**In Defense of Darkness**

Stars, Fear, and Five Nights in the Mountains

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*You can never see further than in the dark.*

Jon Fosse

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PREFACE

When did you last see the stars?

Look at a satellite image of the Earth. Where it was once as dark as night, it is now lit up like a Christmas tree. If you zoom in on a city, you’ll see floodlights, neon lights, car lights, and streetlamps. If you zoom in even further, to your own bedroom, you might see lamps and TV, tablet, and phone screens.

If you live in a city and look out of the window, there will be a grayish yellow haze between you and the Milky Way. Even if it is night. Even if it is winter.

Humans have always struggled with the dark, but isn’t it light enough now? What is all this artificial light doing to us and everything else that lives? What is it doing to our sleep patterns and rhythms and bodies?

I live in Norway, the land of the polar night. I have a cabin in the mountains in Finse. Darkness and stars can still be experienced there, particularly now during the darkest months of the year. I pack my bag and head up there. To seek out natural darkness, knowledge, and the night sky – and to see how long I dare stay.

Because paradoxically, I am afraid of the dark, and that fear is all-consuming, at least when I’m completely alone.

There aren’t any roads to Finse, so I buy a train ticket.

DAY 1 – MONDAY

The train rattles out of the city. It is early Monday morning. The city twinkles and flashes and is still awash in artificial night lights. I have with me a large, blue backpack which I put together with suitcases and bags at the end of wagon 4 and then find my seat, number 36.

 I most often live in this city, in a high apartment building with a view out across everything. I can see all the way to the fjord and several thousand rooftops, I can see a bit of forest. But at night all is transformed into crackling, luminous noise. A strong humming broken up by rougher sounds. Artificial light glows above every large city at night. The light from Oslo reaches 100 to 125 miles away from the city center in every direction. This makes it difficult to really see the night sky. It’s impossible to see the Milky Way.

 The train rattles onward, and after awhile the afternoon approaches with its daylight. Wagon 4 buzzes with conversations and movement, low music, coffee-slurping, and a conductor wearing a hat who coughs and asks to see tickets. I have brought my computer and several books. One of them is about a woman who, in 1934, was on her way out of another city. Christiane Ritter was travelling far north, all the way to Svalbard, an archipelago located midway between mainland Norway and the North Pole. She was on her way toward a darkness and a winter she knew nothing about. How dark does it actually get so close to the Pole? Would she manage it?

Christiane

Christiane was a woman of the upper class from Bohemia, which in those days was a part of the country of Czechoslovakia. Her husband, Hermann Ritter, was a trapper on Svalbard. He had tried to lure her northward to Gråhuken on the northern end of Spitsbergen, which is the largest of the islands in the archipelago. She did not initially wish to go, she was enjoying her painting and spending time with her four-year-old daughter and friends, but her husband wrote one, two, three letters, saying: “Leave everything there at home and come to me in the Arctic!”

 He wrote that it was impossible to describe everything. The endless summer light. The long darkness in the winter. She had to come to experience it for herself. She was eventually convinced, packed her bag and began her journey in the summer of 1934. She brought along a Bible, camel hair long underwear, dried parsley, and painting supplies. She boarded a boat that brought her further and further north up the coast of Norway. To a landscape that became increasingly more barren and lonely.

 She passes the northernmost point of the mainland, sails beyond Bear Island, but when the other passengers find out where she is going, they are horrified. “You must put that idea out of your head. You will freeze to death on that island. It’s not suitable for you, little doll. And you might also get scurvy.”

 On the northwest coast of Svalbard, in Ny-Ålesund, she is met by her husband and they continue sailing further with a smaller boat. Many up here are familiar with the cluster of islands, they boast loudly, and one Norwegian claims that spring is the best time of year. Christiane does not think she is going to see it that way, she says defiantly that she won’t be captivated by the landscape as they are. “Oh, you are going to be captivated,” the Norwegian says quietly, but with certainty.

 After a while, Christiane finally sees Gråhuken, a forlorn, gray, elongated strip of coast off in the distance. She also spots the cabin. She thinks it looks like a tiny little box engulfed in land. So this is where she is to live. Together with her husband—and one other trapper. For one year. For one witless, long winter. No one on board speaks, only an older man who speaks German says a few words: “No, my gracious lady, it’s impossible that you will stay here during the winter. It would be an act of endless foolishness!”

 Everything is gray and rainy. And Christiane thinks it is a gruesome place. “Nothing but water, fog, and rain. It surrounds the people until they lose their minds. What business do humans have on such an island? How much hope, how many proud plans have not been reduced to nothing here, how many enterprises have not ended in shipwreck, and not least: how many human lives have not been claimed by the landscape?”

 They bring their luggage up on land and she explores the tiny trapper cabin. It is 7.42 by 1.28 meters, altogether 10 square meters. And it is located 250 kilometers from the nearest city, Longyearbyen. When the boat departs, there is no knowing when they will see other people again. The trappers don’t have a satellite phone, there are no rescue services or any helicopter that might save them if something were to happen.

 The stove doesn’t work at all, and the fog is thick around them. Christiane turns to her husband: “Where is the boudoir that you promised me in your letters?” she asks.

