MAINTAINABILITY

with time as a design tool

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Examiner:
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Architecture and Urban Design
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ABSTRACT

It's easy to forget that no building will ever be static, due to the constant affects of time. The black and white photograph fascinated the early modern movement with its possibility to capture the ideal state of architecture; with its high contrast between light, dark and shade. A still life, perfectly arranged and *frozen in time*. Not so far from the final drawings done by architects. Meanwhile, the white color became associated with pureness. In common speech today, there's still a general expectation when someone moves into a new place, that it should be just like a blank canvas before the first brush stroke, white and clean.

Estate agents often positively refer to weathered residents as 'renovation objects'. A renovation object seems to either be damaged and with outdated standards or a 'rough diamond' waiting for someone to rescue it. I find both cases as problematic in terms of sustainability, because the overall idea is about *replacements*. New constructions, renovations and demolitions put together accounts for more then a third of all waste generated in the EU. A shift of mindset is urgent when it comes to the estimated lifespan of materials and building elements. 'Maintenance free' materials like plastic, aluminum and concrete has to be replaced when damaged and are rarely repaired, reused or recycled. Despite this, it's still very unusual to build *without* these materials.

The aim of this thesis is to discuss how the knowledge embedded in historical craft and traditional maintenance techniques can be a guide for sustainable design solutions. It also aims to investigate the non-static movement of time, its affects on material and space and how it can become more interacted in architectural representations. Because various shapes of the plant *flax*, like linseed oil and linen, plays an important part in several traditional maintenance techniques, flax is used as an active design tool throughout the project. The design proposal of the thesis is a small summer house, which primarily serves as a conversation piece and represents a selection of situations and materials, affected by the *movement of time* and connected through the *ability to be maintained*.

Keywords:
material lifespan, maintenance, time, linseed oil, linen, flax, weathered

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INTRODUCTION

Buildings could be seen as anchors through time. There are buildings that can connect us to former civilizations, tie a memory to a certain place or give a physical sense of the past. But it can easily be forgotten that no building will ever be static, due to the constant affects of time. New buildings are seldom built to last more then 50 years, because that's more or less how far the standard estimated lifespan reaches without any greater efforts of maintenance. Is it so that we count on that the buildings that are historically important to us to last forever, while the constructions of today are not even meant to outlive the generation that built them?

AIM

The aim of this thesis is to discuss how the knowledge embedded in historical craft and traditional maintenance techniques can be a guide for sustainable design solutions, in comparison to the standardized maintenance-free solutions of the past decades. It also aims to investigate the non-static movement of time, its affect on material and space and how it can become more interacted in architectural representations. Because various shapes of the plant *flax*, like linseed oil and linen, plays an important part in several traditional maintenance techniques, flax is used as an investigating design tool throughout the project.

