

## PROJECT DESCRIPTION

Student: Arnulf Mårdalen Hasle

Title: Ly

Subtitle: Sheltering from the elements of a rough climate in a remote area at Hardangervidda, Norway.

Norway has long traditions of hunting and fishing, exploration and an extensive use of nature around us and the resources it brings with it. The interest in what Norway has to offer has increased in recent decades with new records of visitors to the various tourist cabins and the famous destinations that offer exotic nature experiences.

This also leads to an increasing amount of rescue missions year by year. In a report from Red Cross in 2017 they list up 225 missions only for missing persons on foot or skiing.

The possibilities of seeking shelter in such situations are still inadequate especially with the increasing amount of people who use the mountain, and the need for emergency shelters is therefore, more relevant than ever. This applies not only to the most popular attractions but also to the more remote areas of the mountains.

Through research and conversations with The Norwegian Trekking Association and Norwegian Red Cross I chose to focus on the trail between Finse or Krækkja at Hardangervidda for my project. This is a location which is a popular trekking and skiing destination, but also has challenges in distance and weather conditions which lead to dangerous situations and a discovered need for shelter.

On this stretch I found two situations close to the trail appropriate for planning a shelter. My main focus has been on one of these sites, designing a site-specific emergency shelter that will provide for the most basic needs, as well as a smaller intervention at a second site.

The main shelter has been designed in a way that makes it possible to connect several modules together, as an idea to accommodate different uses, however on this site it should only accommodate for an emergency purpose and not make a large intervention on the landscape.

# *[ly:]*

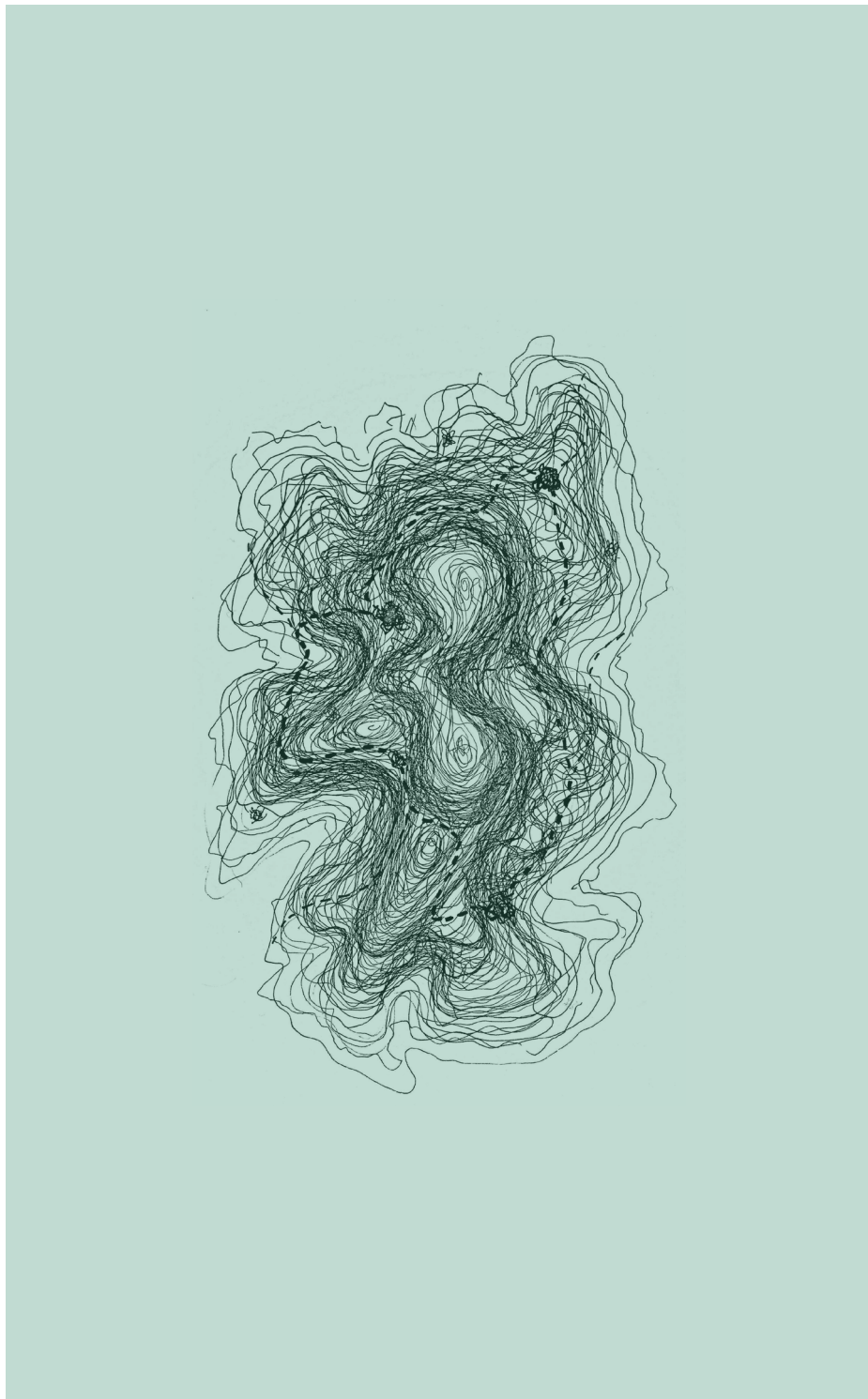
1 shelter, cover 2 protection, safety

*Sheltering from the elements of a rough climate in a remote area at Hardangervidda, Norway.*



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## ABSTRACT

Norway has long traditions of hunting and fishing, exploration and an extensive use of nature around us and the resources it brings with it. The interest in what Norway has to offer has increased in recent decades with new records of visitors to the various tourist cabins and the famous destinations that offer exotic nature experiences.

