



Diploma report

# Transforming the unity barn

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## Introduction

The unity barn is a building typology in Norway, which was invented and improved during the industrial revolution from 1840-1920. It is characterized by its red color and size; the unity barn was the most important production building on any farm for a long time.

It was more like a machine than a building- in the sense that you fed it raw materials and got refined materials back with a minimum of effort. The building technique that made the unity barn possible was a sophisticated play with materials and forces through a skeletal building system— also allowing for expansions and changes.

Nevertheless, as rationalization of farming continued through the 19<sup>th</sup> century, the unity barn was not adaptable to accommodate for heavy machinery and more specialized farming. New production buildings appeared and the unity barn became redundant.

As the urban fabric expanded after 2<sup>nd</sup> WW in order to serve an increasing population, much valuable farmland has been built down, but the farmhouses and barns are still standing in many cases. I am curious of how suburban and peri-urban condition is reacting in relation to the barn buildings today.

Now it is estimated to be 100 000 empty barns in Norway. According to SSB there is currently 170 000 agricultural properties, and only 40 000 full time farmers. What to do with all the empty barns is still an open question.

Since 2<sup>nd</sup> world war Norway conducted a policy where the countryside played an important role. The state subsidized the farming industry as they saw it as important for the nation to be self sufficient as well as keeping the countryside alive and populated.

The last years the political shift from social-democratic to conservative jeopardize these values. Merging of municipalities and centralization of public services is a race for an even more efficient state apparatus, which translates into lesser jobs on the countryside.

Softening of the legislations connected to farms and smallholdings has made it possible for people to use these properties as holiday cabins, and the prices has sky rocked compared to the rest of the marked the last 10 years. Very few buy a farm or smallholding today to make a living, it's about lifestyle. They want a place to put potatoes, vegetables, have chickens and be able to chop wood on their own property (3).

The biggest search provider for property in Norway, FINN.no, reports that the search for “*småbruk*”, smallholding, is the most used search term on their page in 2016 and 2017(2). Even though only a fraction of the population is able to realizes the picturesque vision it still gives us a hint of what kind of life many people in Norway are dreaming of right now.

Among the younger generations in Norway the awareness of the environmental challenges we all are facing is increasing.

Is there a conflict between low carbon footprint and the need for safe environment where kids can grow up and there is enough space to unfold? Is it important for human beings to grow things themselves and have a community where they get know their neighbors? And is it affordable for most people anyway?

I wonder if the barn building, with its references to the country life and its history connected with an authentic way of living, could provide as a framework for a new type of living that combines some rural qualities with the advantages of living relatively close to jobs and services.

I decided to pick an abandoned barn in proximity to a central hub in order to investigate the possibilities of transformation.

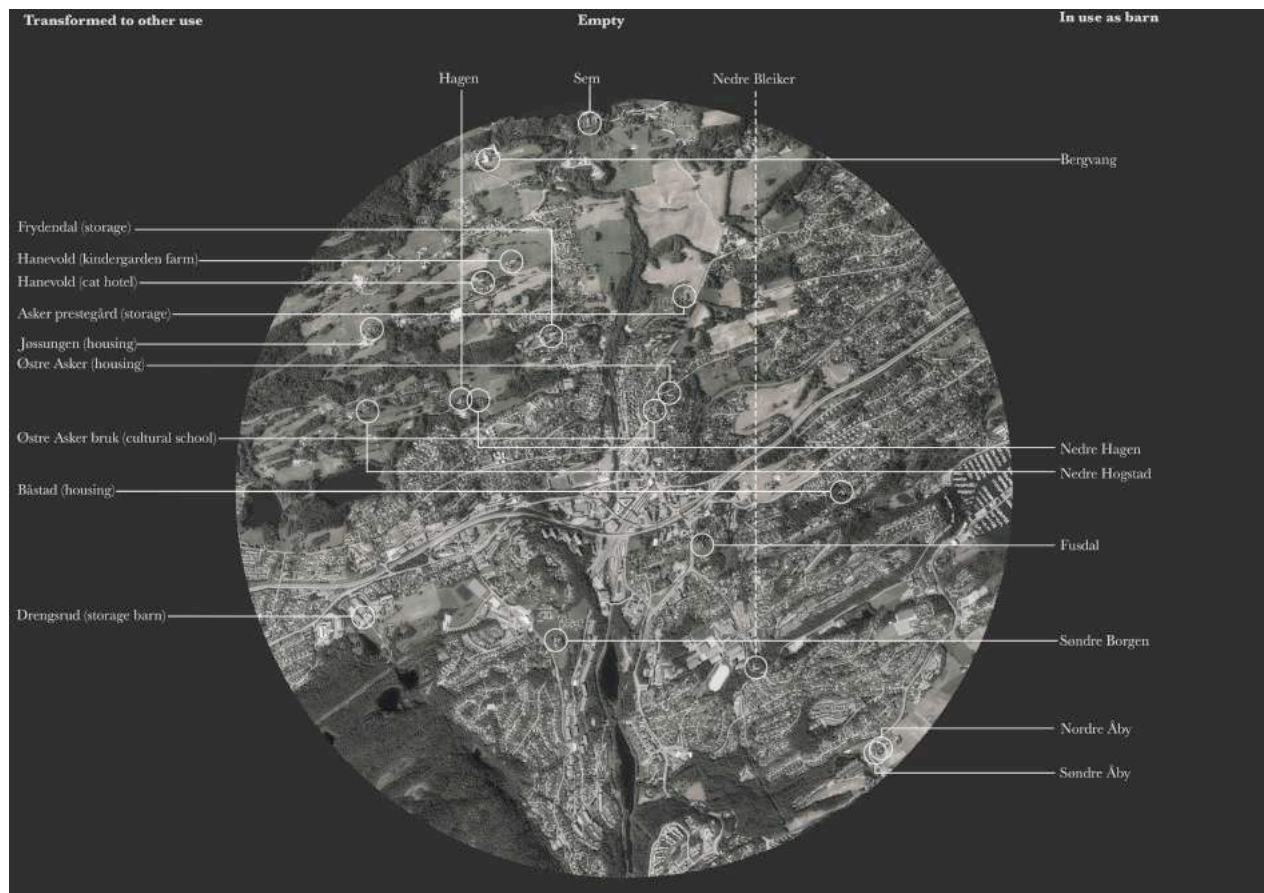
In general, I want the project to take advantage of the spatial resource of the barn along with its building technique and historical traces. The unity barns have been characterized as the cathedrals of the Norwegian countryside, and I hope that by transforming them they can live on into the future.

### *My intentions*

I have decided to study the barn typology and use what I learn to form a project.

After locating all unity barns within a radius of 2,5 km to Asker city center I went to most of them to find out what they were used for. I was surprised there were not more of them being empty.

I chose the barn at Nedre Bleiker gård as a representative context for my thesis.



## Thesis

I want to investigate the possibility of transforming a unity barn.

How do I retain spatial and historical qualities of the unity barn while meeting the demands of an insulated and light modern building?

Is it possible to translate the functional and structural properties of the barn into something new?

I want to take an experimental approach to my answer- everything may not work perfectly. Hopefully some of my findings will be useful for similar transformations of other barns in the future.

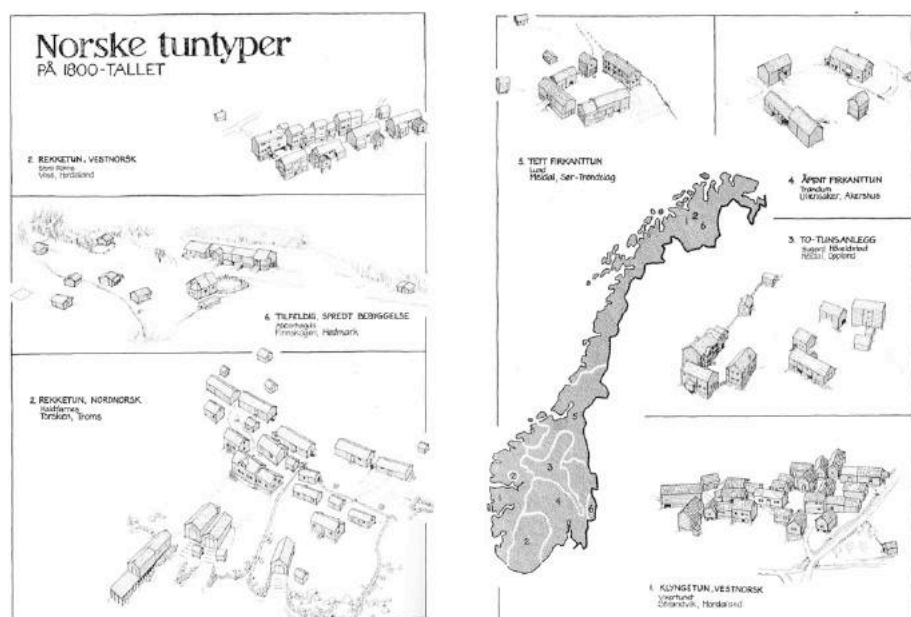
In order to test my thesis I have found a unity barn at *Nedre Bleiker gård* in Asker that is abandoned and located in a suburban area experiencing densification and growth.

