.53 Aisle towards CBT and Mind&Body treatments

Ill.54 Gym torwards aisle and garden

▲ To get healthy physically and to feel strong and empowered, are two aspects facilitated in the gym. There are space for both group fitness where either active or passive interaction is possible, and individual exercises. From the gym, you can enter the physical therapy consisting of bodily treatment and specific exercises, or the acupuncture treatment. The rooms can facilitate multiple body treatments if needed. As movement is an important factor for health and well-being, the flow through the building and the changes in level, will discreetly nudge the users to exercise.

▼ While exercising under controlled conditions, you can overlook the sea and dwell. The public path can be used as running trails, or just to go on a walk as a part of the eco therapy.

Ill.55 Gym towards the view

◂ The mental department offers Cognitive Behavioral Therapy, by either a psychologist or a psychotherapist. This can be performed as group therapy or individual sessions. When accessing the mental treatment zone via the change in level, the sliding doors are clearly indicating if the single CBT rooms are occupied or open for use. There will be no need for knocking and disturbing the members in their sessions, and when the rooms are not in use, it expresses openness, transparency and expands the room.

Ill.56 Group therapy room

▾ Throughout the therapy department, the smaller enclosed rooms have lowered partition walls as a continuation of the window row dividing the wall and the roof. This brings in light and opposes a claustrophobic atmosphere in the smaller rooms. Furthermore, the continuation of the ceiling can be followed between the treatments, supporting the conceptual aspect of the roof being lifted from the walls, and creates a coherence throughout the building.

Ill.57 Single therapy room

III.58 Single therapy room

▸ The Mind&Body treatment is located in the end of the treatment volume. Here the bodily and mental experiences come together through Yoga, Mindfullness and Meditation. Two terraces are extending the room to the outside, to always have a sun full and shadow full choice of outdoor activity. In the healing garden, the terrace is a level down in it's own enclave in a wildly planted area of the garden to support the connection to the nature. A window opening to the orangery contributes with a tropical atmosphere and substantiates that the orangery is a part of the treatments through eco therapy, yet is only accessible from the outside, through the healing garden.

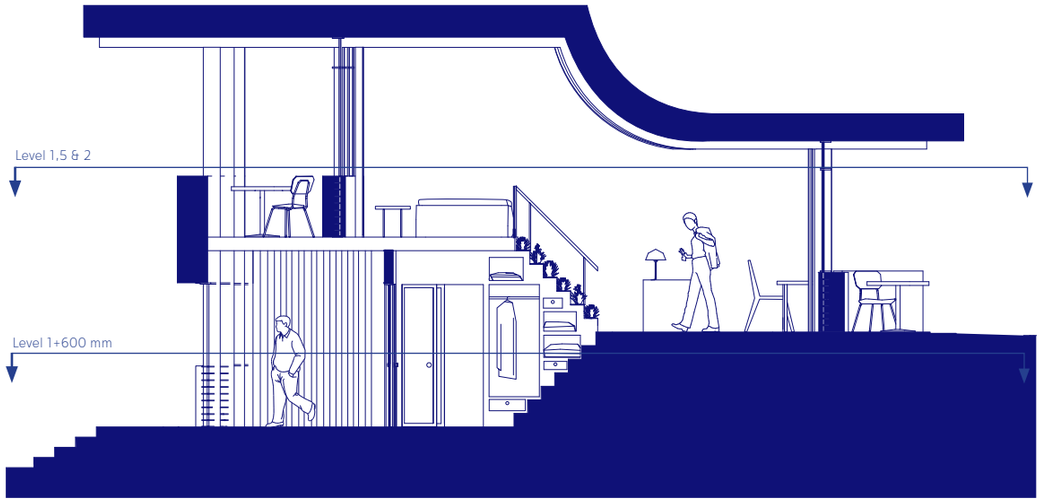
Ill.59 Mind6Body therapy room

Rooms

The rooms are protectively surrounding the healing garden facing east and west, acting as a wind barrier. The members will spend the last hours before sunset in the rooms, benefitting from the warm evening light. The room is divided in three levels: entrance and bathroom, living room, and sleeping facilities. The members enter the room with the bathroom to the left and a build-in wardrobe on the wall. From the entrance, they can immediately spot a flight route from the living room to the open field. As in the rest of the center, the change in level indicates a change of activity and promoting adapted mind-set. The room is the home while staying at the center. The living room is a place to be with yourself, but also allow company in a more private setting. The guest will not be able to see the intimate area of the bed from the living room level. A workstation makes it possible to sustain the work life while being at the treatment center.

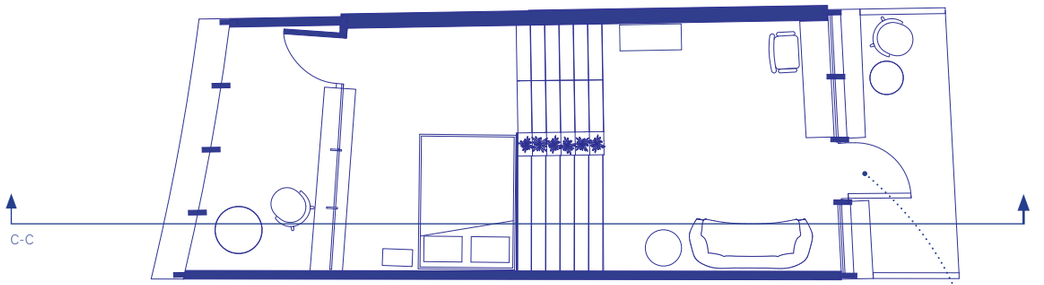
When suffering from stress or depression, it can be a challenge to sustain a normal day rhythm and activity level. The living room should support relaxing, but not let the members slumber the day away. To help the members with the distinction between activities, the stairs divides the levels, making sleeping an active decision. The sleeping area has a terrace to the east, for if the members can't sleep in the night and need some fresh air. They will wake up with the morning light, following the rhythm of the day. The members will have to tend to the plants on the stair and feel the responsibility, giving them a sense of worth.

The rooms will vary in sizes as a result of the curved building shape. This gives the opportunity to choose if a larger or smaller room is the best fit for the specific symptoms of PTSD for a member. Additionally, the larger rooms allows a member to have a partner to stay overnight at the center, undergoing partner therapy or as a support for the initial days of the stay.

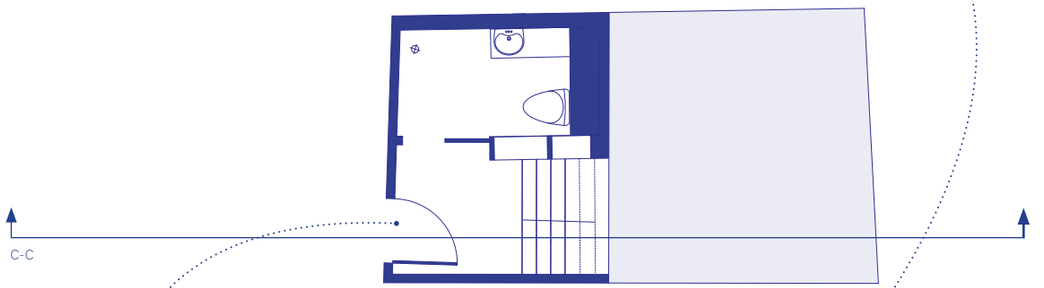


Section C-C 1:100
Meters

Ill.60

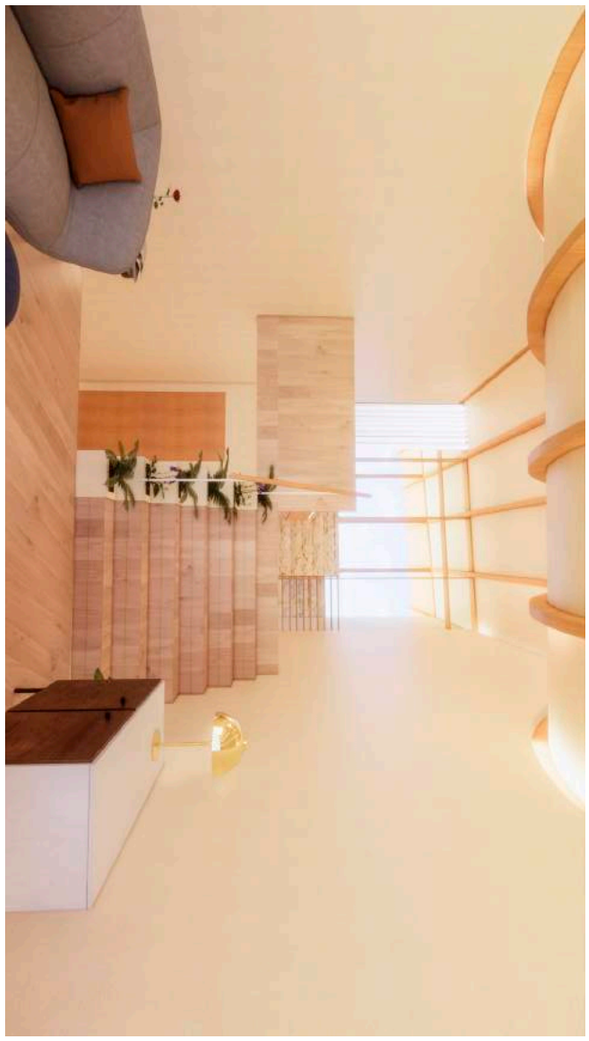


Room level 1,5 and 2, 1:200

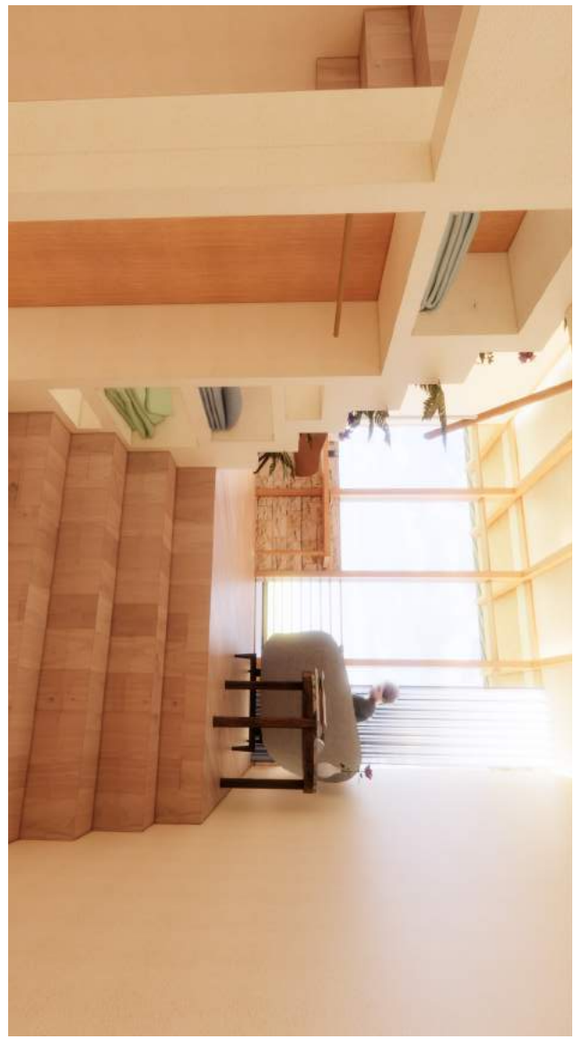


Room level 0+600 mm, 1:100

Ill.61



III.63 Living room towards bedroom



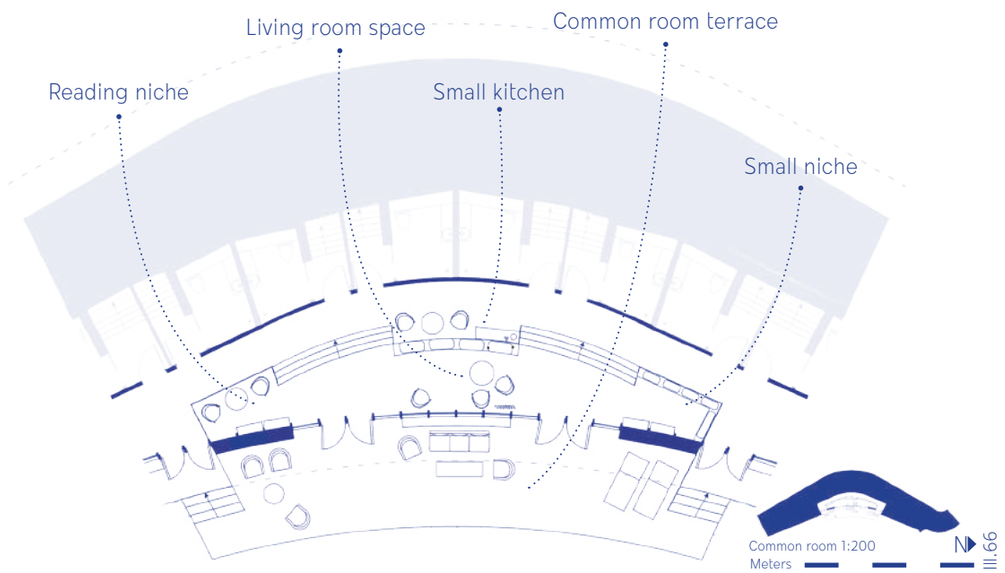
III.62 Entrance towards living room

III.65 Morning terrace towards east

III.64 From terrace towards west, looking in

Common Room

The common room is a place to meet and use as a living room. There is several intimate niches and bigger areas for people to gather. The small kitchen allows the members to create a cup of tea, as they would in their own living room at home. The room is extended to the terrace, making use of the healing garden, and connect with the treatment volume visually. The steps down are creating a distance from the activity on the aisle to the common space. A smaller common area is situated by the entrance and the staff bedroom in the northern end of the room volume. Here the members can meet to watch a movie or meet with the overnight staff, if having issues.



Ill.66

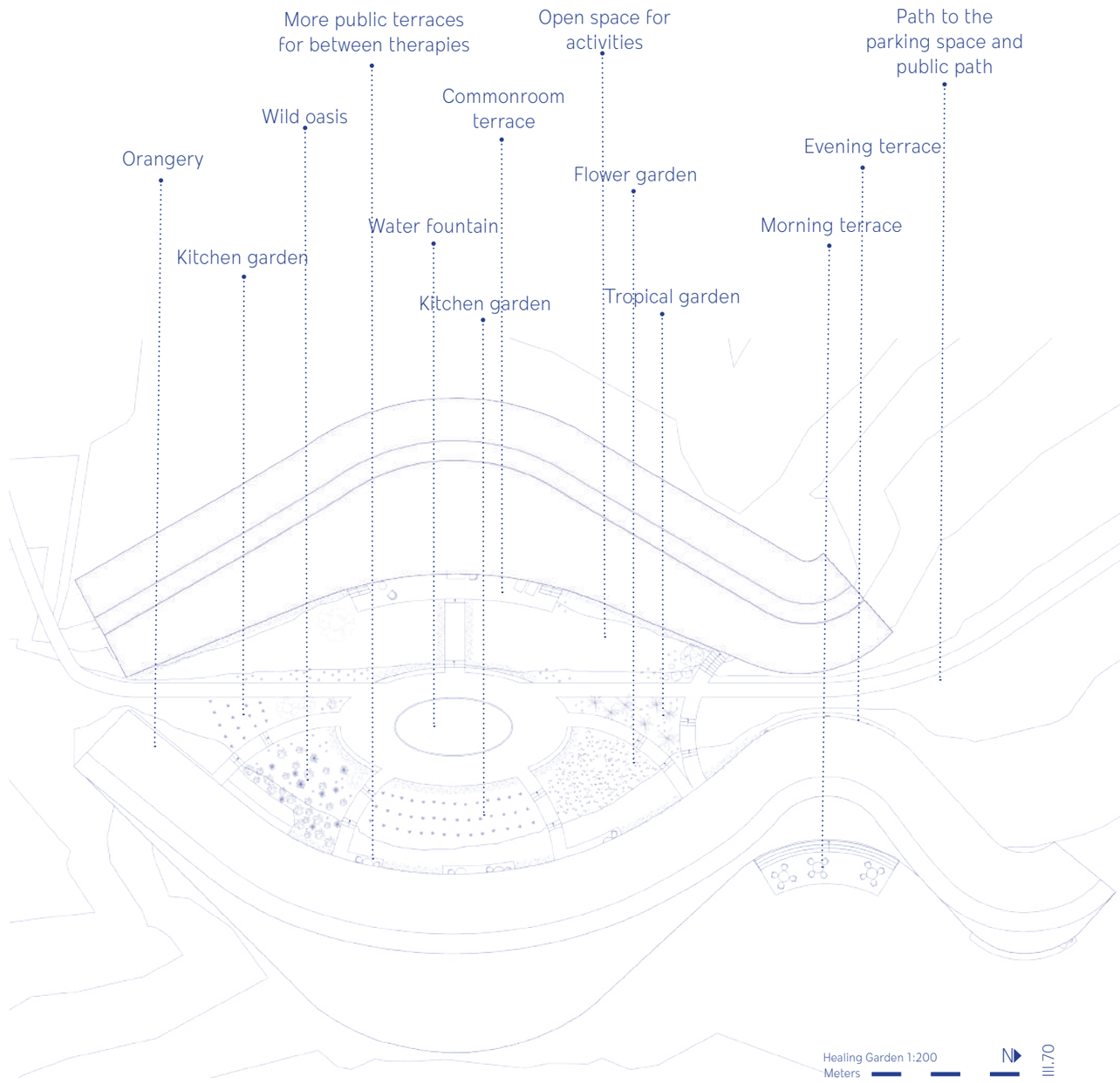
Ill.67 Common room

Ill.68 Terrace

Ill.69 Water fountain centrally in the healing garden

Healing Garden

The healing garden is a secret magical place, in contrast to the uncultivated nature surrounding the center. The garden is a transition space for the members between being at their temporary homes and working with themselves in therapy. Passing through the garden becomes a ritual. The garden support three approaches to a healing garden; that the smell and sounds can influence our well-being, that working with the garden can have a positive effect, and that activities in relation with the personality, can have a positive influence on healing. The garden has a shielded central space with a water fountain, for dwelling and meeting. The different spaces between the paths are clearly defined and entails various types of vegetation with different focal points. This makes the garden easy to understand and utilize. Certain areas connected to the more active treatment zones, entails the kitchen garden, where, along with the orangery, the members and the gardener will grow and harvest vegetables. The orangery is positioned in the southern end of the garden, making people move through the spaces and unconscionably get affected by the soothing nature.



Ill.70

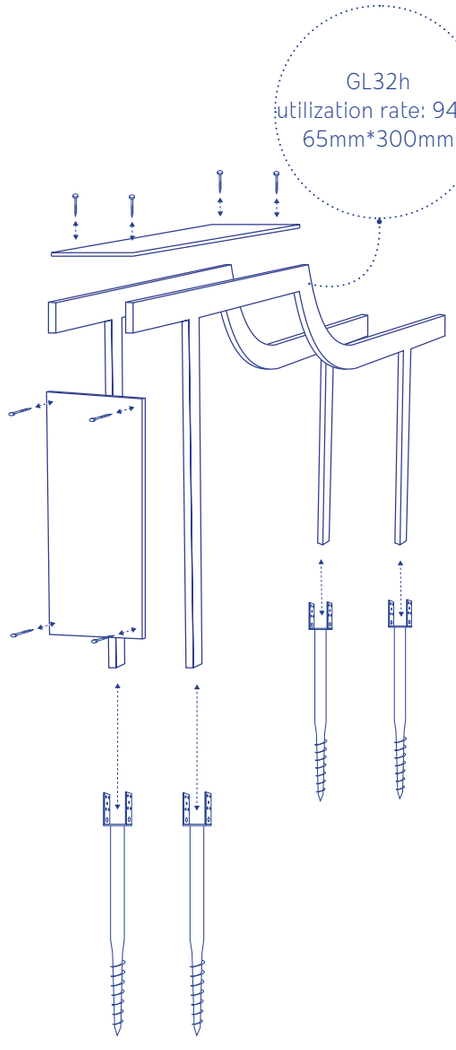
Ill.71 Healing garden from the entrance

Ill.72 View from north-east

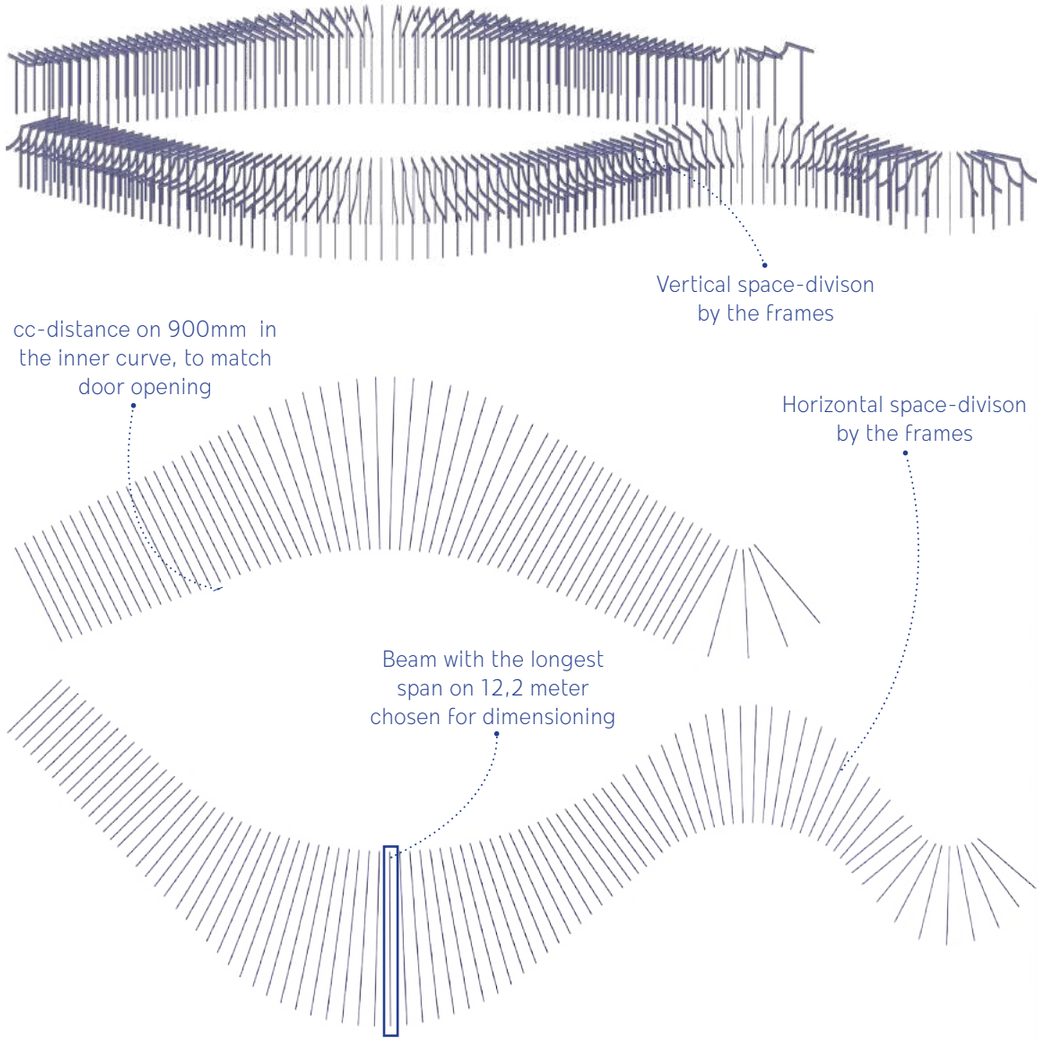
Construction

The partly visible frames play a significant role in the tectonic approach of the building design. The frame structure allows an open floorplan and defines the spaces both horizontally, by adjusting the span of the beam, and vertically by its curved change of height. The cantilever extension is adjusted to shield for the sun but will still allow sufficient amount of sunrays for passive solar heating. By visible frames expresses honesty in the contruction. It is readable that the frames are loadbearing and not granite façade. The frame construction acts as the skeleton of the building, with the façade cladding as the skin. The window openings drags the skin to the side, revealing the skeleton of frames. The longest beam of the center has been dimensioned to an elegant 65*300mm. (Appendix 3)

Disassembly
Designing for disassembly is an influential part of considering the carbon footprint of the building, but also for an efficient construction process, the use and the reuse of the building, and hereby the economy. Constructing the center, the frames will be prefabricated, and attachted on a screw foundation, and the rest will be constructed on-site layer by layer. The screw foundation is easy to install in the ground and deconstruct after end lifetime of the building, to be reused for another project, leaving the site rather untouched. The frames are stabilized by woodfibre boards as wind barriers in the climate screen. Each layer is attached by screws, which makes it easy to deconstruct as pure materials and reuse or burn for energy. Furthermore, the climate screen can be deconstructed layer by layer and reattached, making it possible to switch certain layers inside the climate screen.



