

The Environmental Audiotour – Helsinki Biennial 2023

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1. The Meeting Point

Welcome to Helsinki! This is a tour of the city, where I will be your guide as a voice in your ears. At any point, if you have any questions, do not hesitate to ask me!

Where to start? What to observe? What would you like to see and hear? As the waves and the seagulls remind you, Helsinki is a city by the water, a city spread across land and islands, as it also connects to the Gulf and the Baltic Sea.

This Gulf could be like so many of the other Gulfs: it is defined by a particular kind of a shape and geography that guide the flows of the water and the chemicals they carry; the gulfs meet bays meet straits of the sea that then meet another sea and an ocean - and repeat all over again. These waters are surrounded by land-- in this case the different borders and nation states but also infrastructures that frame this body of water. Even our weather is formed far away, as pressures drop or rise, the seas around us react accordingly. It is like a complex natural signaling system.

The gulf is an aerial system as much as the air is a watery system.

You might have experienced other tours, but this one is different. We don't observe the monuments, historical events, or the usual stops that you get on touristic tours. We observe a different kind of city as it unfolds into an elemental world of water and land, one inhabited by plants and animals, insects, and birds. We observe the heat of the sun as it touches upon surfaces, and we breathe in air that is monitored by thousands of sensors across the city as it is by lichen and other organisms. We observe the energy that powers the city, and the natural and artificial islands on which we have built. While you move with me across the city, observe the rain and the air pressure, the sun and the wind. Observe some of the mist or clouds that are formed on the island we will visit, or in the skies above us.

Some of the atmospheres you will encounter are artificial, tightly controlled climates which also offer an imaginary trip to a different place.

Welcome to the environmental tour of Helsinki – this is a Biennial tour that takes place in different registers: some factual, some fictional, some conjured out of the air that surrounds you, some narrated through ghosts of sites of the past.

Don't mistake my voice as that of a historian though. I am as interested in the future as you are. This future I speculate about is however not entirely reliable.

See, I like to imagine things – to imagine things how they could or could not be, to think of that stretch of time between where we are now and how we might be. I like to ask this question about the environment too: the four elements of water, air, land, and fire – how were they formed, how were their thresholds defined, how will they change as time goes

by, as we fabricate new elements? What kinds of curious hybrids might emerge from our contaminated world?

All of this happens now as we walk together across the city: past and future timelines collapse into the tour as we visit an old weather station, current air monitoring sites, and places where we collect data about the environment as much as we cultivate artificial climates too. I already told you that I am not a historian, but I am not a data scientist either. I do this for other purposes than gathering numbers. I do it for other purposes than the usual forecasting of weather.

I am not into how things will be, but how things could be.

I am interested in sensing and collecting through stories and infrastructures. I collect stories like others collect numbers. My data are words, thoughts, and suggestions that will populate the world you are listening to like a subtle subtitling. I will turn you into my data companion, one that reads the environment like others read words, someone who measures with the accuracy of words.

Let me tell you an example. This one is real.

Once an artist advised on how to make a painting with the wind. She wrote: "Cut a hole in a bag filled with seeds of any kind and place the bag where there is wind."

We can devise an experiment of our own. In the same spirit, we could also make ourselves into a set of instructions, into experiments.

Try this:

In your near surroundings, find the warmest spot you can think of now. Stand or sit there for 1 minute. Think about the surface that catches the warmth, the radiation, the cosmic rays that make up the biosphere as you observe the sun observing you.

After one minute, find what you would suspect to be the coolest spot. Stand or sit there for 1 minute. Notice the change, notice the materials that are around you, notice your own mood as you have shifted to a different climate.

You have made yourself into a two-state thermometer, a measuring instrument.

Now think beyond your own skin. How many surfaces are there around you? What material are they made of? How intensively bright or dark are they?

Now think beyond those spots where you stood for a minute or two. How many other surfaces are there in the city? Across the artificial built environment and the natural surfaces such as water, how many surfaces do the work of sensing? How would you start counting them, let alone how they measure in their own peculiar way, with their own organic or non-organic sensoria, the spot they occupy, the area they cover.