## The history of the unity barn

### THE FARM

The Norwegian cultural landscape has been in constant change since the beginning of agriculture in the Late Neolithic period, about 6000 years ago. The traditional Norwegian farm consists of many small houses. While the houses from the Viking age was large and undifferentiated the change to more specialized houses points towards more sophisticated farming and way of living. The houses were organized into two main categories: in-house and out-house. Out-houses would be the houses needed for production at the farm such as different animal sheds, hay barn, smokehouse and brewing house. The in-house was for storing food and for living. The stable was often placed in the middle.

There are five common ways of organizing the buildings further: 1) the cluster-farm, 2) the row-farm, 3) the double farm, 4) the open square, 5) the closed square. Topography, climate and influences from abroad have played a role in this development- as well as the psychological aspect for the farmer of creating a “world” or *tun*. The *tun* is translated to courtyard but also stems back to the term *town*. All buildings were made as a combination of stave-and log-construction. (3)



The Norwegian farmers have lived by the rule of thumb “deliver the farm to the next generation in better condition than when you got received it.” This meant a lot of hard physical work for the farmer and his family. The use of tools and animals for labor has been an integral part of farming from an early stage until the industrial age. From the 1850s agricultural engineers presented the Norwegian farmers for a new invention that was going to make the work easier and more productive. The Norwegian state needed the farmers to produce more. This policy has manifested itself physically in the cultural landscape, most significantly through a particular building typology: the red unity barn.

## THE BIG CHANGE

In 1801 a national census revealed that 8,8 percent of the population lived in the cities and that the number of farms was 77.000 in addition to 40.000 crofter pitches. At this time the farmers were mostly self-sufficient.

In the 1800s the farming industry changed and adapted more directly to the monetary system. People started to move from the countryside to the cities in search for a better future. The old peasant societies had enough manpower but lacked knowledge of how to boost the production. The industry development provided farmers with new inventions for agriculture such as mowers and thresher that made farming profitable.

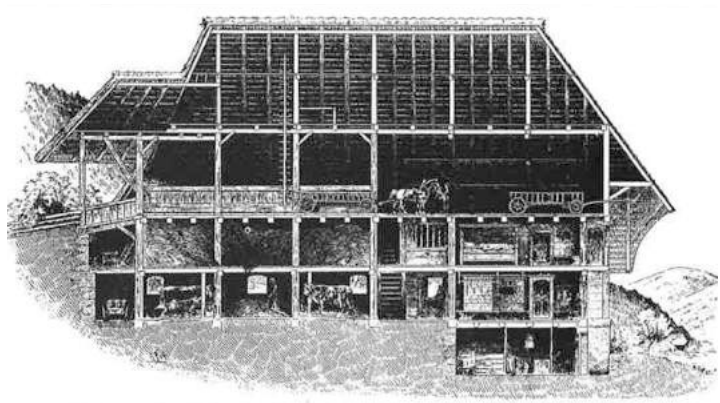
Agricultural engineers investigated how the Norwegian agriculture production could be conducted more efficiently. In 1855 the government employed three *agriculture agronomists* and *agricultural engineers* to help assist the farmers in different matters.

The biggest breakthrough came as most of the specific production buildings such as the animal sheds, stable, hay barn, grain barn and storage of different kinds were united in the newly invented unity barn- *enhetslåven*. The red color and the barn bridge characterize this typology. Not all the barns are red- yellow and brown also occurs. But red was the cheapest color available and therefor most common.

The agronomist would give advice to the farmer and help him in planning new production buildings. In 1914 all five regions in Norway had a handful of their own agricultural engineers that made drawings of new types of farm buildings as well as helping the individual farmer in designing his new barn.

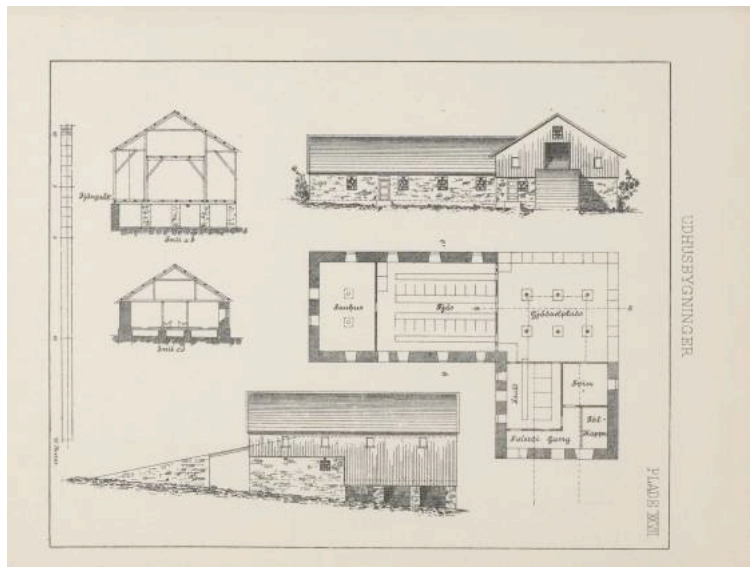
## THE BIRTH OF THE UNITY BARN

An important figure in this era was agricultural engineer *Gudbrand Tandberg* (1851-1929) from Hallingdal. He later became the director of agriculture and wrote the first textbook about agricultural buildings, *Kortfattet Veiledning i Bygningsvæsen paa Landet* in 1885. The textbook was intended to assist the farmer in planning his new buildings as it also contained details drawings of foundation and wood joints as well as plans and sections. The new buildings were all designed in the new modern construction system named *Sveitserstil*, which originated from Germany and Switzerland.



Principal section of a barn in Schwartzwald, Germany.

Buildings made in *Sveitserstil* were faster to build and more material efficient than the old log buildings. It was first and foremost the big and mighty farms at the east of Norway that adapted to this new way of constructing.



Type building of a unity barn by G. Tandberg

The craftsmen building the barns probably used the work of Tandberg as a starting point, but had no problem editing and adjusting the type drawings. According to specialist in traditional building technique Jon Bojer Godal, the craftsmen themselves relied first and foremost on their own skill, local building traditions and knowledge regarding different building typologies.

## OUT OF DATE

In 1939 there was 210 000 independent farms in Norway, an all time high. Until 1950 there was full diversity in agricultural production on a typical farm in Norway, but after 2<sup>nd</sup> World War this started to change. Since 1939 there has been a continual decrease in the number of farms, even though the production has grown in volume. The cities tempted the rural population with higher salaries in the industry than what you could get on a small farm. People moved to the cities and many small farms were abandoned. Those remaining had to adapt, and this again formed the buildings and the cultural landscape. The combustion engine revolutionized the farming industry once again as the tractor and other heavy machinery entered the barn. In the 1970 the farming policies encouraged the west part of Norway to produce milk and cattle and east part of Norway had to focus on vegetables and grains for further efficiency. The number of farms kept decreasing, as the once surviving got bigger. According to SSB the number of farms in

2015 was reduced to 42 000 units.

Today we observe that the agriculture industry is getting gradually more specialized with the help of advanced technology. The number of farms is decreasing all over Norway as machines are replacing manpower. Norway has since 2<sup>nd</sup> World War subsidized farmers - a policy to keep the communities in the periphery alive and the nation self-sufficient, even though the farms might not be as efficient and profitable as the enormous farm industries in Sweden, Denmark or Germany

## SPRAWL AND AGRICULTURAL ADVANCEMENT

There are three main reasons why the unity barn typology has become redundant in our time.

1. Most important is the demand for *specialized* agricultural buildings. New legislations that has to do with hygiene and animal healthcare as well as the automatic systems that the building has to accommodate for is easier implemented by simply building new. The new agricultural buildings today are often in one story without columns.



A modern cow shed from 2018

2. The second reason is the fact that many farmers' offspring simply don't find it *profitable* enough to become a farmer. They rather put their effort somewhere else. The farmland gets rented away and the barn falls into decay.

3. The third reason is a phenomenon called *sprawl*.

Sprawl happens when the city centers continues to grow geographically due to population growth and the vision of a house in the suburbia- the urban fabric eats into the rural landscape. In many cases crop fields not so suited for big machinery was built down.

Many old farmhouses and barns then became redundant.

Many people still live on the old farm without being farmers. They don't necessarily make the effort to take care of the unused production buildings there.

There is a clear difference in potential between barns in more urban areas than the rural; as sprawl and densification continues the farm plots becomes more profitable for the developers. This also indicates that there might be a reason to reevaluate the potential for a different use of these iconic agricultural buildings.