Ill.73 Stabilization and disassembly



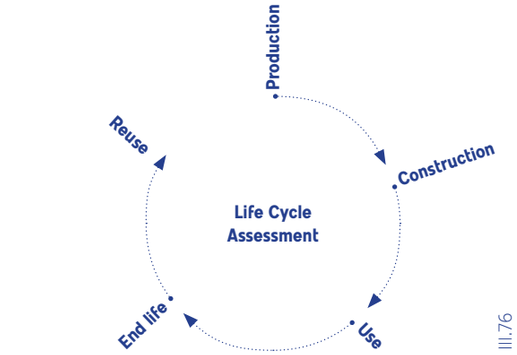
Ill.74 Frame constrction layout

Ill.75 Frame constrction layout, plan

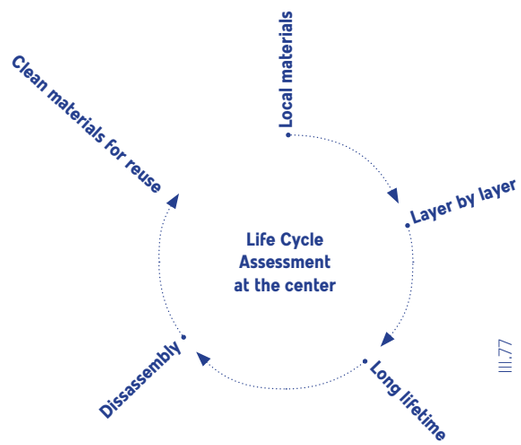
Life Cycle Assessment

Life Cycle Assessment is considering the carbon footprint from cradle to grave. The center has a focus on clean sustainable materials. A factor in the production of the materials, is the transport from the extraction site to the production site and to the construction site. Using local materials, minimizes this pollution and furthermore contributes to the embodiment of the place. The local stones and seashells used in the center, has a long lifetime, and therefore a low CO2 emission, but will however pollute a little. To reduce the overall pollution, organic materials can influence the numbers as they will have absorbed co2 during its lifetime. If burning the wood for energy after end use, the CO2 will be released into the atmosphere, thus, the reuse of the materials should instead be considered.

A calculation has been made of the climate screen. It is assumed that that the result of the roof construction will be similar to the wall construction. The foundation has been considered on a conceptual level regarding choice of materials and construction method.

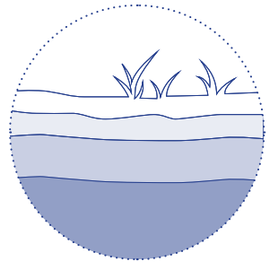


Ill.76



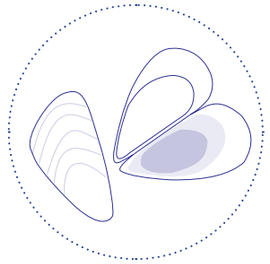
Ill.77

Local materials
Minimizes the impact from transportation

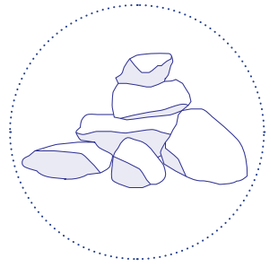


Clay
No chemicals and can be reabsorbed in the ground

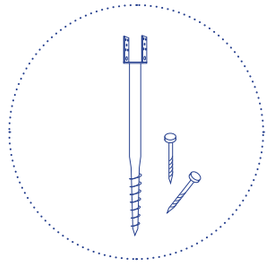
Organic materials
Has absorbed and bound CO_2 through its lifetime



Seashells
Local residual product, as capilar breaking layer in foundation

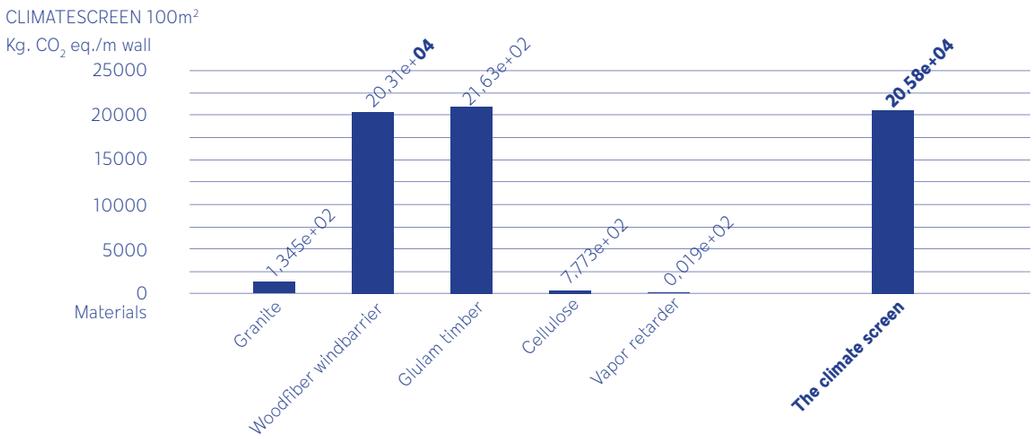


Long lifetime
Granite and slate can sustain a long lifetime



Leave the site untouched
Can be removed and resued for another project

Ill.78 Material choice regarding LCA

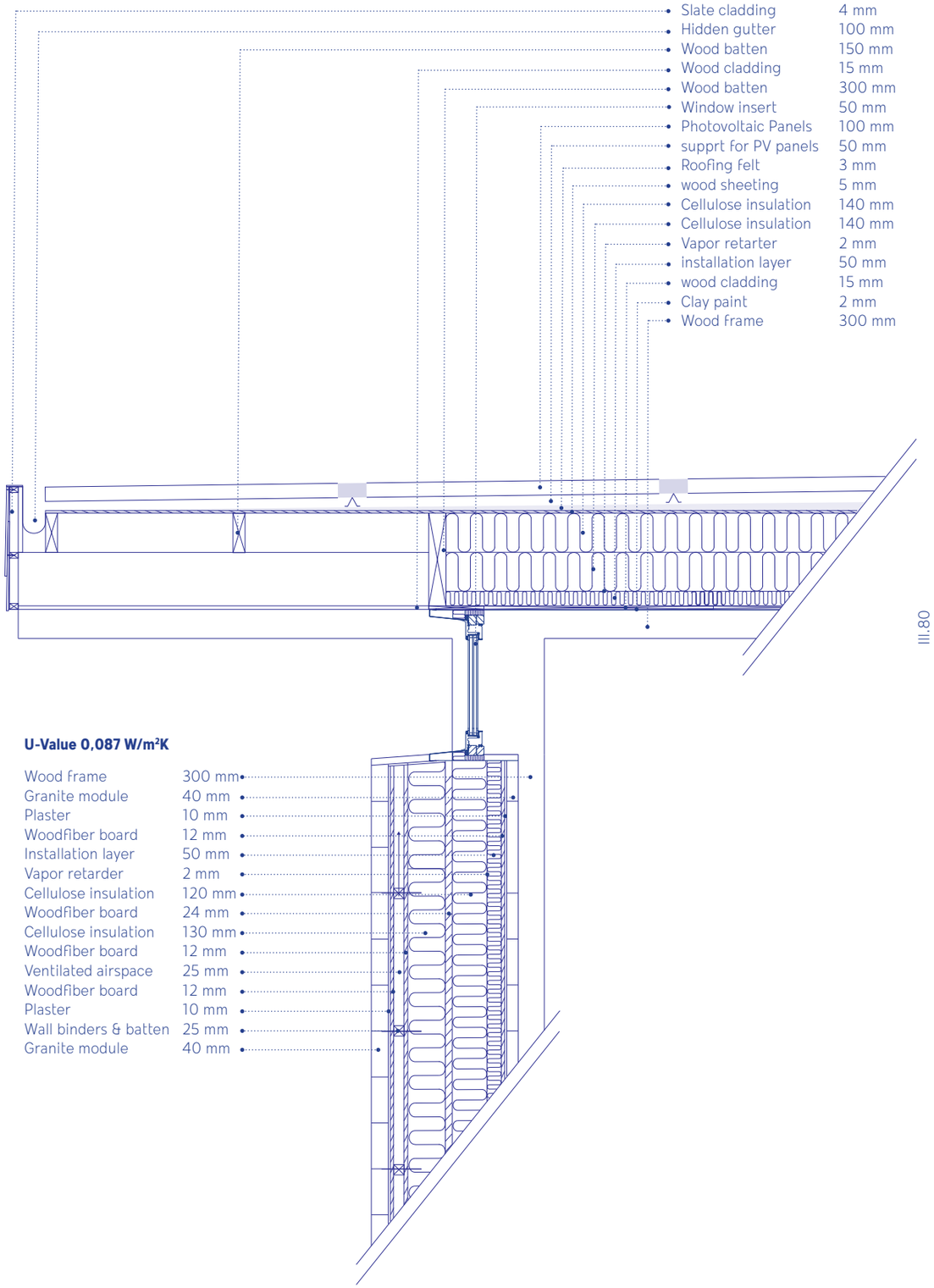


Ill.79 Carbon footprint of the wall

Construction detail

The climate screen with a low U-value, is an influential passive strategy regarding energy saving. To achieve a low U-value, the thickness of the wall becomes large. The expression of a large wall enhances the contrast between the heavy wall and the uplifted roof. As insulation material, cellulose insulation is chosen, as it is a very common material to use in Brittany. It has a thermal conductivity as the common material rock wool, but opposite of rockwool, it has a negative carbon-footprint. Instead of cross laminated timber as wind barrier and stabilizing material, woodfibre boards from Nordic Woodfibre (KILDE) has been chosen as it consists of 100% natural woodfibers. Furthermore, is it possible to plaster and increases constructional rigidity.

In the roof construction, the Photovoltaic panels are hidden in the surface on the horizontal part of the roof. Likewise, a gutter is hidden, yet open so it can be cleansed if needed.



Ill.80

Ill.81 Light into the center

Daylight

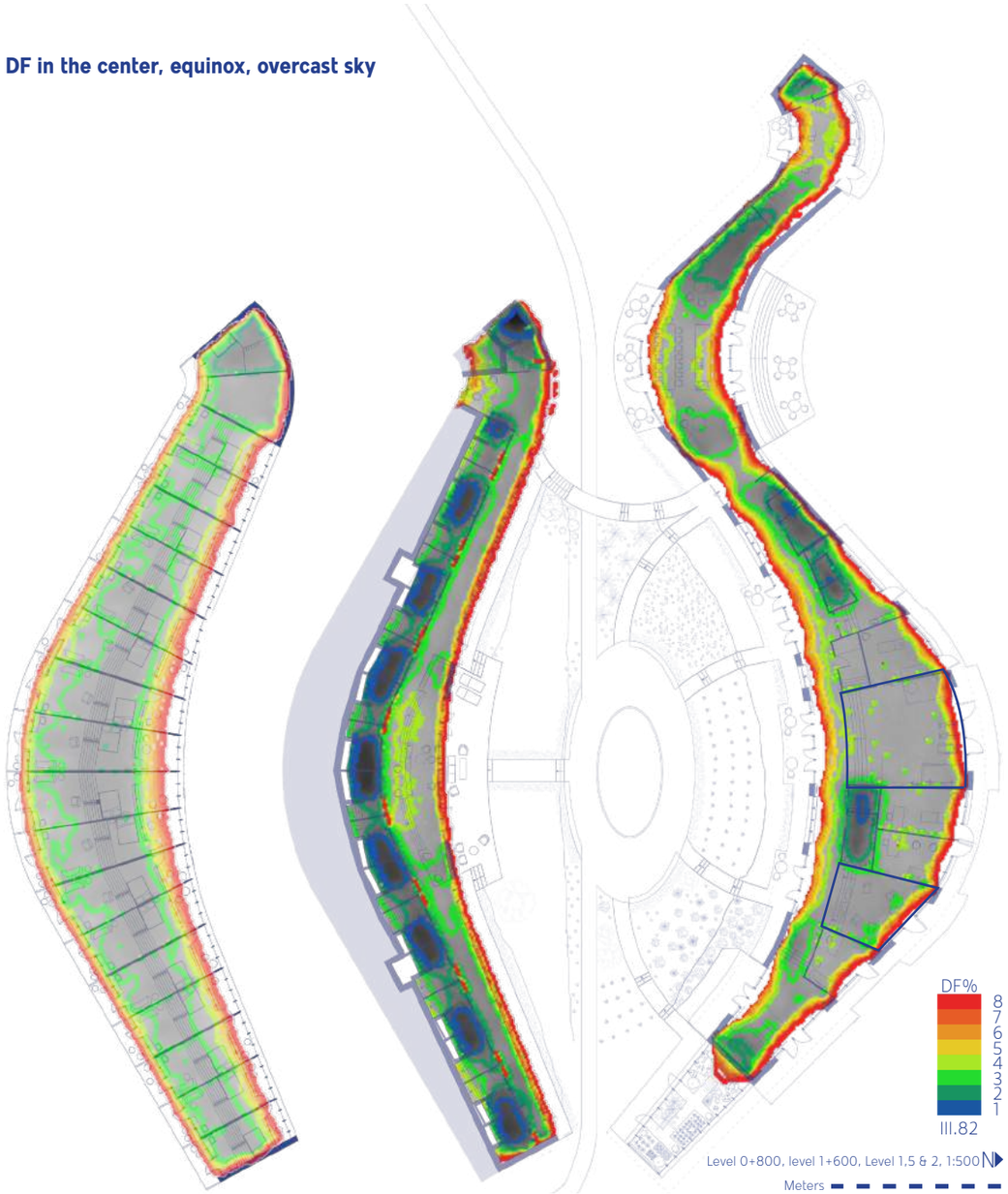
Daylight is important for our well-being. Physically and mentally, it can contribute to reduction of depression, and help regulating the hormones so we can be active when awake and tired when about to sleep. Atmospherically, it can influence an impression of a room and set a mood. Spiritually, it is a resource of life, and can be used as an artistic effect.

In the center, the daylight is used as a design element, to create a sense of lightness with the window row lifting the roof. Furthermore, it creates movement when the beams of the frame construction divides the sunrays and creates a run. It is reminding the members of time, as the impression of the rooms will change throughout the day and the year. The curved roof will softly drag down the light and express softness and smoothness. Additionally, the daylight can create a sense of safety when a room is bright and lit. The functions independent of light, is placed in the core where it is dark, and the light dependent activities are positioned near windows.

Throughout the center, the windows have horizontal shutters in height with the window shelves. This is to shadow for the high sun, not to cause overheating, but also as a protective factor, as the members cannot be fully spotted from the outside. From the outside looking in, the shutters will hide unflattering elements as chair legs and mess on the floor.

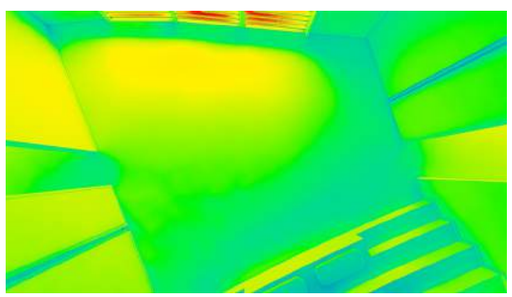
The eastern light contains more lux than the evening light. Therefore, is it the members able to be greeted by the light in the morning on their bedroom terraces and in the common rooms.

DF in the center, equinox, overcast sky



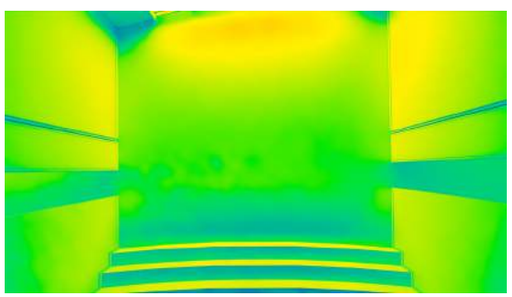
III.82

DF in the CBT group room, 12:00 overcast sky



III.83

DF in the gym, 12:00 overcast sky



III.84

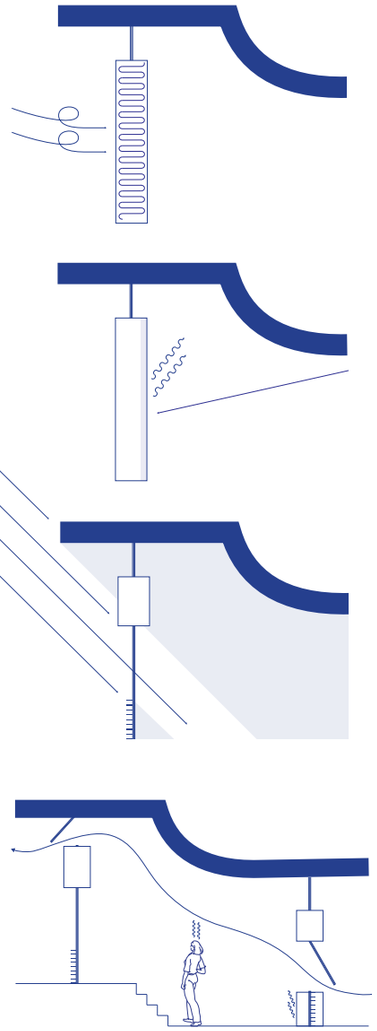
Passive Strategies

Envelope
The envelope is a screen against the outdoor climate with a big influence on the energy consumption of the building. This is through a low U-value and few cold bridges. The thick envelope has been exploited as window seatings in the center (ill. 85).

Thermal mass and moist absorbation
Stone has a high thermal mass and hereby the ability to absorb and store heat energy. The heat will be absorbed when warm and released when colder, which increases comfort and reduces energy cost. Clayboards are used for partition walls, instead of the typical plasterboards, which is an porous material. It can absorb moist, resulting in a naturally adjusted atmospheric indoor climate (ill. 86).

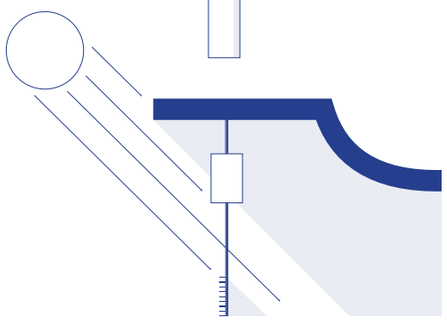
Sunheating
The sunrays are the buildings heatsource. The windows are adjusted in size so it lets in enough sun for heating without overheating. Horizontal roof overhang and shutters are used to block for the sun during summer time, when the it is higher on the sky and the weather is warmer. Curtains will shield for glare when the sun is lower on the sky, entering through the horizontal shutters (ill. 87).

Natural ventilation
Members suffering from PTSD can be disconnected from their bodies. Not feeling the surroundings, not being in the present. The members should regenerate this awareness of the signs their bodies are telling. Manually controlled natural ventilation, will nudge them to relaize when to open and close the windows. Acting to their needs and regain controle of themselves (ill. 88).



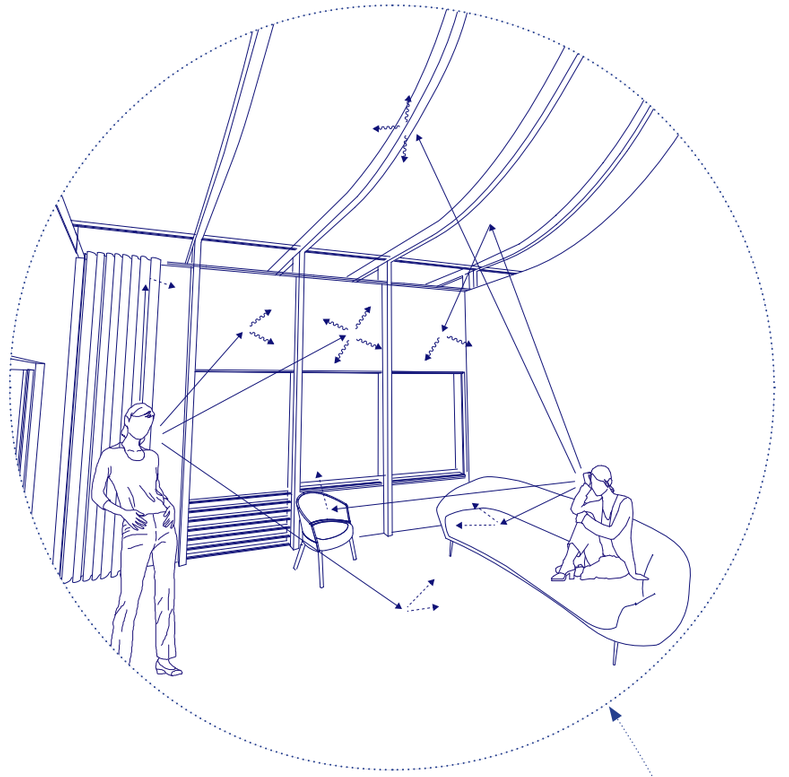
ill.85

ill.86



ill.87

ill.88



ill.89 Acoustic regulating elements

Acoustics
A well indoor acoustic can reduce overwhelming experiences and a change in acoustic between the rooms, can indicate a change in focus. Granite is a material with a tactile surface, and along with the visible frames they will spread the sounds waves, while soft materials as curtains, furniture and poeple, will absorb the sound waves. CBT treatment is an initmate setting between two people. Thus the indoor climate has to be good. The CBT is chosen for reveberation time calculations.

Reveberations time: 6,5s
The CBT room for the calculations
See Appendix 5 for calculations.

ill.90

Ventilation

Natural ventilation is the only inlet of fresh air in the center, nudging staff and members to be aware of the need for air change. This can be a challenge to manage, but the embodiment of the natural parameters influencing the indoor climate, can contribute with a connection to the nature. From every wet-room is a exhaust, leading to exhaust on the roof. The bathrooms in the room section, shares a thicker installation wall, leading the exhaust run to the roof. The stove in the kitchen has an integrated extractor hood, leading to exhaust under the floor, leaving the ceiling untouched.

The roof following the hillside, has the potential of promoting thermal buoyancy. When the air gets heated by people, equipment and the sunrays, the density will drop, and the air will move upwards. Here the top window row will ventilate the heated air. The windows will be controlled manually but will open via a contact in the wall. The building will in average need an air change rate on 2 l/s m2 during summer to eliminate the need for cooling.