This also leads to an increasing amount of rescue missions year by year. In a report from Red Cross in 2017 they list up 225 missions only for missing persons on foot or skiing.

The possibilities of seeking shelter in such situations are still inadequate especially with the increasing amount of people who use the mountain, and the need for emergency shelters is therefore more relevant than ever. This applies not only to the most popular attractions but also to the more remote areas of the mountains.

In my diploma I aim to research and map the need for temporary and emergency shelter in the mountains of southern Norway in modern times with the increased mountain tourism, as well as look at traditional ways to seek shelter. How we can adapt and accommodate to the changes need? What does a shelter need to be?

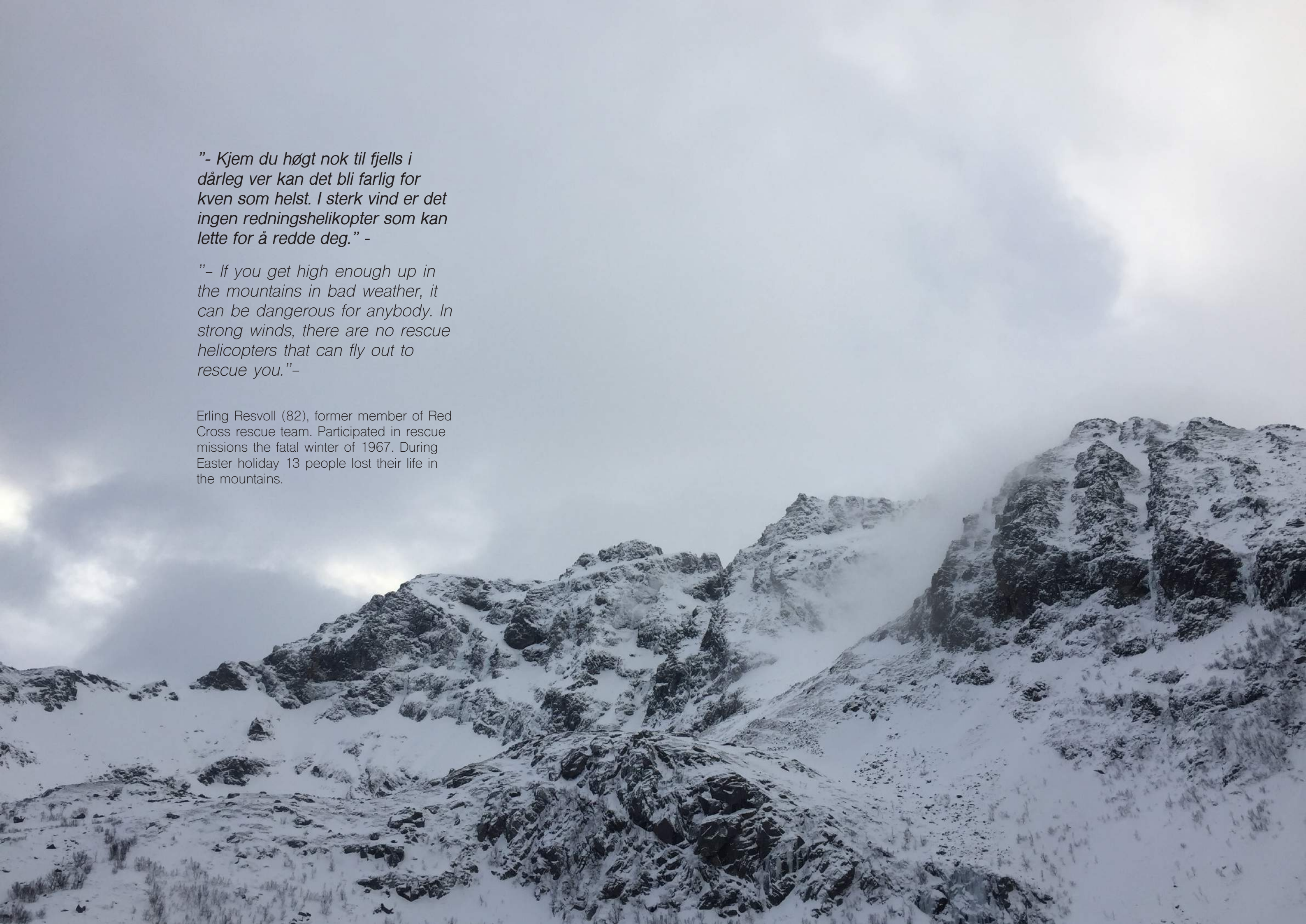
To further develop the idea of an emergency shelter, as an alternative to placing generic emergency barracks along the trails of major hiking destinations and sending rescue teams every time someone gets lost or hurt, can we find a more adapted solution within the balance of visibility, availability, new technology and historic building materials?