 It is August and summertime, daylight around the clock. Gray around the clock.

Finse, 1222 m above sea level

I was born in August and like this time of the year. I like long, bright evenings when the fjord is warm. Maybe that isn’t so unusual, since we humans are made to survive without a down jacket and wool long underwear in milder latitudes. The genes in our bodies have been programmed from prehistoric eras that days are light-filled and then it is dusk and nights are dark.

 And still, I have lived for eight years on Svalbard, and I have always been to Finse. I have gathered up my warmth, put on my ski goggles and struggled against the wind and darkness for over forty years. And it feels as if snow and storms and slush and hard snow have also become a part of me. That I am dependent on drawing breath up in those parts every now and then, to use big words. Sometimes you have to do that.

In addition, Finse is the best place I know from which to view the stars.

But I’m not often there alone. I don’t like being alone, not for prolonged periods of time in any case, a few hours is fine. I mean, I’ve slept outdoors a few times, in the mountains and in snow caves and in tents when it’s been minus forty degrees – but always with another person there. With a man, with the kids, with friends. I don’t like it, but I need to do it: to be alone in the mountains when it gets dark. I need to practice, because I want to be there. I’ve moved around a lot in my life, but I keep coming back to Finse. This place and the cabin are constants for me, so I need to be able to be there without someone to hold me when darkness falls.

 I need to be able to sit and write there, because I’m a journalist and I write reports and books, about nature and the north and people – and how everything is connected in this unstable world. So maybe this trip is part of a bigger project, or maybe it’s not. Maybe it’s just stupid, maybe I’ll get to the cabin door and change my mind.

 I look out of the train window at everything flying past. Trees become fewer and farther between, finally disappearing altogether. I think about the kids and about my husband back in the city – I already miss them. I get off the train after four and a half hours. At Finse station, 1222 meters above sea level, the highest railway station in Northern Europe.

 Finse is referred to as the southernmost Arctic, the temperatures and landscapes being similar. There are no trees here. The average temperature throughout the year is below zero. All the old heroes came here. British polar explorer Ernest Shackleton came here to train for long and difficult polar expeditions. Fridtjof Nansen came here somewhat late. And there are pictures of both the lake Finsevatnet and the glacier Hardangerjøkulen in Roald Amundsen’s house. The history of the place is all quite recent, as is the case for Svalbard. Finse only became a small community when the Bergen Line, which opened in 1909, was built.

 Laborers migrated up from the lowlands, looking for work, and lived in small barracks in the mountains to work on the 492-kilometre railway line stretching from east to west. Deep in the darkest mountains they drilled and blasted tunnels using dynamite and just their hands. The project pushed the limits of what was possible when it came to knowledge and technology at that time, and it was hard work. In the dust and the dirt and the dark, in snow and storms and pissing rain.

 The Bergen Line was a bold, demanding and magnificent project – and cost the entire state budget at that time: fifty-two and a half million Norwegian kroner. King Haakon referred to it as “our generation’s masterpiece” when he opened the line in November 1909. It was now possible to travel between Oslo and Bergen in fifteen hours. And to get off the train in the mountains. To stay in a nice hotel.

 I’m the only person getting off this Monday. There’s still a nice hotel near the railway station. There’s also a large tourist cabin a few hundred meters away. Everything is closed. It’s low season. It’s windy.

I fire up the stove and dread what is to come

I put on my skis and ski goggles and head towards the cabin. I pull my sled along behind me. It carries enough food and everything else I need to spend a few days here alone. As mentioned, there is no road leading to Finse, and the closest store is miles away. I go no more than three kilometers through fresh snow, white landscape, and wind, spot the cabin in the distance. Put the key in the lock.

 I unpack. The cabin is cold and I fire up the stove. I look out at the plateau and frozen lake and wind. It is almost three o’clock. It will start to get dark in an hour or so. The cabin is bigger and better than Christiane Ritter’s – about five times as big. The stove is better too: it even has glass doors so I can see the flames. They provide a nice yellow light.

 I don’t know whether I regret it. Well, I do regret it. Even though I’m doing this of my own free will, I’m dreading the darkness so much that I can feel it in my chest and down in my feet. It hurts. I know the darkness will envelop me, not gently, but hard. I know the big window panes will turn black, that the landscape will disappear, and I know I’ll feel heavier then. I can feel it in my bones, and I know me.

 I make it a ritual straight away, from the first evening. Sitting and letting it come. Letting my body relax, sitting there from dusk, crocheting, looking out, letting the blue hour embrace me. Not lighting or switching on anything to provide more light than what the stove gives, because then it will just be even blacker outside. Maybe I’m trying to bid the darkness welcome so it will be kinder to me.

 I know that the worst will come when I eventually close my eyes to sleep. When I need to relinquish all control. I’m not afraid of wolves or ghosts or polar bears. So what am I afraid of?

I want to tell you about the dark.

I’ve been afraid of the dark since I was a little girl, a big sister who was often responsible for a throng of younger siblings.

 “Remember to lock both doors,” I reminded my parents after one of them had sung me a goodnight song. I reminded them to remember to lock the doors every night.

 So no one would come in. In from the dark.