#### WHAT IS BEING DONE TO SAVE THE BARN BUILDING?

In Norway the planning authorities operates with a register called SEFRAK (Sekretariatet For Registrering Av faste Kulturminne) in addition to the official register of listed buildings. The Sefrak register consists of all building constructed between 1537 and 1900. It SEFRAK is intended to be a tool for the municipalities to help protect their local history. : It is not the same as Directorate for Cultural Heritage, which has the authority to protect buildings from new interventions.

The future of the barn buildings is dependent of public engagement but most importantly a willingness to transform them in a meaningful way to meet new needs. The most interesting example I came across in Asker was the transformation of a unity barn to a cat hotel. It is so popular that they are expanding.

## Approach

I want this thesis to be a way of exploring new territories but also use what I have learned so far. Transformation as a subject is relatively new for me and I hope to use that as an advantage to be able to propose something different.

As a guideline through the process I will use a set values based on my analysis of the unity barn and the courses in building tradition thought at AHO.

My focus and method in the diploma process will be to really understand the structure I'm working with by measuring the actual barn and modeling it in 3D. Further I intend to make a construction model by hand- not laser cut. I believe by building it myself I will learn to understand the forces and its properties on a deeper level.

Changing in methods ranging from diagrams, structural analysis, models and sketching to plans, sections and 3D will be my strategy for developing the project.

### *Thoughts on transformation in general*

“When 80% of the total building mass we need has already been built, we as architects need to think differently about how we deal with transformation”.

*Arkitektnyt*, one of the leading architectural magazines in Norway addresses this issue by interviewing six architects of their thoughts of transformation (25. Sept 2018). (1)

One may think that the limitations you meet in relation to transformation could be a restriction for creativity, but they all claim that the opposite is the case. The existing history and building tradition sparks new ideas as well as being a way to learn and understand building tradition from another era. Transforming instead of building new is usually environmental friendly. One common challenge is pointed out by Jarmund Viksnes: “In the case

of clients, we often experience the ability to value the economic value, but not the cultural value of a building.” The labor costs in Norway are high and the materials are cheap. It is usually cheaper to tear down a building and build new than to transform.

It is hard to predict the future- new breakthroughs in technology and food production may support more humans on a global scale than the predictions now tell us. Nevertheless, this should remind us that buildings of historical value are a limited resource. The way we approach this task as architects defines how much of the historical heritage that will be left for future generations. It is easy to destroy and hard to recover.

## Program

Program is not the driving force for my thesis. As the barn and its surroundings are regulated for future housing, I have felt a responsibility to consider housing as a relevant option.

The core *spatial* and *constructive* qualities for the unity barn cannot be compromised through my proposal.

The *tun*, or courtyard, that relates to the barn is also inherently connected to my proposal. The way the barn will be used in relation to the tun should therefor be coherent.

The program should target the challenges related to transformation of the unity barn in general. Therefor I am more interested in solving a general program such as housing in an unusual way rather than finding a very specific program that has little transfer value for other barns.

## The unity barn typology

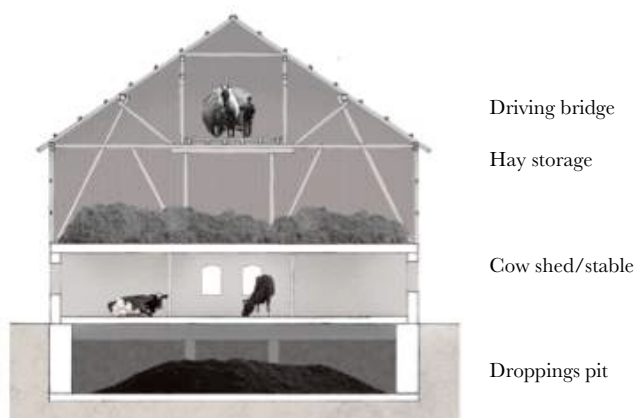
The unity barn was introduced in the middle of the 18<sup>th</sup> century and 50 years later it was quite common throughout Norway. Even the remote and less profitable farms adapted to this new invention eventually.



Small unity barn at Senja. (from Norges Låver p. 76)

The unity barn takes advantage of three basic principals in its design; *gravity*, *air* and *water*.

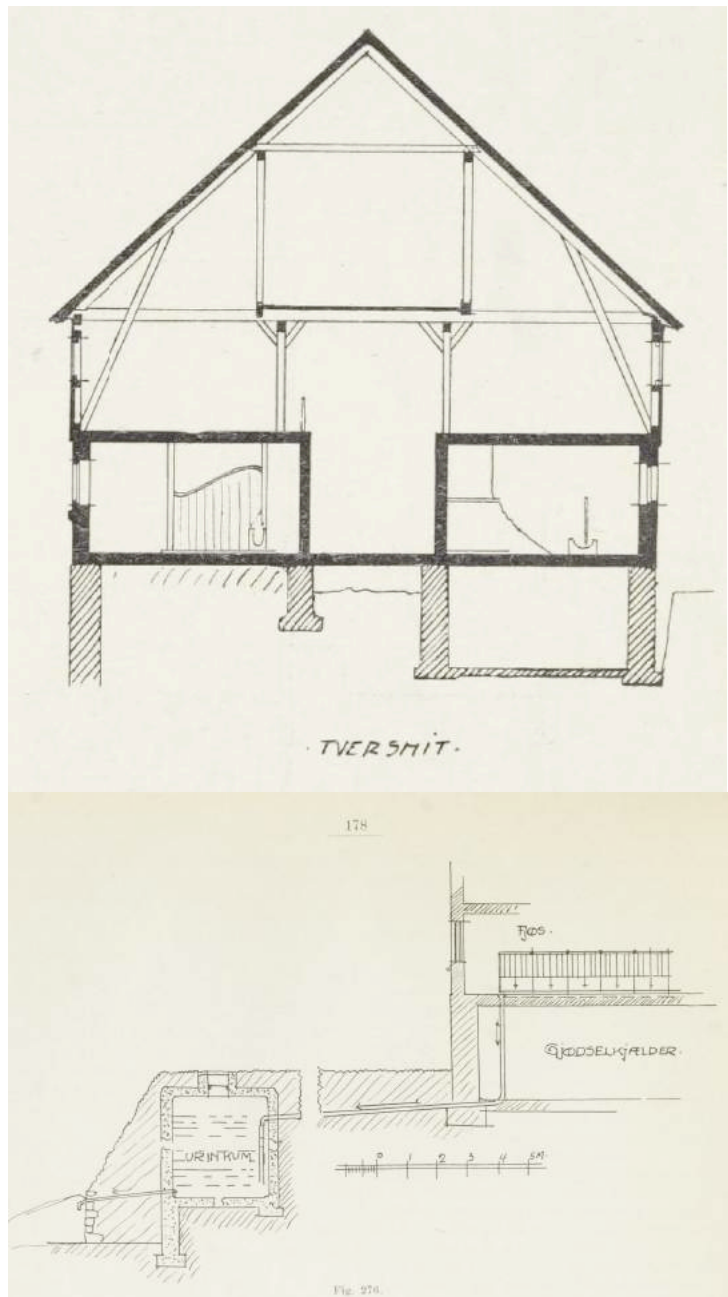
I believe the agricultural engineers started by investigating the section of the barn and how the use gravity could be an advantage rather than a burden.



The horse was the strong working force at the farm. The horse was used bringing the grass from the fields into the barn. By inventing the *barn bridge* that led up to an indoor *drive bridge* rising over the story used as *hay storage*. The hay was fed to the animals through the winter so the barn needed to have plenty of space for this function. To ensure that the hay would not rot this part of the barn had to be airy and dark. Wood boards with small glitches in between made the upper part of the barn airy while protecting the grass from direct sunlight.

One story down the engineers placed *cowshed, stable, pigpen or sheep shed*. This part of the building was often exposed to moisture because of the animals and therefor would have to be built in a non-organic material like brick, concrete or stone in order not to rot. At the very bottom of the section the *dropping pit* was placed, so it would be easy to collect and store the animal stool and use it as fertilizer on the fields next spring. This story was made in concrete or stone. The much cellar produced a considerable amount of heat due to the fermentation process. The heat would go up and help keeping the barn warm throughout the winter.

It all starts by bringing the hay in at the top and move it down the section. This principle reduced the amount of bodywork to a minimum for the farmer.



G. Tandberg: Section of a typical barn

The section described could then be *extruded* to match the size of the farm.

Jon Bojer Godal and Steinar Moldal describes in *Beresystem i eldre norske hus* (*Construction systems in older Norwegian houses*) the construction principals for different unity barns. The regional differences were quite substantial and they also changed over time and influenced each other.

Godal and Moldal travelled through Norway to look into the different building traditions that existed. Generally speaking, the east

part of Norway used the new building system called *Sveitserrost*, while west part of Norway kept their traditional way of building with *frames* (*grindbygg*) or *lofted houses* (*laft*).

