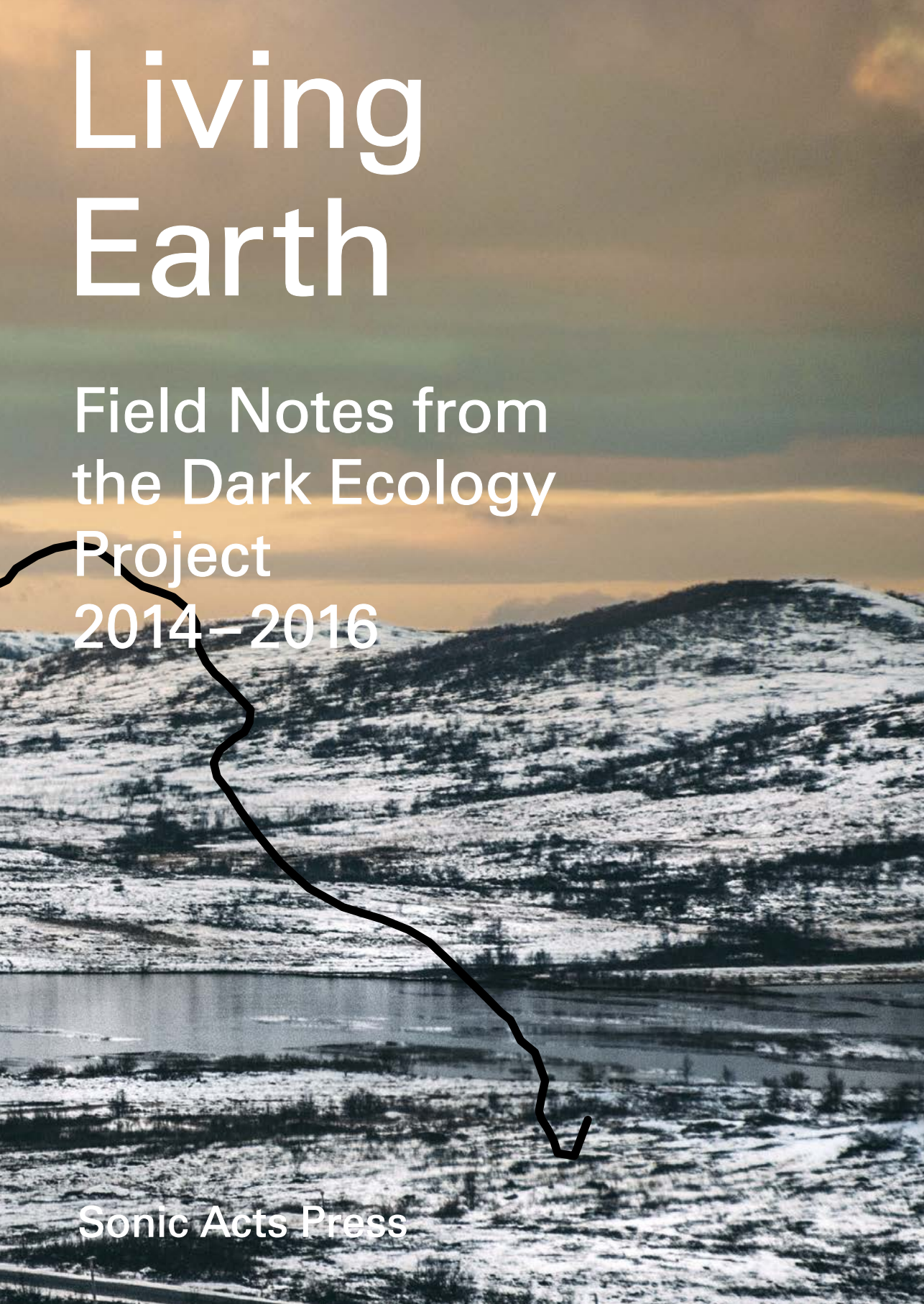
Living Earth

Field Notes from the Dark Ecology