*"- Kjem du høgt nok til fjells i  
dårleg ver kan det bli farlig for  
kven som helst. I sterk vind er det  
ingen redningshelikopter som kan  
lette for å redde deg." -*

*"- If you get high enough up in  
the mountains in bad weather, it  
can be dangerous for anybody. In  
strong winds, there are no rescue  
helicopters that can fly out to  
rescue you." -*

Erling Resvoll (82), former member of Red Cross rescue team. Participated in rescue missions the fatal winter of 1967. During Easter holiday 13 people lost their life in the mountains.





## EMERGENCY SHELTER

In short terms an emergency shelter is a shelter for temporary use, and should provide the most important and basic needs for someone to stay alive. This being shelter from the weather in any season of the year, heat source, food, water and beds.

The shelters should be accessible throughout the whole year, so that wet and cold people can get in to heat up, and so rescue missions may be avoided. It can also provide rescue missions a temporary shelter whilst waiting for transportation if needed.

Some places you can also find "sikringshytter" or "secure cabins" but these are for the most part larger scale cabins with, for instance, space for 20 people.



In Norway some of the most popular tourist attractions have gotten emergency shelters during the last few years. Preikestolen can have over 300.000 visitors in one year.

Preikestolen (picture on the top) and Kjerag (picture on the bottom)

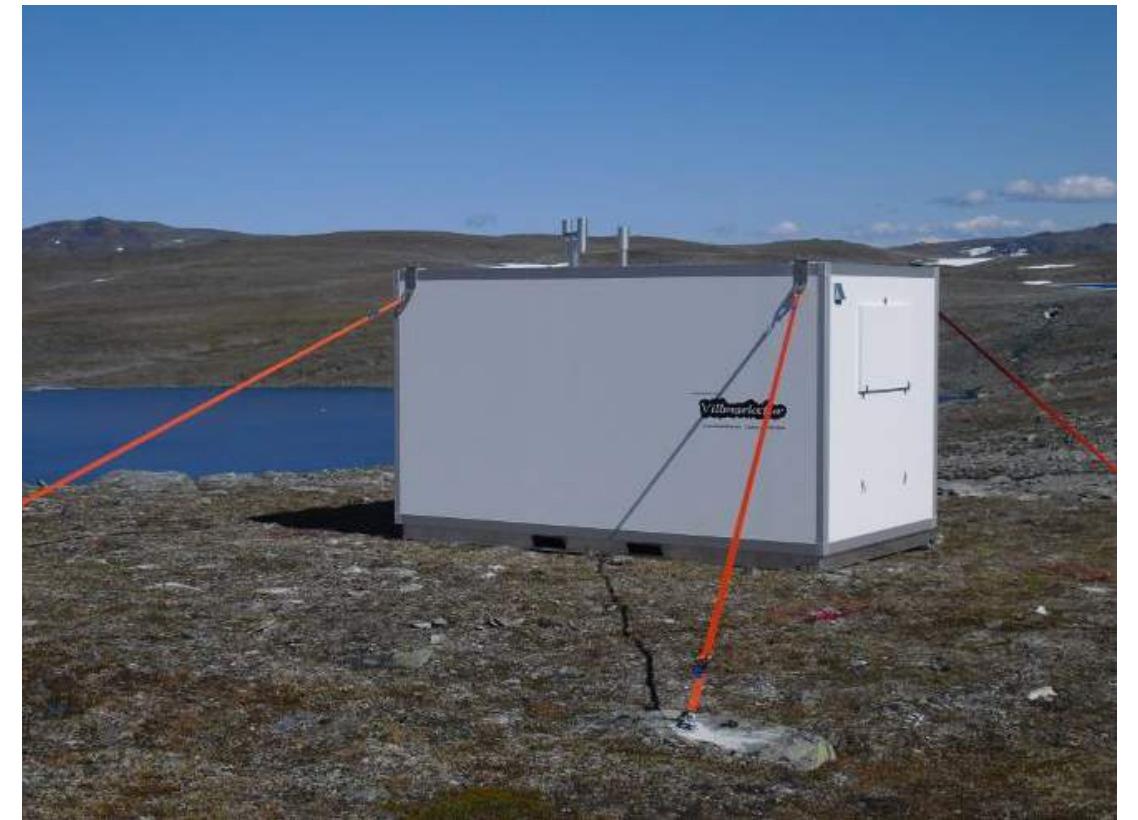




## TEMPORARY EMERGENCY SHELTER

In certain situations, there is also a need for emergency shelter fast and with quick solutions. Some of the most populated tourist attractions had to use containers or prefabricated modules at periods of sudden harsh weather. These kinds of modules are also often used as housing for workers on development or maintenance projects in less inhabited areas, or for storage. There is also examples of the military using units like these as barracks or storage.

Since these shelters often are quick, mobile and temporary solutions, they are not specifically adapted to the landscape and situation they are placed in. Therefore, these units may in some occasions stand out as foreign objects, and might not be as effective as something site specifically made.



This is an example of one of the temporary shelters made by TAM A.S.