#### SVEITSERSTIL/SVEITSERRØST

The building system *Sveitserrost* is parallel to the style term *Sveitserstil* that originated from Germany and Switzerland. As the size of the crops grew substantially around 1850 the barns had to become bigger.

The new building system is an additive one, which easily could be expanded, compared with the old log-based building.

The main structural difference between the new building system and the old one is how the forces are brought down. The old traditional houses led the forces directly from the roof to the *wall*, while the new system brought down the forces inside the house through the *raft frame* (*takstolen*) and down through the *posts* in the driving bridge as well as through the walls. There was according to Godal approximately 50 years of trial and error before the new building system had found its proper form – this happened around 1910.

As the sawing privileges was released in 1860 the price of standardized wooden boards dropped. As this barn was much more material efficient than the old types the price of the barn was reduced substantially. The Sveitserrost building system is an additive one with no limit of how long it could be. Earlier the logs itself defined the proportions of the room. The frames could be made ready beforehand and reduced the construction time. Earlier the log-based barns would need at least a year for the logs to “set” and the walls to be tight. This was not an issue anymore. (Godal p147)

## EXAMPLES OF SVEITSERRØST

Sveitserløst is all about how to carry the roof. The most common system is *roof rafters* (taksperrer) carried by *collar beams* (takstoler). *Roof poles* (takstolper) that are being stabilized sideways by two small *struts* (koppbånd) carried the collar beams. Timbered poles stabilized by diagonal bracing make up the walls.

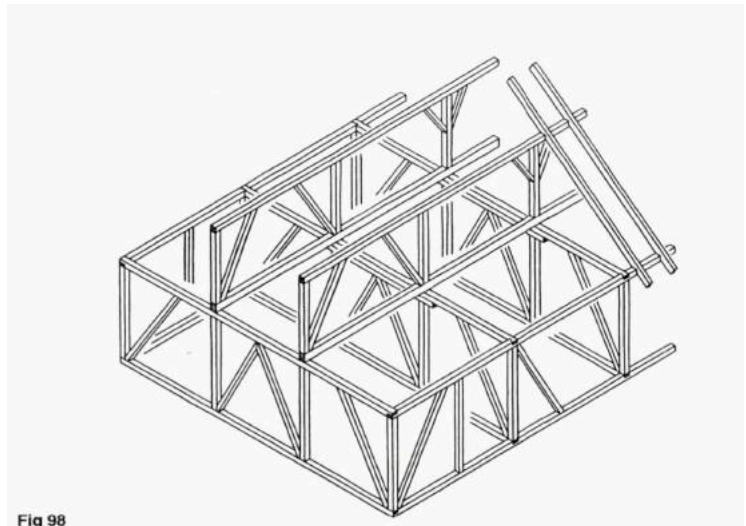


Fig 98

Godal: Illustration of the general construction system named *Sveitserløst*.

The following sections show different examples of Sveitserløst barns.

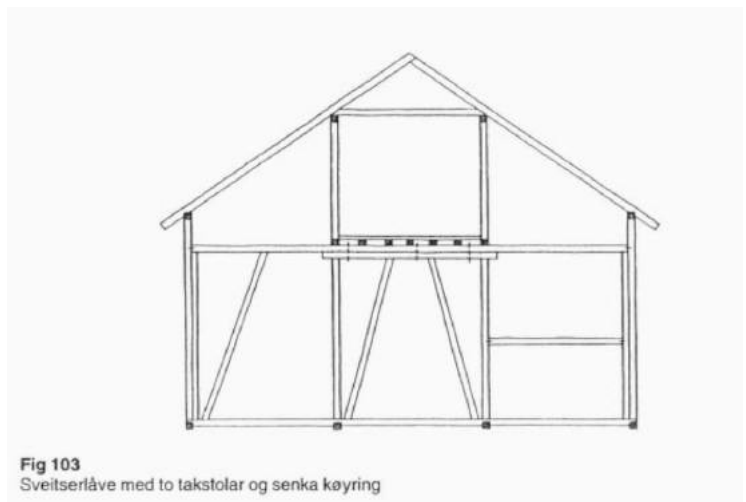
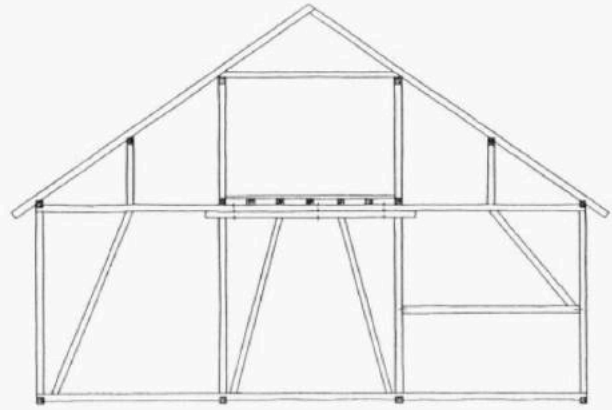


Fig 103

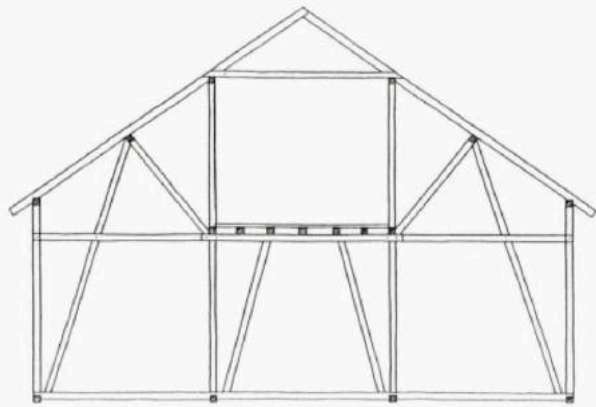
Sveitserløst med to takstoler og senka køyring

This type has two collar beams and lowered driving bridge. (Godal p 102)



**Fig 104**  
Sveitserlåve med fire takstolar, to på kvar side av mønet. Dømet er frå Hjelmingen, Halden kommune

This type has four collar beams. (Godal p 103)



**Fig 105**  
Sveitserlåve med to takstolar på kvar side. Her er dei ytre takstolane «felt». Låven har senka køyring. Dømet er frå Nordre Moer, Ås kommune

This type has four collar beams and lowered driving bridge. (Godal p 104)

## The unity barn at Nedre Bleiker gård, Asker

The unit barn I have chosen uses a combination of the building techniques mentioned above.

Norwegian Institute for Cultural Heritage Research (NIKU) made a report for entrepreneur Skanska to evaluate the historical value of the barn building at Nedre Bleiker gård in Asker in 2014.

NIKU concludes that the barn building at Nedre Bleiker has a quite high historical value, as it is more or less unchanged in its expression since it was finished in 1919. The south part was built in 1908 as a cow shed. The stable part in the north was added in 1919.

Akershus Bygningsvernssenter (Akershus center for listed buildings) made a report for Akershus Fylkeskommune in 2017 to evaluate the physical condition of the barn. They conclude that the barn is in decent shape except of some roof leakages that could be fatal if not fixed.

Here I sum up their findings.



The foundation pillars are in perfect condition.



The brick walls are in relatively good shape.



The brick walls are in good condition but needs maintenance.



Driving bridge is intact.



Roof leakage is the main threat to the barn.



Critical roof damages in the corner meeting of the two roofs



Cowshed/pig pen. Roof damage to the left

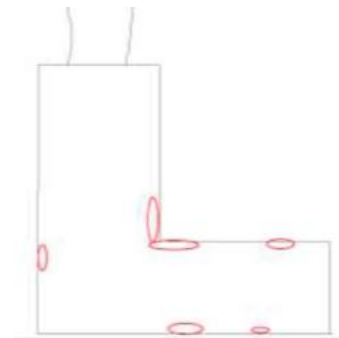
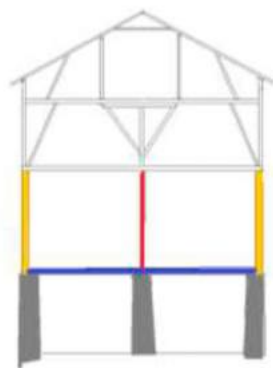


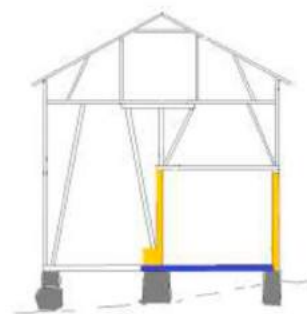
Diagram showing the location of the roof damages

This sketch represents the building system type used in the barn building at Nedre Bleiker:



Cowshed part

Skissene viser fjøsdelens bæresystem til venstre, og stalldelens system til høyre. Grå farge illustrerer granitt, blå farge er støpt dekke, gul farge er teglsteinskonstruksjon og rødt er stålsøyler. Skissene er ikke målriktige, og skal kun beskrive prinsippene.