THESIS QUESTIONS

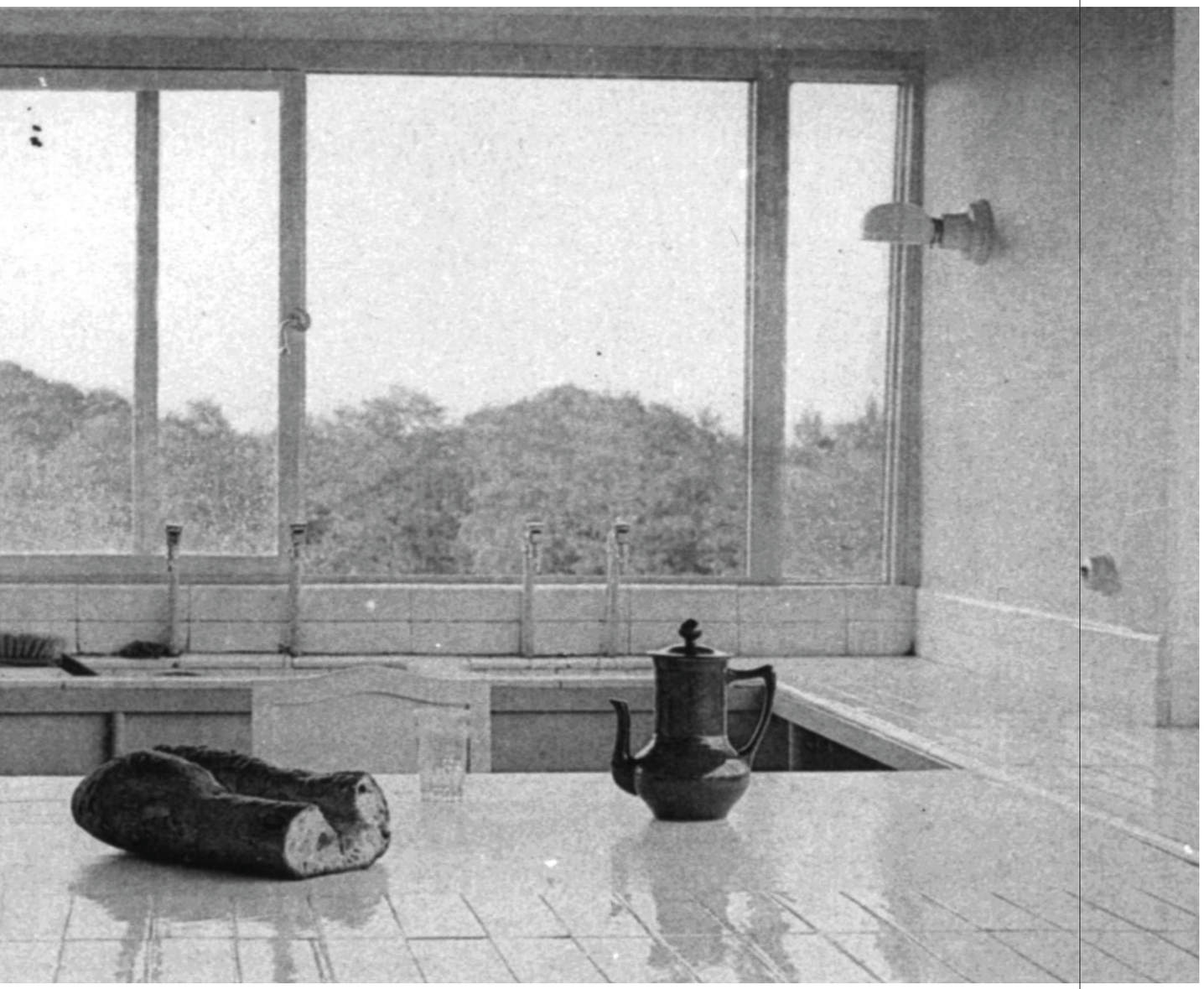
How can historical materials and maintenance techniques be a guide when designing for the future?

How can the non-static movement of time become more interacted in architectural representations?

In which ways can the plant flax be used as a design tool for extending the lifespan of other materials?

DELIMITATIONS

The thesis primarily strives for a speculative discussion an investigation around the thesis questions. The presented design proposal is therefore merley meant as an example and not a subject for discussion. The design is limited to a small summer house, specifically to a zoomed in corner, to present a limited selection of materials and topics on a detailed scale, set for reflection. The representations are therefore not focused on proposing a design, but on speculation around certain scenarios of relevance for the discourse.



Villa Savoye (1928-1930) – Le Corbusier

BACKGROUND

FROZEN IN TIME

The black and white photograph fascinated the early modern movement with its possibility to capture the ideal state of architecture; with its high contrast between light, dark and shade. (Mostafavi and Leatherbarrow 1993) A still life, perfectly arranged and frozen in time. Not so far from the final drawings done by architects. Meanwhile, the white color became associated with pureness. (Mostafavi and Leatherbarrow 1993)

THE WHITE COLOR

Staining, erosion and surface faults seem to be antithetical to the modern movement's ideal of *whiteness*. Inspired by the traditional stone buildings Le Corbusier (1887-1965) had visited on his travels, he believed that the white color could represent justice and equality in new modern architecture. He visioned a harmony uniting all classes, like bread and water; what everyone need and enjoy. The white surface was thought to be the basis of objectivity and of truth. According to Le Corbusier, anything dishonest being put on it or standing forth from it, would hit you in the eye. (Mostafavi and Leatherbarrow 1993)

THE MODERN STANDARD

Today it's easily forgotten that Sweden actually was more or less under a constant economical depression during the first half of the 20th century. The housing conditions were among the worst in Europe at the time and the cities heavily overcrowded. After the two world wars, there was a collective longing among the population for a fresh start and a great optimism about a better future. The 1950's started of with an economical boom, which finally made it possible to catch up with new residents and get rid of the housing shortage. This led to *the million program*, which meant that the state would provide the country with one million new residences in ten years, 1965-1975 (Stellan Ridderstrand and Vicki Wenander 2018).