The single CBT room has been calculated for maximum and minimum temperatures throughout the summer. It reveals a well indoor temperature between 23-26 degrees, with a little overheating, which should be considered in the ventilation strategy. (Appendix 4)

TEMPERATURE

Average, summer
24,3 degree C

Maximum, summer
26,9 degree C

III.91 Key numbers, temperatures

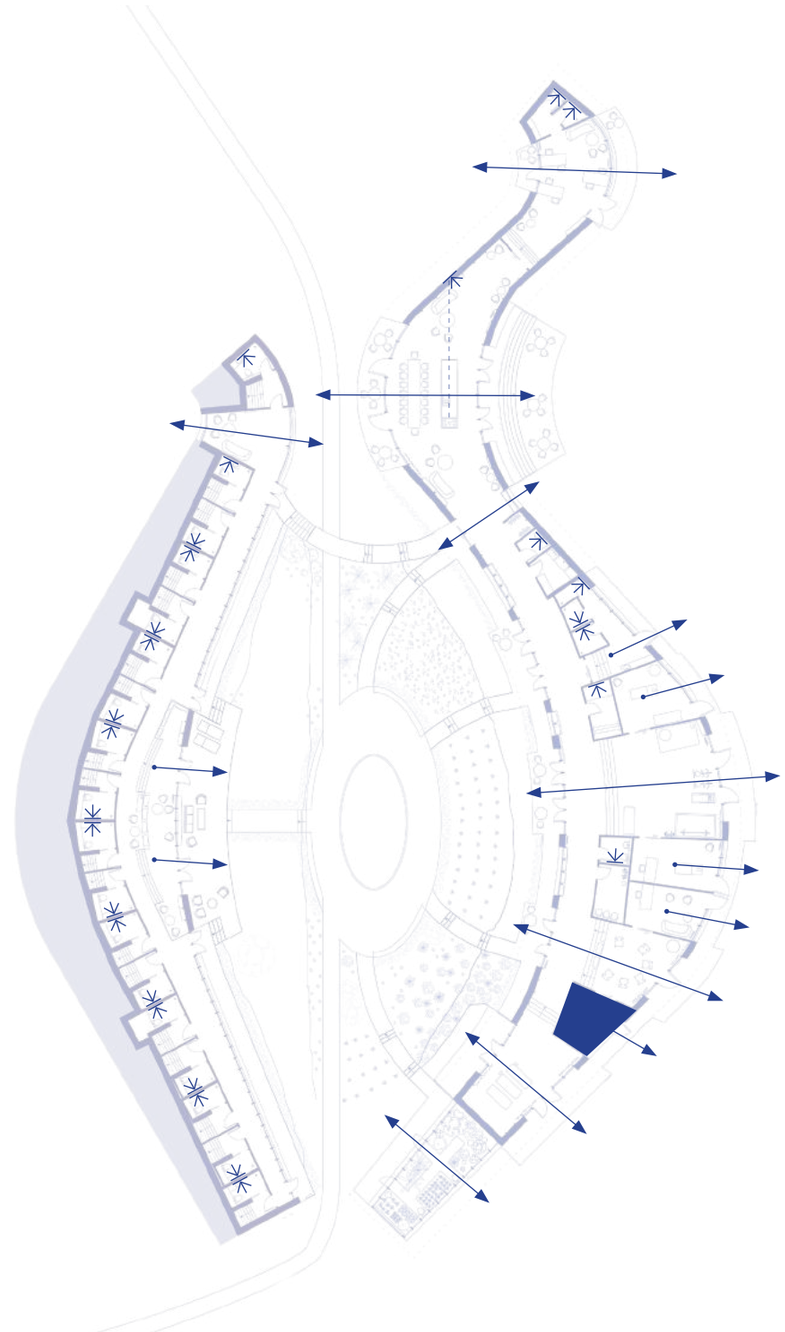
VENTILATION

Needed ventilation during summer
2 l/s

Ventilation strategy, summer
Ventilation rate can be obtained through the upper window row to exploit thermal bouyancy by:
Two windows top hinged, opened by 10 degrees

Ventilation strategy, spring, autumn, winter
Rooms with single sided ventilation:
an opening on 4% of floor area
Rooms with cross ventilation: an opning on 1,5% of floor area

III.92 Ventilation strategy



Single sided ventilation
Cross ventilation
Extraction pipe under floor
Exhaust

III.93 Ventilation plan
Level 0+800 & 1+600
1:500

Zero Energy Buillding

The Center is designed to be a Net Zero Energy Building (nZEB), which means that the building produces at least as much energy as it uses per year, when accounted for on the site. The building have a low energy demand, which is covered for by renewable sources. This energy demand is obtained through passive strategies as earlier described.

Energy use of the building is estimated as recommended in the program Be18. Yet, a higher amount of energy could be neccessary. The Photovoltaic Panels is positioned on the horizontal part of the roof, which is the surface recieving the highest amount of sunhour (See Process p. 55). The PV panels will cover for the energy demand, but the center does not need more PV panels than what covers 15 m^2. There is space to place 935 m^2, but that will be a costly. A reason to do it anyway, could be to produce renewable energy to the surrounding houses connected to the grid, which are powered by gaz as typical french homes. Create a communal sense and responsibility.

To cover for the Domestic Hot Water, a earth-to-water heat pump is installed horizontally underneeth the center, siezing the oppertunity as the earth had to be prepared for construction. A small smount of the energy demand goes to room heating. The heat pump can produce enough DHW to manage floor heating, which could be a heatsource in cold periods.

ENERGY FRAME

Without renewable energy sources
24,5 kWh/m^2 year

With renewable energy sources
0 kWh/m^2 year

Ill.94

CONTRIBUTORS TIL THE ENERGY DEMAND

Room heating
21,8 kWh/m^2 year

Domestic hot water
5,3 kWh/m^2 year

Cooling
0 kWh/m^2 year

Ill.95

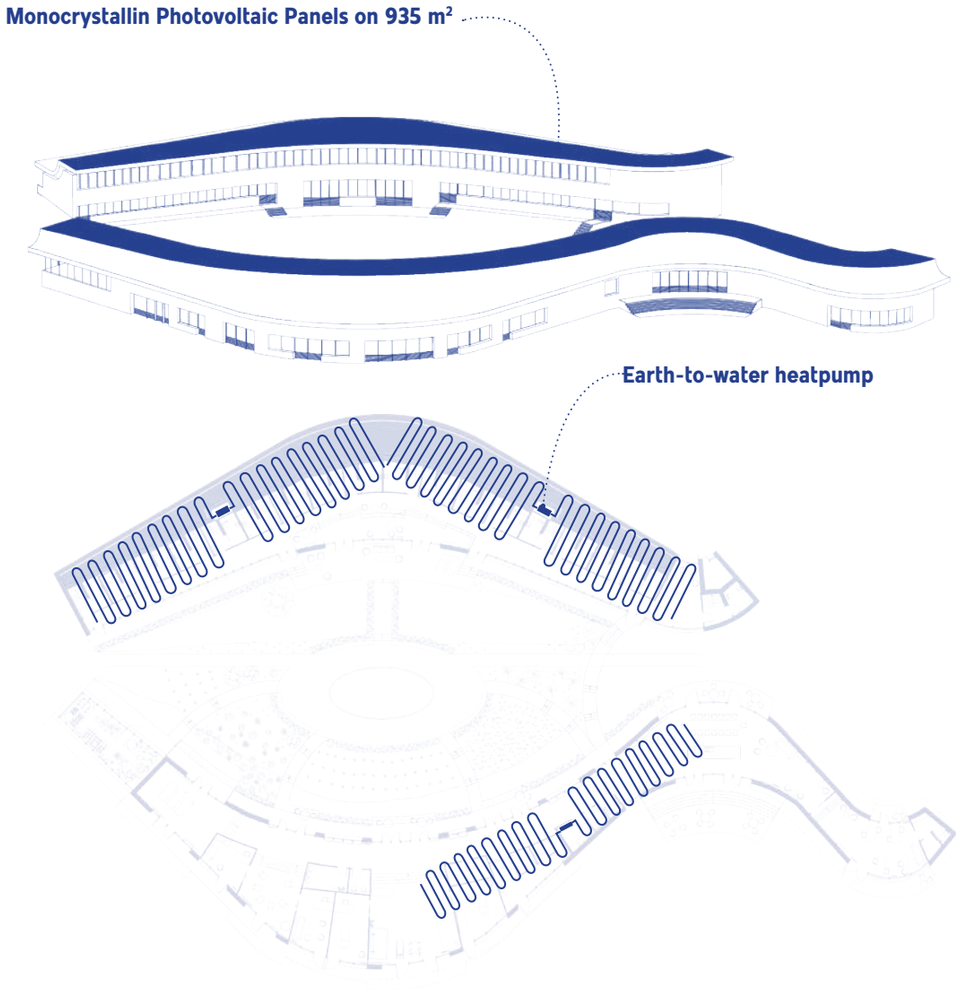
CERTAIN ENERGY CONSUMATORS

Lighting
30,1 kWh/m^2 year

Heat pump
3,1 kWh/m^2 year

Pumps
1 kWh/m^2 year

Ill.96



Ill.97 Position of solar panels

Ill.98 Position of heatpump

Ill.99 PThe center at night from west

Conclusion

The region Brittany in France, has a certain atmosphere. Distinctive cultural treasures, family bonds and their harsh but beautiful nature. When strolling at the beach Les Rosaires and enjoying the coast of Côte-d'Amor, you can spot the treatment center on an open spot in the wilderness on the hillside. The center is not calling for attention, yet it acts proud and not ashamed of the tabu traumas it is there to treat. The center believes in a holistic approach to treatment, where bodily, mental, social and spiritual aspects are affecting each other towards being well. To be open for treatment and help, presence and awareness is critical. The center stimulates the senses in a mild way through tactility, light, smell, and movement. Reconnecting with the senses. The healing garden, in contrast to the untouched surrounding nature, acts as a transition space between the rooms, the treatment, and the common space. The common space has a collective purpose, nudging interaction in safe settings. To regain social values and skills. The staff will be a part of the members everyday life at the center, but be able to go spare and vent with colleagues in the staff section. Connecting all the elements, is the visible loadbearing frame structure. It embodies the site through its shape and enhances the transition-concept down the hill. The frames stands strongly when the skin of the building gets split in two, letting in light between the wall and the roof, creating a spiritual and light atmosphere.

The center is a Zero Energy Building, through passive and active strategies. The sense of a clean natural building by the manually control, making the members regain connection with their sensations. Furthermore, social and environmental sustainability has been considered, as is the need for future generations. The granite rocks on the curved surface is a characteristic element with roots to the local community. The curved granite may inspire the members to believe that they can move their rocks. The granite rocks on the curved surface is a characteristic element with rooths to the local community. The curved granite may inspire the members to believe that they can move their rocks.

A treatment center for PTSD by sexual assault, has yet to be established in France. The holistic and embodied sensual approach, makes it a new type of center with a new way of treating traumas. The center is not only a place to be treated, but a treatment in itself.

Reflection

A Center for treatment of PTSD caused by sexual violence, has been an interesting assignment. Creating a design brief takes you through organizational processes, as the national offers and needs, the geographical and societal field of users, and combining and integrating treatments and staff functions. It is a challenge but also gives an insight of the processes and justification of the center. Furthermore, working in a foreign context has evoked an interesting contextual focus in the design.

The choice of field of well-being and embodiment of senses in architecture, has been a possibility to learn to integrate atmospheric concepts in a tangible way. Furthermore, it is an opportunity to push for an ambition about integrating awareness on human senses in architecture. The place we are the most should support us the most, on multiple levels. Just by designing this project, I, myself, have become more aware of atmospheres, transitions, movements, and which elements of daylight affects me in what way. Throughout the process, it has been perceived that the general conversation about senses in architecture, is lacking legitimacy and argumentation. Few architects and presentations of architectural projects are using senses as conceptual arguments in the design. Maybe it is more a lack in the communication hereof. I find that communicating on paper by illustrations and text, that the essence of the sensual design gets lost.

In relation to being on the master track 'Sustainability', this project has a relatively high focus on construction and tectonic. It has been fostered through the concept of the project, enhancing healing architecture, thus, architecture becomes a holistic field of work. Architecture is aesthetic, functional, technical and humanistic, which allow me to focus on the critical aspects of the design, no matter the educational direction.

Reflecting on the project period, the process could have benefit of a clearer prioritization and project demarcation. The end result has multiple elements touched, but not necessarily solved. As for example the choice for seashells as capillary breaking layer in the foundation, but no detail drawing hereof. It's difficult to let yourself design a building where you know certain elements will reject the project, so the compromise has been to integrate an idea which will work, without designing it fully. Yet, certain aspects have been let aside, such as economic sustainability, access for disabled, and water reuse.

Studying at Aalborg University has contributed with great skills of working in groups and through problem-based learning. Working alone has given an insight in the importance of the discussions and how much of architecture is actually based on opinions rather than rationalization, which is needed when the analysis doesn't give a clear result. The problem-based learning has been integrated in the Integrated Design Process through Maher's model. The method has pushed me to investigate the architectural aspects and to be curious. But, solutions often creates more problems, and then when do I stop investigating? The concept development was not a linear process, but a shape approaching via many elements coming together at once. Wanting to design for multiple elements at one time, could lead to missing a good idea for another aspect. For example should the window niches of course be lower, so that the feet can touch the ground.

As the project has been undergoing for a year but on part-time, the timing has been challenging. How far can I push the point-of-no-return for the concept? I would like to have changed certain shapes of the center. But via mistiming of the process, there was not more time left, if I wanted to concretize the sketch proposal for a treatment center.

Working with sustainability and an integrated design process throughout the education, has resulted in an appreciated experience about designing for Zero Energy Buildings. With only verifying calculations and smaller adjustment to make the center Zero Energy, it is revealed that a base of knowledge regarding technical architectural elements has been developed. Experience without being experienced.

The treatment center has some unfinished corners and design mistakes. Yet, when looking at the values in the design, the center has something to contribute as a sketch proposal in the modern architectural community.

"We do not create the work.
I believe we, in fact, are discoverers."

- Glenn Murcutt 1936, Dushkes, L., 2012. p. 10

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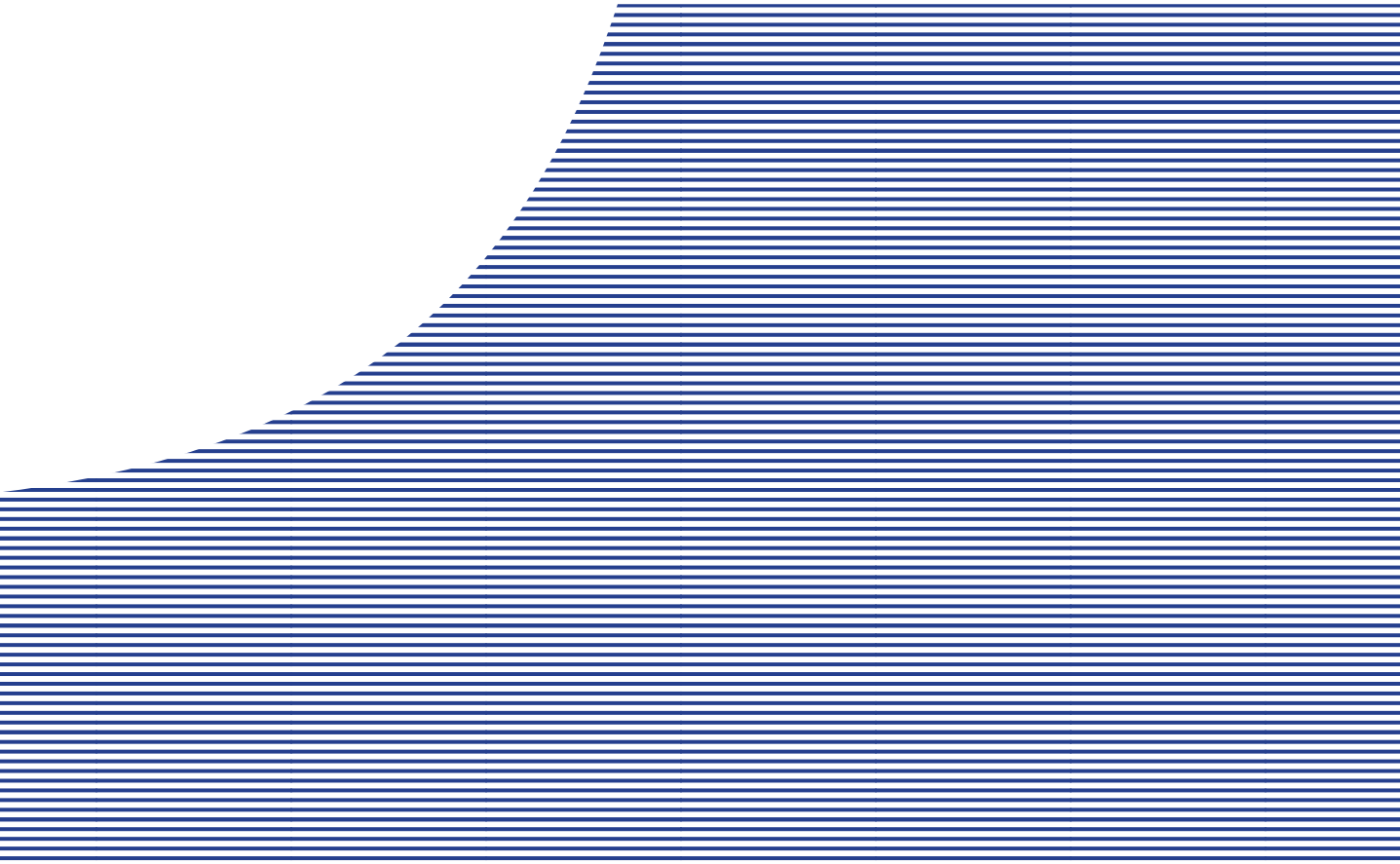
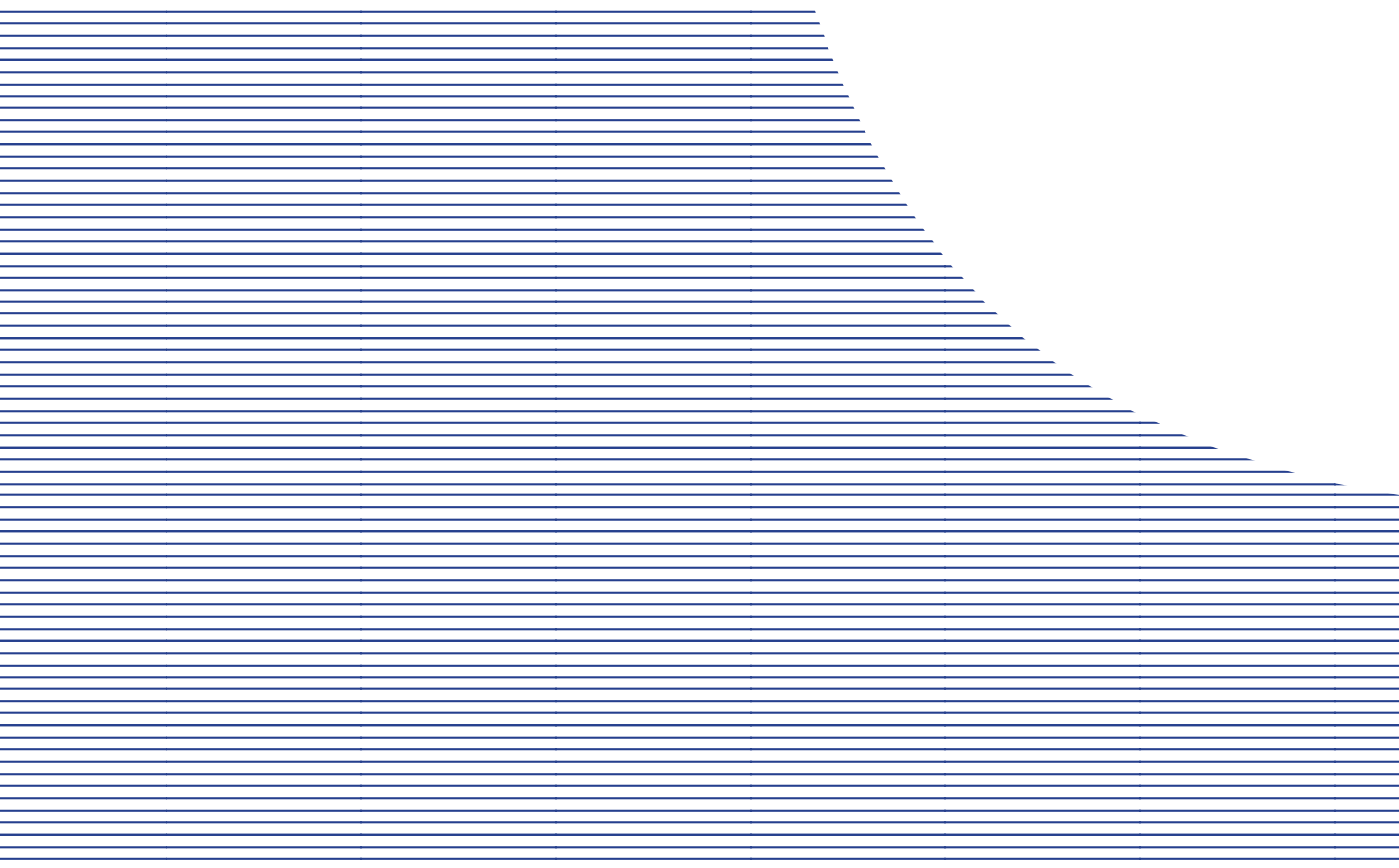


Process

Center for Treatment of PTSD

Master Thesis by Luna Nørgaard Gevitz
Architecture and Design
Aalborg University
September 2021



Project title Center for PTSD
Semester MSc04 - Architectural Thesis 2021
Main supervisor Tenna Doktor Olsen Tvedebrink
Institution Aalborg University
Department Architecture & Design
Project period 01.09.2020 - 01.09.2021
Pages 60

Author Luna Nørgaard Gevitz

Table of Content

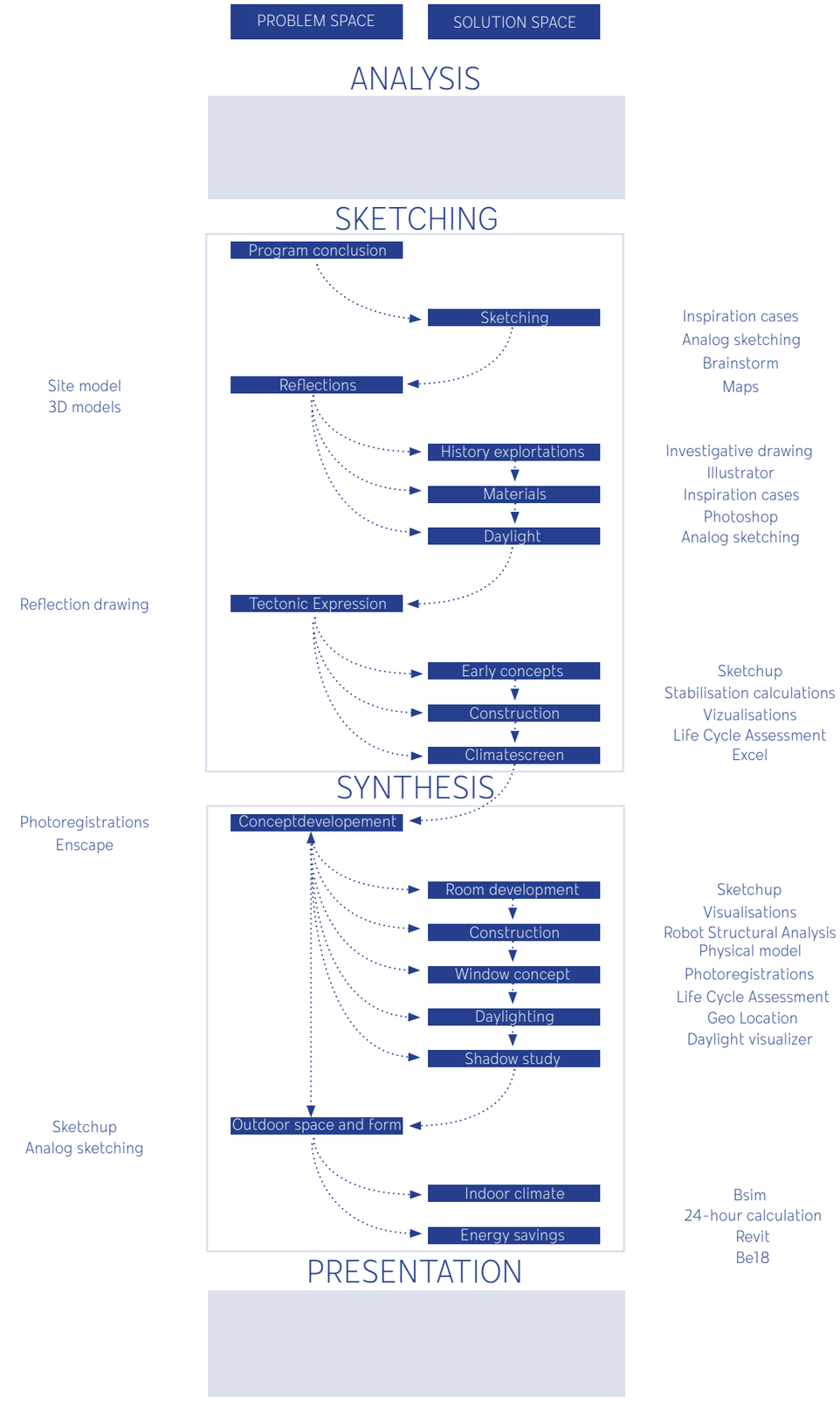
"Architecture is bound to situation. And I feel like, the site is a metaphysical link, a poetic link, to what a building can be"

- Steven Holl 1947, Dushkes, L., 2012 p. 68

Method

The Integrated Design Process is an iterative process, following five phases (Knudstrup, M. A., 2005). Within the IDP, Maher's Model have been incorporated, to navigate through this looping process by problem-solving (Dorst, K. Cross, N. 2001). The aim is to actively develop the problem space in coherence with the solution space (ill. 1). See 'Method' in the Program p. 30-35.