The word darkness and the cultural dichotomy

The work *darkness* gives me a kind of jolt. A hard jolt deep inside. It has connotations of grief and illness and night and the color black – and my own fear of the dark.

 *Darkness* is generally a negative word, a word that is heavy and sad and pulls other words down with it: dark heart. A dark chapter of our lives, of history. Dark days. Dark past and future. Dark path. Dark mood. Dark humor. Dark age. There often has to be light for everything to be well, in poems and songs and literature and life in general. I often left the hall light on and my door ajar.

We have always struggled with internal and external darkness in the world. Darkness was an enemy, like the cold, something unsafe – and light was by definition good. In Greek mythology, it is said that fire was stolen from the gods. That after animals were given all the best qualities, the titan Prometheus stole fire and gave it to mankind as consolation. The king of the gods, Zeus, was furious and created woman to punish mankind.

 Since then, people have sought more light. In the West, light is associated with truth, knowledge, and being able to see. Light represents life and what is good, darkness death and what is evil. In religious texts dating back thousands of years before Christ we find sun gods – and a dark and cold kingdom of the dead. The dichotomy of the light heaven and the dark hell has persisted in both subculture and popular culture. Light is safety, darkness loses its power in the light – and trolls turn to stone and shatter.

 Has this cultural dichotomy prevented us from seeing that the darkness can also be kind? Because it is only now, in the very last seconds of human history, that someone has suggested that, ahem, darkness might also be important. Maybe a bit. Important. For quite a lot.

 I was born in 1975, so my generation and the one before grew up in and with electric light. It has not been properly dark anywhere other than far outside of towns and villages in my lifetime. Maybe that’s why I’m afraid of the dark. Maybe that’s why I haven’t considered what we’re in the process of losing.

In any case, let me try to define it more scientifically and specifically:

What is darkness?

When the sun is more than eighteen degrees below the horizon, we achieve *astronomical darkness.* But because of the light pollution in the world, you need to venture far out onto the plateaus, into the desert, or onto the open sea to really experience it. At the end of June, the American research base at the South Pole is perhaps the darkest place in the world inhabited by humans. Theoretically. If they switched off all the lights. And there wasn’t any snow.

 To understand darkness, we also need to know something about light. Astrophysics defines darkness as an *absence of light.* In space, the distance between objects can be incomprehensibly vast, so when there is almost no distribution of light between what is shining and us, physicists say that darkness is the *absence of light in the direction we are looking.*

Darkness can therefore also be defined as a *perceived absence of light.*

This is actually true: very small quantities of light penetrate everywhere throughout the entire universe – it is just that our eyes cannot see it because they are too poorly designed. Humans can see light, which is made up of electromagnetic waves, when the distance between the waves is between 400 and 700 nanometers (a billionth of a meter). Warm, yellowish red light has a greater distance between the waves and a lower frequency than cold, bluish white light.

 But the light that is visible to humans is not the only light in the universe. Radio waves, microwaves, infrared and ultraviolet radiation, X-rays and gamma rays are also energy – are also light. Some of these rays are reflected by the atmosphere, others find their way through.

 The biggest problem with our eyes is that our pupils are so small: this makes it difficult for much light to enter at any given moment. Of course, we have found ways of enhancing our poor sight. Both cameras and telescopes are optical instruments with larger apertures than our eyes, and so, using mirrors and various devices, the light is gathered and adapted to allow us to see more than we can unaided, and far, far out into space – if it is dark enough.

 It is a fundamental truth that darkness does not exist from an astronomical standpoint. Happy fact. I’m willing to accept this. I try to find it comforting, helpful. But I still struggle to completely believe that darkness does not actually exist. Because what does it matter to a small, poorly designed human whether darkness is real or perceived? And what about the black holes in the universe, what about dark matter, what about the night sky and the threats against it, and… and now I’m exhausted. I’m done for the day. I feel so small and I’m tired of being afraid.

 I walk over to the window looking west, where the phone signal is best, and call my husband. Tell him I’m afraid. He says there isn’t anything to be afraid of. I tell him that isn’t much of a comfort.

 I ask him to sing me a goodnight song. He sings.

Christiane

Christiane Ritter is a respectable lady. She is still wearing her hat and coat up in Gråhuken even though evenings are light in the kingdom of the midnight sun. In her first evening in the tiny cabin, she admits that she has no idea how to get into a sleeping bag.

 “I am divested of my hat and coat, and then simply lifted up into the sleeping bag and rolled against the wall like a roulade.” And it is light all through the night. Or gray. Because the only thing she can see is fog. And rock. “Rock upon rock, I see rock in my waking hours and in my sleep. I can tell it is going to get on my nerves. This rocky country with its vast, utter barrenness will haunt me like a bad dream.”

 The cabin she lives in was built by legendary trapper Hilmar Nøis and his men in 1928. That autumn, Christiane’s husband and his trapper friend Karl Nikolaisen build her a drift timber extension of a couple square meters – the boudoir Hermann promised her.

 Northerner Karl does not expect this to end well. He is convinced that the city lady from the far south will go mad if she has to spend much time alone. Pushed over the edge by the darkness, by the storms, by the men, by this tiny cabin.