In order to handle this kind of building speed, almost all building elements had to be mass produced as fast and cheap as possible. This wasn't questioned by the population until the last years of the project. In parrallel with the mass production of the million program, a lot of buildings were demolished due to their low standards and the swedish cityscapes were almost as transformed as the european cities which actually got destroyed by the wars. This lead to great demonstrations and a newborn interest for renovation and preservation. Untill this turning point, old buildings with outdated standards used to be percieved as sick (Stellan Ridderstrand and Vicki Wenander 2018).

MAINTENANCE FREE MATERIALS

Nowadays, about 60-50 years later, we can clearly see a shift to a lower quality of bulding elements from the time of the million program, as a lot of them has been falling apart or gotten serious damages for several decades. The lifespan of these buildings has already started to reach an end, and the same goes with a lot of renovations from the 1970's and 1980's, which often used the same standards and maintenance free materials as the million program (Stellan Ridderstrand and Vicki Wenander 2018). The concept of *maintenance free materials*, which was first introduced around the middle of the 20th century, was supposed to be revolutionary with fast production, low cost and low effort. The very idea of it may seem tempting and comfortable at first, but the general disadvantages are that they are made to be replaced on a regular and can't be repared or reused (Renoveringsraseriet 2020).

Renovation object, Hemnet (2016)

THE RENOVATION OBJECT

Estate agents often positively refer to weathered residents as ’renovation objects’. (Hemnet 2020) A renovation object seems to either be damaged and with outdated standards or a ’rough diamond’ waiting for someone to rescue it. The *word* renovation refers to the act of renewing and replacing. (Göran Gudmundsson 2010) It used to be called decontamination in Sweden before the 1980’s, when buildings without modern standards were perceived as sick. (Stellan Ridderstrand and Vicki Wenander 2018) Since then, the idea of renovation has shifted to foremost seeing the potentials with change. To replace the outdated with the new and modern. It’s about increasing the level of comfort and function, but also about current ideals and personal aesthetical preferences.

BLANK CANVAS OR ROUGH DIAMOND

In common speech today, there’s still a general expectation when someone moves into a new place, that it should be just like a blank canvas before the first brush stroke, white and clean. This means no traces from the life of the previous owners. Preferably, the blank canvas should contain of white painted walls, floors without marks and a newly renovated kitchen and bathroom. Kitchens and bathrooms seems to be extra important to many people today, because of the association to hygiene. Since the 1980’s, the kitchen and the bathroom are also the rooms we’re most likely to show our guests (Stellan Ridderstrand and Vicki Wenander 2018).

Building maintenance, could be explained as a combination of renovation and restoration. It’s a way of renovation, but with the same cultural-historical respect as with restoration. (Göran Gudmundsson 2010) The idea is to preserve as much as possible and keep the ’soul’ or memory within a building by doing so. Some traces of wear and tear are in this case perceived as high value. An old building perceived as beautiful, could instead of ’renovation object’ be called ’a rough diamond’, even though the intentions of renovation are more or less the same.

Waste from renovation, Renoveringsraseriet (2020)

I find both 'the renovation object' and 'the rough diamond' as problematic, both when it comes to sustainability and cultural-historical value. 'The renovation object' because the time span between renovations seems to get shorter and shorter for each decade, while it encourages modern replacements of what's still functional. When the new replacement has no connection to the original style of the building, the risk is that it will feel misplaced and out-of-date quite fast – which then will lead to another replacement.

The 'rough diamond', on the other hand, which is more or less untouched and perhaps with most original details kept, is most likely so because the former owners couldn't afford to renovate and keep up with the latest. Historically there seems to be a tendency to despise architectural styles built close to the current time, but 'out-of-date' when it comes to new ideals. By studying the changes in swedish architecture through each decade, from the industrial revolution until today in *Byggnadsvård för lägenheter 1880-1980* (2018), it seems like it's a recurring behaviour to despite the style of the previous generation and romanticize the style from about three generations back.

If all despited and not-that-old architecture turns into 'renovation objects' and constantly transforms into new modern standards, there will be no 'rough diamonds' left for the future. Both the renovation object and the rough diamond are problematic in terms of sustainability, because the *overall idea* with renovation is about *replacements*. New constructions, renovations and demolitions put together accounts for more then a third of all waste generated in the EU. (European Commission 2018) A shift of mindset is urgent when it comes to the estimated lifespan of materials and building elements.

”The mouth kisses, the mouth spits; no one mistakes the saliva of the first for the second. Similarly, there is nothing necessarily impure about dirt.”