Throughout the sketching- and synthesis phase, the problem space and solution space has been used to consider the iteration faced, and what was learned from it. Some iterations have been revealing the missing designs elements, whereas other iterations have been giving the solutions. They have been positioned as an overall problem- or solution space. The different tools used for the different phases, are listed in illustration 1.



Ill. 1 Methos used for the process

Just Start Drawing

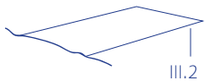
Problem space
Many thoughts and directions have been blooming during the analysis phase. At this early stage in the sketching phase, it can be critical to eliminate designs in the head and/or document initial ideas. What are the first thoughts the program has given me? Can the design-principals be incorporated in different shapes and styles? Only a few design drivers was chosen to this exercise. Inspirations posters were used to kickstart the sketching phase.

Design drivers
The position of the functions
The flow through the center
Block from wind from west and south/west
Outdoor spaces with sunlight and shadow
Light as a bearing design element
Spaces that encourage the functions
Explore the view to the east
Soft shapes

Solution space
Initial unrestrained drawing, puts a pressure on wanting to integrate every aspect of architecture in one sketch. It was found that the microclimatic relations were the most dominating design factors as the placement of volumes can shield and open spaces (ill. 6-8). It reviled that simple design aspects should be investigated in sketching before being able to combine it in a solution. Some sketches were without rooms, placed away from the treatment department, and other sketches showed connected zones (ill. 9 and 7). It revealed a need for clarifying the story of the center.

Different approaches drawn from this excercise

In the hill



Ill.2

Organic with niches

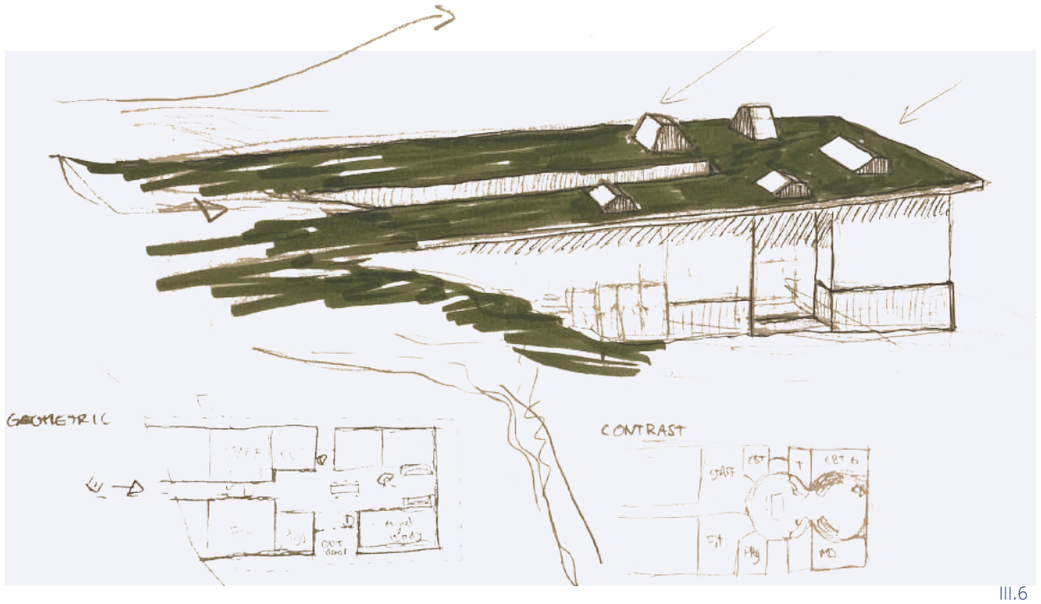
Ill.3

Niches creates organic

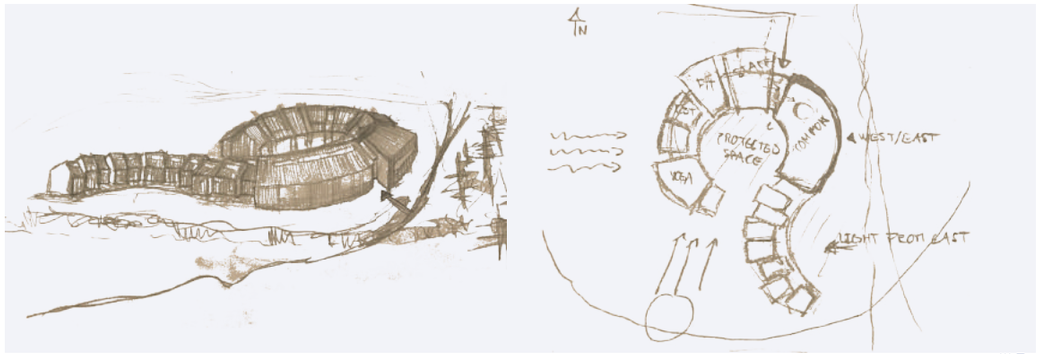
Ill.4

Negative spaces

Ill.5

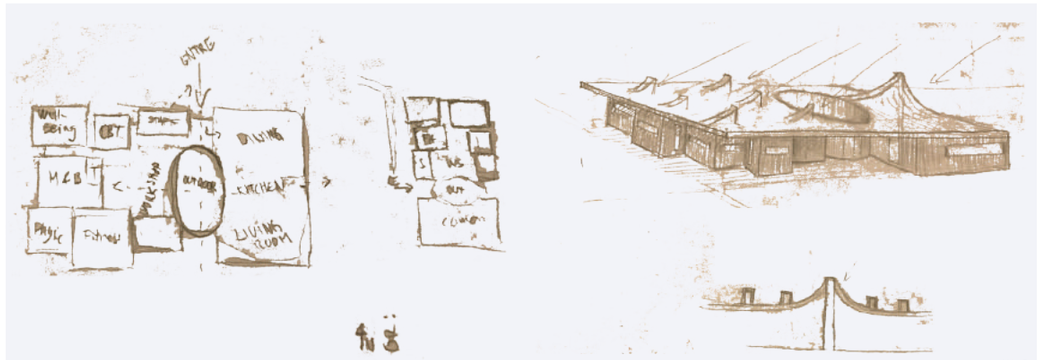


Ill.6



Ill.7

Ill.8



Ill.9

Initial Form Workshop

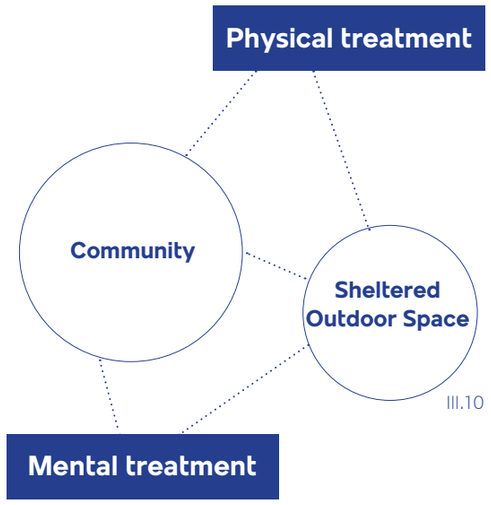
Problem space
To concretize the drawing, the site was incorporated in planview. Still more inspirational drawings and oppertunities to explore shapes were found needed. With a site drawing, but without strict restrictions regarding scale, it was incouraged to draw in both plan and volume.

During this exercise, I had been re-interviewing the 'Center for sexuelt misbrugte' and was re-considering the idea of the members being at the center for longer periods of time. Therefore, in many sketches, the rooms are left out. The uncertainty about the analysis work, could be seen in the sketches.

Design drivers
Functions (ill. 10)
Entrance
View to the east vs. village to the west

Solution space
Even with a site-drawing, the steep and exceptional site was still felt missing in the form workshop (ill 11-22). A model of the site was needed to fully incorporate it in the shapes, functions and atmospheres.

Functions of the center divided in zones



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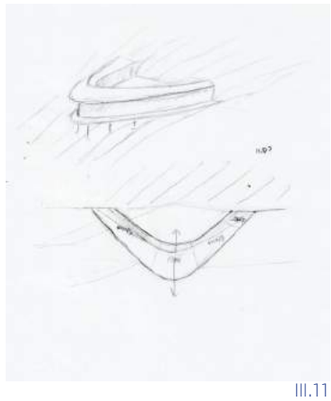
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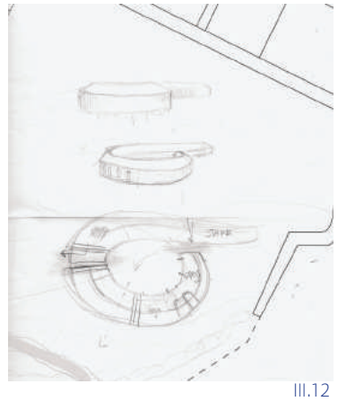
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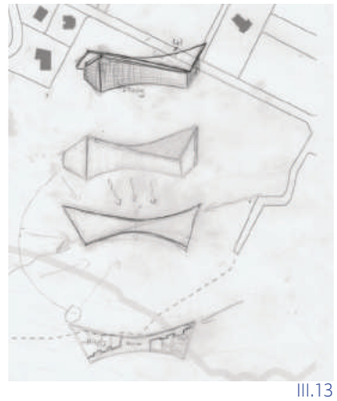
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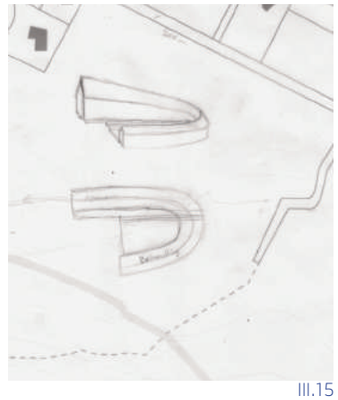
III.14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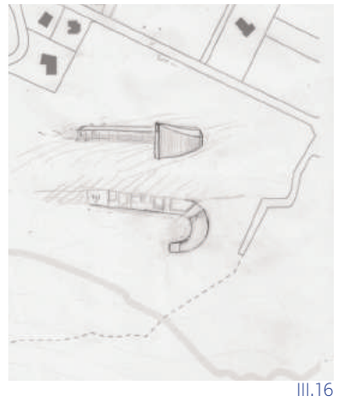
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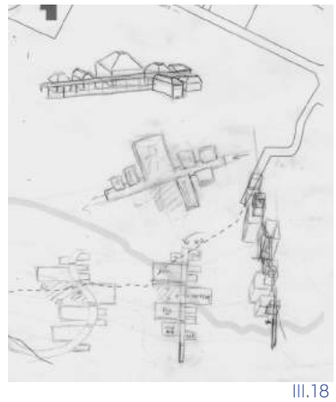
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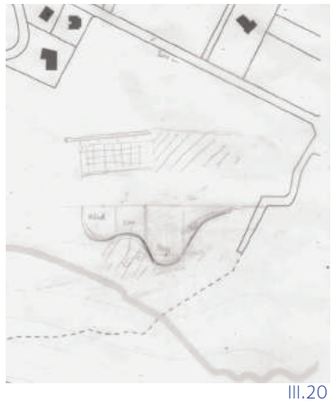
III.19


III.20


III.21


III.22

Reflection of the Initial Concepts

Problem
The characteristic setting was created in model in scale 1:1000, first through a slim model with elevation lines for every second meter (ill. 36-39), but the bigger story of the site was not shown. Secondly in a model intailing more of the site with elevation lines for every meter (ill. 27-35). Now it became clear how the building was situated on the hill.

Designdrivers
The topography
The microclimate
The flow of the building

Solutionsspace
It became clear that the very geometrical sketches and models, were not in harmony with the site (ill. 18, 19, 22 on p. 13). To sense the site and it's curves in the design, a more organic shape following the topography felt right (ill. 27, 29, 31, 33, 35,36). It is also a way of incorporating some principals of healing architecture regarding organic shapes and connection to nature.

Evaluation
This first phase of sketching and shaping, has shown how important the context is to the project. The lack of development in the sketches, brings focus to the need of doing smaller investigations of individual elements, to inspire and to find new entries of design principals to lay the ground of the development of the center.

Elements to keep for further designdevelopment

Organic

Ill.23

Work with the hill

Ill.24

Space towards east

Ill.25

Proud, but not arrogant

Ill.26

Ill.27

Ill.28

Ill.29

Ill.30

Ill.31

Ill.32

Ill.33

Ill.34

Ill.35

Ill.36

Ill.37

Ill.38

History Explortations

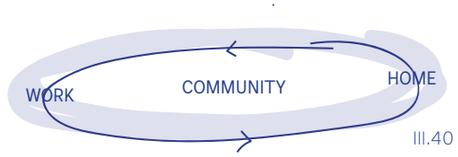
Problem space
The initial sketching showed a lack of a clear story, as a program-conclusion can initiate multiple ways of realizing certain design principals. The structure of a story can be translated into a base in the design and a sensation throughout the treatment center. Investigations hereof, were made on the basis of the landscape and contextual potentials and furthermore on the PTSD challenged user group, such as home-like feeling, movement, soft spaces and intimate spaces.

Design drivers
The position of the functions
The flow through the center
Readable architecture
Relations of the rooms
Relations with the context

Solution space
For the members, it can be important to realize when they are working with themselves at the center, and when they are resting in their private rooms. A transition between the two purposes can evoke an awareness, as seen in "The Process" (ill. 39). A division of the rooms from the treatment part, can support this understanding. If the rooms are situated behind the center, because of the curved landscape, the rooms will have a visual connection to the center and the eastern view, while feeling safe in the rooms, like "The Overview" (ill. 43). Regarding the rooms, an understanding of affiliation with other members can affect the sensation of community, as seen in "We Create Our Space" (ill. 45) and "The Villaroad" (ill. 46).

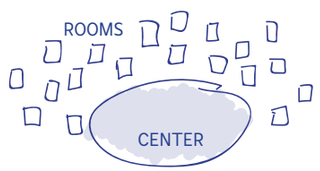
THE RUN

III.39
The Process

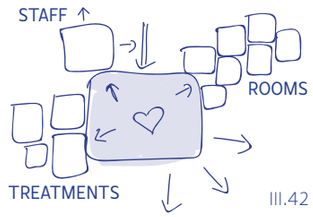


III.40
The Loup

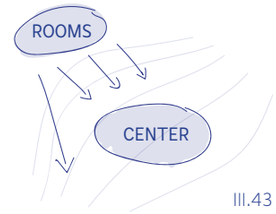
THE RELATIONS



III.41
Our Center

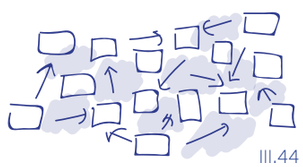


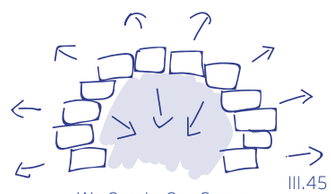
III.42
Which Direction

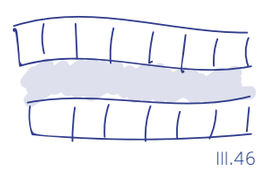


III.43
The Overview

THE ROOMS


III.44
The Village


III.45
We Create Our Space


III.46
The Villaroad

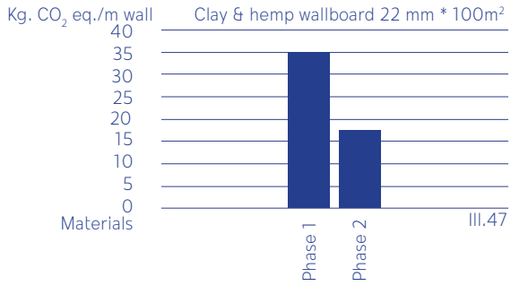
Materials

Problem
What materials can complement a home-like feeling which blends into the harsh nature and can meet the technical demands of acoustics, thermal comfort and air quality?

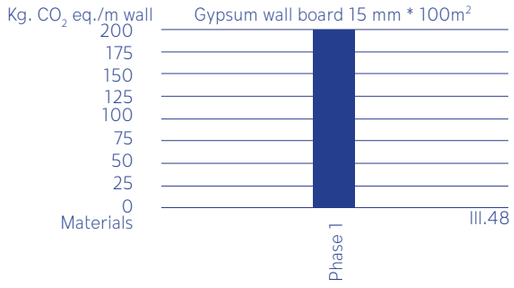
Designdrivers
Home-like
Clean
Tactility and detail
Low CO2 emission

Solutionspace
Granite is the soil of Brittany and therefore used to construct the Britain homes. With it comes the rough tactility ruling the area. Slate is a stone used for roofs in Brittany and is often a demand in the local plan. The small plates of slate creates a tactile surface which can be highlighted by the ability of creating multidirectional surfaces. Furthermore it patinates beautifully, and have a long lifetime. Wood contributes with a warm and soft atmosphere to stand in contrast to the harsh stones. For the partition walls, clayboards has a lower co2 emission than gypsum wall boards, which is the more common material. In modern architecture in Brittany, cellulose is a common insulation material, which make it cheap and easy to buy and install. (See the Life Cycle Assessment analysis of cellulose in the Program p. 46-47)

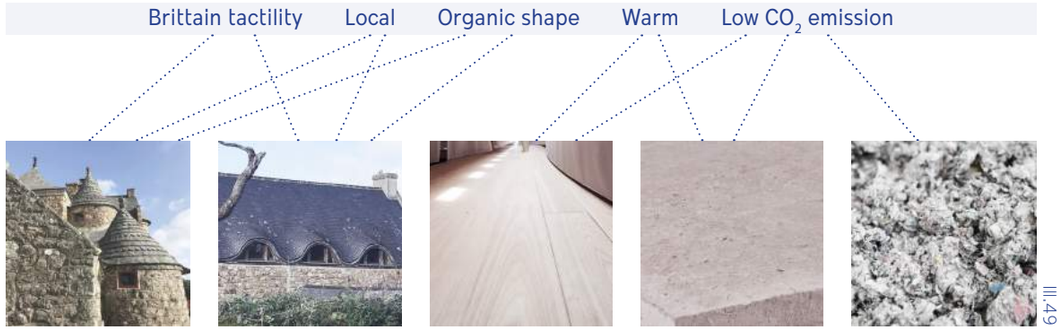
LCA comparison of gypsum and clay wall boards



III.47



III.48

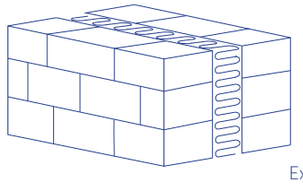


III.49

GRANITE

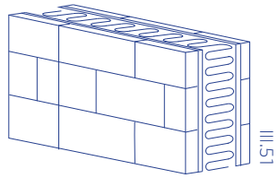
III.50

CONSTRUCTING WITH GRANITE



Brick Wall
Traditional way
Large climatescreen
Time consuming
Loadbearing
More thermal mass
Exploit thickness for niches

Modular cladding
Modern way
Slimmer climatescreen
Quicker
Cladding
Less material
Less shading for sunlight


III.51

Atmospheric Daylight

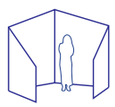
Problem space
What different atmospheres does different types of windowopenings create? How does it construct the room? Can it create movement or pause? Also for this study, inspirations posters was used. See Appendix 1.

Design drivers
Follow the time through light
Contrast, diffuse or direction giving lighting

Solution space
The shadow on the wall from direct sunlight entering the room, will move throughout the day, and create a sense of time. Especially during morning and evening when the sun is low on the sky.
III. 5 and 6 having columns and beams dividing the windows, creates a run along the building wall. The shadows will vary throughout the day.
III. 3 and 4 contributes with an artistic atmosphere and a mystery with an opening between two meeting surfaces. III. 1 creates a space in the space to where you are attracted. III. 2 gives a light expression to an otherwise heavy ceiling. III. 7 and 8 contributes with a diffuse and soft light. The curved ceiling drags down the skylight softly and contributes with a spiritual feeling.