Perhaps now this makes sense: that the city is one large-scale sensorial body. It pulsates as an environment in its own right, as it senses and measures the moisture and the wind, the temperature and the pressure. It has done this for decades – even longer – as this measuring instrument we call the city has also changed along the way. And it changes the weather: cities are heat islands, which collect thermal energy like I collect words. Later they radiate back to the world.

Speaking of islands - and there will be many in the episodes on this tour - step on the boat and let it slide across the liquid surface until you reach Vallisaari.

I will meet you there. Look for my voice.

2. The Weather Station

You have just arrived on the island while I have been here for a while. I've been here since 1650 at least, I lost count of the years. Some say I am the island but I don't know if that is true or a lighthearted exaggeration. I sense so you can sense.

I have been waiting for you by the old weather station. It's only ruins now, merely an empty spot to mark where air, weather, environment was observed and noted down. Now air passes through without anyone almost noticing.

For decades there was quite the buzz about the wind and the rest of the weather: they trained young men to use specialist instruments, to be systematic, to know what to watch, and how to pass on what they saw to other people on the mainland. Who received the data I am not entirely sure about. I think it was just piled up in an office, then an archive, then forgotten about. They said it was for "operational uses". They followed rules, that then turned into algorithms, that then turned into models.

Wind direction, strength, air pressure, precipitation, are among the usual things that make up our numbers about the weather. Any single observation can make up a series that we now use to see large-scale patterns. Any sunny day is only part of a hundred of other sunny or rainy days across years, dozens of years, or in my case, hundreds of years: I know exactly what has happened with the sea ice, and winds. I can tell you a story of what receded and what came instead.

Generally, history describes the place through humans and their concerns, their wars and cannons, bricks and fortifications. If you ask me, you will hear stories of changes in weather patterns, how the soil transformed, how the leaves clung on to the tree with intensity of air moisture, how insects and butterflies lived here struggling in the wind, and how forests were cut down as resource for a distant war --- and how—they all grew back slowly only to wait for yet another war, far and near.

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I once heard a story of a soldier, who - I think in the 1950s - started to collect numbers like others collect stamps or seashells.

The story says: he noted down numbers, year after year, and started drawing diagrams, visualizing patterns, demonstrating trends that the numbers seemed to show. He did not just observe the local weather but collected data sent from other islands around the world. His lines grew into maps that linked to other maps, all featuring islands that were not isolated anymore.

They say: he was obsessed with islands.

Across the Baltic and the Caribbean seas, the Mediterranean, The Black Sea and the Aegean, the Oceans too – Canary Islands and Cape Verde, the Galapagos and the Maldives, Madagascar as well.

They say: he dreamed of weather across the hundred islands of the Dodecanese across a hundred years.

He made weather maps of all of these during the nights and during his days off, arranging the islands into a series: the windiest, the hottest, the rainiest and so forth. He arranged them and rearranged them as he drew maps and assigned values on them.

When it is quiet on this island, and you all have left, I think of those islands, and I think of his maps. They must have looked beautiful – capturing the shape and size of an island, but not seeing it only as rocks and soil and solid ground but as air and heat and fluctuating weather. It was almost that he turned weather observation upside down: we do not observe weather, it is weather who monitors us, throws in these little experiments to see how we react, and what kind of a portrait we would draw up: a diagram, an island, a shape across a map, a painting that tries to capture the invisible wind.

Well, I don't know if this is a true story but I heard it told, and I hope those maps could be discovered one day. There must be thousands of them, drawings of islands morphing into tables. I would like to see them. Wouldn't you too? I dream of arranging those maps across the walls, like a curated artistic display.

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But this really happened in the future:

Decades later, around middle of the 21st century, this island was turned into a weather station again. Now they drew maps the size of the island, 1:1 with its landscape.

I was observing so you could observe. The island became a monitoring station. They again sent people here to read nature like it is data, to observe the variations across every inch of the island. Notations were made, calculations were prepared, predictions were in the air. All was meaningful, every movement of an inchworm measured something; every straw and grass wavering in the wind did too. They had learned to note how the island itself was already doing all the sensing, how the rising sea level indicated a pressure shift across the sea in Denmark, and how, again, the seas were weather, and the air was the sea.