## SELF MADE SHELTER

It is not always possible to get inside a shelter or maybe one is not traveling with a tent. In these situations, it can be vital to be able to make your own shelter, or seek shelter in natural formations in the landscape.

The options for making these shelters are controlled by locations, climate and seasons.

In the forest this can for instance be by sheltering with the root of a tree, or making a shelter with branches or logs found in the forest. In the mountains it is most common to use large rocks or rockwalls, as well as crevices or natural formed caves. In the winter it is possible to create snowcaves, or use some of the methods mentioned above.



## FOREST SHELTER: GAPAHUK

In a forest a common shelter, that can be fast to build and tear down, is what we in Norway call "Gapahuk".

It usually consists of three or two walls with an angled roof. This is a construction that can be fully made with the materials in the woods. It will give you shelter from wind, rain and snow but is not a construction made to stay heated. The open front makes it possible to make a fire close to the shelter so that you can both cook and stay close to the heat.





## MOUNTAIN SHELTER: ROCKWALL

Some of the most accessible resources for sheltering in the mountains, are loose rocks and boulders, as well as rockwalls.

Large rocks can protect from the wind and snowdrift, but overhanging rockwall can also protect from weather from above. One can combine loose rocks with boulders or rockwalls sheltering from multiple weather conditions.







## WINTER SHELTER: SNOW CAVE

Winter in high mountain areas are often unpredictable with weather changing from calm to storm within minutes. Being able to construct a proper snow cave is therefore important.

The best spot to make the cave is on the side of a small hill where snow has gathered up and created a wall. The entrance should be lower than the actual room itself, so it can work as a cold well and prevent direct wind. The zone that you sit or lay down on should then be at least 30 cm higher than the entrance. The roof should be curved, because the temperature will be around 0°C inside and your body generates heat. This causes the inside of the cave to lightly melt, and the curve leads the water off the roof and down the walls instead of dripping on to you. The roof and walls should be from 0,5 to 1,5 meters thick. It is also important to make a ventilation hole in the roof or wall. This could be made with your ski pole by poking it through to the outside. The ski pole can be left in the hole as a marker on the outside of the cave, so people are able to know where you are.

The process of making a snow cave can be time and energy consuming, especially in bad weather and with little experience.