From the program

Enhance movement

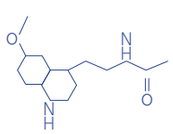


Intimate spaces

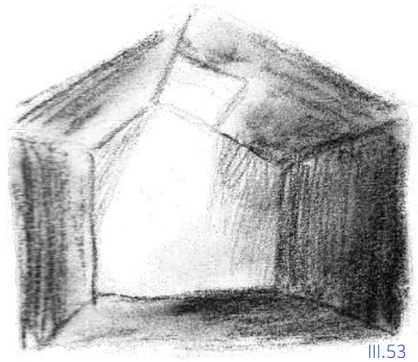
Functional adapted lighting

Aware of time and place

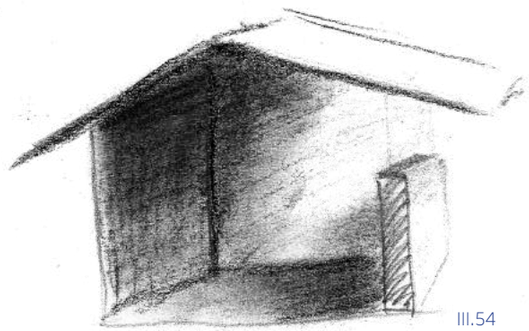
Spiritual atmosphere



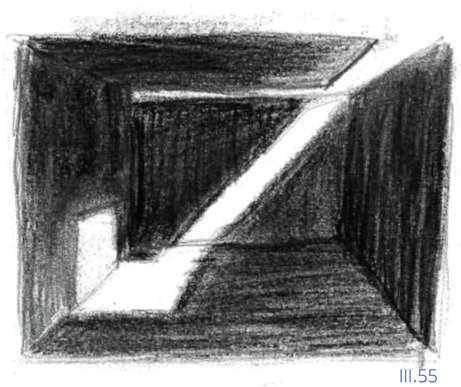
Hormones regulation
III.52



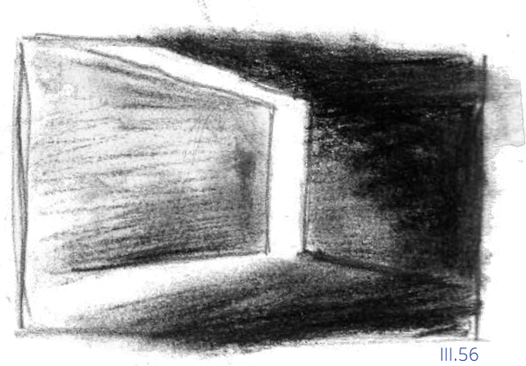
III.53



III.54



III.55



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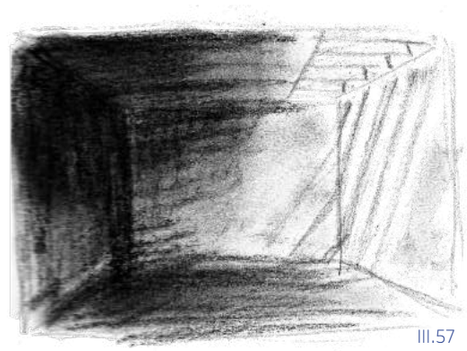
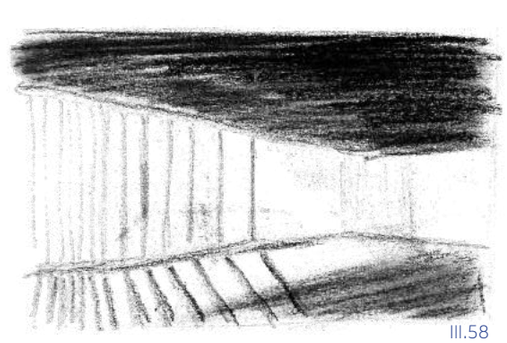
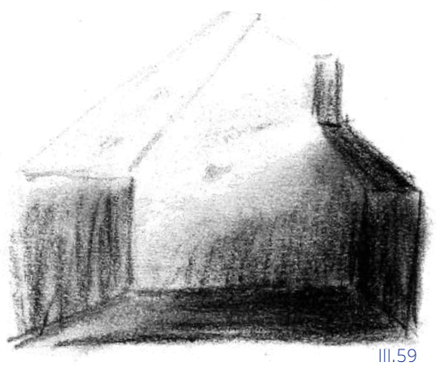


III.57



III.58



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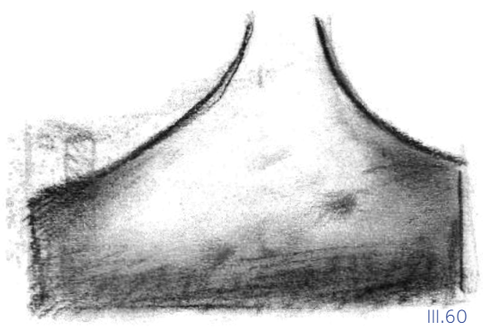


III.60

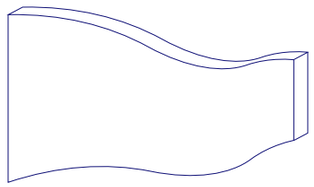
Tectonic Expression

Problem space
What did I learn? What will shape this?
Undergoing the initial sketching workshop, form workshop and smaller studies, it is starting to reveal how the program will be translated into concrete design concepts. The elements needs to be defined to be able to incorporate it further in designconcepts.

Found design drivers
The cultural context
The contextual landscape
Functions as community, intimate spaces, outdoor spaces
Healing architecture elements as readable architecture, movement, connection to nature, niches
The story and ritual
Low CO_2 emission
Low tech ventilation

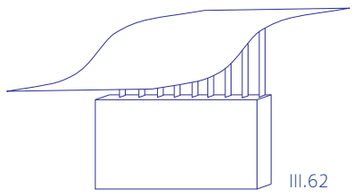
Solution space
These design drivers come together in:
'Move the Rock' (III. 61) – The heavy local granite rocks seems to be in movement when being organic. They can move, just as the state of mind of the members.
'Heavy vs. Light' (III. 62) – The heavy rocks are grounded in the French ground in a safe manner, and lift the organic light roof, creating a spiritual feeling upwards
'Go down a step' (III. 63) – Working with the site on the hill, the members have an overview of the site and the center and goes down to connect with the community and further down to connect with themselves. The shape to gather the principals have yet to be found.

Move the Rock



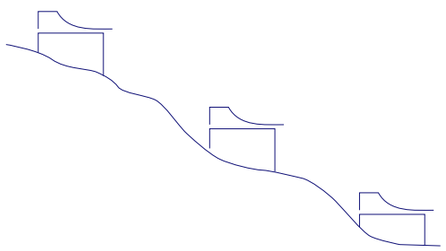
III.61

Heavy vs. Light

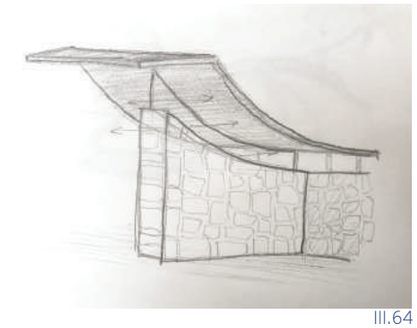


III.62

Go Down a Step

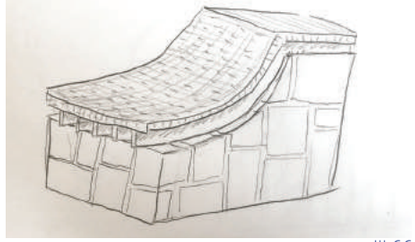


III.63



III.64

III.65



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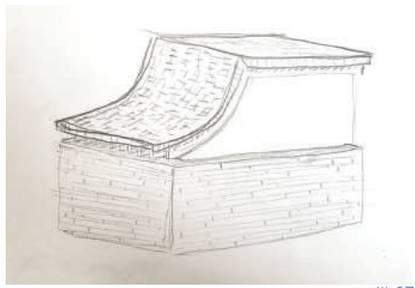

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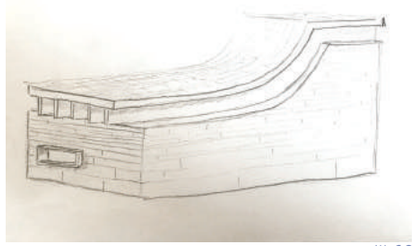
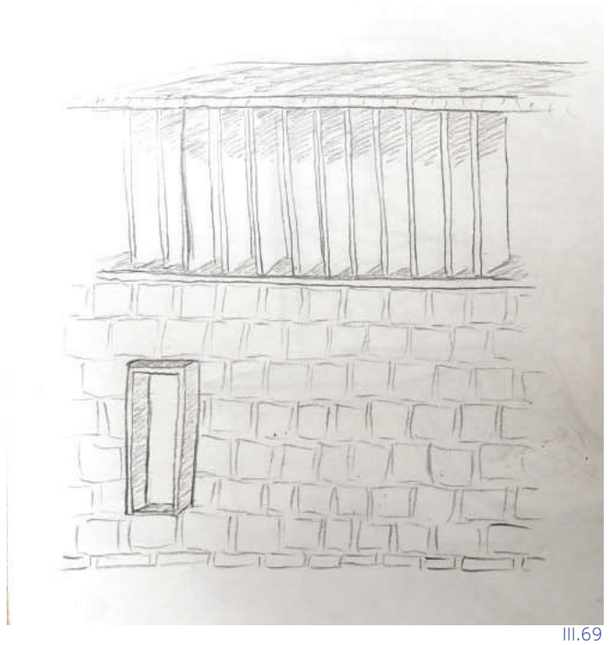


III.68



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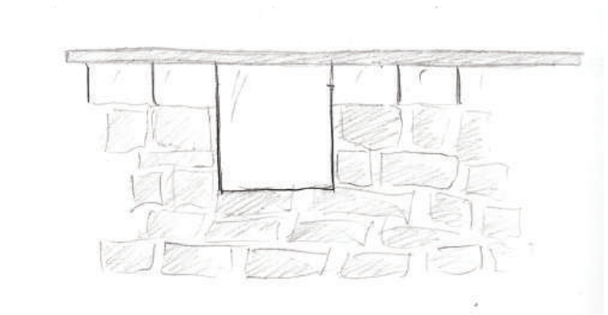

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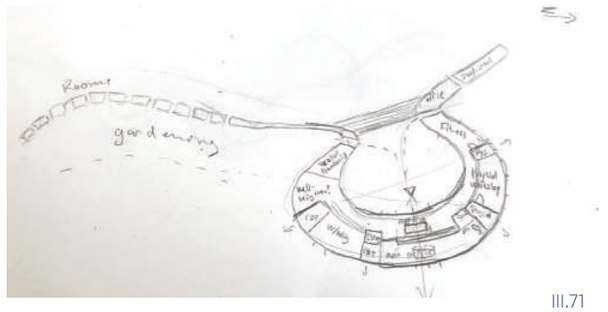
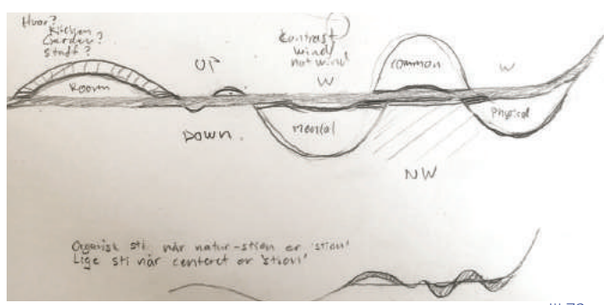


III.71



III.72

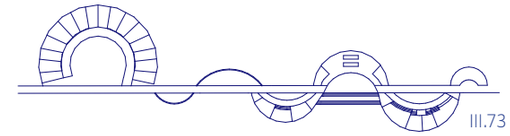
Early Concepts

Problem space
How to create a form incapsulating the design values found through the program and sketching phase? To initiate new ideas, a change of method or material can be a catalyst. Therefore, clay was used in a bigger scale, to really feel the shapes and the flow.

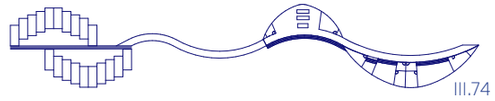
Design drivers
The cultural context
The contextual landscape
Functions as community, intimate spaces, outdoor spaces
Healing architecture elements as readable architecture, movement, connection to nature, niches
The story and ritual
Low CO_2 emission
Low tech ventilation

Solutions space
The choice of clay as modelling material brings to life the initial concepts seen on ill. 75 and 76. They reveal a story and a flow matching the design drivers. At this stage, it was chosen to keep a distance between the rooms and the treatment department, forcing the members to feel the site, sense the air, smells and sounds of the site, before entering the treatments, as a preparation to be present. When drawing with exact measures in 3D, it became clear that the scale of the rooms have been misjudged and that the rooms and the treatment volumes becomes two fighting volumes instead of creating a space in harmony (ill. 73, 74, 81, 82, 83). The plan development has been incorporated in the volume shaping, which is expressed in the two elements enhancing each other, together with venting aspects as thermal buoyancy and cross ventilation (Ill. 73 and 74).
The concept on ill. 76, 78, 80, was chosen for further development as both physical and mental treatments, becomes a whole and not two divided aspects of suffering from PTSD. The common room of the center also becomes the first part you meet when enter the center from the rooms, which will greet you and prepare you for the day. Furthermore, the shape is flexible to change if room size or numbers of rooms should be added, or if daylighting goals are not met because of the depth.

The concept is not right, but it's closer to a direction.

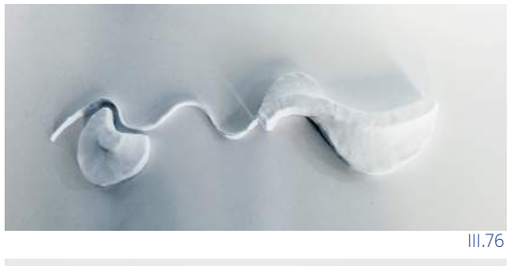

Ill.73

The concept originates from a path from an earlier sketch (ill 71 and 72 on page 23), guiding the members and staff through the process. Each curve holds a function; Physical treatment towards east and north, Community towards east and west, mental treatment towards est and south and the rooms at the end of the path.
The path is being a line you cross up or down the hill between the state of minds.


Ill.74

The concept is based on the same idea as the other concept, but the treatments are placed together and the common room is being the link between the treatment and the safe space in the rooms.


Ill.75


Ill.76

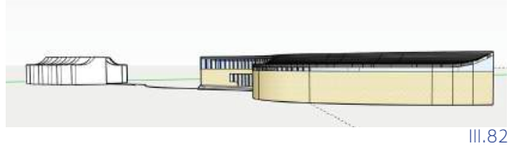

Ill.77

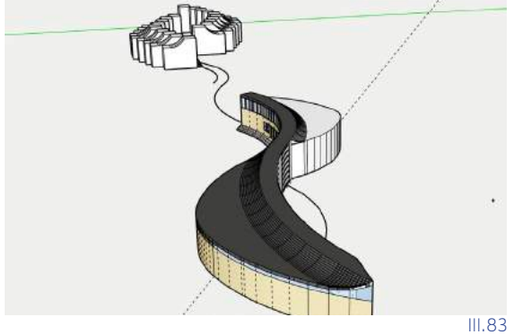

Ill.78


Ill.79


Ill.80


Ill.81


Ill.82


Ill.83

Tectonic Workshop
Tectonic Expression

Problemspace
The concept calls for a frameconstruction. How can a framconstruction facilitate the concept and the concept facilitate the framekonstruction?

Design drivers
Light, uplifted roof
Spiritual atmosphere
Clear lines
Play with the daylight intake
The joints

Solutionspace
The curved roof, yet controlled with the flat areas, gives the opportunity to shape the concept with deeper and slimmer rooms, and bend the façade by adjusting the angle of rotation. The window line dividing the wall with the roof, can contribute with the lightness and furthermore be a way of utilizing thermal buoyancy in natural ventilation (Ill. 87-89).

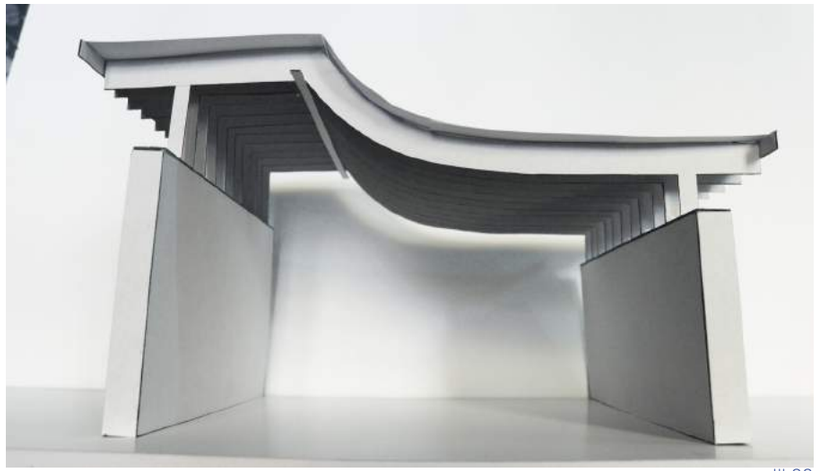
This construction can be constructed with different expressions. On ill. 85 and 86, it has been exemplified by using two beams joined to one column or diving the beam in the joint where the shapes switches from geometric to organic. The different joint expressions also depend on the stabilizing system. The dimensions of the construction will be investigated in a later phase.

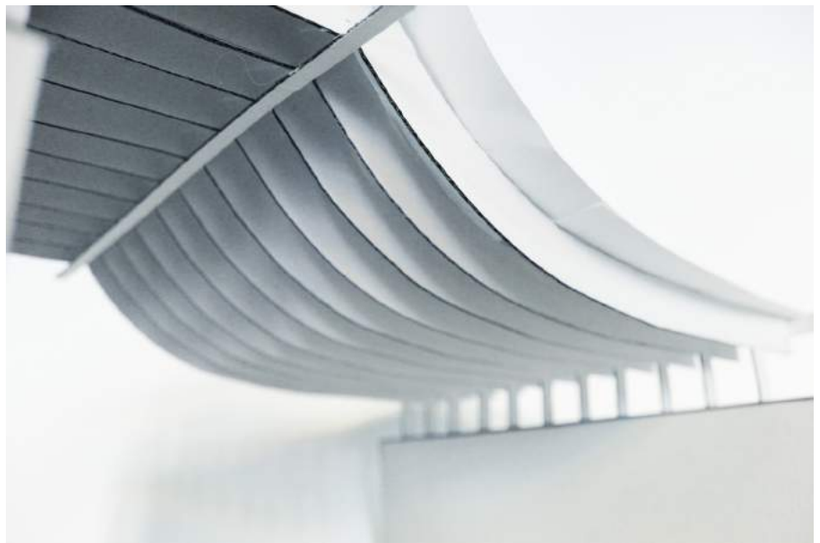

Ill.84


Ill.85


Ill.86


Ill.87


Ill.88


Ill.89

Construction Workshop
Stabalizing

Problem space
The construction of the stabilization in the frame-system and the spatial stabilization, is a coherence with the exspression and story of the building. What parametres in the construction can enhance the story of the center? The spatial stabilization can be met with plates or windcrossing, which can be a coherence with the construction of the climatescreen.

Design drivers
Honesty
Stability
Lightness

Solution space
The frame types on ill. 95 to 98, much is happening, extra wood is used, and it can be challenging to read the path of the forces. The stabilizing solution on ill. 99 and 100 and models on ill. 91 and 92 with a chanier joint dividing the beam in two, sends a message of weakness in that spot. With three clamped joints on ill. 101 and 90, the frame get a cohesion throughout the construction.

In regards to the construction principal and storytelling of the building, the initial thought was ill. 105, where the climatescreen is constructed of granite lifting the frames. Because of modern construction ways and thickness of the wall if granite is the loadbearing material, the option on ill. 106 meets the more technical considerations. Furthermore, the honesty with the frames as skeleton and wall as skin on ill. 107, makes the building readable and talks into the metaphor of going deeper into working.

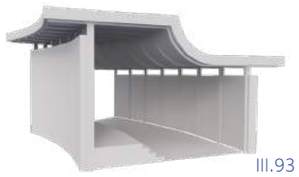
Stabilizing investigations


Ill.90


Ill.91

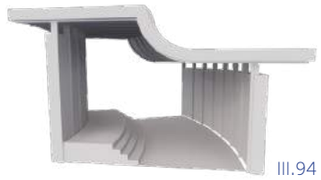

Ill.92

SPACIOUS INVESTIGATIONS OF FRAME TYPES

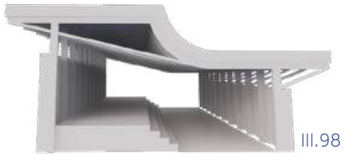

Ill.93


Ill.95

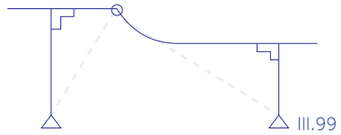

Ill.97

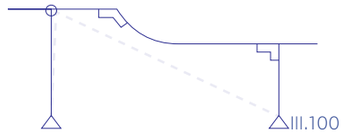

Ill.94

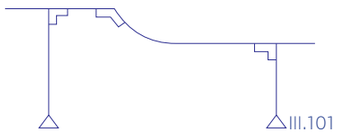

Ill.96


Ill.98

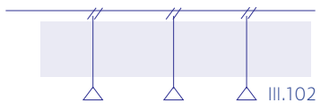
INVESTIGATIONS OF THE STATICAL SYSTEM

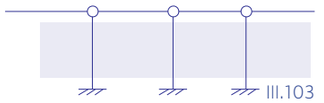

Ill.99
Statically determined

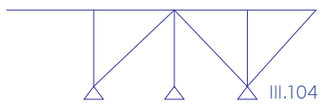

Ill.100
Statically determined


Ill.101
One time statically indetermined

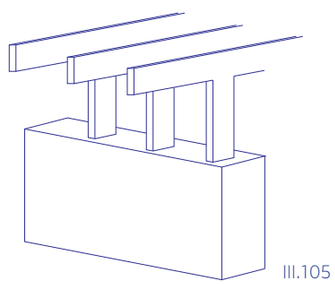
INVESTIGATIONS OF THE SPACIOUS STABILITY

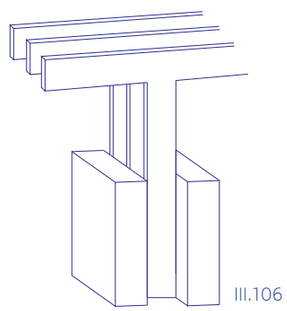

Ill.102

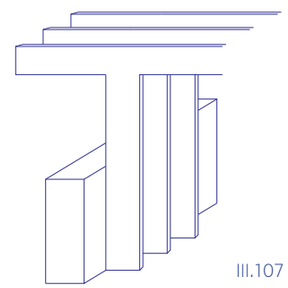

Ill.103


Ill.104

STORIES OF THE CONSTRUCTION


Ill.105
The frames are resting on the load-bearing granite wall, lifting it up


Ill.106
The granite walls are only for shielding, surrounding the frames


Ill.107
The frames are the skeleton carrying the building and highlighting it

Construction
Climatescreen

Problem space
How is it possible to design a wall construction which ensures the stabilization of the building and a low energy and CO_2 emission, and furthermore contributes with architectural qualities?

Design values
To understand the elements affecting the values in the construction, to be able to prioritize a choice.

Solution space
This solution is true to the construction principals as the loadbearing columns in the frames, are visible (ill. 108). As the plywood sheet is the stabalizing element in the construction, it has to be directly connected to the coloums. Therefore the columns interfere with the installation-layer which has to be transfered through the floor structure. Furthermore the plywood sheeting is the most polluting element in the climatescreen, and as an extra layer is necessary, it is shown in the LCA analysis on illustration 110 and 111. Can another material replace the plywood in some of the layers?

I choose the second solution, with a prioritazion of the concept.

See the calculations of the u-values in appendix 1.