Mohsen Mostafavi, David Leatherbarrow (1993)

MATERIAL AND TIME

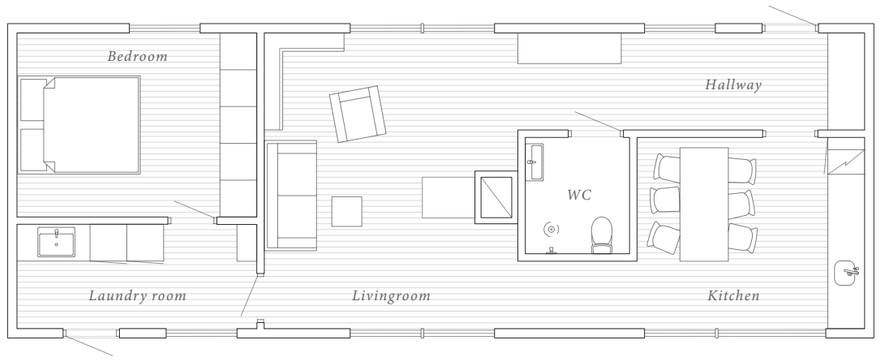
To take care of what you already have, to maintain and reuse, used to be the standard mindset before the rise of mass production. When materials are cared for to last longer, there will simply be less need for production of new replacements. This logic may not be of a major interest in today’s fast profit-driven society, but it’s one important part of the solution for lowering the climate impact and amount of waste generated within the building industry.

FAKED PATINA

Furniture and other objects, sometimes occur produced with a fake patina or a fake material appearance. Sometimes a trend can’t seem to wait for a material to weather fast enough. New jeans get cut and teared, painted cabinets get sanded in the corners and wallpapers are made to look like weathered wood. Despite all this effort, the faked old will never reach the same level of perceived quality as the real. This kind of behavior comes and goes with shifting trends and ideals, such as the *national romanticism* at the turn of the century or the interior style *shabby chic* which emerged in the 1980’s. It’s almost tragical how faking has become a fast solution for capturing the beauty of time.

MAINTAINABILITY

As previously mentioned, maintaining and reusing has historically been a necessity due to the reasons of availability, cost, low production speed and the limitation to local resources. Because of this, there’s already a lot of knowledge of well developed methods and techinques to be found in old traditions. Today, this knowledge is merley used in a cultural-historical context, like restoration, but what if it also could become more of a guide when designing new buildings? The historical reasons for maintenance are perhaps even more relevant today, as we’re now using more resources then what nature can provide us with.



Scale 1:100

DESIGN AS A TESTBED

By designing a small summer house, this thesis discusses the meaning and relevance of time, historical maintenance techniques, sustainable materials and the presence of life. Through design choices, a limited selection of materials and topics for discussion are made. Because various shapes of the plant *flax*, like linseed oil and linen, plays an important part in several traditional maintenance techniques, flax is used as a tool throughout the project. Both as a design tool and as a tool for investigation of how the choice of a material connects to time and future maintenance.

The summer house

The house is small, preferably located between a flax meadow and a forest edge. It's mainly built out of wood, resting on pillars that lifts it about half a meter above the ground. There are two entrances, one that from the hallway, leads directly into the kitchen and one from the back, passing through the laundry room. The laundry room has a direct connection to the bedroom and perhaps out to a garden. It's a passage for clothes and a space for caring of plants. In the center of the house, there is a fireplace, the bathroom and the living room.

Flax flowers, Wikipedia (2006)

Most useful

Flax is a blue-flowered herbaceous plant, with the latin name *linum usitatissimum,* meaning *most useful.* It's cultivated for for its seed (linseed) and for the textile fibre (linen) made from its stalks. (Oxford Dictionary 2021) Humans have used flax for several thousands of years. Traces of linseeds has been found in ancient civilizations and the oldest spun and knotted textile fibre has been dated back to 30 thousand years ago. (Wikipedia 2021)

LINSEED OIL

Linseeds and pure linseed oil can be eaten in smaller doses and contains lots of fibers and omega-3, (Livsmedelsverket 2021) but the oil is perhaps more commonly known as a product for impregnation of wood or as a basis for traditional paint production. Linseed oil is produced as either *raw* or *boiled*, which affects the attributes of the oil. *Raw cold pressed linseed oil* takes about a week to dry. It has extremely small molecules, about 5 nm, and is very liquid. The raw linseed oil can be eaten if pure but is most used for producing oil paint and window putty. (Wikipedia 2021) *Boiled linseed oil* is actually not boiled, only heated in combination with supplied oxygen. It can be produced in slightly different ways and dries already after one day, but turns slightly more yellow then raw oil. What makes boiled linseed oil so great is that its molecules expands with 15% when dried and is therefore exceptionally good for clogging the pores of wood, giving a higher protection then other oils. (Wikipedia 2021)