Stable part

Materials palette: Gray= granite stone, yellow= brick, blue= cast slab, red= steel columns.

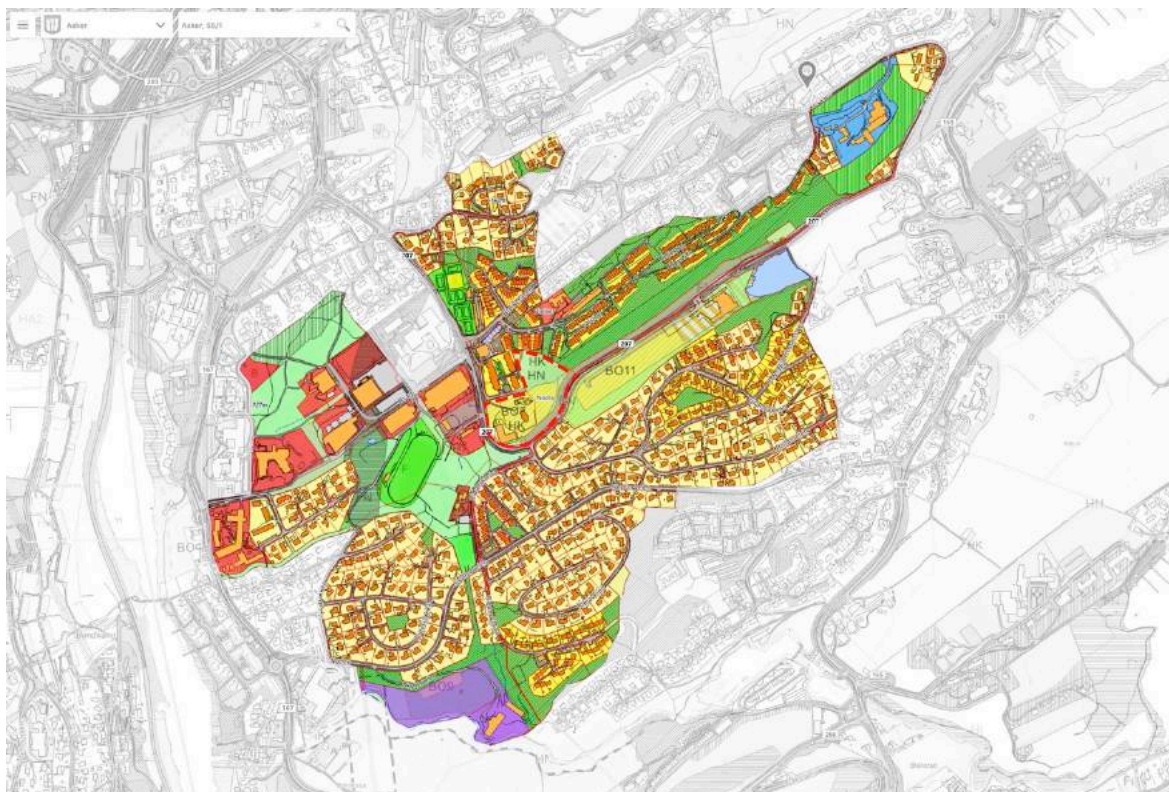
(Sketch made by NIKU)

## Site context



Situation plan for Nedre Bleiker farm

## THE SIZE OF NEDRE BLEIKER GÅRD AROUND 1900



### The history of Nedre Bleiker gård

Nedre Bleiker used to be nobility in the Medieval Ages, with Nesøygodset as its owner in 1647.

The farm was established in 1690 when Nils Christensen bought it. He was a farmer in Asker until his death in 1709.

In 1754 Nedre Bleiker was divided into two parts, but reunited in 1792. Hans Olsen from Bølstad in Røyken bought the farm in 1813.

In 1902, Rudolf Mortensen from Bergen bought the farm and expanded it further by cultivating new land. He had a strong social commitment as deputy mayor, councilor and chairman of Norges Bank.

The son Bjørn Mortensen was in charge of the farm from 1934. He declared a land of 58 acres in 1942 where Vidkun Quisling built his country house Ørneredet, now Leangkollen hotel.

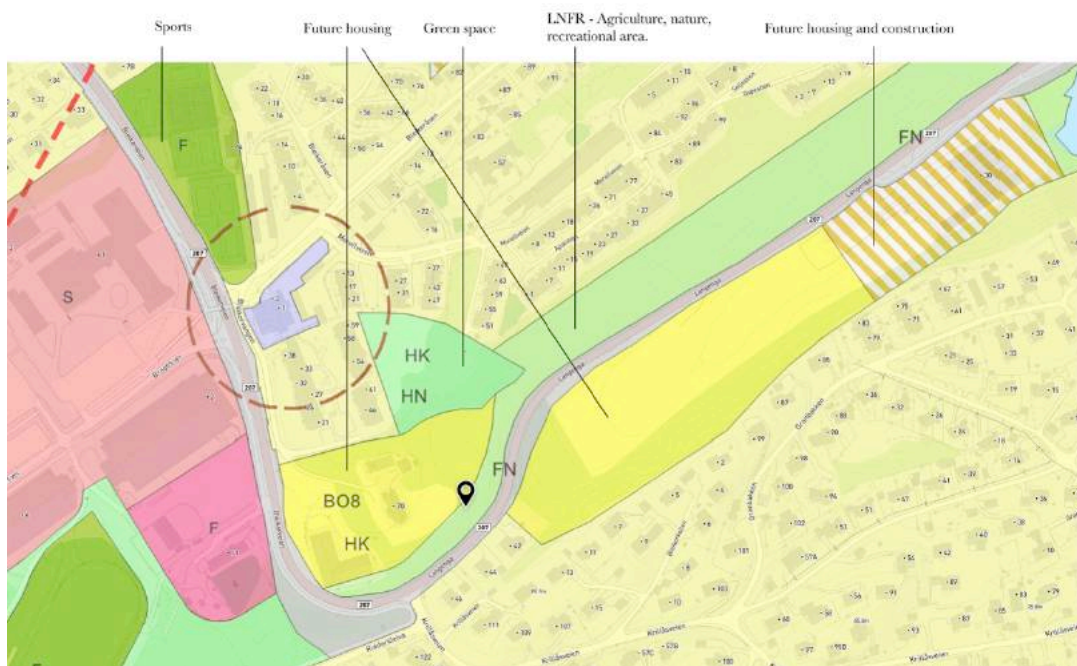
The farm was completely diluted in the years 1960-80 for housing, Bleiker High School (1979) and sports facilities. Bjørn Mortensen himself paid and built the ice hockey stadium Askerhallen in 1969. The farmhouse still exists in relatively good shape. The condition of

the barn is more critical. In 1826 the farm had 216.000 m<sup>2</sup> of fields, 3 horses, 12 cattle, 12 flocks. 1939: 422.000 m<sup>2</sup> of cultivated land, 5 horses, 44 cattle, 6 pigs. Bjørn Mortensen tried his luck as pig farmer with a total of more than 1000 pigs. Arrangements were made with Freia Chocolate Factory in Oslo for feeding the pigs with leftover from the production, to the delight of the kids in Asker as well. (4)

Aerial photos showing housing development between 1951 and 1978:



## MUNICIPALITY PLAN OF AREA USE 2018-2030



Regulation plan for Nedre Bleiker (12.09.2017)

§1.1 The purpose of the regulation plan is to develop housing, as well as to preserve existing cultural environments and cultural values, vegetation and green structure.

## WHAT TO PRIORITIZE IN FUTURE DEVELOPEMENT

This map shows how landscape architects *Østengen og Bergo* evaluates the buildings and the outdoor spaces on the site, as well as important trees and cultural heritage. This document was made for Skanska Entrepreneurs.