Priorities

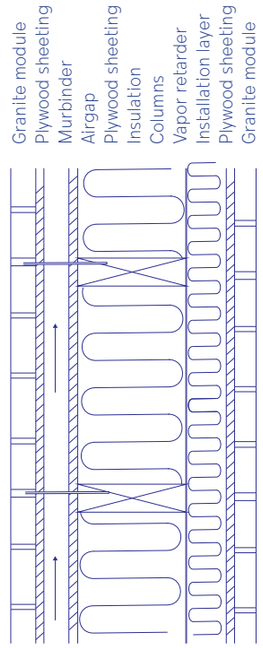
TRUE TO THE CONCEPT

LOW CO_2 EMISSION

LOW U-VALUE

CLEAN MATERIALS

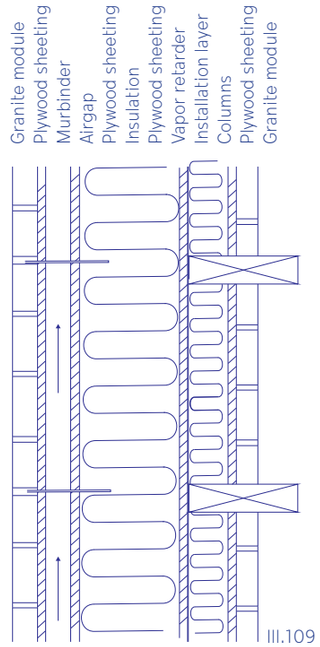
TACTILE ATMOSPHERE



Ill.108

Hidden loadbearing columns

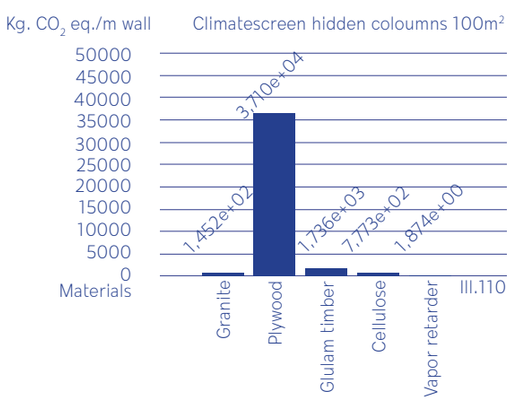
U-Value: 0,1
Thickness: 0,489 m



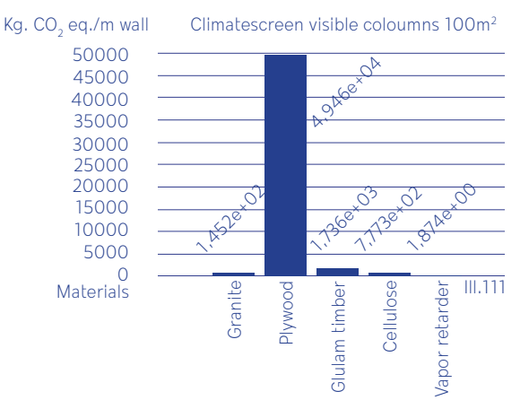
Ill.109

Visual loadbearing columns

U-Value: 0,93
Thickness: 0,496 m



Ill.110



Ill.111

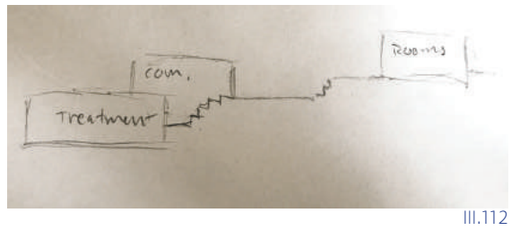
Concept Development

Problem space
Several elements for the concept has been discovered, but only in diagramitic form (ill. 112 through 115). Therefore a new sketchingphase was needed, to concretizise the shaping.

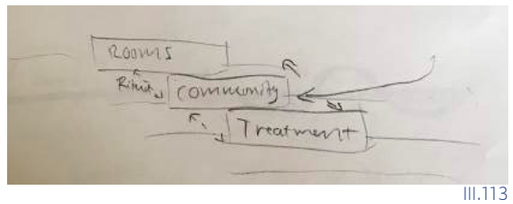
Design drivers
Combining the found design elements

Solution space
The rooms have been placed on the western side of the treatment and commonroom department to create a shielded outdoor space, to shorten the distance from the rooms to the treatments and to make the volumes work better with each other. Still, a ritual of being outside and sensing the place is being preserved, by keeping a distance between the functions (ill. 114, 115). The staff part of the center is located to the north for staff memebers to register when new members are arriving to the center.

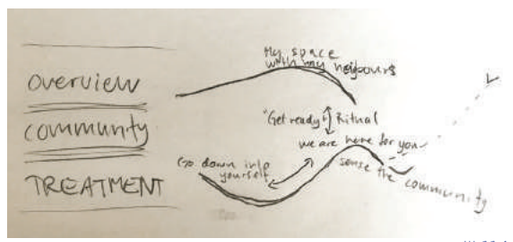
Initially the roof of both building volumes were following the direction of the hillside (ill. 117, 117). After some reflections initiated in the status seminar, the roof on the room-volume were flipped, so the building were facing the treatment volume (ill. 118, 119, 122). This additionally resulted in the center to have a more graduating contact with approaching people from west (118, 120). An important aspect in the room development have been the eastern light intake during the morning because of the circadian rhythm and hormone regulation (ill. 121). This element can still be obtained through a loft sleeping area.



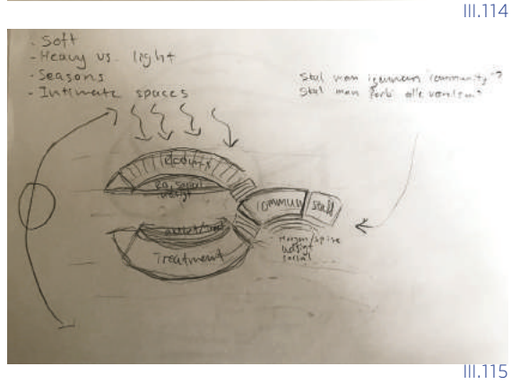
ill.112



ill.113



ill.114

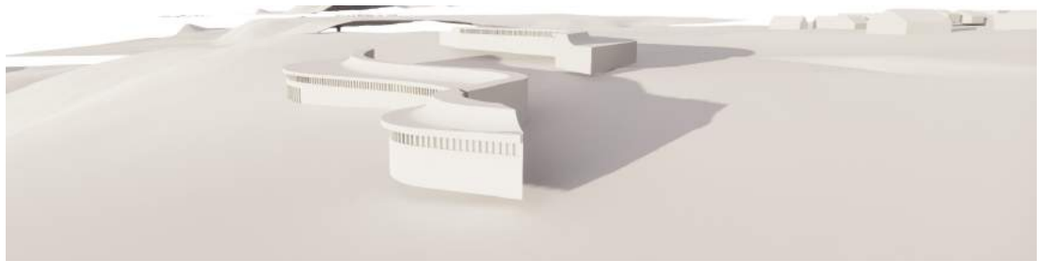


ill.115


ill.116


ill.117

ill. X, the initial volume before flipping the roof towards the outside on ill. X


ill.118


ill.119


ill.120


ill.121


ill.122

Concept Development

Problem space
The members and the issues they are dealing with, was reconsidered in the design. The great distance from the rooms to the community and treatment volume, can in itself be a challenge. Could the architecture lead the people more between the buildings? Can the outdoor space on approximately 35 m space be smaller and more intimate?

Design drivers
The affordance in the architecture
The structure of the plan
The space between the buildings

Solution space
When adjusting the room volume and moving it closer to the treatment volume, it results in a decreasing of the size of the volume, so that the volumes matches together and still creates a harmonious space. Different ways of making them closer was tried in ill. 130-135. A solution where the buildings are closer, but scewed from eachother, and was creating a difference between the room of the members and of the staff, were chosen for further development (ill. 127-129). The concept of going down into the treatments by following the roof and the light was tested in model on ill. 123-125.


Ill.123


Ill.124

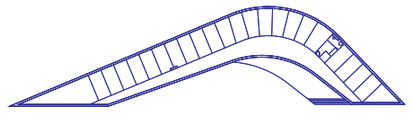

Ill.125

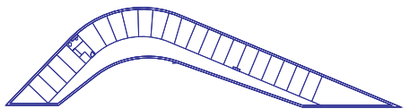

Ill.126

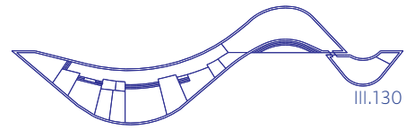

Ill.127

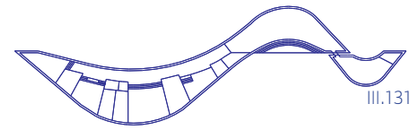

Ill.128

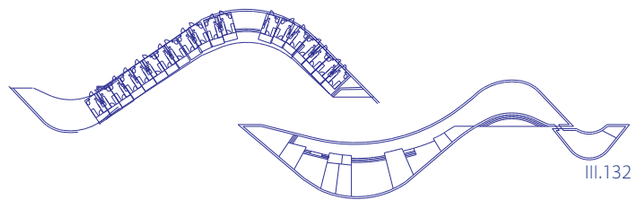

Ill.129

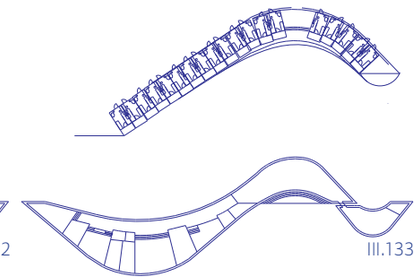


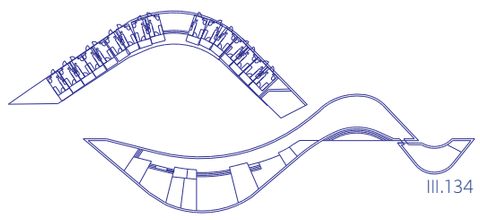


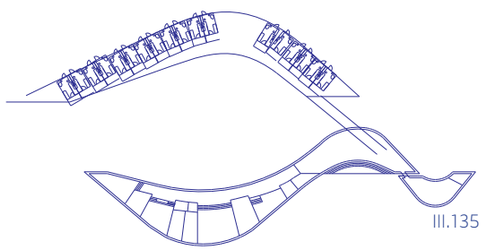

Ill.130


Ill.131


Ill.132


Ill.133


Ill.134

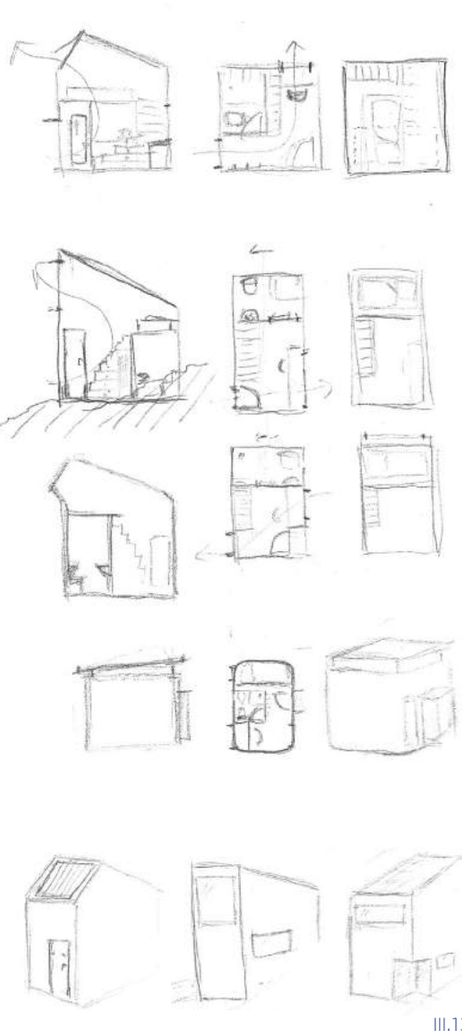

Ill.135

Room Development
Plan & Section

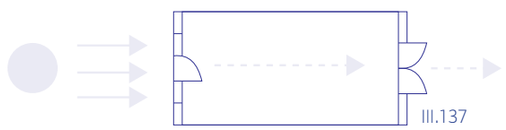
Problem space
How to design a compact room where the members won't be spending all their time, but will prioritize the community, meanwhile they will be able to relax and feel like they can intake the room with different activities?

Design drivers
Affordance
Morning light
Fight or flight instinct
Home-like atmosphere
Have guests
Workstation

Solution space
The rooms are important for the members as it is their home while they are staying at the center. Initially the concept of a compact room was investigated in sketching (ill. 136). Later in the proces, the intention og the rooms were investegated in illustration 137 through 142. If having all the interior on the same level (ill. 138, 139, 142), it can be overwhelming and messy for the members. Too little space can make them feel trapped (ill. 139), and too much space can be a factor for isolation from the community (ill. 138). Forcing them to climb a ladder can be a challenge (ill. 140), but keeping the concept of change of focus when going up and down the stairs, talk into the rest of the center. The solution with "Not Too Easy Not Too Difficult" on Illustration 141, is a solution which doesn't force the members to climb ladders, but still divides the room into activities. A layout for a room which fits the concept and volume, and still is able to integrate changes, is illustrated on illustration 143.

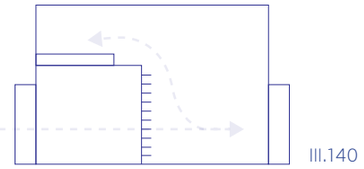


III.136



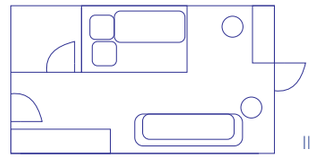
III.137

Elements incorporated in all solutons;
morning sun from the east, view through a door to the outside
to control the fight or flight instinct



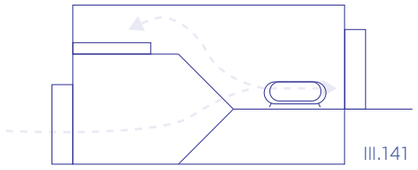
III.140

The Do Not Get Tempted



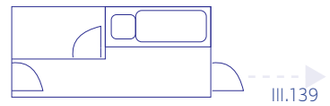
III.138

Stay Here



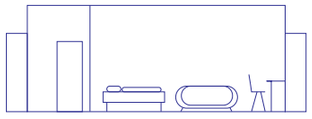
III.141

Not Too Easy Not Too Difficult



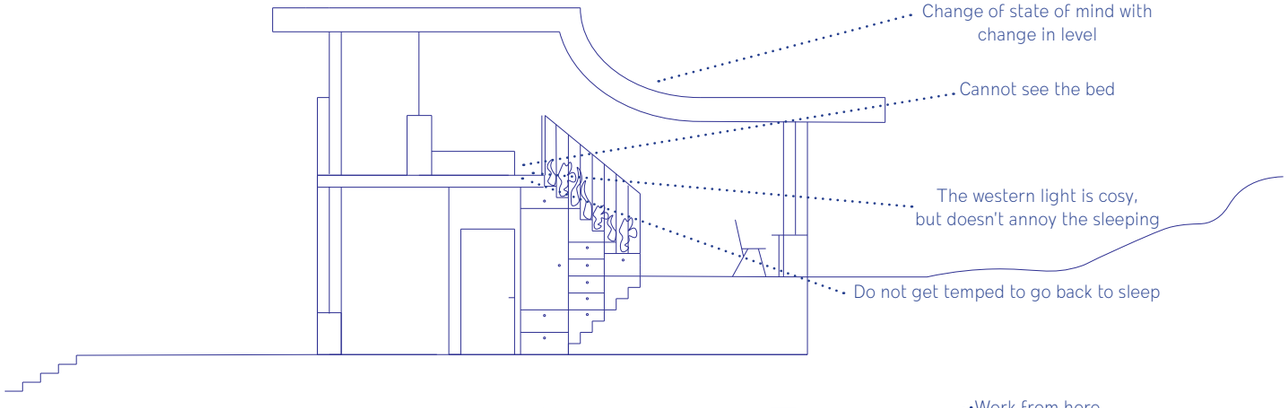
III.139

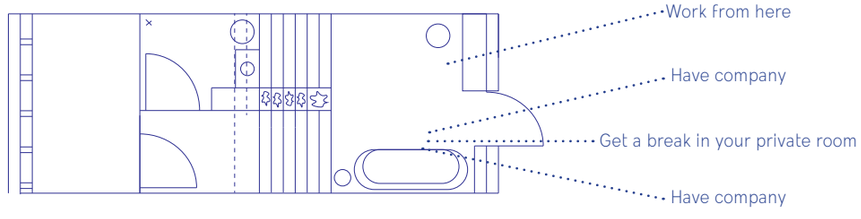
Go to the Others

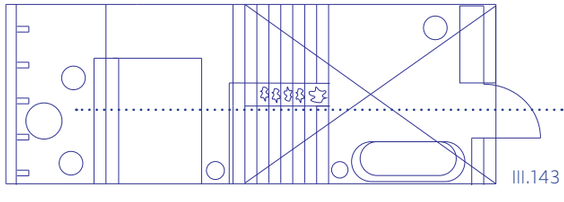


III.142

What do You Feel Like?







III.143

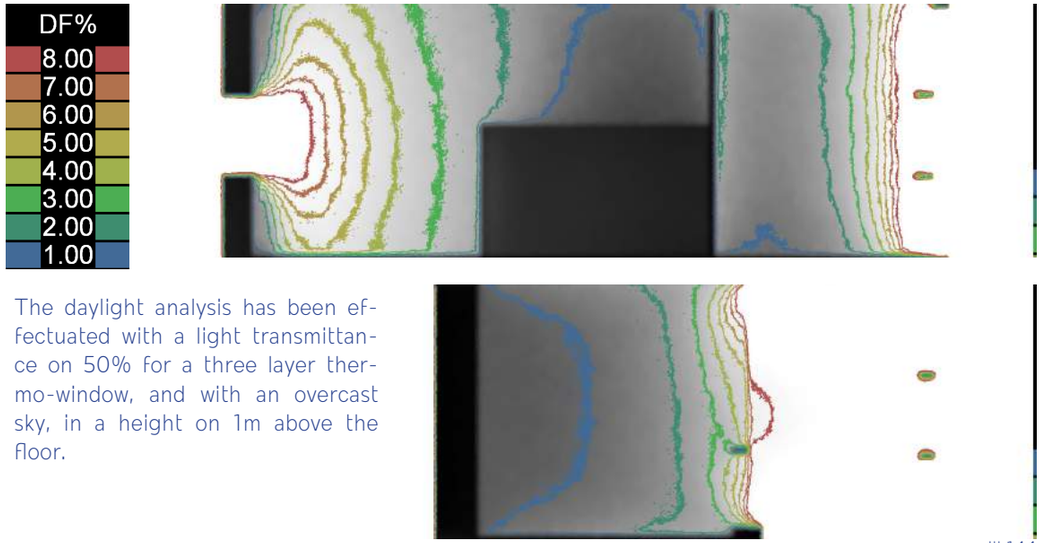
Rooms Development
Daylight & Volume

Problem space
The daylighting is an important aspect impacting the circadian rhythm, and to keep the members active during the day and relaxed during the night.

Design drivers
Eastern light by the bed
Daylight Factor on minimum 2% by the living room area
Daylight Factor on minimum 3% by the working station
Light atmosphere

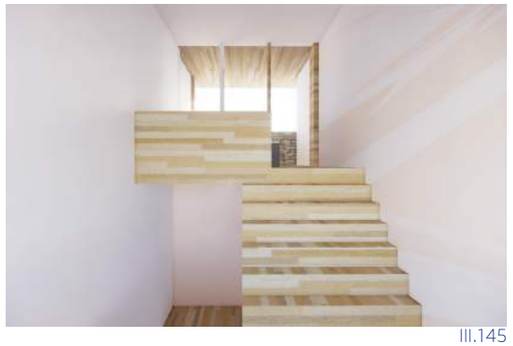
Solution space
The daylighting can be important for the well-being in the private rooms. It can be designed for different functions. The Daylight analysis on Ill. 144, is based on the plan layout on illustration 143 on page 37. It shows high daylight levels, except for the entrance in front the bathroom. As it is a transition area, it can be justified that electrical lighting can be used as a supplement. The impression of the daylight level was investigated through renderings (ill. 145-149). The daylight analysis will be impacted by the final choice of window concept and type of glazing. The depth of the rooms should be considered to ensure proper daylight factor throught the room.

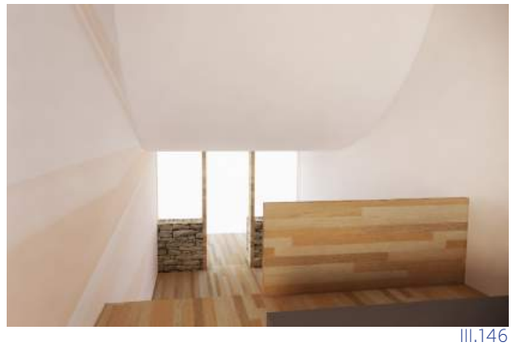
The common spaces in the room department (Ill. 150), are important interaction areas, where the members can meet under informal circumstances and in a safe environment close to their rooms. The space will open up towards the outdoor garden.



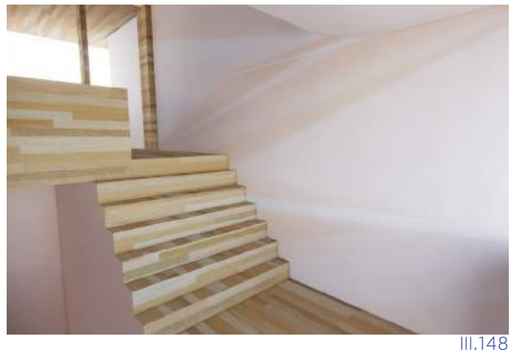
The daylight analysis has been effectuated with a light transmittance on 50% for a three layer thermo-window, and with an overcast sky, in a height on 1m above the floor.

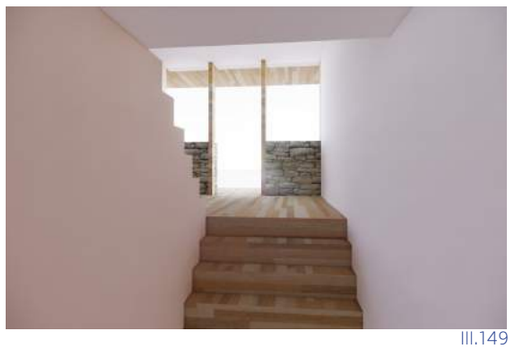
Ill.144

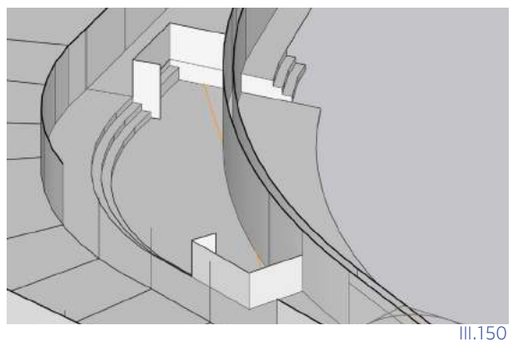

Ill.145


Ill.146


Ill.147


Ill.148


Ill.149


Ill.150

Construction Workshop
The Frame

Problem space
The frame construction has an important role in the design concept. What dimensions can the construction have, and how much of the construction should be visible to express the intended atmosphere?

Design Drivers
True to the concept
Contrast and diffuse lighting

Solution space
For the dimensioning of the beam, the longest beam with a free span situated in the Gym, was chosen (ill. 154). It is assumed that if the beam can carry this load, the dimensions can sustain throughout the building. A light and slim expression of the beams were desired, and a standard beam on 65*400mm were chosen as a base for the dimensioning. Through Robot Structural Analysis, a simplified model of the structure was calculated with the basis on load calculations done by hand (see appendix 3) (Ill. 155). The wind-load was the dominating load. The beam can be downsized to the dimensions of 65*300mm (ill. 156). To ensure the calculations were correct, they were additionally calculated by hand (see appendix 3).

Illustration 151 through 153, is an investigation of how much of the beam should be visible under the ceiling. Ill 151 with 50 mm shown is not achieving the desired effect of having the beams lift the roof from the heavy ground. Ill. 153 with 200 mm visible beam, becomes too heavy and contrast full. The solution on ill. 152 can a balanced amount of visible beam.