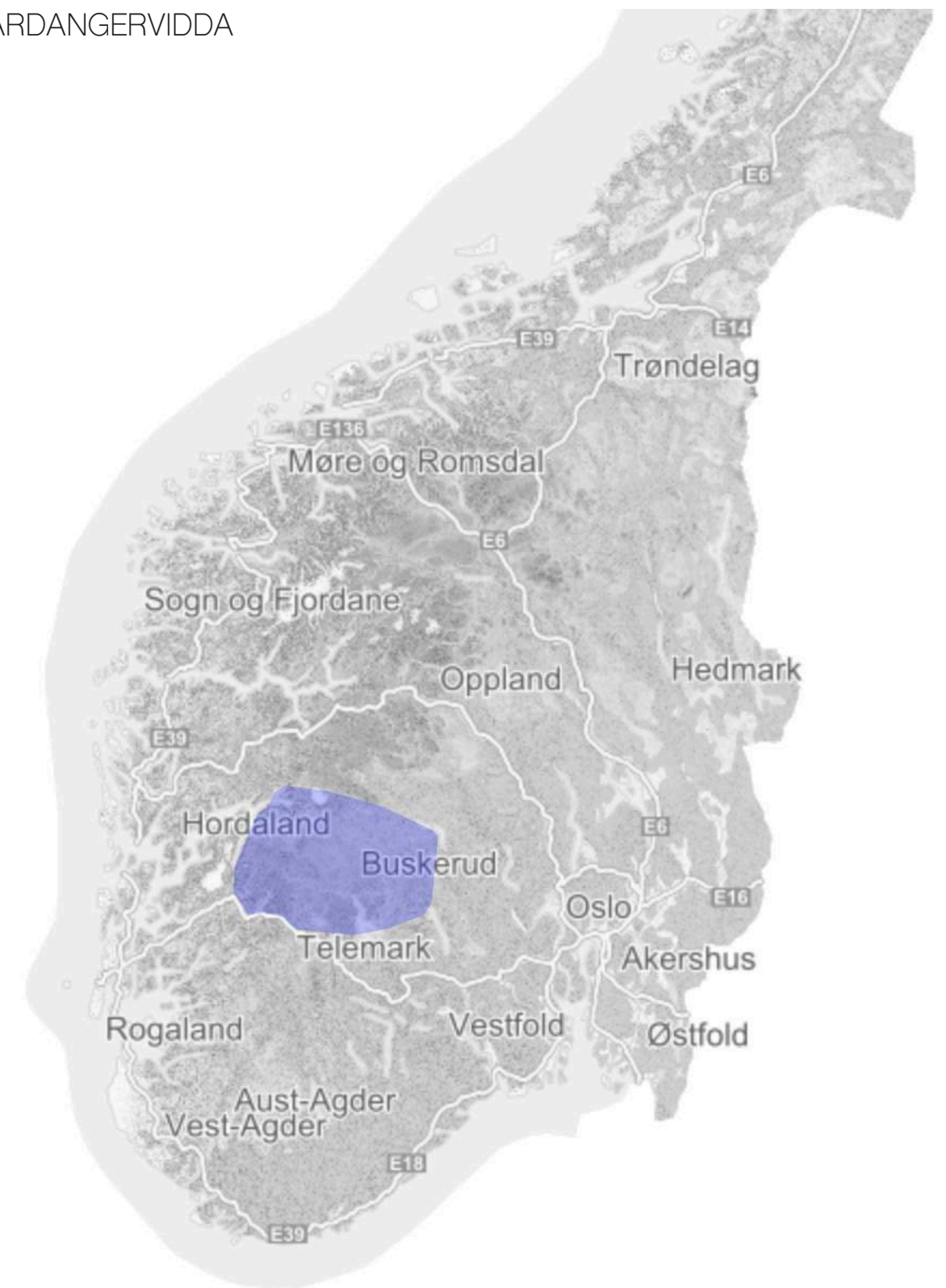
## PLANNING FOR AN EMERGENCY SHELTER

An emergency shelter can provide help and protection for people attending different types of activities in many ways and situations. Some places for large groups of tourists and some places for hunters as the most common existing emergency shelters provide for. Even though there is a large amount of tourist cabins spread across the norwegian mountains, the distances in between them can become very long in certain situations, especially when the weather changes quickly.

I have chosen to work with one of Norway's largest national parks Hardangervidda. This is a mountain plateau that is located right in the center of southern Norway and connects the east and the west of the country.

Many tourists, both local and foreign use this national park as a playground for recreation and activities, such as trekking, skiing, kiting etc. both in smaller and larger groups. The activities and use of the mountains today has developed into more and more extreme expeditions and experiences, and people challenge themselves more than ever.

## HARDANGERVIDDA



## LOCATION HARDANGERVIDDA

Hardangervidda is Europe's largest high-mountain plateau of about 8,600 km<sup>2</sup>, and one of Europe's largest national parks.

Hardangervidda National Park is the largest national park in mainland Norway distributed in the counties Hordaland, Buskerud and Telemark. In the west, the national park comprises areas belonging to the municipalities of Odda, Ullensvang and Eidfjord, in the eastern Hol and Nore and Uvdal, and in the southeast Tinn and Vinje.

The landscape of the Hardangervidda is characterised by barren, treeless moorland with numerous pools, lakes, rivers and streams. There are significant differences between the west side, which is dominated by rocky terrain and expanses of bare rock, and the east side, which is flatter and more heavily vegetated.

Its alpine climate enables the presence of many species of arctic animals like for example large wild reindeer herds and arctic foxes.

The national park was established in 1981 and half the area is on private grounds.

Hardangervidda has several peaks which are popular destinations. Hårteigen (1691 meters above sea level), one of Norway's largest glaciers Hardangerjøkulen (1859 meters above sea level) and Sandfloeggi (1721 meters above sea level) being the tallest.

The Hardangervidda has been occupied for thousands of years; several hundred nomadic stone age settlements have been found in the area, most likely related to the migration of the reindeer. Ancient trails cross the plateau, linking western and eastern Norway. One example is the "Nord-mannsslepa" linking Eidfjord and Veggli in the Numedal valley with Hol and Uvdal. It is still a key transit route between Oslo and Bergen. "Bergensbanen", the railway inbetween Oslo and Norway as well as the national road "Riksvei 7" cross the plateau.

## CLIMATE

Hardangervidda has a half arctic climate. The vegetation is very similar to the one found in artistic areas. Therefore, the University of Oslo and Bergen has a research station 2 km east of Finse.

The climate and the simple access have led to many arctic expeditions to use Finse as a training and test site for equipment. Foreign film companies are often at Finse to record scenes or commercials.

It is said that the Finse resident Tron Bach once had a journalist visiting Finse in early February, in an attempt to show that the winter mountain can be used well outside winter holidays and Easter. The journalist asked if the weather was not unstable so early in the winter. "UNSTABLE?! No, in January we have had 28 days of storm, and it must be said to be stable." Finse is located on the watershed between east and west. The Meteorological Institute also considers the place to distinguish the weather difference between east and west.

Facts:

About 1030 mm of precipitation (mostly as snow)

Snow depth 1 – 5 m

It is coldest in February with an average of  $-9.9^{\circ}$ , and warmest in July with  $10^{\circ}$ . Average is  $-2.0^{\circ}$ .

The heat record on Finse is  $22^{\circ}$ .



DNT – TRAILS AND CABINS

When 19th century Norwegian banker and philanthropist Thomas Hefbye called a meeting at his office, the agenda was "the suitability of founding a trekking association," as described by poet and writer Aasmund O. Vinje in 1866 in the Dølen newspaper. Two years thereafter, Den Norske Turistforening (DNT) – the Norwegian Trekking Association – was founded. DNTs mandate was in part to "acquire means to ease and develop outdoor life here in this country". 223 members joined at the founding meeting.

DNT is Norway’s biggest outdoor activities organisation. For 150 years, they have been working to promote trekking and to improve conditions for all who enjoy the country’s broad range of outdoor attractions.

The local member associations operate 550 cabins across the country, mark routes and ski tracks. Together they maintain a network of about 22,000 km of marked foot trails and about 7000 km of branch-marked ski tracks. DNT members are given discounts on accomodation at all cabins and on served meals at the staffed cabins. DNT activities are based on extensive volunteer work. Each year, volunteers work in total more than 750,000 hours.