Eventually they even built a glass structure to surround the island - to protect what was inside, the unique living dataset of biodiversity - from what was happening on the outside. The architects and the engineers worked to find the ideal solution for this peculiar plan that was borrowed from some image of a dome covering an island, a

hundred years earlier. This glasshouse became an island on the island, an artificial climate, like one of those on the mainland a long time ago.

What was it that sparked this change, this construction, this idea to create an insulated landscape for weather that was protected while it monitors? What had happened that necessitated turning the whole island into a sensory outpost, standing just outside the city, like a sentinel for weather? What was it protecting itself against then? Was it the war or was it weather or was it both in some peculiar mix that we had to face?

I would like to tell you that story too but that has to wait - we should move on back to the mainland for our next stop so you can experience more islands.

3. Hietalahti

Here we are, at Hietalahti, one of my favourite places in Helsinki. *Why*, you might be asking yourself. *I just see a bay; there are ships docked at the sides, and there are cranes.* It is admittedly not very uniquely scenic. It is not a pretty neighbourhood like Punavuori which is just in the vicinity.

But I will have you know that this is where the city stretches itself with islands, like fingers reaching into the sea. This is where the city wants to become an island and the island a city. This is where the city dismantles and amasses itself as its own environmental system, setting down its own patterns and cycles of hollowing, piling and connecting within to try to distinguish itself from the weather.

We have been to the weather station island. We moved backwards and forwards in history. Now close your eyes and come with me again to see the urban islands. I want you to follow me skywards to look upon Jätkäsaari and Hernesaari. Think of yourself in an invisible elevator, your feet no longer touching the earth. As you ascend, your view climbs higher than the rooftop of the nearby hotel and even of the cranes at the dock. You see the bay widen and stretch out into the sea. But as you go higher, you see the water narrow into a strip, with Jätkäsaari and Hernesaari like long and straight fork prongs on the right and on the left.

Do you see how these islands form the water into a highway to other cities? We could go to Tallinn or St Petersburg. There is a new dock at Hernesaari, where cruise ships carrying over 6000 passengers will take us elsewhere in the world. We could live on translator: no need to translate for obvious reason these islands too. Do you see the new housing areas, the Hyväntoivonpuisto (or the “Good Hope Park”) in Jätkäsaari? One of the neighbourhoods on the islands had once been an international cargo container quay. But the quay gave way when the ships became bigger – this happens about almost every thirty years or so. Once the ships change, the urban islands need to also evolve. As the sea levels rise, these islands also grow bigger and stronger with a new dock that will be constructed at the end.

Stay with me and keep going upwards, until you can see the edges of the holiday islands of Pihlajasaari in the south.

At least a century ago, you would see Jätkäsaari as four separate islands, and Hernesaari and Munkkisaari as small islands off the coast of Helsinki. Jätkäsaari was once known as ‘Busholmen’, a harbour by another name. Its four islands became one when the distance between them and Helsinki were filled up with land. It became Helsinki’s ‘West Harbour’, Helsinki’s largest port and busiest container harbour in the 1960s. Hernesaari and Munkkisaari were also filled and attached to Helsinki. If you look down into and past the water, you will find submarine and power cables, water mains and sewer pipes stretching from Hernesaari to Pihlajasaari.

Now I want you to come up from the sea again and if you keep going higher, you will see the wider expanse of the Helsinki coast, past Vallisaari towards the East. You might be able to see ships carrying blasted rock from Kruunuvuori, or even from Vuosaari harbour fairway further east, where it is being hollowed out to make way for more and larger ships. Can you see how rock from the ships are being taken to Hernesaari, like a transplant, to be grafted on and resettled?

And so the urban islands continuously shrink and lengthen. Today, contaminated rock from the coast and seabed is removed from one part of the Helsinki coastline. The next day, another concrete caisson platform structure is filled to become a new port. Then the port is destroyed, its rubble becoming the ground of new land elsewhere.

I have been watching the urban islands for years and they morph according to cycles that are shorter than the ones of weather which are being counted and mapped from the old weather station. But at some point, the cycles of these environmental systems spill into each other and overlap. I don't know if the seasons of concrete landfilling will extend beyond the rhythmic circulation of the seas eroding the island coasts. Or how fast the ships and ports will grow in comparison to the ways the oceans will warm. Or if the islands would eventually turn into ships themselves, attaching and detaching themselves from one end of the city to another, carrying people across the seas as they go about the daily tasks of their everyday lives: buying groceries and walking the dog.