LINEN TEXTILE FIBRE

Linen is a textile famous for being strong and durable, the flax fibers are one of the strongest among plants and their strength can even be measured with ordinary structural steel. It's a hygroscopic material, which means that it can absorb and release moisture to it's surroundings but also dries fast. This means that linen is suitable for summer clothes, towels or as an insulation material. (Linda Grey 2013) When used as an insulation material, there is no need for a plastic vapor barrier. (Ekologiska Byggvaruhuset 2021)

SHAPES OF FLAX

Stalks

Insulation wool

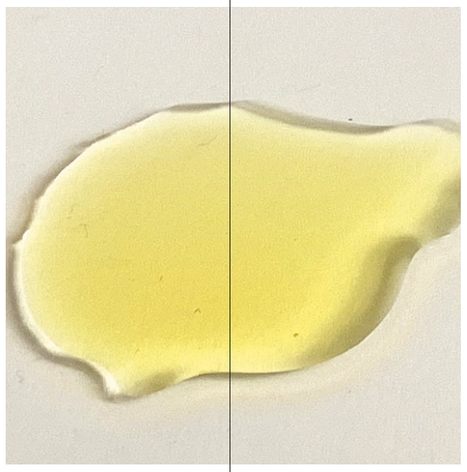
Combed

String

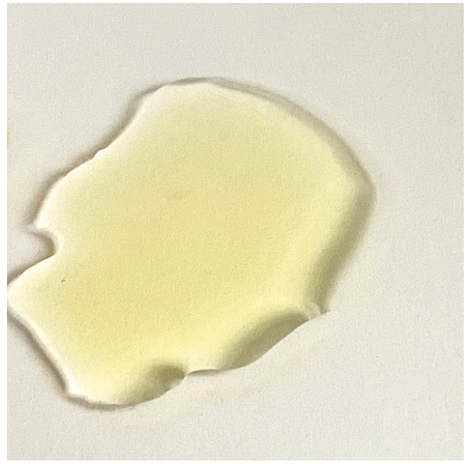
Textile

Seed capsules

Seeds



Raw oil

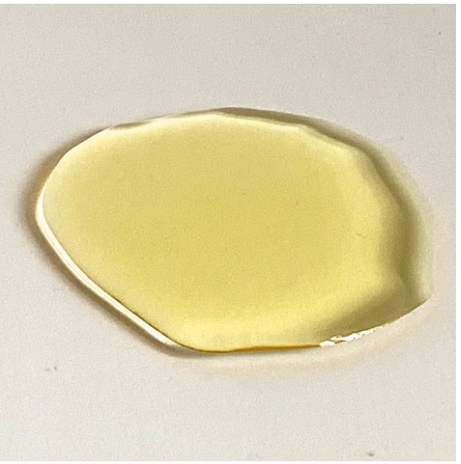


Boiled oil

Oil Soap

Linseed oil also occurs in the shapes of oil paint, oil wax, egg tempera and linoleum.

STALK, FIBRE AND OIL



Design strategy

To illuminate the protective attributes and material versatility of flax, the designed summer house will have a roof of thatched flax stalks, linen insulation wool and wood treated with linseed oil.

Linen insulation wool and linseed oil as protection of wood are traditional and well-proven, but the thatched roof of flax stalks is purely a curious speculation.

Thatched roof of flax stalks

Linen insulation wool

Linseed oil combined with wood

Conceptual diagram

Pine heart wood, Wikipedia (2006)

WOOD

The heartwood is the central annual rings of a tree, which is more resistant to decay then other wood, due to a genetically programmed process that goes on for as long as the tree is growing. (Wikipedia 2021) Pine wood has distinctively darker heartwood then fir and is therefore more easy to distinguish. The slower the tree grows, the denser the annual rings get – which makes the wood stronger and much more resistant to moist and decay. (Slöjd och Byggnadsvård, Nääs 2016)

Before the industrialization of forestry, trees younger then 130 years were never felled, because that's when the heartwood was considered to be mature enough with strong and dense annual rings. Trees were also only felled during their winter sleep, in january and february, when the trees contain the least water. A rule of thumb was that the wood should have at least 6 annual rings per cm to be used for carpentry purposes. (Claessons Trätjära 2021) Today, the great pressure on the forestry industry makes it almost impossible to wait 130 years for the trees to mature, which means that the wood we find on the market today is of a much lower quality. (Claessons Trätjära 2021) The use of renewable materials, like wood, is by principle only sustainable as long as the pace of the deforestation is lower then the regrowth of the forest. (Varis Bokalders, Maria Block 2009)

Design strategy

The structure, facade, floor and windows of the designed summer house will be made of swedish pine and fir heartwood. When maintained, wood can continue to serve well for several hundreds of years and if treated right, it also ages in a very beautiful way.