Project 2014–2016



Sonic Acts Press

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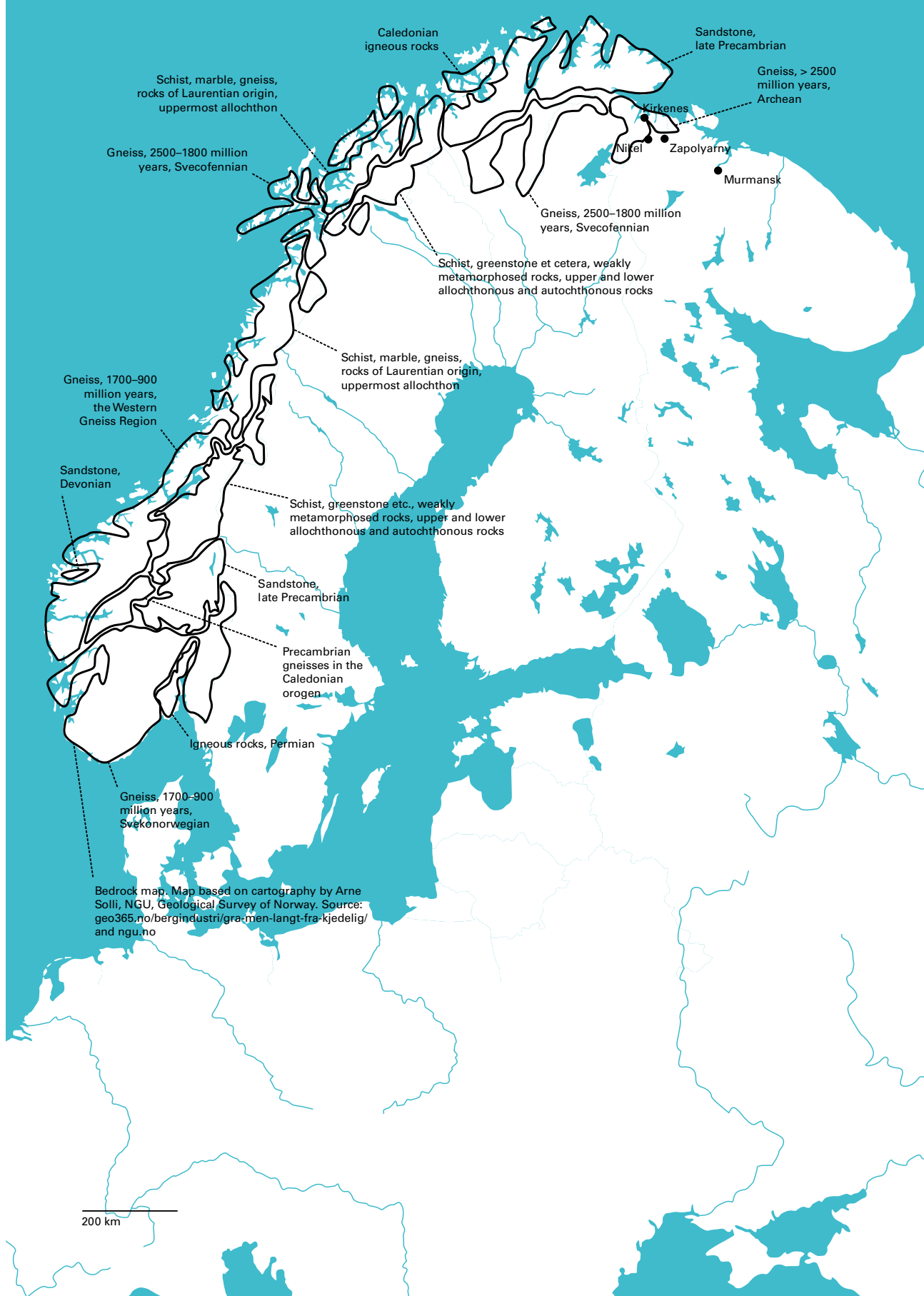
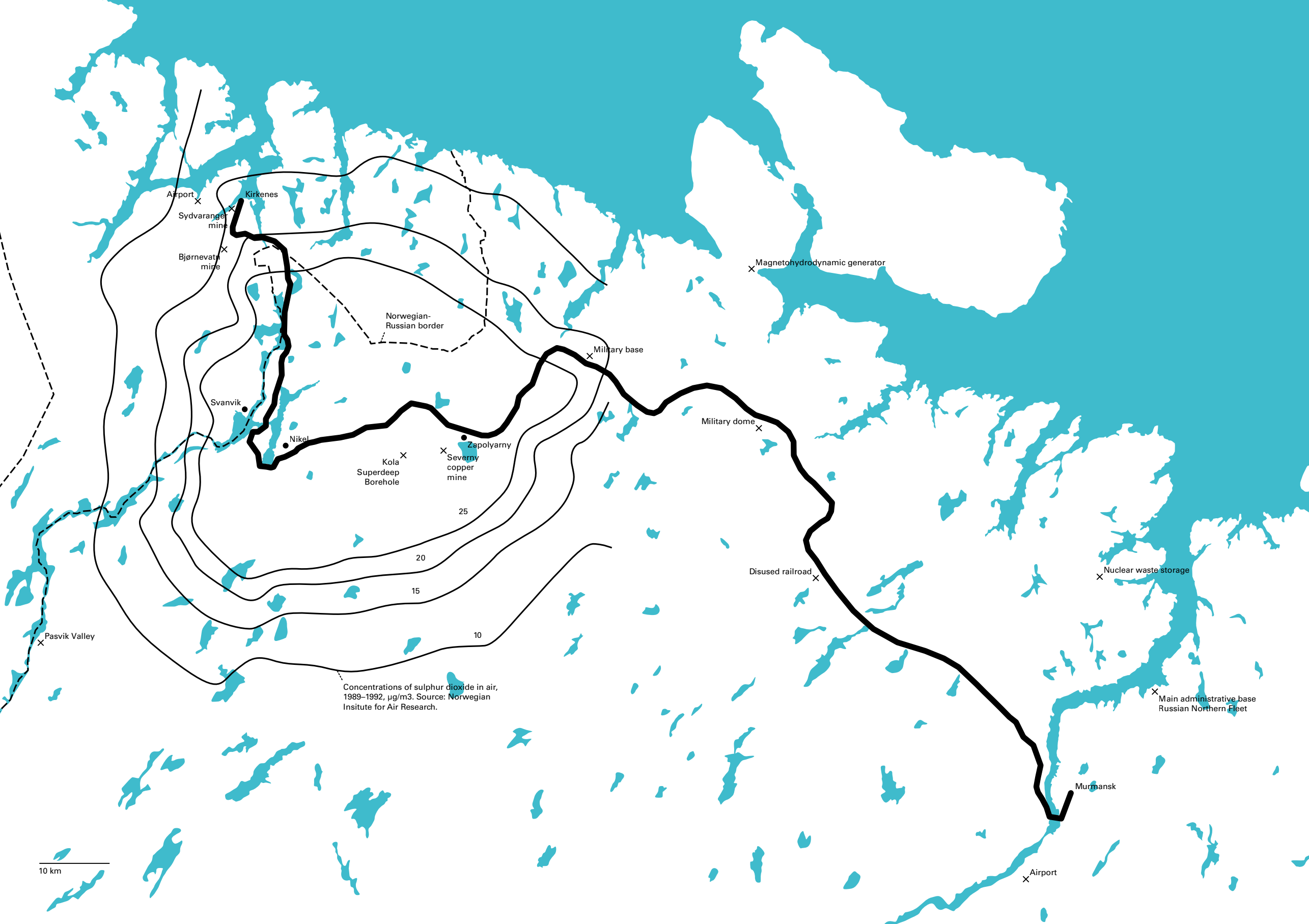