 Finally, the fog lifts. The men are often out trapping, tending to fox snares, shooting grouse. It is important that they find as much food as possible before the polar nights draw in. Christiane falls in love with the open landscape, with the glaciers flowing into the sea, with the silence, with the fresh snow blanketing everything. The trapper’s hut is called Kapp Hvile. The Cape of Repose. It is one of the most beautiful names for a trapper’s cabin that I have ever heard. Or rather, it *is* themost beautiful. Kapp Hvile.

Eventually autumn and darkness come to Gråhuken as well.

…

*Author’s note: Between these excerpts, I write about the polar night, fear of the dark, sleep, and daylight, among other things.*

**EXCERPT 2**

DAY 2 – TUESDAY

…

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The need of the pack animal to be alone

And now I’m here alone again. I’m better prepared this time and know I need it needs to happen. Over the years I’ve become more sensitive to crowds and noise and different atmospheres. I need quiet.

 Some people say that going out into and turning to nature is a means of withdrawing from what is important. I think seeking out nature and paying it heed is actually the opposite, it’s coming home or back. To what we’re an important part of, to what we really need to be talking about now. If we and the Earth are to have a chance.

 “It’s too late to be pessimistic,” as legendary outdoorsman Nils Faarland puts it.

In any case, I need distance from the noise and to be alone. I need air and space and to figure out the darkness.

But humans are pack animals, so I need people as well. There’s a persistent ambivalence about this, the fact that we need to be alone as much as we need others. No matter what, they might always be with us, in our thoughts and memories. And nowadays, when the wilderness isn’t really a thing anymore and technology lets messages and snaps and updates trickle and pour in, and satellite phones work wherever we are – are we *ever* alone?

 Well, I’m fine now in any case, I’m physically alone, I’m warm and full, and it’s still light out. And the internet coverage here is abysmal, so I’m unlikely to be bothered.

 I’m back from my short afternoon walk, but I don’t have any water because of the unsafe ice. I fill buckets with snow from a drift outside to melt in the big pot inside. I haven’t seen anyone today either, I’ve read a little and heated up some fishcakes and vegetables for lunch, otherwise tidying some shelves, playing records on the old record player, but I haven’t done half of what I’d thought I would.

 It feels like the second day is drawing to a close here in the mountains. Much too quickly. Because it’s already getting dark. I sit in the same place I sat yesterday. On the sofa, with the blanket. Fire up the stove, crochet a yellow and red granny square and let it come.

 It’s still bluish-gray outside. I go out to pee and see that one of the neighboring cabins has an outside light on even though they’re not here. It’s kind of reassuring, but it’s terrible too. Irritating. And there’s no law against it – not yet.

I’m feeling anxious, wondering whether I’ll get scared. I consider putting a light on inside, but wait a while.

Artificial light

Humans lit fires and torches first. Then, ten thousand years ago, they started burning oil in containers. Animal fat, plant oil, and petroleum were used as fuel over the years. Oil lamps were the main source of artificial light until science really figured out electricity. Gas was used for a while before lamps were finally lit using electric energy. The first electric lights, carbon arc lamps, emerged in around 1850, providing a bright light that was sometimes used for outside lighting. Then came the carbon filament lamp, which was better suited to general use.

 Then renowned American inventor Thomas Alva Edison invented the incandescent lamp, which had a long service life, and also developed ways of supplying the public with electricity.

 Skien was the first city in Norway where electric light was made available to the public, in 1885. Hammerfest was the first town in the world to have artificial streetlamps following a fire in 1889. Valen Hospital in Sunnhordland was the first hospital in the Nordic region to be supplied with electric power, in 1910. The Royal Palace and a church in Oslo were the only public buildings to have electric power before this.

 But it was only after 1950 that most Norwegian homes had electric light. This was quite something in a country with such dark winters. Because that’s been our biggest problem as long as I can remember: having too little light in the winter.

 When the incandescent lamp was introduced, our sleep was reduced by an average of 1.5 hours. In 2012, lamps like these were banned in the EU. LED bulbs are much more energy-efficient, so now there aren’t any savings to be made there are lights on everywhere, twenty-four hours a day, all year round. Outside and inside. Even so, more electricity was used in Norway in 2017 than ever before. And sleep disorders are on the rise.

*THE STARS WILL SOON BE*

*all that keeps quiet.*

*They sit over the bleachers,*

*the railway cafés and hotdog stands*

*with their skirts pulled well up*

*over their slender calves*

*of light.*

 Kolbein Falkeid

Light pollution and night sky laws

When I lived in Longyearbyen, I could go hiking in the closest mountains at any hour during the polar night without a headlamp because of how brightly lit the town was with all its streetlights. My apartment building in the city is never completely dark, no matter the season. And just when I’ve managed to tear the kids away from their screens, they disappear out onto the balcony. They like sleeping there. And even though it’s not completely dark, even though we can’t see the Milky Way, we can still see some stars. We can see the Big Dipper the neighboring building at bedtime, and my eldest has named a star after himself. And every morning they sit there with ruddy cheeks and muesli, having slept through city noise and dogs barking and parties in neighboring buildings. But there has been more light in the local area in the last year. Very bright outdoor lights that encroach on the balcony. The stars are harder to see – and the more I learn about this, the more uneasy I feel as a mother.