Cabins:  
There are three types of cabins with accomodation: Staffed lodges, self-service cabins and no-service cabins.

Staffed lodges serve breakfast and dinner. Many have showers and electricity, either from the power grid or from a local generator. The staffed lodges are open only in certain seasons. Many staffed lodges have self-service or no-service cabins for accommodation out of season. The self-service facilities are not available when the lodge is staffed in season.

The self-service cabins are equipped with all that trekkers need for cooking and sleeping. Firewood, gas, kitchen utensils, table linen and bunks with blanks or duvets and pillows (hut sacks, also known as hut sleepers, are required!) The cabins are also stocked

with provisions including tinned goods, coffee, tea, rye crispbread and powdered soup packets, but the selection can vary from cabin to cabin.

No-service cabins usually have the same equipment as self-service cabins, but they have no provisions. There also are a few simpler no-service cabins where you'll need a sleeping bag and perhaps more equipment. The descriptions of the cabins include specifications of their equipment. Some of the no-service cabins are closed for periods during the year.

Private staffed lodges resemble but may have higher or lower standards and prices than DNT staffed lodges. Some are real hotels. The seasons of opening vary just as for DNT staffed lodges. A few of the private cabins have limited or no food service.

Most staffed lodges are open from late June until early September, but some have longer or shorter seasons.

Waymarking:  
All DNT routes are clearly waymarked at intervals sufficiently short so you can see from one waymark to the next, even in fog and rain. They are of two types: summer hiking trails and winter cross-country skiing tracks.

Summer hiking trails in the mountains are waymarked with red letter Ts, painted on cairns and rock walls. Summer waymarking is permanent and can be seen year-round.

Keys and payment:  
Self-service and no-service cabins are locked with the standard DNT cabin key. If you are a member of DNT or of an affiliated association in another country, you can borrow a DNT cabin key against a deposit of NOK 100, which is refunded upon return. Many self-service and no-service are unlocked. Some have their own locks. Some cabins are completely closed and not available in some seasons. Most staffed lodges have Point-Of-Sale (POS) terminals for payment by debit or credit card. At the self-service cabins you have to fill out a payment form for you stay.



Private Tourist Cabin

DNT Staffed Lodges

DNT Self-service Cabin

DNT no-service Cabin

Map of trails and cabins on Hardangervidda during summer season.

Map of ski trails and cabins on Hardangervidda during winter season.









## FINSE

Finse is a mountain village area on the shore of the lake Finsevatnet in Ulvik municipality in Hordaland county, Norway. The village is centered on Finse Station, a railway station on "Bergensbanen". The village sits at an elevation of 1,222 meters (4,009 ft) above sea level, making it the highest station on the entire Norwegian railway system. There is no road access, only a railway stop.

Finse is a significant tourist destination both summer and winter and an important starting point for a number of well-known routes in the surrounding mountain hills, with Hardangervidda in the south and Skarvheimen in the north.

Hardangerjøkulen is also close by which holds the sixth largest glacier in inland Norway, and with the highest point of the glacier being 1861 meters above sea level.



## KRÆKKJA

Krækkja was DNT's first cabin on Hardangervidda and the first building built is from 1878. In 134 years, there have only been 4 managers at the cabin.

People have lived in the area for thousands of years and one can find remnants of settlements are almost right outside the door.

From the cabin there are marked trails

in several directions, including Finse, Kjeldebu, Tuva and Haugastøl.