Let's come back down to the ground and feel the earth beneath your feet again: this land that comes from elsewhere.

I will let you in on a secret about urban islands: its land is transported from another time. You see, the earth of an urban island is the result of a previous operation and the beginning of the next one that has already been plotted and laid out in maps. These maps expand and shrink layers of images stitched together according to what we know and can calculate of the future: *the port that we build will be here in 50 years*, the city says to itself, *then we will clear it for residential purposes. By then, we will have a higher breakwater*. It uses weather data but also draws against it, as a way to stretch the city's boundaries and keep them intact.

But the ground of the urban island is always more than just earth and concrete. It slips away as we speak, into winds and shores. I don't know when the dust will truly settle or where the islands – and the city – begin or end. This is why I like to come here: to watch drama unfold from high above and from below, with no closing act in sight. And as you walk around this bay, imagine as far as you can into the next century or beyond, how these urban islands before you will grow and what they might become.

4. Palm House

Assuming that you are standing before the main entrance to the Kaisaniemi Botanic Garden, walk in, and find your way to the Palm House. It is the largest and oldest part of the Botanic Garden's greenhouses, completed in 1889 on the site of an earlier one. Perhaps you will agree with me that a greenhouse, however elegant, is almost nothing as a building: a giant air-conditioning unit, or a disproportionate accessory to one. Cast iron and glass, a framework, little more: a shell for the air that it has been built around. It is hardly anything, if compared to the contemporary pink and blue granite constructions around the city, and yet, it contains some principles that might help us to understand where we are.

Let me recall a few episodes from the history of this site.

When, during the Second World War, in February 1944, eight bombs fell on the gardens, shattering the glass of the greenhouses, the frost that set in completely destroyed the plant collection. Only one cypress, a *Cupressus sempervirens*, survived. The Santa Cruz water lily (or *Victoria cruziana*) died, but its seeds, lying at the bottom of the frozen marsh pool, were spared, and germinated the next summer, producing a new specimen. Recently, in 2023, a dwarf palm (a *Chamaerops humilis*) was returned to the garden after being rescued and taken to a private home the morning after the bombing, 78 years ago.

The bombing wasn't the first accident in the history of the Botanic Garden. In fact, its very origin can be traced back to one: founded by Professor Elias Tillandz in Turku in 1678, the garden was moved to Kaisaniemi in Helsinki in 1829, after a fire destroyed the original site.

Greenhouses are human-made environments that demonstrate our ability to manipulate nature - but don't they also serve as a reminder of our vulnerability and the limits of our power? Care. Think about the care required to sustain, maintain, and reproduce them. Isn't this the most valuable aspect of such environments? You might think of it as symbolic, but it actually embodies an enduring spirit and commitment to the preservation and protection of our world.

Barely anything, we said, as if the building's ambition was to be invisible: in fact, what makes a greenhouse is mostly a gesture of shielding, which allows something to be built within its boundaries. Its technical function is insulation - the main condition for an atmospheric island to exist.

Think now of the greenhouses of the Botanic Garden as an archipelago: the main Victorian-style glasshouse, with its central dome, several smaller interconnected wings and their interiors, divided into different rooms, each with a specific climate and plant collection. Connected by pathways and bridges, they allow different environments and

plant communities to flourish. Within this archipelago, architecture isolates enclaves from the surrounding elements - but perfectly sealed structures are empirically impossible. Imperfect insulation requires leak management systems, and protocols, including leaving your shoes as you enter a new room, and cleaning from potential pests.

Similar warming systems, ventilation, and air conditioning define the internal environments of our houses and offices, making it possible for us to navigate through the modern world, across hubs and malls. This is our life support system, too: it might give us the illusion of autonomy and control. We have been taking the functioning of the technological and ecological systems which support us for granted; they only deserve our attention now when they fail to perform.

The construction of such buildings is an explicit act of climate fabrication. From the early nineteenth century, greenhouse architects searched for and experimented with the practical conditions for the naturalisation of tropical plants around Europe, for the study, conservation and cultivation of drugs, spices, herbs and other economically relevant species. European glasshouses – and we include even these Northern ones - are experiments in globalisation. These greenhouses are model worlds, as they define the atmospheric variables of insulated milieus.