 There are few places left in the world that are not polluted by artificial light. Pictures taken by NASA show that light pollution has increased dramatically in the last twenty years. Light pollution is defined as *excessive and inappropriate artificial light*, and researchers are now discovering more and more areas where this light is causing harm.

 Almost all types of pollution are regulated in Norway: both air and noise – and what can be discharged to sea, freshwater, and earth. According to section 6(3) of the Norwegian Pollution Control Act, light is only to be considered pollution “to the extent determined by the pollution control authority”. And according to Norwegian lawyer Erling Fjeldaas, no measures have been taken to counteract light pollution since the act entered into force in 1981. He is incensed that everyone is free to cause as much artificial light pollution as they like, with few exceptions. In his prizewinning master’s thesis, he discussed the Norwegian legislation in this area, finding both frighteningly few regulations and frighteningly few examples of complaints about excessive artificial light being taken seriously. For example, in the Norwegian Planning and Building Act and in civil engineering regulations there are no application requirements concerning light specifically. Many municipalities therefore misinterpret this as meaning people do not need to apply to erect lamp posts.

 When three huge floodlights were erected to illuminate a mountainside in Rjukan, a neighbor complained about the indirect light encroaching on her property. She described the case as “emotional abuse caused by both the business and the fact that no one else was involved in a project affecting people’s lives and mental health in the way that it does”. The county governor in Telemark for his part did not think that permission was required to erect the floodlights. Fjeldaas found paragraphs in both the Constitution and the Norwegian Public Health Act that can be used to protect people from light trespass. Among other things, section 14(1) of the Norwegian Public Health Act states: “The municipality may order that aspects of a property or activities in the municipality be rectified if the situation has a direct or indirect negative impact on health […]”.

 In Arendal, there were complaints about a huge screen displaying adverts and information about the city. The light from the screen was reflected by the sea, and the city’s neighbors on the other side of the fjord found the light unpleasant, claiming it made it difficult for them to sleep. The Public Health Act could have been cited in this instance, but the complainants did not win their case here either.

 Doctors across the country are hearing more and more complaints about the use of bright and unpleasant light at night. Many people are told they should just close their curtains and then it will be dark. But the authorities have the power to do something. In a rare decision in 2009, Ålesund Municipality forbade SK Herd from used outdoor lighting after nine o’clock in the evening, and they also stipulated rules on how bright the light could be.

 Other countries have proven more concerned about preserving the night sky than Norway. An organization called the Dark Sky Association is fighting for this, and eighteen American states have adopted laws against light pollution. In New Mexico, for example, all bulbs brighter than 150 watts must be shielded, and if they are not, they must be switched off from eleven o’clock at night until sunrise. Some states have done so much to preserve the night sky that tourists and stargazers are now flocking there to experience the darkness. The organization is also working on preserving the darkness in parks and other landscapes. They have certified thirty-five places around the world so far, and in the autumn of 2018 a large national park in France, Cévennes National Park, was granted the status *International Dark Sky Reserve*, thereby becoming the biggest park in Europe to have achieved this status.

 This is also a discussion in Germany, and extensive dimming of outdoor lighting in public spaces has been introduced in some towns. On the Spanish island of La Palma, there is a law they refer to as the “Sky Law”, which regulates the light. This was introduced because there is an important astronomical observatory – where work does not really start until after dark – high up on a mountain on the island for which natural darkness is a necessity. Other observatories around the world have been rendered useless simply because they have not managed to shut out the steadily increasing light pollution. The sky shines yellowish brown at night and reflects all artificial light sources. But in La Palma, those who break the Sky Law face significant fines. Among other things, they reduce the brightness of all streetlights by fifty per cent at midnight, making the light softer and more orange. And all the lights point down at the ground.

 The Dark Sky Association has specific advice on how to talk to your neighbor and public bodies about having unpleasant light dimmed. They talk about a global movement for the starry sky. Being able to experience true night, a starry sky in all its glory, is a human right. It’s a lovely thought.

 Erling Fjeldaas is fighting to bring such legislation to Norway as well. He has specific proposals for amendments to laws and wants the lighting used by sports centers, hothouses, aquaculture facilities, and roads to be regulated and outdoor lighting requirements to be stipulated in civil engineering regulations. “The rules should concern the angle of the light, the brightness of the light and when the light is switched on […] Unfortunately, our view of the sky has not yet been discussed in the Norwegian Parliament. The parties ought to have an opinion,” he writes.

We need natural darkness

Another Norwegian, the journalist Erlend Christian Lysvåg, is worried about what we miss out on in an overlit world: “[…] artificial light makes night, darkness, and all the innumerable nuances of nature’s own light inaccessible to us. We do not see stars, do not see the animals, the shadows, the distinctive details that emerge in the darkness. We have effectively stunted our sensory perception; we would not cope if the power suddenly cut out for good. We cannot orientate ourselves, cannot navigate, cannot really live,” he writes.

 And the situation is critical. Two thirds of Norwegians now live where they are unable to see the Milky Way. New studies show that sixty per cent of Europeans and eighty per cent of North Americans cannot see it either.