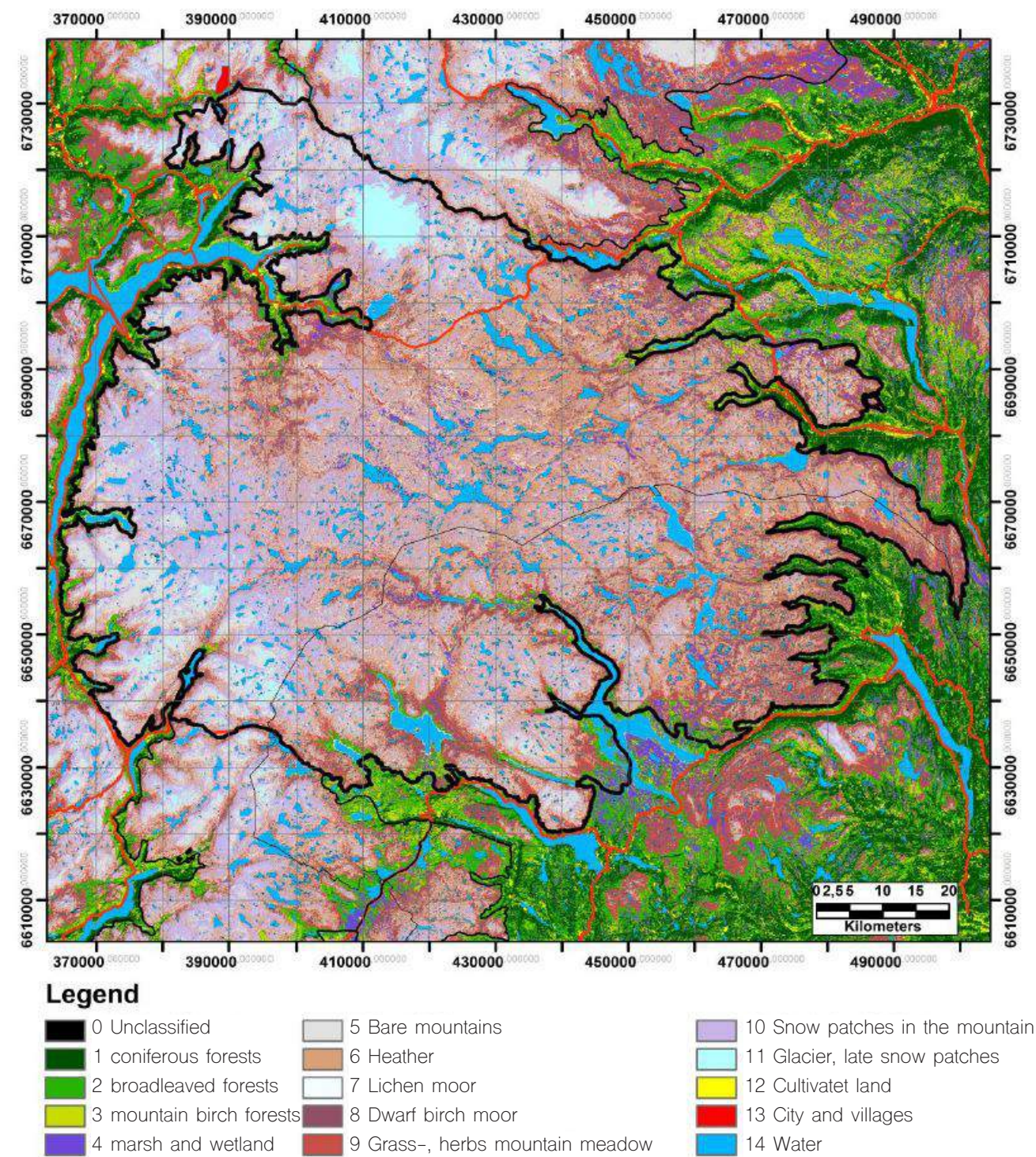
The cabin is a staffed lodge and has 85 beds, bathrooms with showers and serves food.

Because the cabin is a staffed lodge, it is not open the whole year around. In the winter it is open from March 1st to May 5th. While in the summer it is open from 28 June to 15 September. The dates may change from year to year.





HARDANGERVIDDA LANDCOVER MAP



THE WILD REINDEER

Norway is now the only country in Europe which still has remnants of the original wild reindeer. This means that we have a special responsibility to take care of and manage the wild reindeer in a way that will allow future generations to experience viable populations of wild reindeer.

The reindeer population on Hardangervidda is approximately 8.000 by 2018, but this is considered low, and it should be around 10.000. Norway's government has strict regulations and laws to retain the population of the reindeer and keeps control by continuously counting animals through the year and this affect the hunting season on how many reindeer that can be shot. In 2018, 700 reindeer were shot at Hardangervidda.

The wild reindeer most likely used to move across mountain areas through the whole country. Natural causes, human interventions and management reasons have changed their movement. Also, extensive hunting, the wild reindeer where by the end of 1800th century segregated and shaped into herds in to several different mountain areas through Norway. Increase of human traffic and infrastructure, and

development of land use also continues to put pressure on the areas inhabited by wild reindeer. This is fortunately taken in to consideration and several measures to release some of the tension is taken. DNT (Norwegian Trekking Association) will for instance close down some of their cabins in areas at times when reindeer are staying in close proximity for a certain period of time.

In March 2016 there was discovered CWD or Chronic Wasting Disease in Nordfjella, which was the first time this disease was discovered in Europe. This is a disease that causes definite death among members of the deer family only. Extreme measures had to be taken to prevent the disease to spread on to other herds or animals, therefore the all reindeer in Nordfjella was exterminated. Almost 2000 reindeer was hunted down in this area during that year. This decision caused great debates, and caused much harm for hunting traditions in the local community generations to come.

Because of the segregation of the wild reindeer in Norway no signs of the disease have been recorded anywhere else since.



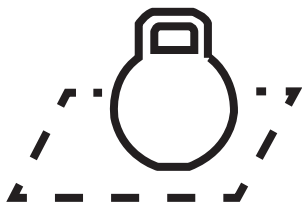
# SUSTAINABILITY

My sustainability focus has been on the impact of landscape, minimizing both the direct and visual impact of my intervention, as well as using the existing landscape as a possible part of sheltering. I have also focused on the sustainable use of materials, using local materials with low need for maintainance in this rough climate. Heating and possible electricity should come from clean sources, such as clean buring wood stove and solar panels. I has also been a focus to minimize the interfearence of the wild reindeer.



ORIGIN OF MATERIALS

Local materials, both origin and production, means short transportation distance and support of local businesses.



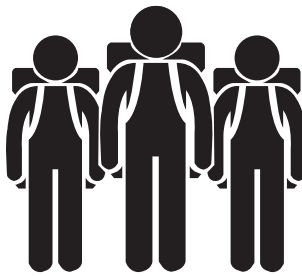
DURABLE MATERIALS

Durable materials, means low need for maintainance as well as long lasting.