Airport
Kirkenes
Sydvaranger mine
Bjørnevatn mine
Norwegian-Russian border
Svanvik
Nikel
Zapolyarny
Kola Superdeep Borehole
Severny copper mine
25
20
15
10
Pasvik Valley
Concentrations of sulphur dioxide in air, 1989–1992, µg/m3. Source: Norwegian Insitute for Air Research.
10 km
Magnetohydrodynamic generator
Military base
Military dome
Disused railroad
Nuclear waste storage
Main administrative base Russian Northern Fleet
Murmansk
Airport

Dark Ecology — Outside the Comfort Zone

Interview with Arie Altena Gideon Kiers Hilde Methi Lucas van der Velden Annette Wolfsberger

by Mirna Belina

This is the transcript of an interview with the curators and organisers of the Dark Ecology project: Arie Altena (AA), Gideon Kiers (GK), Hilde Methi (HM), Lucas van der Velden (LV) and Annette Wolfsberger (AW). All of them answered the same questions; most of them did so separately. The answers were compiled into the following text through a collaborative editing process.

MB What is Dark Ecology? Could you explain both the term and the project?
LV Dark Ecology brings together a set of ideas and ingredients that accumulated over the years in our own projects with Sonic Acts and the personal interests of the people involved. With Sonic Acts we've always been investigating research-driven and experience-based art, as well as interdisciplinary and experimental forms of art and their connections with science and philosophy. We've been investigating new forms of presentation, and new infrastructures to create new experiences, both intellectual and physical. We've done a lot of location-specific projects over the years, mostly indoors. With Dark Ecology we invite artists to go outdoors and investigate the natural and industrial landscape and create site-specific works for these environments. The project also brought more urgency to our activities. The nature of the project forces us to interact and engage in a more direct way with the world, because of its theoretical implications and the geographic and social and political challenges. Dark Ecology functions first and foremost as a catalyst for research, ideas, the development of new artworks, setting an agenda, and connecting artists with theorists and scientists. We foster an artist-driven approach to the discussion around the Anthropocene by organising residencies and commissions and by providing artists with an academic and theoretical framework.
AA We borrowed the term 'dark ecology' from Timothy Morton. What I find interesting about this concept is that it is so outspoken in stating that we need to think ecology without the ideal notion of Nature with a capital N. Ecology is about connections, it's a mesh (and a mess). It isn't about going back to some originally pure natural state. It does not conceive of the world as an environment that human beings are 'in'. Various interconnected actors, both human and nonhuman, are caught up together in a process of world-making. Dark ecology takes this interconnectedness seriously, and thinks it through. In the modern view, nature is a background on which the history of human culture unfolds. In a non-modern view (to use the Latourian term) these strict divides — which have characterised the modern worldview — do not exist. Also, dark ecology takes as its point of departure that the 'apocalypse' (namely the devastation of our planet, and our human civilization through human-induced climate change) has already happened. If we accept this, it means we can grieve, and go on. That's an interesting proposal for art. It's about finding new ways to connect.
HM I would say Dark Ecology is a collaborative curatorial effort that takes time to dig deep into the Earth's crust, and make things speak. It is about forming a microcosmos and a community of thinkers and doers who care for a shared planetary space, a micro-reality that can spread and infiltrate into other realities, and ways of thinking about and being in the world. Dark Ecology is about seeing, listening, acting and reflecting art and theory.

MB How did it start and why?
AW It started in 2012 with Per Platou from PNEK introducing Sonic Acts to Hilde Methi after we visited Kirkenes and the factories in Nikel. Coincidentally, it turned out that Arie had been interested in that area for a long time, and knew quite a bit about the Barents Region.
AA The project took shape during our first visit to the Barents Region in May 2012. We were standing in the black snow at the edge of the road above Nikel, looking down on the town and the smelter with its pipes belching coloured smoke. (It is the 'official photo spot' where tourists stop — but we didn't know this.) We were amazed by the industrial landscape, the heavy industry and the pollution in the middle of the beautiful nature of the Pasvik Valley. I'd been reading Timothy Morton's books *Ecology without Nature* (2007) and *The Ecological Thought* (2010), and I thought: 'Eat your heart out, Timothy Morton, *this* is dark ecology!' So how to deal with this? A lot of intimate connections that we have (with pollution, with metals, with industry, with nature) and which are pretty much hidden in our 'smart' Western cities are very much in your face there. It's immediately clear there is no such thing as a nice, smart, clean, green solution to all

Top–Area close to Kirkenes Airport, Høybuktmoen. Photo by Konstantin Guz, 2014. Middle–Sydvaranger mine, Kirkenes. Photo by Marijn de Jong, 2014. Bottom–Kirkenes harbour. Photo by Konstantin Guz, 2014.

our problems (and certainly not a smart technological solution). It's complex. It's messy. Black snow exists — it's not a rare thing.

LV Dark Ecology started because several strands we'd been working on fell into place. With Sonic Acts we'd been investigating Speculative Realism and Object-Oriented Ontology as part of our Dark Matter research, and we wanted to do something with Timothy Morton and others in this area of theory and philosophy. But until we visited Kirkenes and Nikel we hadn't found the right context for it.