 More and more tourists are coming to Norway to experience the polar night, northern lights and starry sky – and silence. We Norwegians brag about our untainted nature and lovely mountains and fjords, but even so, a grayish yellow veil has been drawn over large parts of our country and some of the best we have to offer.

 Municipal autonomy in Norway means that the municipalities do not need to wait for the state to take action and can step in themselves. This means it is possible to regulate all light, consider what needs light and when – and what type of light is used. There might be places that want to be Norway’s first Starry Sky Preserve, or Dark Sky Community. That could agree, in the event of a particularly good weather or northern lights report during the winter, that a star alarm will sound and all unnecessary light will be switched off for a while so that everyone can look up and out into the universe itself.

 Such a thing would be beautiful and important, saving more than just energy and money. Natural darkness is about much more than experiencing nature. Researchers are finding more and more evidence that too much artificial light can have a detrimental effect on our bodies, rhythms, and mood. And we’re not the only ones affected. It has an impact on other animals and the ecosystem too – nature itself.

 We need natural darkness.

Christiane

Total darkness descends on Gråhuken. Christiane writes that the darkness has now confined them to the cabin. All three of them take turns doing the housework, otherwise keeping busy with various things. Hermann writes and reads, she repairs clothes, and Karl “always has something that needs building, soldering, or putting together”. They play solitaire and tell stories, all while the world outside is consumed by night. They do not dare venture far from the cabin in such deep darkness.

 “The storms, which sometimes last for days, are really all that is left of reality, and at night, when it is quiet in the cabin, they are what command our consciousness.”

…

*Author’s note: Between these excerpts, I write about what I am afraid of and about depression, storms, and terrifying Christmases in years gone by, among other things.*

**EXCERPT 3**

DAY 3 – WEDNESDAY

…

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Christiane

The men return to Gråhuken. But they haven’t seen the last of the storms. On one occasion they notice a ring around the moon, and Karl says this portends bad weather. And sure enough, the following night, a storm blows up with explosive force. There is not a lot of friction in the barren landscape of Spitsbergen.

 The storms rage on. Hermann, her husband, is out alone somewhere for a time. Christiane lies awake at night. Asks herself whether anyone would be able to walk upright in such a tumult – wouldn’t he simply be blown away like a splinter of wood?

 “Anyone who dares venture out in such a storm is hopelessly lost! The sound of the storm and the sea is staggering. […] It is a dark hell that howls all night long.”

The storms keep coming.

Night draws in again

Wednesday is buffeted along in Finse, the wind ravaging and sweeping the landscape. The hours drag at a completely different tempo, and I sit by one of the big windows, looking out, reading a little, trying to write. I don’t feel as nauseous anymore. When the wind finally dies down for a while and changes direction, I start dreading the darkness, but I’m not as scared as I have been. After all, I’ve managed to sleep the other nights. Somehow. When I take the blue hour seriously, let my body relax. Don’t switch on lights. And say fuck it all. I sit on the sofa and look out, as is my ritual. Crochet. The stove has died down, so I fire it up again. The cabin is much colder when it’s this windy. I see my neighbor’s outside light again when the wind drops a bit and it starts getting darker. It’s still irritating, but not as much as before. If anything happens to the windows here, it’s nice to know there are other cabins.

What happens to our brains when it gets dark

When it gets dark, our pupils dilate to let more light in. When photoreceptors in our eyes register less light, a signal indicating that *night has fallen* is sent to our pineal gland, which is as small as half a pea and located just above our midbrain. When the brain is no longer receiving daylight signals, this gland starts secreting the hormone melatonin.

 Melatonin is our darkness hormone.

 The secretion of the hormone peaks between three and four o’clock in the morning. Production decreases the older we get. Melatonin readies us to sleep by dilating the blood vessels in our skin so that our body temperature drops, among other things. This makes us feel tired and want to go to bed.

 The hormone can also affect our libido – and is a very important antioxidant that protects cells from harmful mutations and helps our immune system to activate white blood cells at night.

 And it is in precisely this field that revolutionary research is currently being carried out: at the start of the 2000s, it was discovered that in addition to image sensors, cones, and rods in our retina, there is also a hitherto undiscovered type of photoreceptor in a layer of cells we thought only contained coupled cells that were not sensitive to light.

 The researchers found out that when blue light hits these newly discovered cells, a reaction is triggered that stops the secretion of melatonin. They also discovered it is this light that elicits the greatest response from these receptors.

 This is a recent problem. Although incandescent bulbs and electric lights have existed for 130 years, these emit a lot more red and yellow and peaceful light. Most LEDs use blue light, and unfortunately these dominate not only in streetlights, outdoor lighting and tunnel lighting, but also in all the screens we surround ourselves with, in iPads, computers, cell phones…

 As well as having a different temperature and shorter wavelength, blue light also has a different frequency. It flickers instead of flowing. Some people think that the temperature is the biggest problem, and others think it is the frequency.