## MAPPING OF PROGRAMS IN PROXIMITY TO NEDRE BLEIKER GÅRD





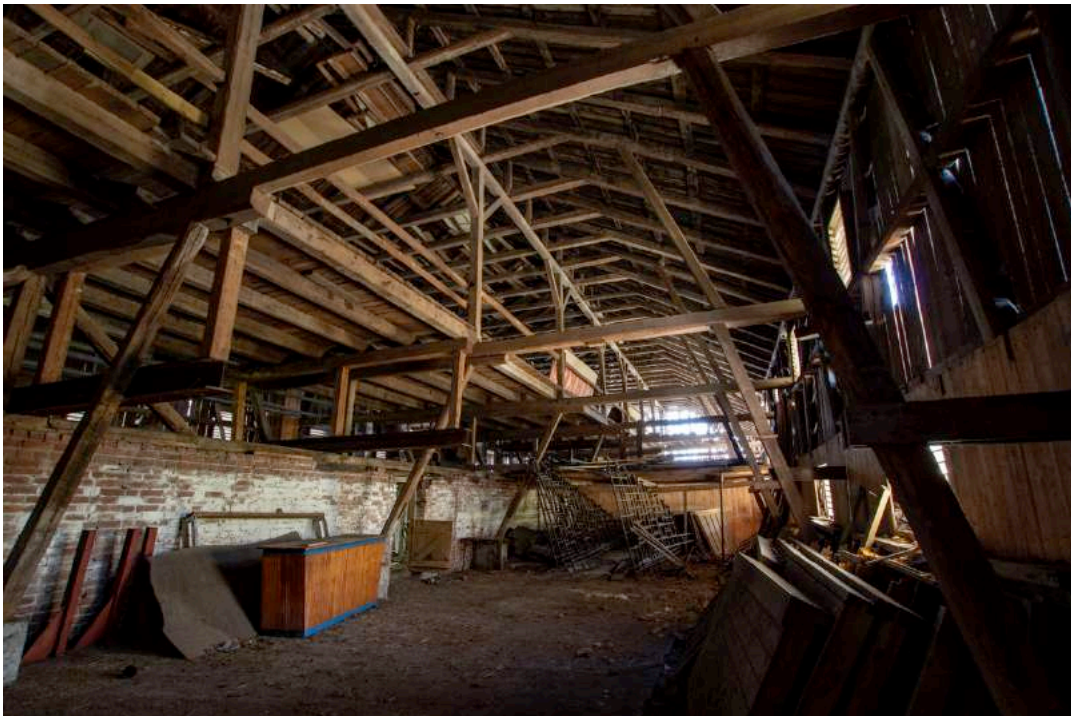
TIDLIG FASE: Her er arkitektskissene av boligblokker og utbygget låve, som Skanska har sendt til kommunen. Våningshuset i midten. Tegning: Foto: LØVSETH + PARTNER

A sketch drawing of how a developer wants to build new housing at Nedre Bleiker. The red barn is now replaced by a brand new building that *looks* like the old barn, only that it's moved 15 meters to the north and contains apartments. The red barn-like building works as a symbol for an old barn, but most other qualities are lost along with the original barn.

## Pictures of the barn at Nedre Bleiker



View from the driving bridge where the two wings of the barn meets.



Picture taken from the ground floor towards the corner in the newest part of the barn.



Ground floor in the old part of the barn. Used as cowshed and later pigpen.



The barn surrounded by vegetation.

## Submitted material, Diploma

- Physical *structural* model of the barn at Nedre Bleiker 1:100
- Physical final model of the barn at Nedre Bleiker 1:100
- Section models 1:20
- Situation plan 1:1000
- Section 1:1000
- Plans 1:100
- Sections 1:100
- Illustrations
- Sketchbooks
- Process
- Diagrams

August:

Typology study of the unity barn. Models. Diagrams

September:

Test of programs in the unity barn at Nedre Bleiker.

Choose a program.

October:

Develop the chosen project. Model studies.

November:

Develop the project further. Final decision on the plans.

December:

Finalize material.

January:

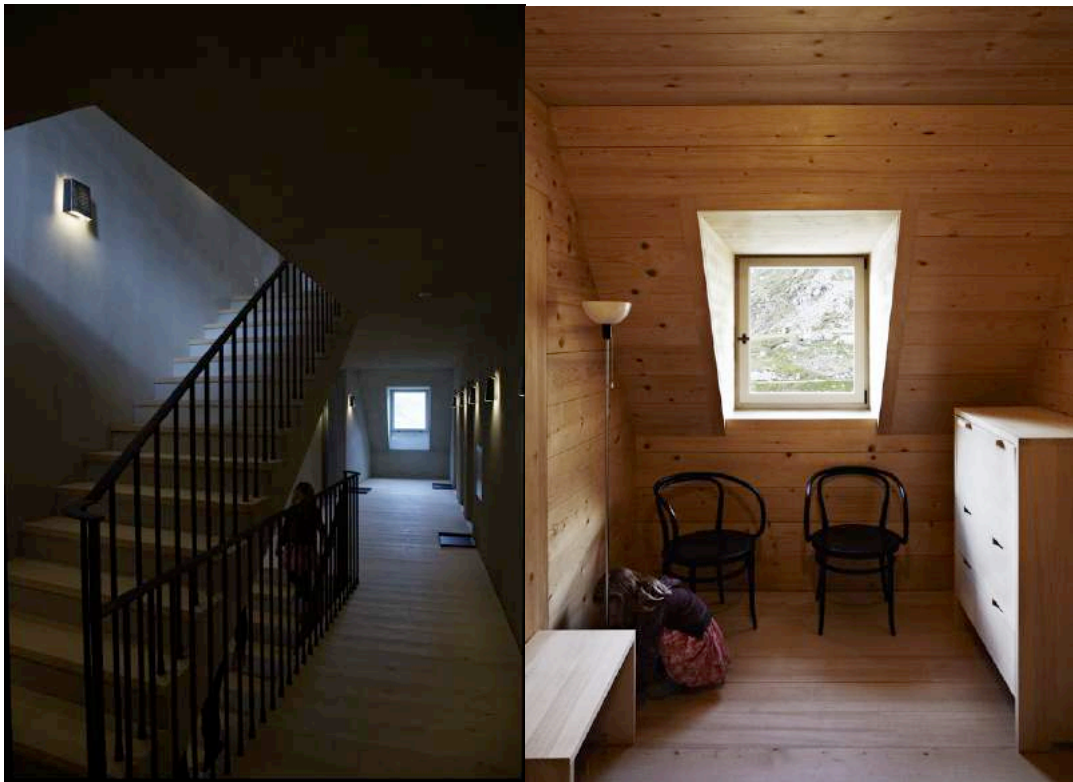
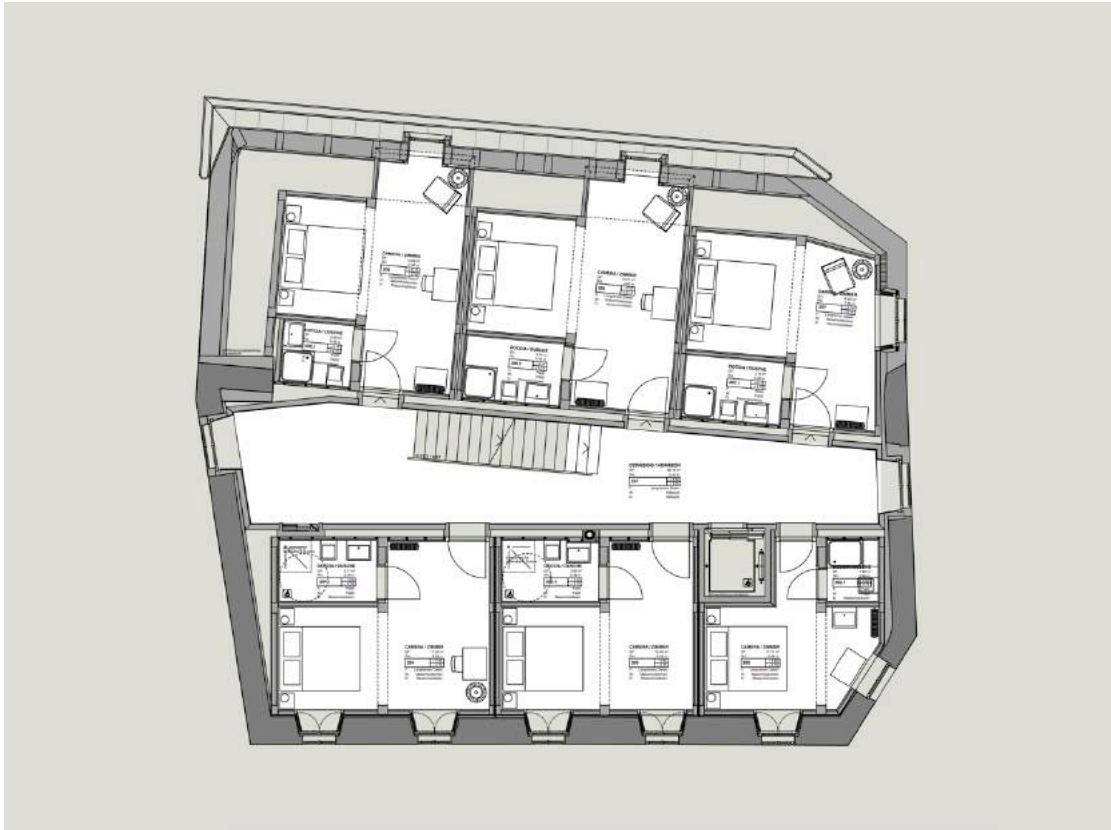
Presentation.