I believe that proper maintenance of wood is absolutely necessary for slowing down the pace of deforestation. Even though there are many forests in Sweden, it's not enough to only state that more should be built out of wood for sustainable reasons. Wood may be one of the most sustainable options when it comes to building materials, but deforestations of larger scales, all over the world, are currently devastating for the climate.

Clay mortar, Hyllingegårdens Lerbruk (2021)

CLAY

A mix of clay and sand is called clay mortar and it has been used by many cultures for thousands of years. It's often a local and an easily accessible material, which means a low cost both when it comes to preparation and transportaion. (Hyllingegårdens Lerbruk 2021) Clay provides with a good indoor climate. It's a breathing material that has a good ability to buffer moisture, which gives a stable and comfortable humidity level. It has a cooling effect in the summer and keeps the heat well during the winter, (Varis Bokalders, Maria Block 2009) while it's also insulates, windproofs, protects against fire and provides a good surface to paint on. (Hyllingegårdens Lerbruk 2021) Clay walls are beautiful in their natural color, but can easily be wallpapered or painted with clay paint or egg tempera.

Design strategy

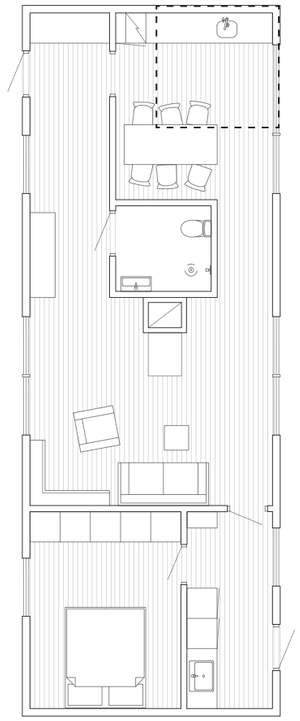
The designed summer house will use clay boards as inner walls, because the breathing and moist buffering attributes that cooperates well together with the linen insualtion wool and wooden structure. The material is also chosen due to it's local access in most parts of the country and because of the low climate impact from extraction and transport. It is one of few building materials that easily could return to the ground in the future and old clay can always be used again if mixed with water.

Physical model, further developed digitally

THE CORNER

As an investigative design method, I've chosen to specifically zoom in on one corner of the summer house, to set a scene for the representations and reflections that carry the discourse of the thesis. The corner is 6 square meters and is placed in the outer corner of the kitchen. It's built as a physical model in the scale 1:10 and has been further developed digitally to represent several scenarios. The two final scenarios are stretched to three and four times of the corner's length, to guide the reader a bit further into the building.

The kitchen is chosen as the main scene for the representations, because it's the most frequently used space of most homes and is usually the subjected for the largest renovation interventions. The chosen scenarios are not focusing on replacement, but on maintenance and changes, caused by the movement of time.



Floorplan

The original physical model in scale 1:10

LIFE

A residence is meant to be lived in. Objects are meant to be used and moved around. Every room goes through the loop of becoming a mess to getting cleaned and then messy again. Perhaps this is most obvious in the kitchen, as the loop spins each time food is getting prepared. While cooking, the interaction with certain surfaces are getting more intense then in other rooms. The kitchen counter repeatedly gets exposed to heat, fat, acid, stickiness and cuts. Coffee and tomato sauce drips down on cabinet doors, the pasta water boils over and oily candle-grease drips down on a table cloth. Pulled furniture happens to scratch the floor and a door handle happens to smash into a wall and leave a small mark. It is impossible to avoid all of these things, as they are part of the movement of life. A perfectly arranged room is therefore only a temporary state within the loop, otherwise it's not being lived in.

THE SCRUBBED FLOOR

Cleaning is perhaps the most basic act of maintenance. We do the dishes, we do the laundry, we vacuum and we polish windows. It's an unspoken agreement between a resident and a residence. A scrubbed floor is an untreated wooden floor, only cleaned with linseed oil soap and cold water. It's warm and soft against the feet and with time the wood gets brighter and becomes even more durable. The soap also has a nice scent that lingers for a while.