All around you, sensors monitor environmental parameters and signal when changes occur; actuators receive signals and perform actions, also in the form of mechanical movements. There is a weather station outside the greenhouse, on the roof: the sensors measure temperature, light, and the intensity and direction of the wind. Inside, three sensors measure the temperature of the substrate, and the temperature and moisture of the air. A computer in one of the back rooms could technically steer the interior's climatic conditions autonomously: lights do go on and off, water gets sprinkled from above and locks open on the roof. Watering the plants, though, it's too difficult. The gardeners say that each plant needs a different amount, and they prefer to do it by hand.

To keep the climate simulations going, to keep the model-natures transported from afar into these Northern halls from collapsing, the gardeners perform cyclical routines. They exercise techniques of well-trained perception. They have an eye and a nose for these sorts of things. Some monitoring practices rely fundamentally on technology, but observation, physical engagement and action are often just what is needed. Human skin is more sensitive than moisture sensors: if you want to know how wet the soil is and you put your finger in a pot. Notice the smell of ammonia and you will know when the water in a pond has gone bad. Look at what's sprouting and you can tell the temperature of the soil: if it's a parsnip, it's 21 degrees.

Greenhouses are islands where seasons are fabricated, where the weather is adjusted, and yet they are excellent places to familiarise with our own reality. What keeps our planet warmer than it would be, is after all called greenhouse effect.

If possible, spend some time inside the greenhouse now. Remember what I asked you to do earlier when we stood at the ferry port? Adjust yourself into a sensorial device. Notice how the temperature feels compared to the temperature outside. Can you spot the difference that makes a difference? Observe the sunlight: notice how it passes through the glass walls of the greenhouse and is absorbed by the plants and soil inside. Picture the sun's radiation absorbed by the Earth's surface and then re-radiated as heat, which is then trapped by the greenhouse gases in the atmosphere.

Observe the plants: notice how they grow and thrive in the warm, humid environment. Notice the humming in the background: you are in a fragile, technical condition. Sounds of animals, plants, objects populate a complex ecological system that is constantly evolving and adapting. Is anyone taking up a task right now? Someone with the responsibility of maintaining and sustaining such a system. Look around. If I could, I would thank them.

5. The Lichen Garden

*Raindrops on moss and mushrooms sprouting,
Minerals and metals or carbon or sulphur.*

Let me tell you about some of my favourite things now.

If you are standing outside the Botanical Museum, you may have noticed a seemingly unremarkable pile of coloured stones, and a familiar sight of delicate, ubiquitous growths extending over rocks, tree bark, soil, and shrubs. An unassuming collection of "insignificant others," so to speak, until such organisms become meaningful. This walk is dedicated to them, the lichens.

The lichen garden, one of the first of its kind in the world, was created in the spring of 2016 with lichen collected in Espoo from a forest area about to be cleared for construction, and a large rock from Keskuspuisto donated by the City of Helsinki. From the Kaisaniemi Botanic Garden, the initiators collected some old wooden benches covered with crustose lichen. You can sit on them if you like.

Modest as it may seem, this curious subject is considered by some to be one of the most striking and unexpected discoveries of biological science in the 20th century. Look closely: lichens are beautiful, enigmatic organisms, but *a* lichen is not a single organism. They are the result of a partnership, a mutualistic symbiosis, between a fungus and an alga. The fungi provide shelter for the algae, and the algae provide food for the fungi. Other symbiotic partners like yeasts and specialized bacteria make the details of the lichen's individuality even more intricate. Personally, I am in favour of all kinds of subtle and friendly category transgressions - symbioses of categories, you might say, furtive collaborations as they connect across taxonomic boundaries. After all, it has been working just fine for 250 million years! But this open, interspecies relationship is troubling to some: many scientists are concerned because lichens don't really fit into the hierarchical systems of biological classification. Their alliances span two or three biological kingdoms at once. What a creative mess!

Xanthoria parietina, Parmelia sulcata, Candelariella vitellina. Each variation bears only the name of the fungus - well, if you can tell. Taxonomy - the practice and science of categorizing, classifying, and separating - simply cannot accommodate the merging of separate organisms into a single new one.