Insects are dying and people are falling ill

Artificial light also affects insects and other animals. Everything that lives, in fact. Flowers and plants open and close depending on the light. And fall dormant in the winter. Trees, the biggest plants on Earth, shed their leaves in the autumn to save energy, reducing their activity through the snow and winter. But how do they know when to start growing leaves again in the spring? Well, plants and trees register the return of the light and how warm the air is before budding and growing their leaves back. Artificial light can disrupt this process. Pollination too. Researchers have discovered that plants illuminated by streetlights are visited sixty-two percent less by pollinating insects than those in natural darkness.

 Artificial light also disrupts insect reproduction. And this is dramatic. The human population has doubled in the last forty years, and the insect population has halved. Insects don’t need us, but we need them. Researchers don’t think we would last more than a few months if insects were to completely die out. There are many reasons why they are disappearing, and light pollution is one of them, because these small flying creatures are drawn to light when it gets dark, which is why you should always close your windows on dark spring and autumn evenings. The main theory as to why they do this is that they think the light is the moon and fly in circles towards it. The increasing use of outside lighting means that these tiny creatures are circling their way to certain death. And even though some city insects are now in the process of changing their behavior, studies show that hundreds of millions of insects are killed every season in big cities.

 Light at sea is also problematic. Birds crossing the North Sea are fooled by illuminated oil rigs. They fly towards the artificial, floating light and exhaust themselves circling the rigs. Some of them never make it to where they were supposed to be going.

 Artificial light is not only a problem for animals that fly. It makes it more difficult for predators to hunt. Frogs can be blinded for several hours by one car passing. When it is difficult to see the stars, for example in cities, some animals have trouble orienting themselves. Newly hatched sea turtles on beaches struggle to find their way back to the sea as they are supposed to, using the moonlight and stars. Dung beetles, which navigate using the Milky Way, can also end up going the wrong way. Swedish researchers figured out this form of navigation when they started studying *Scarabaeus satyrus,* a small African beetle. The female works at night, rolling small balls of dung that she uses as both a food source and somewhere for her larvae to grow. To lay them in peace, it is important that she moves these dung balls away from all the other beetles – which means it is crucial that she finds the right way and does not veer too far off course. The researchers noted that the insect managed this even at night. They also noted that she crawled up onto the dung ball and performed a dance of sorts, as if trying to work out where she was.

 The experiment proved that the beetles navigate using the light. If there was no moon, they could use the stars, and even when it was overcast, the light from the Milky Way could help them find their way.

 Most animals and plants also have circadian rhythms, just like us humans, meaning that they need both light and darkness in appropriate measures. Global warming, land development, and light pollution cause problems when it comes to biological diversity. A number of studies show that night shifts and artificial light too close to bedtime can have a negative effect on our health. And this might have to do with the frequency and temperature of this light. We discovered the link between sleeplessness and depression and increased use of screens a long time ago. A detailed report from 2012 shows that there are more and bigger problems than we initially thought. There is a higher risk of morbid obesity, breast cancer, diabetes, and depression in people exposed to artificial light when it is otherwise dark. It can also cause early puberty.

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Storms and stars

Pitch darkness closes in on Wednesday. I know it will get light again tomorrow, and even though I’m not as afraid anymore and have a better understanding of how important the darkness is, I still feel uneasy. I’m still not entirely sure how to handle it. I try to focus on breathing. Take a deep breath in, take an even deeper breath out. I lie down on the floor. Breathe. Close my eyes. When I open them again, I have to blink.

 I can see and hear the wind, the black and white and gray snowstorm up to a height of three or four meters, but above that I can see an expanse of dark sky, I can see stars. Finally.

Clear, bright stars. And the Milky Way.

The wind has swept away all the clouds, revealing the stars shining in the firmament. Shining and shining above the wind. What a sight. The windows in this cabin are new and high, almost giving me the sense of being outside. I’ve never seen anything like it. If I’d been outside, I’d have been standing in the middle of the snowstorm. In here, I can see far more. And much further up. I think about what Jon Fosse wrote: you can never see further than in the dark.

 This is a rare sight. I completely agree with Fjeldaas that the night sky needs to be preserved. That people need to wake up and see this, to realize how much unnecessary artificial light we are surrounded by – and how much harm this is doing. Parliament needs to discuss this. ASAP. There should be national parks in Norway for seeing all of this. This sight is reason enough to move here, to the mountains.

 In any case, this is a good place to see the stars. The Milky Way. That’s always been the case. On the rare occasions there isn’t a cloud in the sky in Finse, the stars are clear and bright. I remember us all putting on our warm clothes and going outside. Dad pointing and explaining. Explaining that the stars emit their own light, that they’re suns with fuel inside them, and planets and moons and comets shine because they reflect the light from our sun. Explaining that some of them are already dead. And that we look back in time when we look up because it takes time for the light to reach us. We stood in the cold and looked and looked. For Arcturus, an old star, red in color – probably so old it will soon die. We looked for the Big Dipper as well and drew a line from its two outermost stars to find the North Star, located about 323 light years from our sun, which is actually three stars that have been given many names: the Pole Star, Stella Polaris, Polaris.