Despite this, prejudices often counteract the choice of scrubbed floors. Back in the days it was common to scrub in a kneeled position and dirty outer shoes were often worn indoors, so scrubbing used to be associated with ache and pain. (Gudmundsson 2010) Nowadays, when it's more common to use a brush with a shaft, the method is actually very simple. All needed is a bucket of cold water mixed with about 1 dl of linseed oil soap. After the floor has been vaccumed, it's first wet with some cold water and then scrubbed with soap water in the longitudinal direction of the wood. Afterwards, the floor is rinsed with clean water again and dried with a cloth. The process only needs to be done once or twice a year and for each time it's done, the floor becomes a bit softer, brighter and more dirt-repellent. (Gudmundsson 2010)

So the older a scrubbed floor gets, the stronger and the more beautiful. Another reason to maintain the floors with linseed oil soap, is that every other option of treatment is then still possible in the future. (Gudmundsson 2010) Unlike the case with other treatments, the floor won't need to be sanded or removed if someone, for some reason, later would decide to change the floor treatment. It is a rewarding process which gives visible results and strengthens the floor, so that it can (depending on the wood quality) continue to last for hundreds of years.

CHANGE

Inner walls can easily change the appearance of a room. Wall surfaces almost for certain get painted, wallpapered, nailed and drilled. Shelves and frames can be added or removed. Even though the original material is beautiful in itself, it's doubtful that its appearance will last through generations of residents, each wanting to add their own layers. Not because of a lack of material quality, but because of the need for personal aesthetical expressions.

Clay board walls can easily be repaired without any need for replacements and the smooth surface can easily be wallpapered or painted.

Reparing clay

Unburned clay can always be used again if mixed with water. Adding moist makes it’s possible to fill in holes, marks and smoothen out cracks. The breathing and moist buffering attributes of clay cooperates well together with the linen insulation wool and wooden structure.

THE THATCHED ROOF

Thatching is the craft of building a roof with dry vegetation. It is probably the oldest type of roofing and it occurs in different techniques and materials on all continents except Antarctica. (Wikipedia 2020) A swedish thatched roof is traditionally made of straw, rye or water reed, but has also been made of wheat and sedge (cladium mariscus). The chosen material and binding technique is normally dependent on the local vegetation and cultural heritage. (ByggaHus 2015) The low material cost, with the ability to use residual products from cereal harvesting or local vegetation, is perhaps the main reason for building a thatched roof. (Wikipedia 2020)

Using flax

Flax is grown in two different varieties; for production of linseed oil or production of linen textile fibre. The former is using the seed capsules and is therefore more low-growing with several branches, while the later is using the stalks and therefore has taller straws without branching. (Wikipedia 2021) The whole plant can be used for both purposes, but because it has been plant bred over thousands of years into two different uses, I'm not fully convinced that there aren't occurring any residual products after all.

Hypothetically, I believe that flax could be a very suitable material for a thatched roof, as it's such a similar plant to what has been traditionally used. The reason for why it has not been used for thatching is likely because the stalks are primary used for other purposes, but if we look at the typical attributes of all shapes of flax; strong fibers, breathable, dirt-repellent, moisture repellent and durable – it would be very interesting to see how it would behave over time as a roof material.

WOOD TAR

Tar is a dark brown or black viscous liquid that can be obtained from a variety of organic materials, but in northern Euroupe the word 'tar' primarily refers to a substance that is created through burnt wood. (Wikipedia (2021) Resin, the viscous substance within a tree, is a natural protection of wood, with a healing and moist regulating capacity. The best raw material for producing tar is an old wooden stump, because 10-80 years after the tree is felled, the resin has become a very large proportion of the stump's weight. (Claessons Trätjära 2021)

All wooden surfaces that are exposed to sun, wind an rain will with time leach on the surface, turn grey, weather and crack. Even tarred surfaces age in this way and when it occurs, it's time to add on a new layer. The timespan for maintenance depends on local climate conditions, which means that the annual interval can differ from 5 years to 10 years or sometimes even longer. (Claessons Trätjära 2021) It's always an advantage to work with heated tar on a sunny day. Warm tar, preferably with a constant temperature, is smoother to work with and gives a better result. (Claessons Trätjära 2021)

The smell of tar

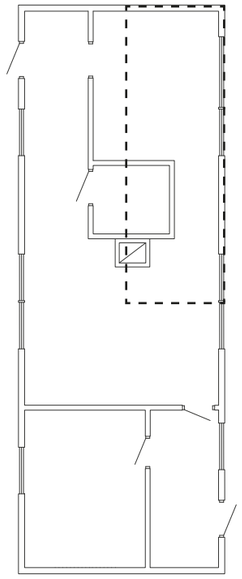
The distinctive smell of tar seems to be one of a kind. By many, it is strongly connected to a memory of a certain place. It's often associated with wooden boats, fishing cottages or cultural-historical buildings, mainly from before the 19th century. The smell of fresh tar is quite intense, but appreciated by most. A house that can contribute with memories connected to a positive smell, is a house that strengthens the relationship between the resident and the residence.