If you, like me, sympathize with the messy lives of the lichens around you, you might think each component is entitled to its own classification - but I am afraid this would not sit well with the curators of the lichen collection.

Imagine: not only the annotations, but also the files in which they are stored would begin to multiply. The simple but influential cabinet architecture of the herbarium, invented by the Swedish naturalist Linnaeus, would lose its meaning and its logic would be shattered. The cabinet, after all, was supposed to hold everything together: for each

genetic variation within a species, there could be one and only one file. Synonymy and redundancy - duplicates - evoke the botanist's worst fears and anxieties. It's no surprise that Linnaeus himself dubbed lichens "rustici pauperrimi" of vegetation, the "poor trash" of vegetation'. How silly of him!

Such ambiguity, and the difficulty of fitting in, however, apply to all visible organisms: following evolutionary biologist Lynn Margulis, we have all formed alliances along the way and evolved from symbiotic associations. Like lichens, we have never been individuals; we are all composites.

Think for a moment of the fragility of our identities, our own interdependence with non-human beings, from the microscopic to the planetary. Think of your individual body as collective, in relationship with other species and elements — not only viruses and bacteria, but also the inexhaustible landscapes inside and outside us all. Lichens have no roots: they don't draw their nutrients from the soil or their substrates. They absorb and capture gasses and particles from the air while contributing to making and remaking the atmosphere. Some species disappear if pollution reaches specific levels. Fruticose lichens, with branched structures well above the surface, are more susceptible to sulphur dioxide damage than foliose lichens, whose leaflike thallus lies nearly flat on surface. Both in turn are more susceptible than crustose lichens, which embed their tissue in the cracks of bark, soil, and rocks. If, while walking around the city, you could keep an eye out for any of these, your mental map of lichens distribution would indicate air quality too.

Finnish botanist Wilhem Nylander was the first to realize in the 19th century the effect of atmospheric pollution on the growth of lichens. He called them "hygiometers", literally instruments for measuring the quality of the air.

Nylander collected lichens in the Kaisaniemi Botanic Garden too. There, he found a specimen of *Lobaria pulmonaria*, a species that requires old-growth forests to develop, and which would be impossible to find today. It now lies in a paper envelope in the prominent lichen collection of the Botanical Museum.

Instead, surrounding you, are shrub- and leaf-like macrolichens, and many crustose, some of which have not yet been identified. The garden is a pilot study for lichen transplantation: the specimen grew on rocks, wood and other surfaces from the beginning and were brought into the garden with their growing substrates. Only lichens from areas similar to the garden in terms of light, humidity and pollution were collected. The composition somehow reflects the presence of lichens in the city of Helsinki, except that it doesn't include species that are known to be very sensitive to air pollution: their life expectancy might be too short for the effort. However, some may still respond to environmental parameters too complex for us to understand.

The *Cladonia* carpets are among the easiest to recognize and track: a genus of moss-like lichens. The main food source for reindeer and a bitter poison to humans, they are also a bioindicator of precipitation chemicals.

Consider your body akin to a lichen, permeable to the environment in surprising and disturbing ways. Pinch the skin on your hand and stretch it: there is no hard border at which an organism begins, and the environment ends. Like lichens, our bodies can serve as unconscious sensors of the environment, as leaky containers of chemical information, which can be measured by expert observers.

Outside of our own self-centered worlds, our bodily experience of the environment exceeds our senses: just by being exposed to detectable substances, we can provide measures to the gaze of others. Specific chemicals are present in our fluids and tissues, as are the products of their chemical conversions, and the *effects* of exposure.

We - you and I - are immersed in a complex ecosystem, in the interplay between organic and inorganic forms of perception. These perceptions can happen below and above our human thresholds of sensation. Our experiences are objectified. Digital sensors convert continuous waves into discrete codes, opposing numbers to qualities and information to sensation. We become an integral part of a broader infrastructure of environmental knowledge.

6. Kuva / Hanasaari

Are you standing at the entrance of KUVA, at the University of Arts?

Good.

Behind you they train for the visual arts, the arts which turn noticing into images and other expressions. Now look across the road, over the overhead bridge. I would like you to meet an old friend of the city, one which has seen the city grow bigger over the last few centuries. An old friend which was an integral part of the city: in the air, in our corridors, in our roads.