HM I liked Sonic Acts' curatorial work and through conversations and mutual visits since 2012 we developed a basis for working together here in the North. There was a mutual interest in developing our experience in curating and producing site-responsive artworks. This specific Northern region on the border between Norway and Russia — a periphery with a small population and few or no infrastructures for art — invites artistic works and interventions outdoors or in unusual spaces that are not the ordinary black box or white cube. For me it has been important that the commissioned and produced artworks are shown *in* the area rather than having the area exported as material in works presented elsewhere, in very different contexts. The commissions are different from what has been shown here before — and that is where Sonic Acts has been a great partner, with its background in interdisciplinary arts, science and technology, and its networks.

AW It also provided a great opportunity to work outside the white cube and present, produce and negotiate artistic ideas in this area. For Sonic Acts, it has created an opportunity to expand and test its ideas in a new territory and in a new collaboration with the experience of having curated a festival abroad (the Kontraste Festival in Austria from 2011 to 2013).

MB What did each of you hope to expand or explore with Dark Ecology?

AA For me Dark Ecology meant I could 'activate' within Sonic Acts an interest that I had pursued in, for instance, Science and Technology Studies, Actor-Network Theory, Object-Oriented Ontology, and political theory. Bruno Latour's work was very inspiring, and it certainly changed a lot of my ideas. This interest was always somewhere in the background of

what I was doing with Sonic Acts, never in the foreground. In this project the challenge of reformulating what nature is, how we relate to the world, what ecology is, and what type of ecological thinking we need in the face of climate change, and the devastation of the Earth through neoliberal capitalism, became more central. These issues have been absorbed into the Anthropocene debate, which has put climate change on the map for art, and where interestingly it's the humanities and the arts that are most articulate in bringing forward this idea of living in a new geological age. The question is also: how do we adapt (as humans, psychologically) to 'living after the apocalypse' so to say, or living in the Anthropocene. When I reread Latour's *Politics of Nature* (2004) after reading Morton, I found that a lot of Morton's ideas of an 'ecology without Nature' that were so vivid in my head, were also formulated, in a slightly different way, by Latour.

LV The current situation in the world — the scientification and financialisation of everything, the geopolitical and ecological crises, and the impact human activity has on the entire planet — throws very big questions at us as individual actors and in many ways leaves us completely in the 'dark'. With this project we want to make these huge abstractions more tangible, physical and experience-based. In many ways the Barents Region is a place where the complexity of the 'now' is very real and can be experienced first-hand, as it is part of this complex multi-layered system of geopolitics, resource extraction, Arctic nature, industry, and indigenous, European and Russian cultures. So for me Dark Ecology is very much about the 'now' and how we can present experimental art and forward-thinking theory in such a context and maybe come up with some new approaches to it.

MB How does working in a border zone influence the project?

GK Growing up in Europe in a period when a common goal seemed to be to become 'borderless' — with a free flow of people, goods, services, culture and ideas across former divides — the present resurrection of borders throughout Europe and between Europe and its neighbouring countries is a very physical sign of the times. We seem to have entered a time of fear, and bells of much darker times that were not so long ago can be heard ringing all across Europe again.

Top left–Panorama of Nikel. Photo by Nicky Assmann, 2015. Top right–Tree on a hill close to the Norilsk Nickel processing plant. Photo by Lucas van der Velden, 2012. Middle–Panorama of Nikel. Photo by Marijn de Jong, 2014. Bottom–Dark Ecology participants arriving by bus at the main square in Nikel. Photo by Konstantin Guz, 2014.

Antenna between Nikel and Zapolyarny, Russia.
Photo by Annette Wolfsberger, 2012.

Top–On the road between Nikel and Murmansk. Photo by Lucas van der Velden, 2015. Middle–Propeller graveyard in Murmansk harbour. Photo by Rosa Menkman, 2015. Bottom–Panorama of Murmansk from the feet of the Alyosha, a 35.5-metre-high statue overlooking the city. Its full name is 'Monument of the Defenders of the Soviet Arctic during the Great Patriotic War'. Photo by Rosa Menkman, 2015.

This makes these regions a particularly difficult terrain to navigate, also in a spiritual sense. There's a strong urgency to act defiantly while at the same time it is vital for the success of this project and the wellbeing of the travelling party to remain respectful at all times. This is a delicate balance that sometimes seems impossible to maintain.