Old tar will get wrinkled drop-formations after generations of tar layers. This can be scraped off or kept as a sign of age.

BODILY METAPHORS

Buildings are sometimes described as living organisms. There is a wide range of metaphors which ascribe buildings with life or bodily characteristics. (Stephen Cairns, Jane M. Jacobs 2014) A building structure could be likened with skeleton and bones, walls with flesh and skin, while windows almost seem to have the ability to see. Sometimes it's even possible to ascribe buildings with signals of body language; like being strict and authoritarian, or friendly and inviting. It's like we need to use our own bodily experiences to describe and understand architecture. Perhaps this is why buildings with signs of old age often seem to trigger stronger emotional reactions than newer constructions.

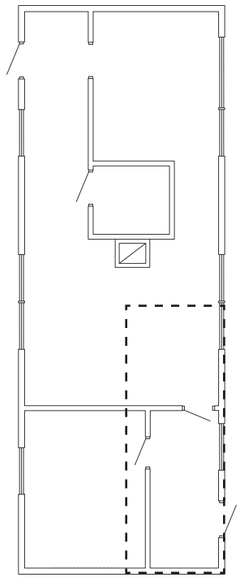
Buildings are sometimes described as living organisms. Some state that old buildings even have a soul or spirit, with memories carried within the materials. Weathered buildings can sometimes be referred to as sick or even close to death, (Stephen Cairns, Jane M. Jacobs 2014) while they also tell a lot about their past. Materials that have reacted to weather conditions, been repared or replaced, broken, soiled or layered.



THE FIRE PLACE

After central heating became standard in Sweden, fire places have still occurred from time to time during the past century for the plain reason of cosiness. (Stellan Ridderstrand and Vicki Wenander 2018) Fire seems to have an almost enchanting effect on humans. A controlled fire makes us calm and it instinctively catches our eye. It seems to be so deeply rooted in us, as a symbol for safety, survival, warmth, food and gathering.

The fire place may not be the best heat source for every building these days, but a small summer house which is rarely heated, should be quite suitable. The act of lighting the fire when arriving to a summer house becomes foremost a ceremony rather then a necessity, while it's also able to quickly warm up the building. The fire place will always be appreciated, regardless of trends.



THE LINEN TEXTILE

Just as linseed oil soap mixed with water makes a wooden floor soft and dirt-repellent, linen textile also rejects dirt and turns softer for each time it's washed. Linen easily absorbs and releases moisture, but also dries fast, which means that it's suitable for summer clothes, towels or as an insulation material. (Linda Grey 2013) Linseed oil soap can be used as a general cleaning product, even as a laundry detergent. This means that one shape of flax can be used for cleaning another.









DISCUSSION

By outlining the problem with the general positive attitude towards renovation in today's society, this thesis has searched for sustainable solutions within the matter of material lifespans. Research has been done through in-depth studies of traditional materials and through contemporary books on building maintenance. The design strategy has been to select materials connected with traditional craft and well-proven techniques and point out reflections through design choices and relevant scenarios.

The represented scenarios has been an attempt to reach further then only showcasing the ideal state of a finished design. Together, they create a narrative and invites a presence of life. Throughout the process, I've tried to almost take a step into the design and predict situations relating to the ordinariness of the reality. This method has given me a deeper understanding of the meaning of every design choice, having to reflect upon the stages of the material origin, how it will be used and how it will age.

The conclusion of the thesis is that materials that can be maintained to achieve a longer lifespan, plays an important part in the strive for a more sustainable building industry in the long run. To take care of a building should be rewarding in many ways instead of merely be perceived as inconvenient work. The relation between resident and residence through the act of maintenance can increase the experience of quality, belonging and perhaps even respect towards material resources. The designed summer house primarily serves as a conversation piece and represents a selection of situations and materials, affected by the *movement of time* and connected through the *ability to be maintained*.

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with time as a design tool

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