Can you see it? It is the black large looming mountain, but you might be more familiar with its other forms: the caustic smell of burnt material, the warmth that you experience when you are in a building. It only makes itself known when it is gathered in a pile. But even then, it usually sits in the background as part of the landscape.

The pile is the city's shadow. I bet you don't even notice it if you ever drive past the university. Sometimes the pile is bigger and sometimes it is smaller. You see, its size changes according to the seasons. In the winter, it tends to shed more of itself, and it grows when the cargo ships come in. But now something has changed.

The furnaces in the power station are no longer working.

But you can still sense it.

Imagine that you are coal. You are older than countries and cities; you don't know where you end and where you begin. You were the remains of plants which coagulated before everything around you became very hot and intense. You felt immense pressure for untold years. Liquid burned off and you became part of the earth.

But all of a sudden, something breaks in you; you are shaken. You fall apart and you become a rock – a clump of edges. You feel yourself moving horizontally but you are still sitting still. Other clumps are ahead and behind you. You are brought together and you are moving once again as a pile in the hold of a cargo ship. The ship stops and you feel some part of you disappear onto the dock. But that is not your final destination. The ship moves again and you are pushed out of the ship onto the dock of Hanasaari power plant.

Imagine that you are a coal particle. You dislodge and drift off from the rest of yourself when the winds run through central Helsinki or when the sea breezes float onto shore. You are as big as a grain of sand or a minuscule piece of dust. When you ignite and combust, you excite in oxygen and give off heat. You become gas which turns lichens into another color. You suspend in the air, floating and hanging with the other particulate matter. No one can see you. But you are everywhere.

You weren't supposed to leave the city this soon but it has been a long time coming. For decades, you invaded and pervaded the air. Your gases turned the rain into an acid wash, leaving behind streaks of discoloration and disintegration. Artists were so fascinated with you so much that they painted you. The Impressionist painter Claude Monet immortalized you in skies of densely hazy glow. He saw smog as muted sheen.

Take a deep breath.

Do you still smell smoke?

These days...you know how this story will end...After all, what do you see here? An empty power station, which one day, could be Helsinki's next art institution, a monument to coal and our fossil fuel past.

How do we measure coal's presence or its absence? You could take out an air quality indicator to see if the air is clear of particulate matter. You could take down the dimensions of the coal pile and calculate how many people we could fit in its space – at full capacity for five floors, at the very least. Or you could count the number of people and hours to mine the coal, negotiate for its supply and the amount of fuel consumed to transport it here into the city. *Or* you can tell a story in the way that you had just imagined and map all the ways and places coal has gone and goes to.

The city is not completely done with coal yet. But it wants to continue its own story elsewhere – from a looming black mountain to an empty dock to... *sudden excitement* islands! They say we will store heat in pools of water in floating islands with covered domes. These islands will be hot water reservoirs with offshore hothouses or greenhouses, just like what you see in Kaisaniemi. Once upon a time, the hothouses kept plants sheltered from the coal-streaked skies. Now we will drift them towards a carbon-free horizon.

But let's keep moving even further ahead, shall we. Will we – and our animal and plant life – still need heat in the way that we currently live? Will water be our fuel or will we discover another dormant substance like coal was once for us? Perhaps we might find the substance from the depths of the sea. It might be an unknown species of plankton which has evolved under pressure with the toxic substances and microplastics in our waters. Or, perhaps it will be harnessed by unlocking another stubborn equation with supercomputers that are the size of a thumbnail. We might also extract something in the atmosphere which is currently not in our periodic table of elements. Instead of producing energy through combustion, the new substance could be implosive. It might not leave any residue or waste.

If there is one thing that we know for certain, we will need to produce *more* energy for all this to be accomplished!

Take a deep breath.

Stand still.

If you listen closely to the winds, you will hear them whisper, carrying coal dust in their trails: *no one can see you. But you are everywhere.*

Once before, we could visualize the air through coal's voluminous presence. As the skies seem to clear in our eyes, we can still trace the contours of the winds and the invisible edges of our atmosphere by following coal's smallest forms which escape our shells of shielding or insulation. Coal lingers on even as the city attempts to bid it adieu. It is the city's ghostwriter that cannot be contained and told where to go.

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