Parametres for the calculation

Rectangular beam
GL32h

Loads
Wind, the flat part of the roof: -1.258 kN/m
Wind, the sloped part of the roof: -0.943 kN/m
Selfload, 0.351 kN/m
Snowload, 0.538 kN/m

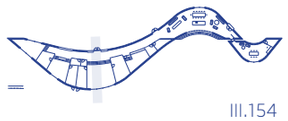
Loadcombination
Windload as dominating load (appendix 3)

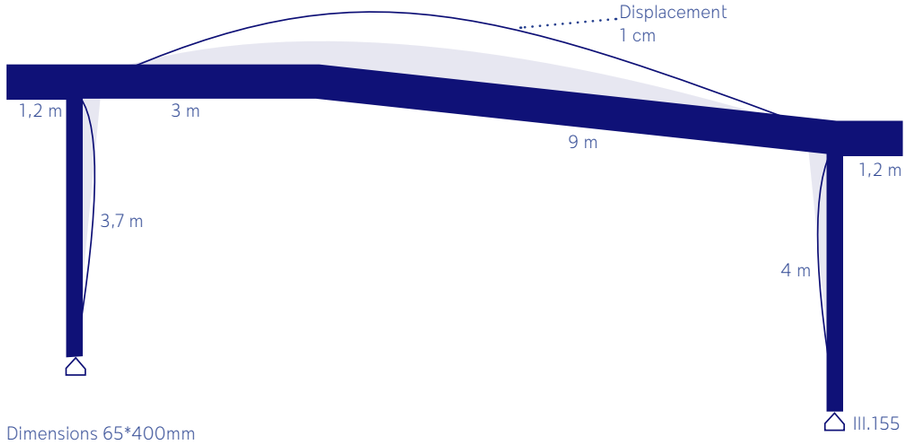
Dimensioned for
65*400mm, with an utilization rate on 53.1%
90*300mm, with an utilization rate on 67.9%
65*300mm, with an utilization rate on 94%


Ill.151
50mm visible beam

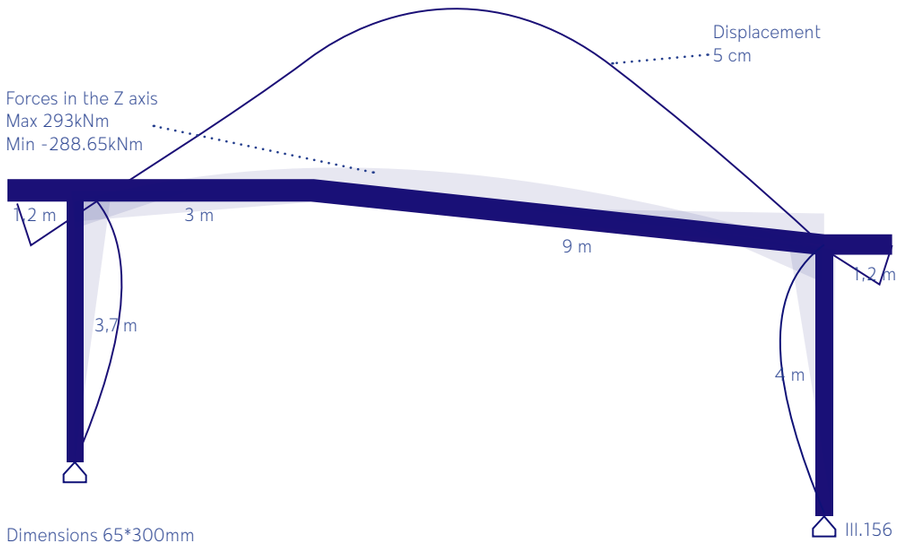

Ill.152
100mm visible beam


Ill.153
200mm visible beam


Ill.154
The location of the calculated beam



Dimensions 65*400mm
Ill.155



Dimensions 65*300mm
Ill.156

Construction Workshop
Rooms

Problem space
The frame construction in the room volume is different to solve, as this volume contains three levels. It should still be true to the concept.

Design drivers
Honesty in the construction
True to the concept
Functionality

Solution space
Ill. 158 is the frameconstruction adapted to the room-layout with the division walls and floors. Ill. 159 and 160 opens up the terrasse so the coumns doesn't screen the view. Ill. 159 by moving the central coloumns and support the roof by a beam, leading the load down the remaining coloumns. In Ill. 160, the main frame is moved further back, creating a cantilever. On Ill. 157 the solution with the cantilever has been investigated in Robot Structural Analysis through a simplified model. The result reveals that the beam, on 65*300mm dimensioned in page 41, can sustain a cantilever on three meters. The solution on Ill. 158 is the most true to the construction concept but function of the terrasse has to be considered in the design. The solutions in the facade is shown on Ill. 161 and 162.

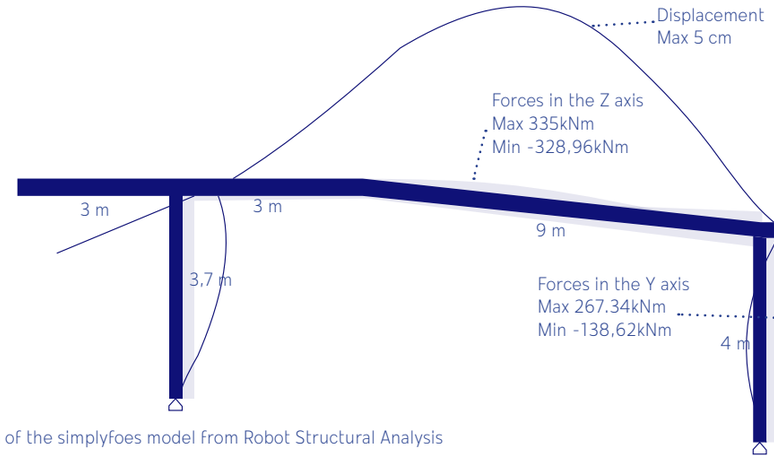


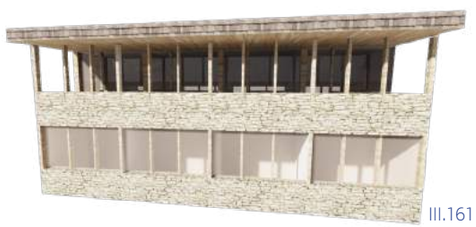
Illustration of the simplyfoes model from Robot Structural Analysis

Ill.157

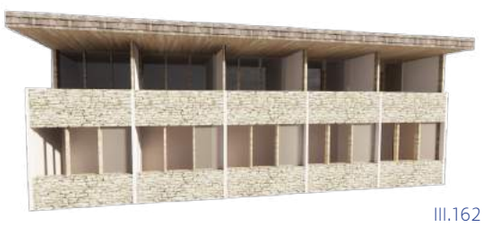
Ill.158
Frame construction adapted to three levels

Ill.159
Leading the loads through a supporting beam

Ill.160
Cantilever to keep an undesturbed view from the terrasse



Ill.161
Facade expression to the construction solution in ill. X



Ill.162
Facade expression to the construction solution in ill. X

Window Concept

Problem space
How to construct a window concept enhancing the story of the building in regard to the functions and an tectonic expression?

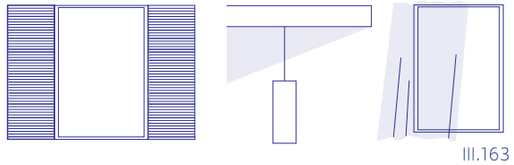
Design drivers
Niches in the windows
Visible flight routes
Connection to the outside
Not being visible from the outside

Solutions space
Two main ways of creating the windows has been investigated in model and in illustrations. One where the skin of the building (the granite wall) is pulled away and revealing the loadbearing frame construction (ill. 164-168). Secondly, a solution where the wall is extruding through the frames, creating an understanding of the building (169-172). The section model is a cut out of the gym, physical therapy and acupuncture room, as the functions and activity level will vary within the rooms, which can affect the window principles (ill. 164-165 and 168-169).

The solution with the visible frame construction, is expressing honesty in how the building is constructed. It is clear that the granite is just a facade cladding, and that the wooden frames are not only load bearing, but also shaping the center. The vertical lines highlight the frames and points to the lifted roof.

To meet the criteria of niches in the windows, a windowshelf in the height of 600mm can be used (ill. 168). The 600mm will match in a system of the measurements times with three, used throughout the building. The building is constructed by a distance of 900mm between the frames, 600mm height of window shelf and window row underneath the roof, 2100 as height of doors and top of the windows, 1200mm is the length of the roof cantilever, 300mm is the depth of the stairs.

Sunshading
In France, shutters are not only the preferred sun shading method, but also a part of the culture. In Brittany, the climate doesn't necessarily require shutters, as the heat from the sun, is less than in the rest of France. Yet, the daily routine with closing off the windows in the evening and opening then up in the afternoon, lives in the habitants. A great purpose for the center is to connect the members with the circles of the day, to reset the circadian rhythm and the hormone regulation, and to spiritually connect with the present. Therefore, it is chosen not to integrate shutters, but use the cantilever roof as sun shielding and indoor light curtains to regulate the glare while keeping a light ambience. The following investigations of the energy demand and the indoor climate will reveal if shutters or other sun shading is necessary (ill. 163).



Ill.163

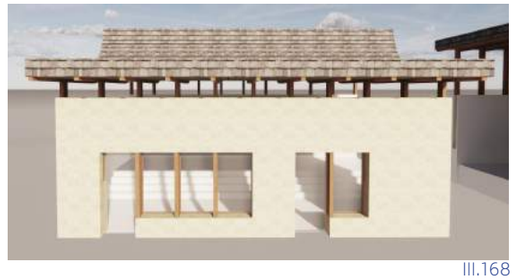
THE SKIN CUT AWAY, REVELING THE FRAME AS THE SKELETON

Ill.164

Ill.165

Ill.166

Ill.167



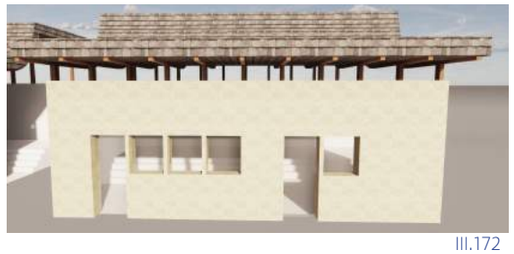
Ill.168

THE WALL EXTRUDING THROUGH THE CONSTRUCTION, REVELING THE FRAMES

Ill.169

Ill.170

Ill.171



Ill.172

Daylight

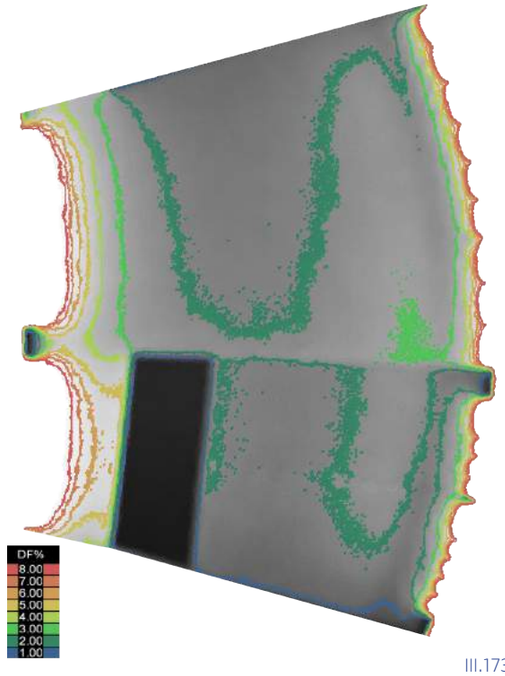
Problem space
How to meet a high standards for daylight in regards to functions and well-being, while utilizing the light as an atmospheric aspect?

Design drivers
Comfort light
Atmospheric light
Functional light
Light and movement

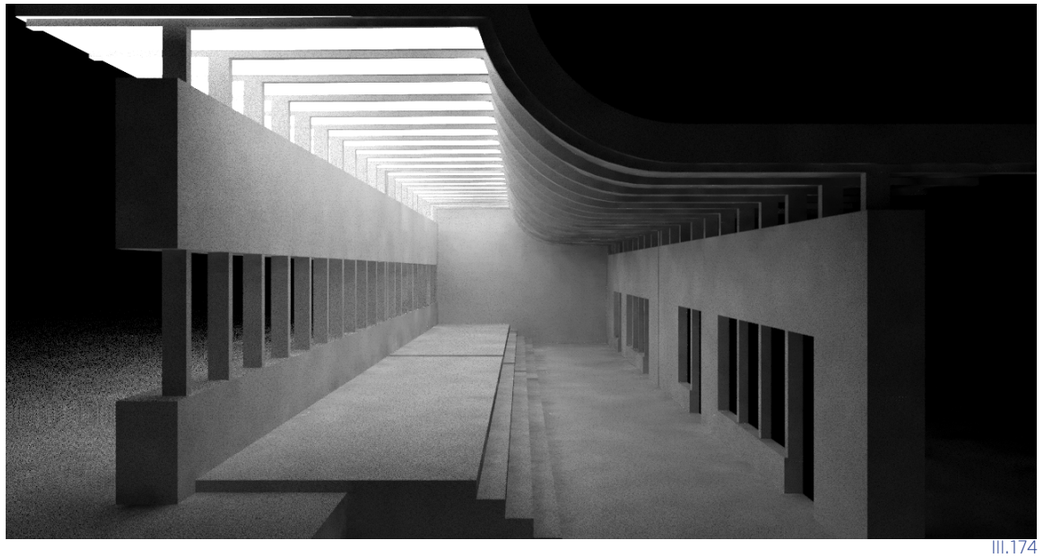
Solutions space
Illustrations 177 through 180, are investigations of how the length on the overhang roof, affects the light traces in the center through the top window row. There is a difference on respectively 400mm and 600mm between the overhang to where the wall ends. In general with an overhang, this light trace will only happen on certain periods on the day when the sun is low on the sky, and thus, shouldn't be a defining aspect. Yet, the columns as a part of the loadbearing frame system, creates a shapefull path to follow, which will move throughout the day (ill. 175 and 176).

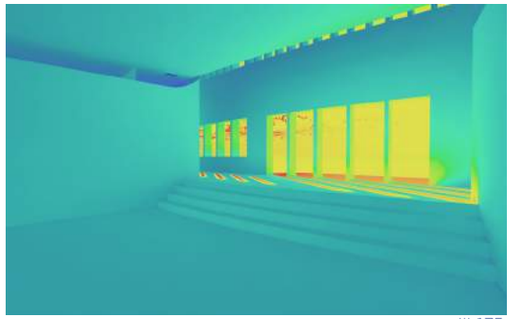
Looking at the illuminance study (light landing on a surface) on ill. 174, it is seen that the uplifting window row dividing the surfaces, contributes with an effect on diffuse light landing on the ceiling, lighting up the area. These investigations has shown that it is not all about the direct sunlight traces, but about enhancing the uplifting feeling and lightness of the roof.

It is chosen to investigate the Daylight factor of the Gym and two therapy rooms, as the gym is the deepest room in the center and as the therapy rooms only has windows to one surface and are deeper than they are wide (ill. 173 and 175). The lack of daylight in a small CBT room, can affect the comfort in the room and hereby the therapy which depends on a well state of mind of the patient and the therapist. The daylight discomfort can both be by lack of diffuse daylight or by glare from direct sunlight. The overhang roof and interior curtains contributes in solving this challenge.



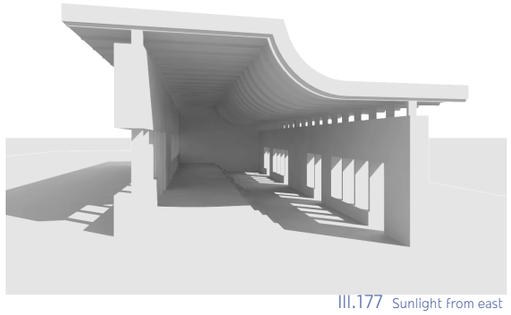
Ill.173

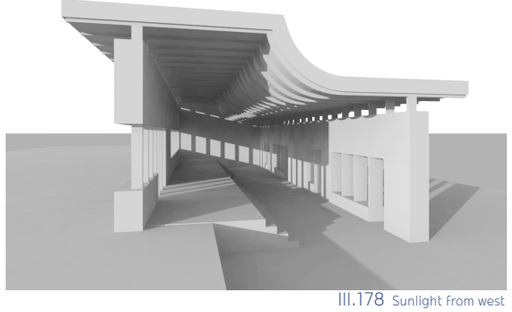

Ill.174


Ill.175

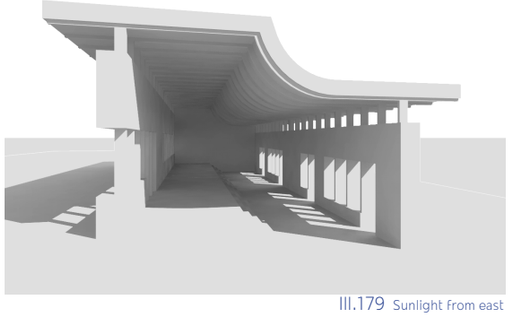

Ill.176

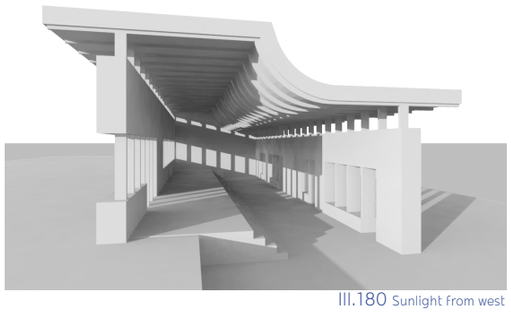
WINDOW ROW 600MM


Ill.177 Sunlight from east


Ill.178 Sunlight from west

WINDOW ROW 400MM


Ill.179 Sunlight from east


Ill.180 Sunlight from west

Shadow Study

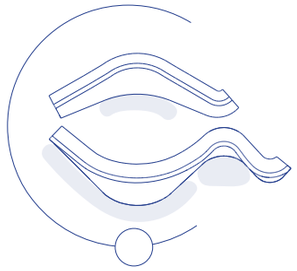
Problem space
Shadows and the sunlight have been considered in the design as principals, and more precise when drawing in 3D. How does the shadows affect the outdoor spaces through the seasons?

Design drivers
Different spaces for different activities in various times on the day and the year
Morning and evening light by the common room
Morning light by the outdoor space by the rooms
Shadow in the therapy part of the yard during mid-day
Sunlight by the orangery

Solution space
The shadow study (ill. 181) shows that the morning light in the common room will last till approximately 14:00 throughout the year, giving the opportunity to explore the space in sunlight from morning and through lunch, or choose the opposite site towards west, if shadow is desired (ill. 182). In the courtyard, the areas in shadow and sun will vary during the day, creating different spaces to use in different times and to different activities (ill. 184). On the terrasse by the rooms, there will sunlight in the morning and shadow in the afternoon when it gets warmer, and the members are finished with the therapy of the day (ill. 183 and 184). The evening light from the west, landing on the living space in the rooms, will signalize to the members that it is evening (ill. 185).

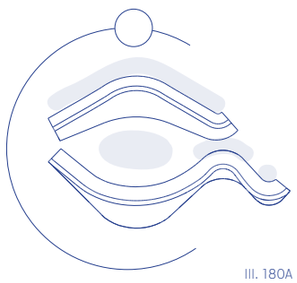
Outdoor spaces for different times on the day should be considered

MORNING SPOTS

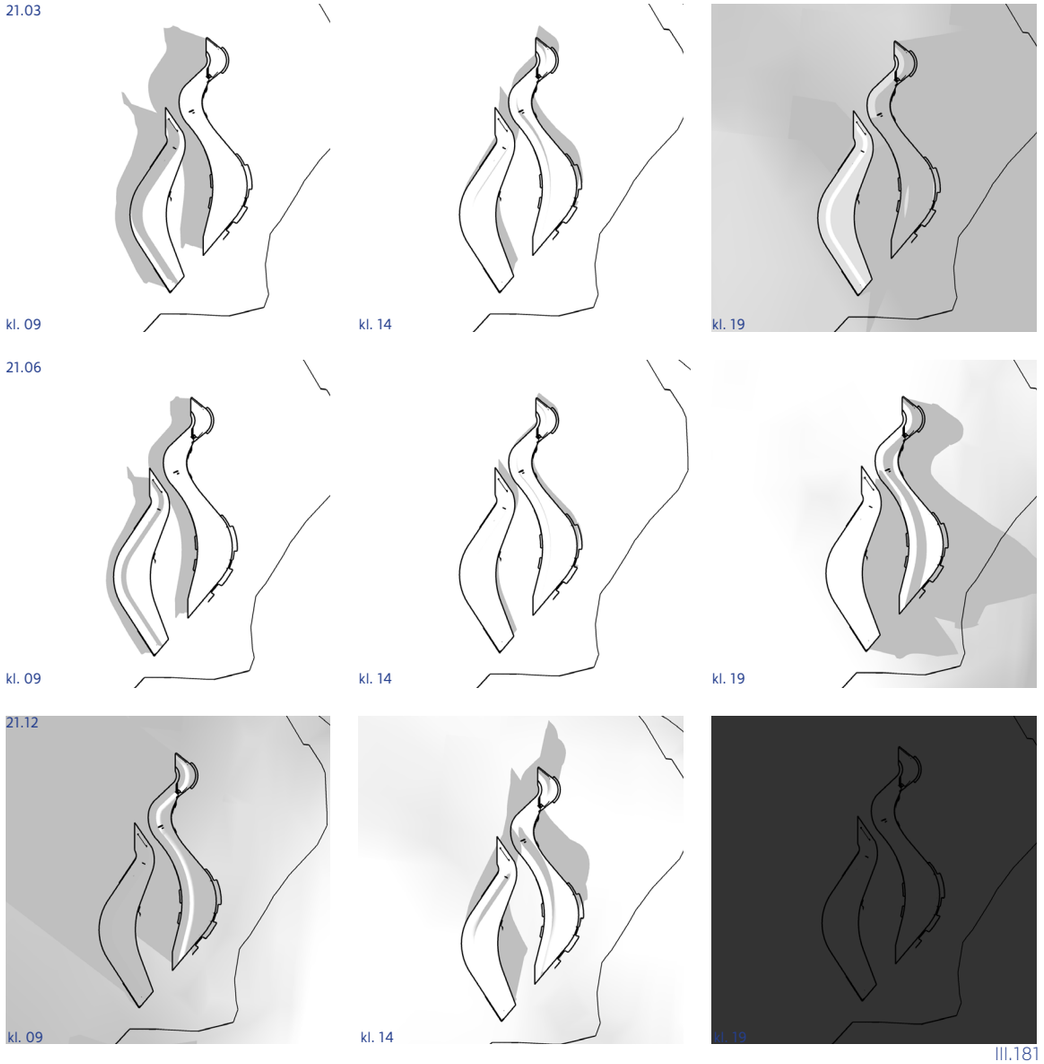


MIDDAY SPOTS

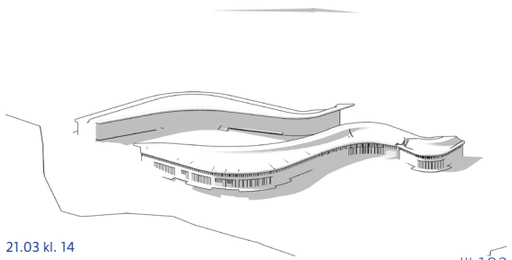
EVENING SPOTS



III. 180A

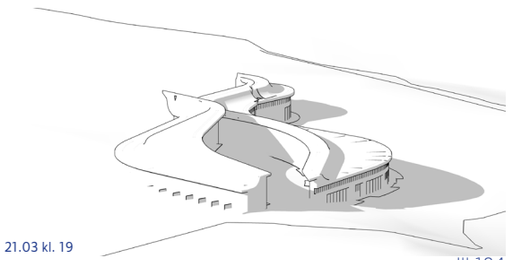


III.181



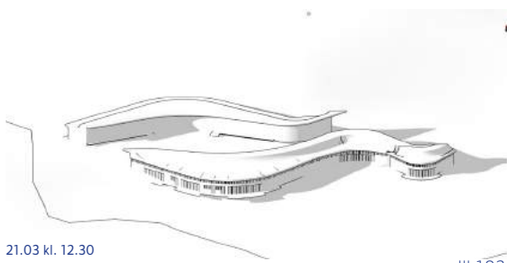
21.03 kl. 14

III.182



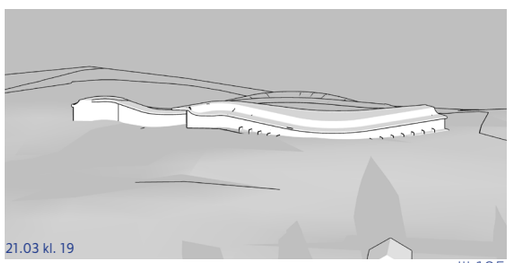
21.03 kl. 19

III.184



21.03 kl. 12.30

III.183



21.03 kl. 19

III.185

Orangeri & Shape

Problem space
The orangery is a part of the Eco therapy, but the original idea by placing it as an entrance space between the buildings, was not possible with the steep site and a shape to match the organic volumes. In relation to the integration of the orangery, the shape is being reconsidered. The pointy corners of the form expresses an aggressiveness and it doesn't correspond with the concept of frame construction and curved stone walls. The sharp corners appeared from a line through the building, from an earlier concept, and now needs an iteration. Furthermore the space between the volumes can be more harmonious than the skewed volumes.