## Reference projects

Altes Hospiz St. Gotthard – Miller & Maranta (Switzerland)

We visited this Hospiz on a study trip in 2017 with Jan Olav Jensen. It is a transformation of an old hospice given a new contemporary expression. Extended use of wood inside give a warm character to the rooms. Local building tradition with wood frames is the technique that is used and really gives a feeling of handcraft and uniqueness that I like very much.





Sognefjellshytta – Jensen & Skodvin (Norway)

I visited this building quite randomly when it was still under construction. The playful way this office often works with wood is a big inspiration for me. In this project the interplay between glass and wood is interesting. Also the massive wooden columns and beams inside give me associations to the unity barn building technique. Also the walkways, mezzanine and ramps give this room a character of movement and dynamic.

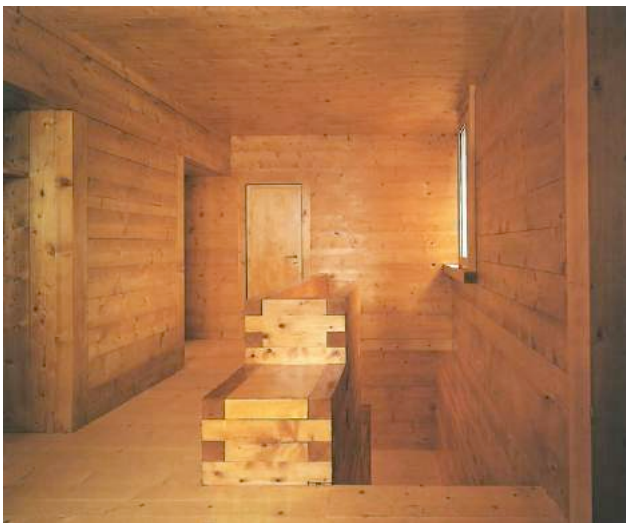
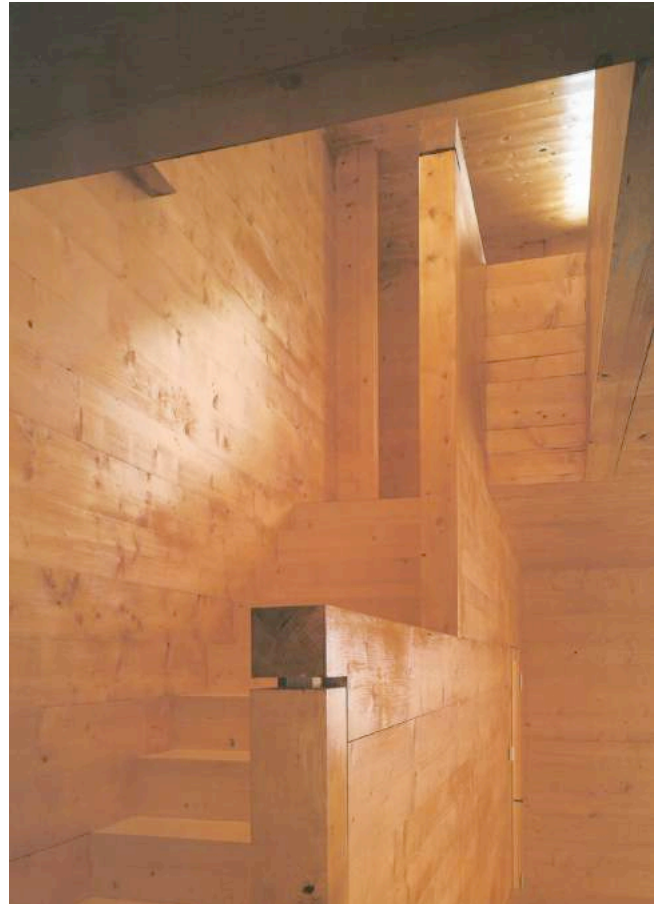
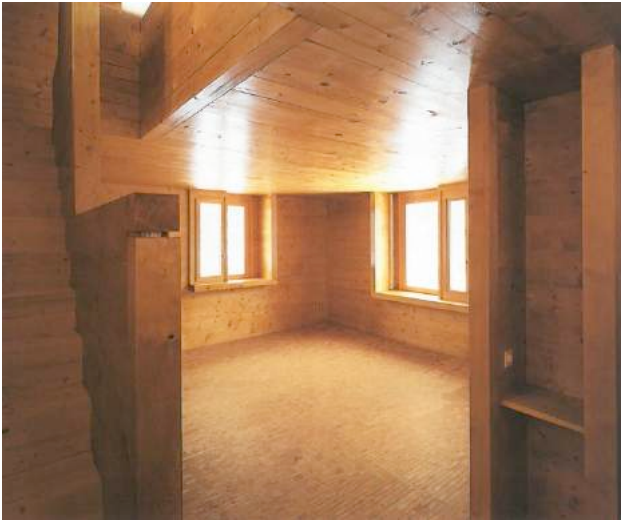


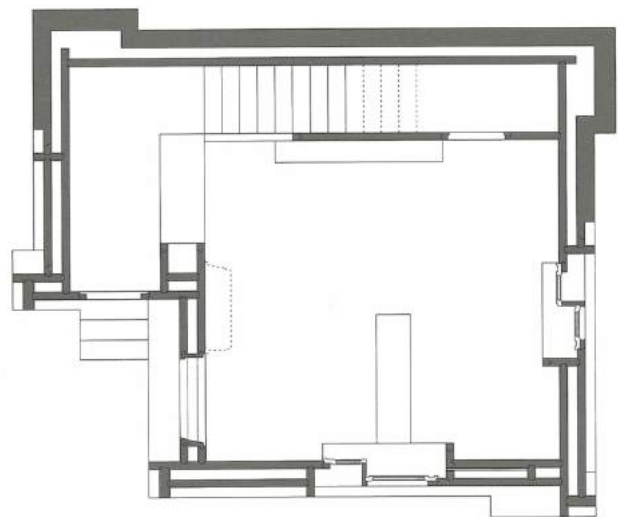




### Mortuary – Gion Caminada (Switzerland)

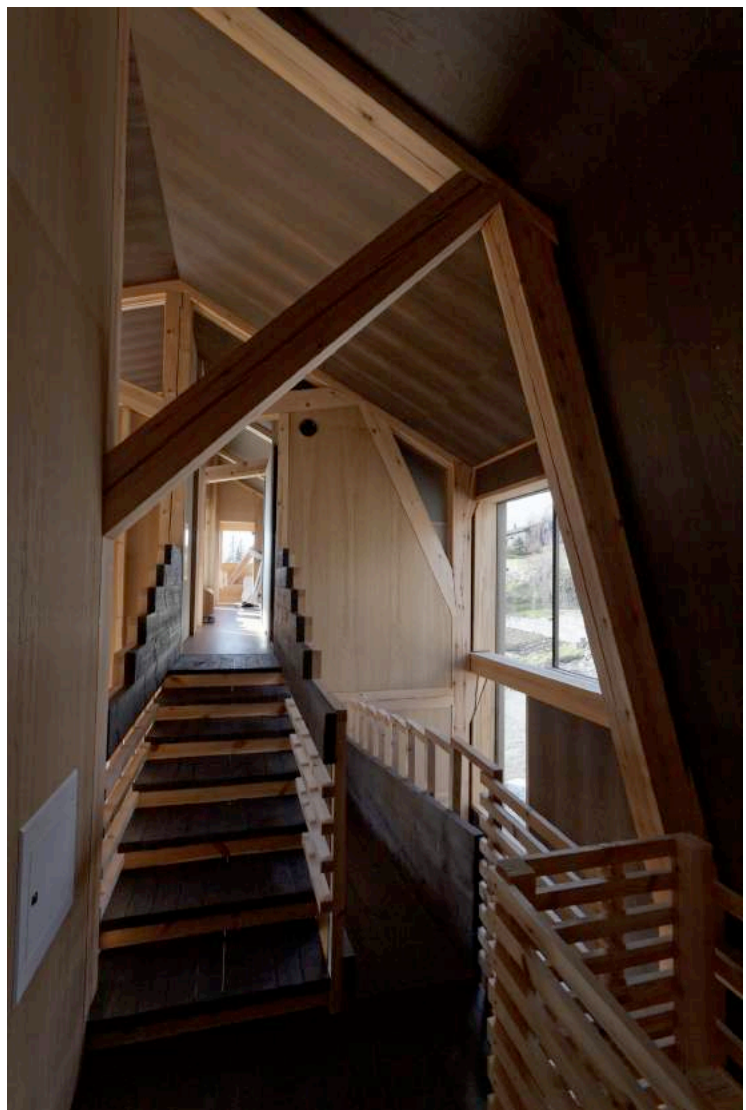
Caminada is an expert in using massive wood by stacking the beams and columns – making slabs and stairs as an integrated part of this logic. His Mortuary is a good example of his way of working.