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*Author’s note: Between these excerpts, I write more about our universe, about black holes and dark matter, about the northern lights, and about a night with a full moon, among other things.*

**EXCERPT 4**

DAY 5 – FRIDAY

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And then morning comes and the sun rises on my fifth day in the mountains. I haven’t slept a wink. After the moon went down, the stars shone even brighter. I saw stars and satellites and shooting stars. Everything disappeared when the morning colors emerged.

 By the way, it doesn’t just get light here at this time of year, it gets red, orange, yellow, it gets purple and pink above the mountains. It’s an explosion of colors, and I find myself thinking: why was I so afraid? These are my mountains, I know them, they’ve been here the whole time, and there’s the snow, and here I am. Safe inside.

 It’s early winter now, before Christmas, but these are definitely the February colors in Svalbard. In clear weather, when the light is slowly returning. When the days and the entire polar world are blue and sunrise becomes sunset without the fiery orb of the sun showing itself. And when the first rays of sun hit the mountains and they turn pink. One such February, at bedtime, when we were talking about our day, one of my children said:

 “Mommy, you’re more beautiful than the mountains when they’re pink.”

 I cried on the inside and smiled on the outside and tucked it away in my heart. I take it out when I need it, now they’re getting older and will soon be cool young people and disappear into their own worlds. I take it out now, when I miss them.

 The following month, on March 8, on International Women’s Day, the sun returns to Longyearbyen, hitting the steps where the old hospital used to be. Celebrations last a whole week.

 And soon I’ll see the sun for the first time during this visit to Finse. I know it will peek over the mountain to the southeast at around ten o’clock. I know it will only just manage to keep itself above the mountain in the hours that follow, and I have to say, one of the best things about moving from Svalbard is this blessing: that the sun rises every morning and goes down every evening. I’ve thought about that and been grateful for it every single day since we moved south.

That it always gets light, and it always gets dark. We’re so lucky.

Christiane

It clears up in Gråhuken on January 9. “[…] and at about midday, for the first time, we see a faint, reddish gleam on the horizon to the south. We are overjoyed. The world might have gone up in smoke, but at least the sun still exists, and the Earth is still in its usual orbit!”

 But the reddish gleam is followed by more bad weather and further days of deepest night. It has been a hard and lean winter for the trappers in Gråhuken, with little to show for their efforts, but at least the sky to the south has colors again at the end of the month. Even though the stars are shining above their heads. “We look at each other for the first time in daylight and are utterly appalled. We look like plants kept in a basement, pale yellow, our skin loose and wizened.”

 And even though the light is returning now, it is cold. February and March are the coldest months in the far north. As far as the temperature is concerned, winter is only just setting in. All the same, the end of the month brings a festive mood. Christiane, Hermann, and Karl stand on the sea ice and watch reflected light move across the mountain. Then, just THERE, they see a bright light between the peaks. Before the reflected light continues west. They saw the sun for a moment. Spring comes to Gråhuken. The storms have settled. And Christiane revels in the silence. In the recumbent sun hanging over the soundless landscape.

 “I feel close to the very essence of nature. […] I have some insight into the last great secret, and all human reasoning will fade into nothing before it. If only the people down on the continent could imagine the profound peace and beauty of this icy wilderness! When the sun shines and all the storms have passed!”

 She writes that you can open an encyclopedia and read about the extraordinary polar world, but you cannot know the peace, clarity, and lightness of a human soul under such a radiant sky. She feels at home.

And now to bed

I was really afraid, but I’ve calmed down somewhat in the early hours of the morning. I’ve spent time alone, I’ve tried to open my eyes to the darkness – and from an entirely logical standpoint, I know how important it is. I’m also not as scared now I’ve written this and it’s daytime and the sun will be here soon.

Now I can put the axe back where I found it and catch the train back home.

But first, I need to sleep – until tomorrow, at least.

EPILOGUE

CHRISTIANE: Christiane Ritter stayed in Svalbard longer than she had thought she would. She spent the entire Arctic summer there before returning to the mainland and her daughter. Her biography, *Kvinne i polarnatten (The Woman in the Polar Night)*, was published in 1938 and became a bestseller in Europe, but wasn’t translated into Norwegian until 2002. I found the book in connection with a ski trip to Gråhuken, and it really piqued my interest. The Norwegian translator, Karen Ragna Nessan, let me see all the letters she had received from Christiane. In these, she wrote that the year she spent in the far north was the happiest year of her life. In a letter dated February 7, 1993, she writes: “The winter I spent in Gråhuken was a profound experience, not just because of the overwhelming nature in the far north, but also spiritually: the long period of darkness and the subsequent reemergence of *the world in the light!*”

 Christiane Ritter lived to the age of 104.

AND ME: I must confess I’m still a little afraid, but I look more kindly on the darkness now. And I’m still learning, I’ve started introducing routines at home: all screens must been switched off at least an hour before bedtime. I try to be strict, and sometimes I manage. I’ve bought an old alarm clock so my phone can stay switched off in the kitchen at night. And I find reasons to hope. There is hope in the German rebellion against energy-saving light bulbs, dark sky laws, and the fight for the night sky. Hope in NASA replacing the bright blue light in a space station because the astronauts couldn’t sleep. And hope in amber LEDs, a variant of this efficient light source which is still expensive, but kinder to both people and nature.

There is hope in the fact you’re reading this.