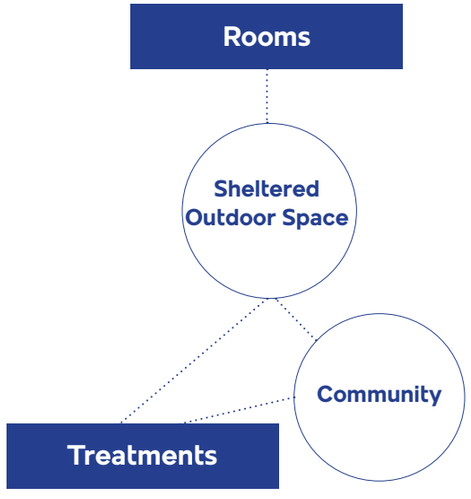
Design drivers
A part of the therapies
A space to be experienced
Connecting the volumes on a hillside

Solution space
When the orangery is placed in the southern part of the therapy volume, it is stated through the architecture that this is where eco-therapy will be executed (ill. 187). This placement will receive sunlight for the plants, and it can nudge the members to walk through the garden to get there. A space in the centrum of the garden, can be created with other measures (ill. 186).

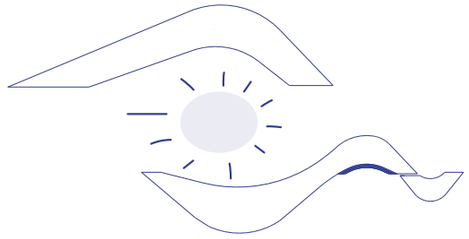
The space between the buildings can express a more balanced atmosphere by being positioned aligned with each other (ill. 188). It becomes clear when trying to create a central space within the skewed volumes (ill. 189). The volumes will even match each other better when the therapy volume is extended by the orangery (ill. 190). Curved gables were investigated to enhance a soft expression (ill. 192). The cut ends relate better to the construction, as the building will stop by the last frame (ill. 193).

When the volumes are placed centrally, the room volume blocks a bit of the western view and light to the common room (ill 190).

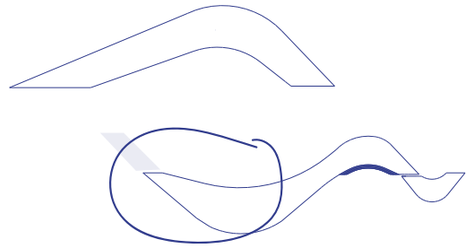
INTERPRETATED SOLUTION OF ILL. 190



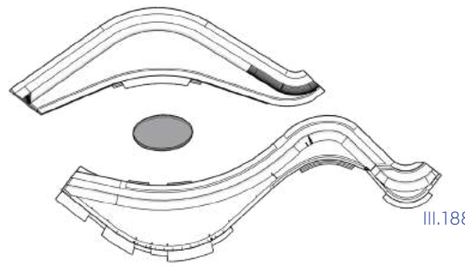
Ill. 190A



A gathering space in the center Ill.186

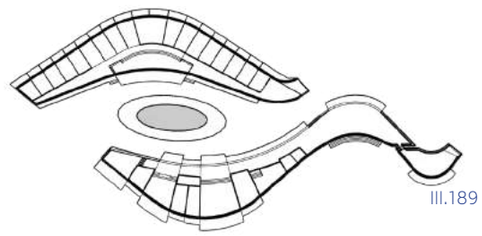


A part of the therapies Ill.187



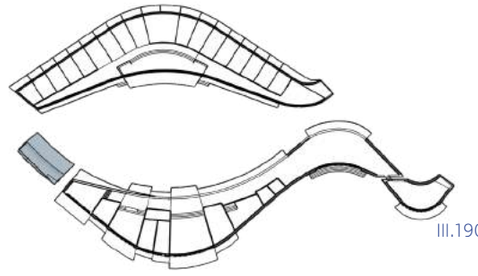
Ill.188

A gathering space in the center, centralized volumes



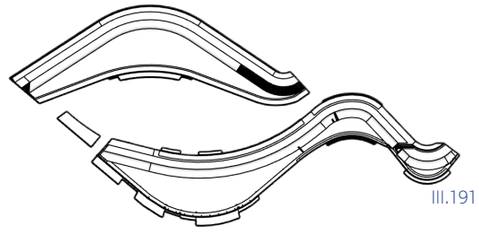
Ill.189

A gathering space in the center, scewed volumes



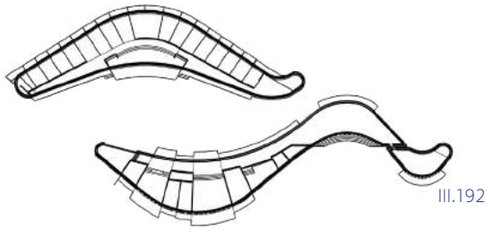
Ill.190

The orangery as exstension to the therapies



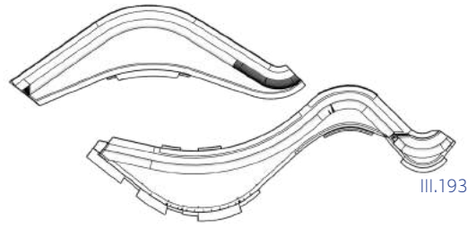
Ill.191

Orangery as extension, scewed volumes



Ill.192

Curved gables



Ill.193

Room end defined by the frames

Outdoor Spaces

Problem space
How can the elements of a therapy garden be integrated in a space connecting the two volumes in a special ambience?

Design drivers
Implementing the elements of a healing garden
A world of it's own

Solutions space
Three directions in the school of therapy gardens, have different approaches; that the visual beauty and smells can affect us, that the work with the garden can play a role, and that the interplay between activities and our personality can have an influence our well-being. All aspects should be encouraged to obtain a holistic effect. A therapy garden should aim to affect all the senses and entail diverse spaces which will match the diverse stress levels and activities of the members.

On illustration 194 the flow through the center has been investigated before designing spaces for the garden. Through this phase, the considerations regarding another position of the volumes, were not considered in the sketches. On illustration 195 through 199 the challenge to combine the volumes is noticable. A volume as an entrance space have been difficult to integrate when the hill is steep (Ill. 194-197). A less defined stair and levelling as an entrance, creates a softer connection (ill. 198-199). A clear path in one level is an opportunity to lead people in the garden from the entrance (ill. 199-201). A central space can be another space to interact with a different atmosphere, example water (ill. 196, 202-203).

Aspects of a healing garden

Boundaries: Cut from the public life and requirements

Sounds of water: Calming effect

Subdued colors: Strong colors can provoke

Smaller defined spaces: Overview

Birdsong: Nesting in bushes with eatable fruit

Smells: But not too strong smells

Peaceful: No mess or trash

Wilderness: Nature should do what it does

Spacious: Contrast to the city, no urban sounds

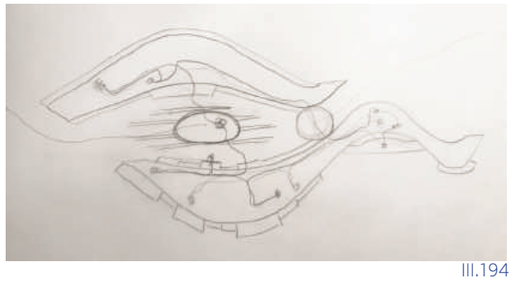
Cultural history: Identity

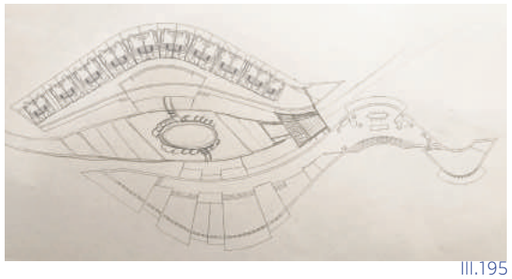
Open: No purpose necessary

Collective: Accessible

Safe: Enclosed, be yourself

(Sejr, K., 2007)


Ill.194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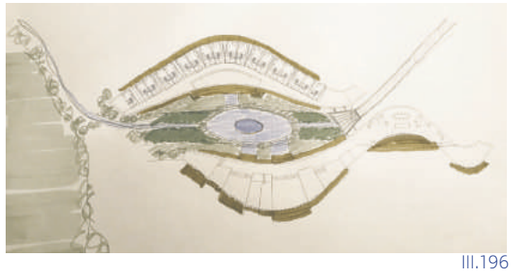
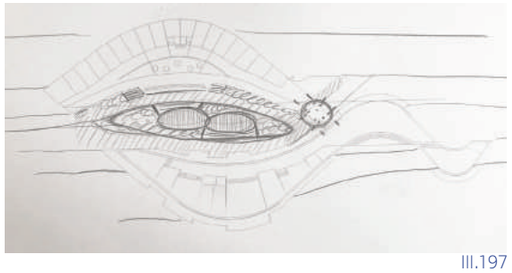
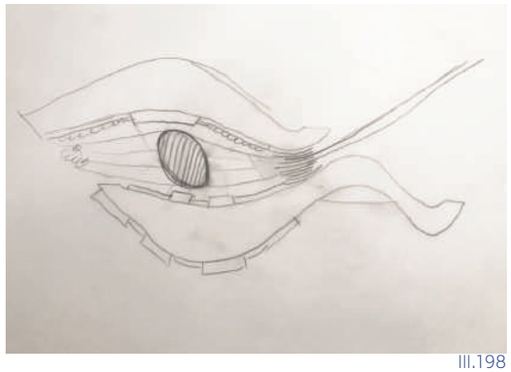
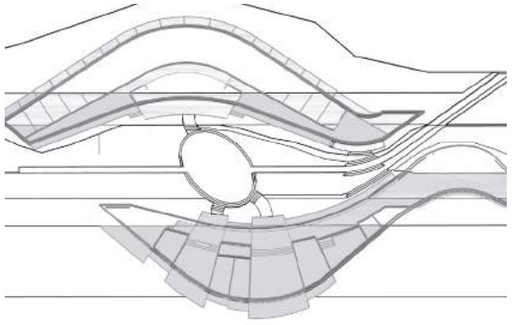
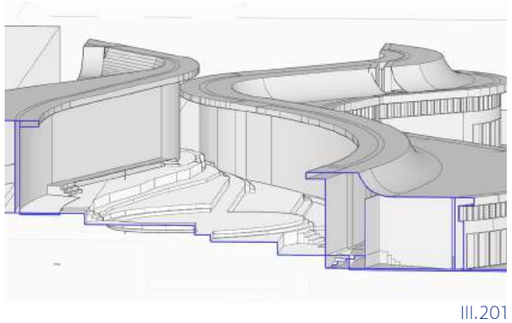

Ill.196

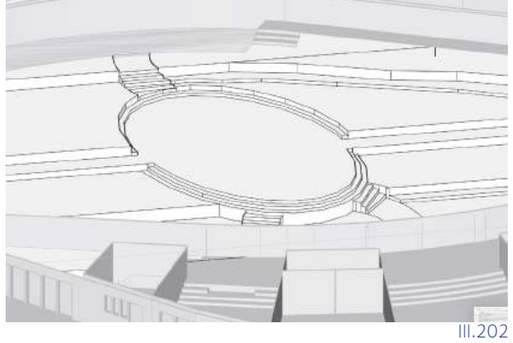

Ill.197

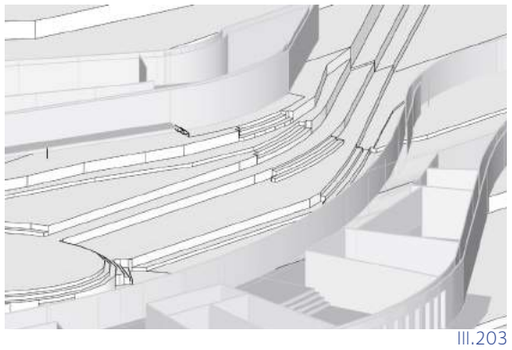

Ill.198


Ill.199


Ill.200


Ill.201


Ill.202


Ill.203

Energy Savings

Problem space
Through passive strategies as low u-values, natural ventilation and solarheating, the energy demand has succeeded in being classified in the low energy class. How to create the energy for room heating and Domestic Hot Water through renewable energy sources?

Design drivers
Create a Zero Energy Building
Solar cells on the horizontal roof
Heat pump

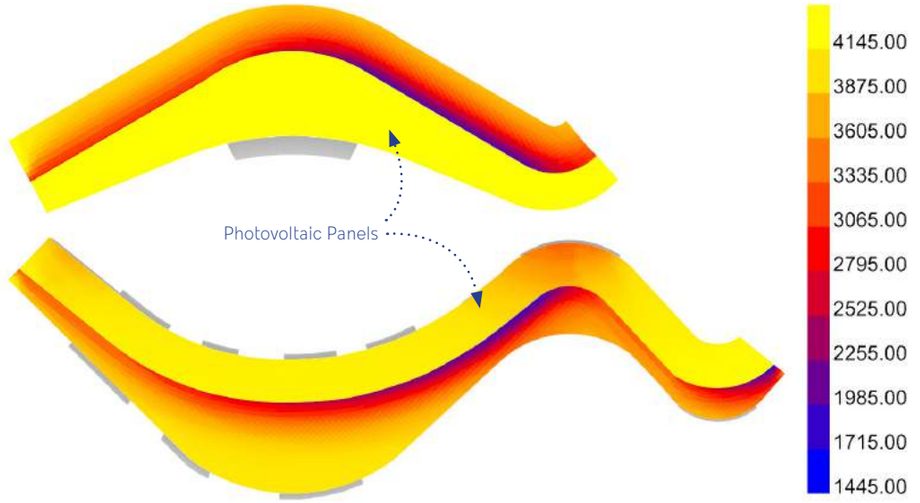
Solution space
Throughout the project it has been the intention to incorporate solarcells for electricity on the horizontal part of the roof. In France the sun is higher on the sky, and therefore it can attract enough sunlight hours. It has been investigated in Grasshopper with a sunlight hour analysis with climate data from the city Brest (1,5 hour west from the site). The analysis shown in illustration 204, shows that the optimal part of the roof to position solarcells, is on the horizontal part of the roof with approximately 4145 hours of sunlight per year. Where the buildings are closer, the room volume will shadow a bit from the western light. The position of the solar cells on this part of the roof, entails an option for hidden solar cells in the design.

When doing the energy frame calculations in Be18, the window area and the overhang roof plays an important role in the energy demand. The natural ventilation during summer is high, and reflections hereof is if a milder ventilation system should be activated during summer. This would consume more energy.

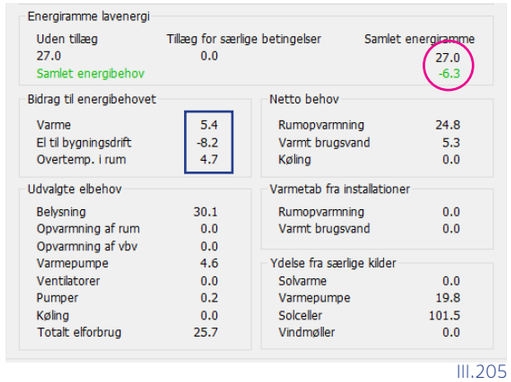
Another possible improvement is to reduce the u-value from 0.09 to 0.08 W/m²K. This will affect the thickness of the climatescreen.

On illustration 205 and 206 shows the energy demand before integration of possible improvements, with and without the heatpump and solarcells for electricity and domestic hot water.
On illustration 207 and 208, it is seen that the window row underneath the roof, contributes with a heatloss as the u-value is higher and not enough sunlight enters the inside to even out the heat balance.

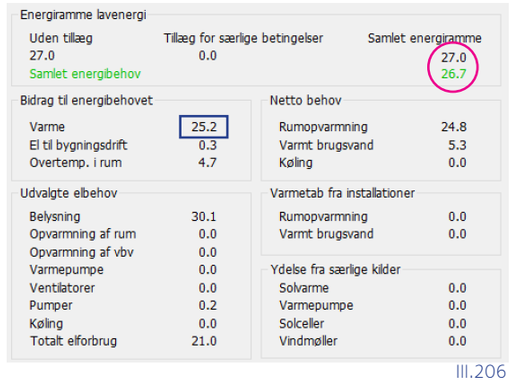
Parameters for the Be18 calculations
- Because of the oceanic climate in Brittany, the dimensioning outdoor temperature have been adjusted to -5
- U-value for wall, roof, and floor on 0,09 W/m²K
- Lighting has been set to standard values on 200 lux for bigger spaces and 300 lux for smaller spaces
- In bigger rooms the lighting is automatic, in smaller they are manuel
- Heatloss through pipes is 0 as they are insulated
- The ventilation is only natural, but with mechanical exhaust from toilets, bathrooms, and kitchen
- Natural ventilation during summer is on 2 l/s
- As internal heatgain, a standard amount for other buildings than houses, is used, on 4 persons per square meter.



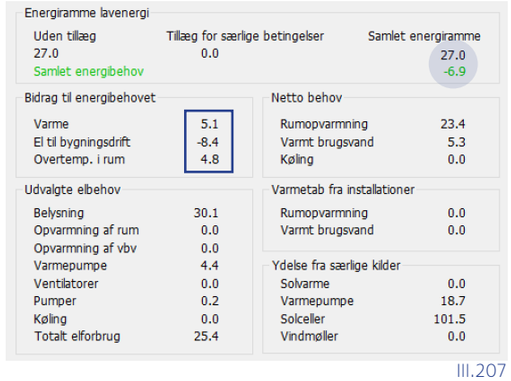
Ill.204
Sun Hour Analysis, Grasshopper, Brest



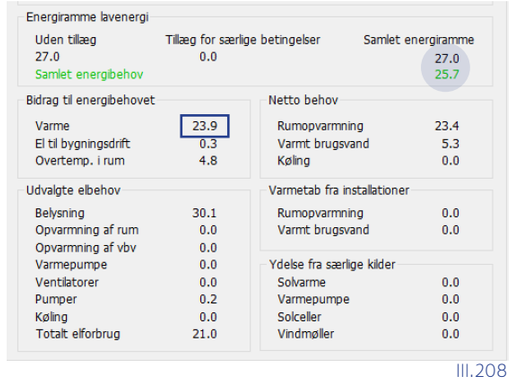
Ill.205
Key numbers with solarcells and heatpump



Ill.206
Key numbers without solarcells and heatpump



Ill.207
Key numbers with solarcells and heatpump and a reduction of the area of the windowrow underneath the roof from 0,6m to 0,4m per window



Ill.208
Key numbers without solarcells and heatpump and a reduction of the area of the windowrow underneath the roof from 0,6m to 0,4m per window

Indoor Climate

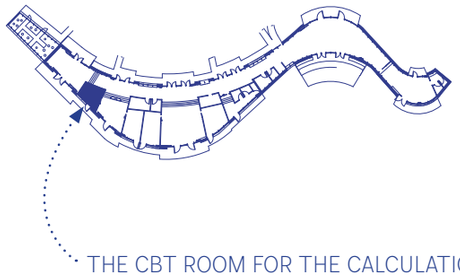
Problem space
The individual CBT room was chosen for studying the indoor climate, as it is an important room to feel well, when having sessions. As daylight is investigated in earlier workshops, this study will attend to the temperature and acustics. The CBT room is facing south/south-west and has a larger surface of climatescreen than the other individual treatment rooms, meaning more exposed for regulations in the temperature.

How is the average temperature in the individual CBT room? How is the acoutics climate?

Design drivers
Low difference between highest and lowest temperautres during summer

Solution space
Overheating:
In the Be18 calculations on page 54-55, it is seen that the building has a little overheating. It is suspected that this issue is during july. By doing a 24-hour average temperature calculation, the factors to adjust this issue can be found. The indoor temperature should aim to be between 23-26 degree celcius during summertime. The calculation shows temrapures a little to high, on 26,4 C. Some adjustments were made regarding the window area could reduce the temperature. Another more effective aspect was to add sun shading as horizontal blinds, which brought the temperature down to 24,3 C (ill. 210). An aspect showing a balanced climate inside the building, is the difference between the highest and the lowest temperature on 5 degrees C. (Appendix 4).

Acoustics:
The reverberation time has been calculated for the CBT room, to ensure a well climate for conversation. Some materialdata has been challeging to find, and other similar material data in relation to acoustics, has been used as compensation. The parametres for the calculation is listed on ill. 211. The recommended reveberation time for an office on 2-4 people is 0,6 s (Arbejdstilsynet.dk). The calculations shows an average reveberation time on 0,63 s, which is a bit too high (ill. 212). Parametres having the greatest influence on the reveberation time, is the room volume, the curtains and the wooden interior. To reduce the reveberation time even further, acoustic panels could be installed in between the beams in the cieling, and the expression of the building would be kept. (See the calculation in Appendix 6).



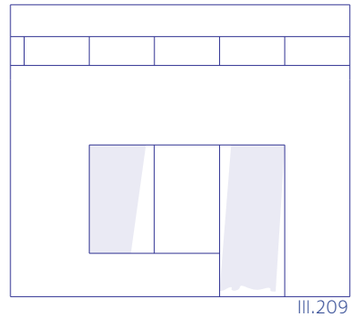
THE CBT ROOM FOR THE CALCULATIONS

24-HOUR AVERAGE CALCULATION, JULY
CURRENT

Average temperature: 26,4 C

Maximum temperature: 28,9 C

Minimum temperature: 23,9 C



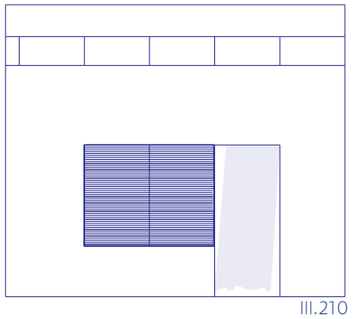
III.209

24-HOUR AVERAGE CALCULATION, JULY
ADJUSTED

Average temperature: 24,37 C

Maximum temperature: 26,84 C

Minimum temperature: 21,83 C



III.210

Horizontal shudders
Reduce window area on 1 meter

PARAMETRES FOR THE ACOUSTIC CALCULATION

Interior setting:
Two people
One computer
Two wooden chairs
One wooden table

Interior materials:
Division walls of clay wallboards, data as gypsom wallboard
Wooden floors
Cieling of lightened wood
Door of wood
Climatescreen of granite, data as unpainted concrete
Curtains, lightly vowen
Windows of thermal glazing
Cieling beams, data from wooden chair

III.211

REVEBERATION TIME

125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz
0,5 s	0,5 s	0,7 s	0,8 s	0,7 s	0,6 s

III.212

"A profound design process, eventually makes the patron the architect, and every occasional visitor in the building a slightly better human being"

- Juhani Pallasmaa 1936, Dushkes, L., 2012. p. 8

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