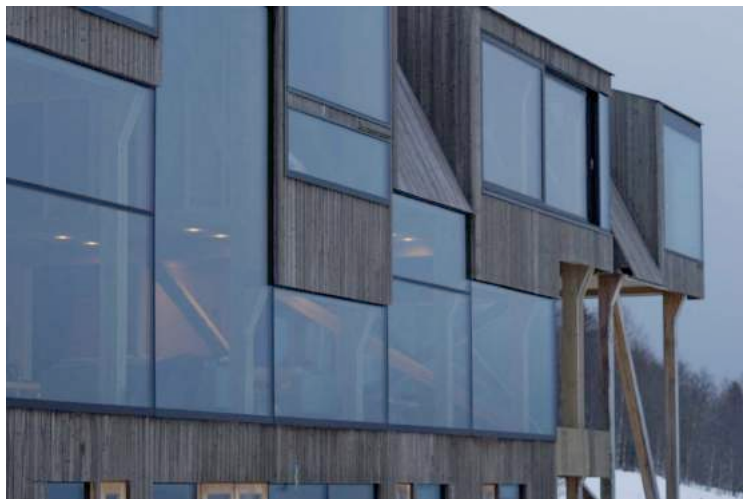


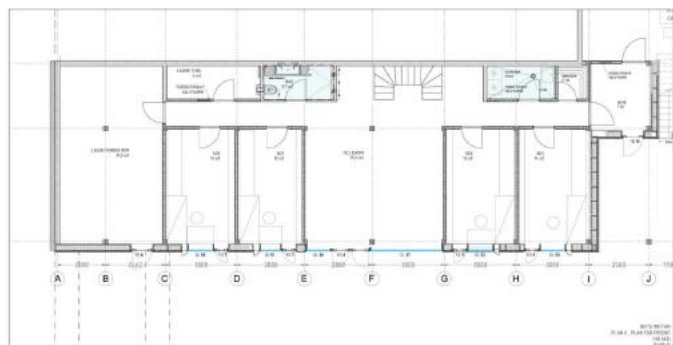
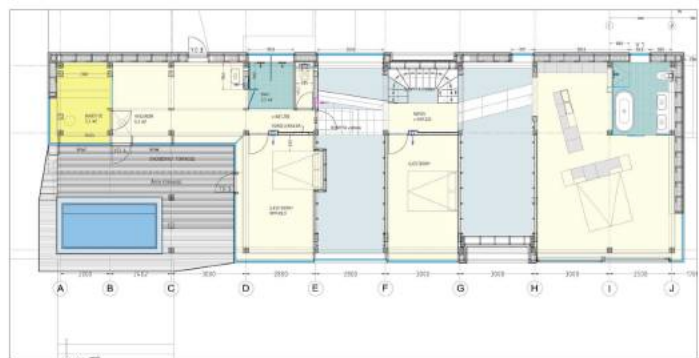
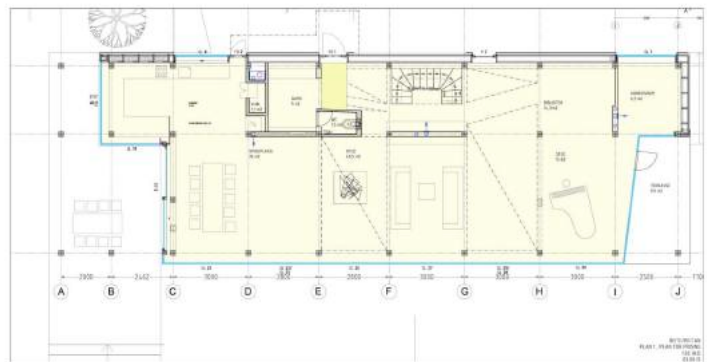


## Villa Gudbrand – Jensen & Skodvin

This villa was inspired by the local building technique of the barn buildings in the area. The section frames follows a strict rhythm – dividing and defining the different spaces. At certain places the section is open between all three floors, which makes a generous feeling of space. The way glass is used in this building is very interesting and yet simple. It is put outside the beams and clued and fixed. They show how glass doesn't necessarily need big and fat frames when used in wooden architecture.

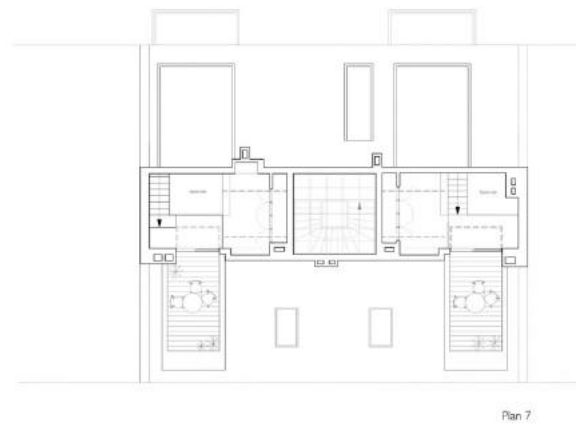
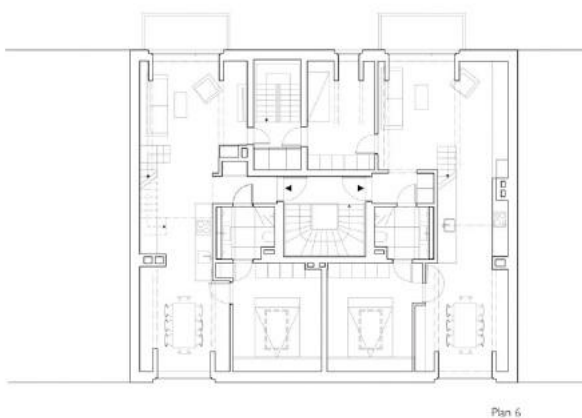






## R21 – Vidars gate (Norway)

In this transformation project of an attic in Oslo the architects takes full advantage of the high ceiling and the slanted roof. Bringing light in from all directions and in a very precise way really makes this apartment feel generous. The notion of dividing spaces by using the section is something that could be a useful strategy in transforming the unity barn. I like the simple stairs and steel details that shows how storage and movement can be combined.





## Lille Tøyen cooperatives (Norway)

Initially this was worker housing but has now gained immense popularity. Here the open carré structure orients towards a middle garden – letting cars pass on the outside. The houses have private gardens with hedges that give the feeling of privacy. The middle garden and the morphology of the corner buildings can (with some imagination) be translated into a barn and its tun if transformed into housing.



La Borda cohousing - LaCol cooperativa – Spain (Barcelona)

I have an overall intention of becoming familiar with the use of massive wood in my architecture. It has a wide range of features, and is the only building material that stores CO2 in massive amounts. Most scientists are concerned of the level of fossil fuel that is being burned and our lack of viability to decrease it. By letting massive wood be a natural choice in future architecture it can be a part of the solution. This project investigates cohousing and is a critique of ordinary market driven housing projects.

I intend to transform the unity barn in a way that too questions the typical way of living.



## Glassmesterlauget - Danish craftsmen in glassworks

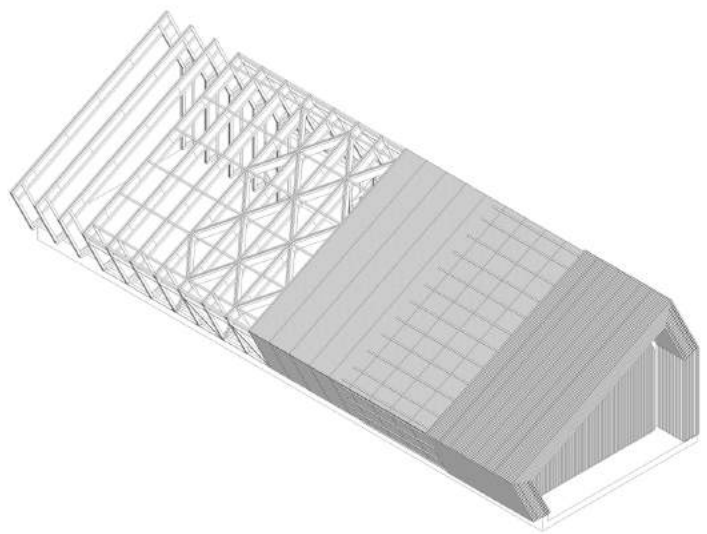
Here Danish craftsmen shows how custom cut glass can be fixed to a wooden structure like a greenhouse with minimal use of frames. This is very relevant if I decide to make a half acclimatized space inside the unity barn.



Pocket farm – Scarcity & Creativity studio at AHO 2016  
(Nes Kommune, Norway)

I was part of the Scarcity team in 2016 where we designed and built a modern barn. It had to be airy, dark and uninsulated, like in the old days. The farmer had a vision of building houses later so that the barn could be rented out as a whole or partially. Another student in this diploma semester is actually developing the housing in relation to this project. The farmer himself had transformed part of his old barn to a music studio. I guess this project opened my mind for the barn as a typology and the possibilities within it.





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