HEAT SOURCE

Heating from clean buring wood stove.



PUBLIC

Public cabin, meaning it can be used by many people in need, which lead to less expensive and demanding rescue missions as well as less interference with reindeer by facilitating for groups.



## SOCIAL SCIENCE ABSTRACT – LANDSCAPE AND SHELTER:

The social science essay is an investigation on how we see, identify and use the mountain landscape. I look into what role The Norwegian Trekking Association (DNT) has had on how we use the Norwegian mountains, what way different users read the landscape and what a shelter is compared to these users.

In the essay I join in on the discussion of Gro Ween and Simone Abram in their text “The Norwegian Trekking Association: Trekking as Constituting the Nation”. The discussion is about how DNT has taken control, or given directions and taken measurements to direct people in how to use the Norwegian nature. These measurements can in some situations be good while in others bad.

One of their subjects of discussion is about DNT's way in to the Norwegian nature and landscape and that it was based upon a national romantic vision created by city people on what Norway was supposed to be. While the people living in the rural areas that were considered national romantic were forgotten in the process of DNT taking control over specific areas of the land.

While the people from the cities were seeking hikes in the breathtaking nature of the countryside of Norway, the local people from these areas saw the landscape as a resource, used it for farming and livestock and had implemented stories into it from generations.

This brought me over to the book “Mytiske Landskap” (Mythical Landscapes) by Anders Johansen. He introduces Bronislaw Malinowski's studies of the indigenous people of Trobriand Islands in Melanesia, and their importance of capturing the influence of the mythical aspect of a landscape. In other words, how the local people interpret the landscape through stories and myths.

I think this is reflected on to by who and how the landscape has been interpreted in Norway as well. In many situations it is clear who is local and who is visiting an area just by comparing their way of sheltering. Tourists often use tents or DNT's accommodation and sticks to the marked path, some locals have small invisible shelters off the beaten path made of the materials found at the site, and others small cabins used for hunting, fishing and livestock. Respect for local knowledge should be considered to understand the aspects of landscape and the situation when hiking, making shelter or building.





CALENDAR

- Compulsory days at BAS
- Reccomended days at BAS
- Open working days
- Scheduled appointments / plans
- Weekends + holidays

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# CIRRICULUM VITAE

## ABOUT

**Name:** Arnulf Mårdalen Hasle      **E-mail:** arnulf\_mh@hotmail.com

**Date of birth:** 11.05.1991      **Phone:** 95892359

**From:** Gjøvik, Norway      **Address:** Rosenbergsgaten 30A,  
5015 Bergen

## EDUCATION

2016 – 2019  
**Master in Architecture,**  
Bergen Arkitektthøgskole

2013 – 2016  
**Bachelor in Architecture,**  
Bergen School of Architecture

2011 – 2013  
**Visual art,**  
Nordic Institute of Scene and  
Studio (Now Westerdals)

2010 – 2011  
**Hiking/Trekking/Adventure,**  
Seljord Folkehøgskole

2007 – 2010  
**General Studies with emphasis on  
Design (Studiespesialiserende med  
Formgivning),**  
Gjøvik Videregående Skole



## WORK

Nov. 2018 – Dec. 2018  
**Photo editor,**  
Nfoto

June 2016 – March 2017  
**Delivery driver,**  
Peppes Pizza

June 2015 – Aug. 2015  
**Maintenance work,**  
Helge Kristoffersen AS

Summer job. Washing and  
painting containers.

Aug. 2012 – Aug. 2013  
**Shop assistant/sales,**  
Bags & Tags og Handysize AS

Part time job in two stores at  
Byporten in Oslo

June 2011 – Aug. 2011  
**Kindergarden assistant,**  
Gjøvik Kindergarden, Gjøvik  
Municipality

Summer job.

2004 – 2011  
**Shop assistant/sales,**  
A. Hasle Jernvare og Kjøkkentøy  
AS

Family business were I work as  
shop assistant/sales in holidays  
and after school.

## LANGUAGES

Norwegian, English.

# MASTER COURSES

## BAS master course 50/50 A QUESTION OF CONTINUITY – Autumn 2016

The master course 50/50 A Question of continuity consisted of three cases. The first was a study of Regjeringskvartalet (The governmental quarter). The second case was a study of the work and living of the artist, Nikolai Astrup, with a study trip to Jølster. The third case was a relatively open assignment with the possibilities to design an intervention based on previous study trips, visited locations or themes. The cases covered central aspects of Norwegian and international contemporary cultural and sociopolitical debate enlightened with exhibitions and running debates. See portfolio for more information.

## BAS master course LAYERED LANDSCAPES LOFOTEN – Spring 2017

The master course Layered Landscaped Lofoten mainly consisted of research tasks related to different aspects of the landscape in Lofoten, such as vulnerability and flexibility. We investigated the weaknesses and strengths of the landscape and designed or planned for an improvement of the landscape. See portfolio for more information.

## BAS master course COMPLEX CONTEXT – Autumn 2017

The master course Complex Context focused on the aspect of learning and living conditions. In groups, we did research on one chosen situation in Bergen, and with this research in mind we planned for a better learning and living environment in that given situation, in our case – expanding a primary school. See portfolio for more information.