LV In a way Dark Ecology is also an attempt at 'unbordering'. Making and doing on a very small and personal level (not a political or bureaucratic level), using the region as a reflection device for testing new approaches and ideas to understand the world in a different way.

HM Making this border zone into a temporary space for artistic intervention is in my view more important than talking about the border or provoking the border regimes. It's about being present and about insisting on the ability of art to direct our senses, make us listen and see. The 'activism' of Dark Ecology is to expose and cultivate the poetical, to stimulate reflection and conversations in, and from, this highly political territory.

MB Dark Ecology experiments with the 'festival' format. For one, it involves 'curating the audience'. Could you share some ideas about the concept of 'the Dark Ecology Journey'?

GK Indeed, we carefully handpick a group of about 50 people for these Journeys. Roughly two thirds consists of people we invite ourselves: artists who are presenting a new work or who come along to think about and work on a new piece, keynote speakers, our Sonic Acts team, the production crew, a documentation crew, and so on. The remaining one third is selected from a list of applicants who respond to our open call. Some are curators, some are artists, some are academics, some are scientists, some are activists, and some are organisers. These people are the only ones who experience the entire Journey. Most of the events we programme along the way are open to the local public as well. Although not necessarily conceived as such, it is my experience that our bright red and yellow tour bus and its very peculiar load are often as much a spectacle for the local audience as the artworks and performances that are presented, usually for the duration of the visit only. It is therefore not entirely clear to me who the audience actually is. But in terms of people experiencing the Journey in its

entirety, I'd say the audience is the travelling party. And in that sense I think it's almost the perfect festival; as organisers we get to create a 120-hour experience from which the audience is unable to escape.
AW I think that 'being there' acts as a multiplying factor for the participants; it makes one more vulnerable, more perceptive, opens up one's thinking... Travelling as a group makes it possible to create a temporary 'safe' zone for an intense exchange and discussion triggered by the environment and even more by the works and interventions. In my conversation with Alicia Cohen during the first Journey, I called this 'curating intimacy'. Because of this intimacy it is especially important to be precise and accurate in what you present and how you do it. At times, the project feels like a luxury. Not in a 'package-deal-Hurtigruten way' but in the sense that it creates and ring fences time and space for experiencing, thinking and discussion. It confronts and exposes both the local and nonlocal public with art and ideas that fall outside their comfort zone, and therefore it creates a much more intense experience than a normal festival setting 'at home' could ever provide. Due to its size, length, location, et cetera, the Journeys invite experimentation with format and content. I wouldn't even call it a festival. Dark Ecology is about curating the experience of the audience, and is about mediation. The other challenge is not to become too speculative, especially in 'discovering' the region, its venues and its obvious extremes. It requires going beyond impressive factories, mines and towering smokestacks, beyond visible pollution, and it's about discovering more layers of reality. The area and our topic can easily turn into a cultural 'dark tourism project', and that is definitely not what we want.
HM It's an insider-outsider perspective that we discuss constantly. It's about being in dialogue and listening to 'the local' while not compromising our curatorial ideas — maybe a 'detour in the local'. Most of the elements of each Dark Ecology Journey were public, but indeed 'curating an audience' is also what we do. In that case, the audience is the participants and the participants are the audience. The format is a hybrid; it could serve as a proposition for a research-driven format for art that can work at the periphery (both geographically and artistically) and in a local setting, and also in larger artistic contexts. From a curatorial perspective I think that experimenting and working in more peripheral settings is *per se* about inventing new formats.
LV We don't present Dark Ecology as a festival, but you're correct, it is in many ways an experimental festival format. We have of course a long background in curating festivals in the Netherlands, and also with the Kontraste Festival in Austria. With Sonic Acts we have always tried to approach the 'festival format' as an experimental system. From very early on our own discussions about the festival were in terms of a 'journey' and a 'curated experience'. So for us the Dark Ecology project fits in with this line of format experiments. For most people our festivals in Amsterdam are about the actual event, and we see the same thing happen with the Dark Ecology Journey. But I think the residencies, the commissions and the research before, during and after, are equally important. This is especially the case with Dark Ecology, and with the longer running collaborations and exchanges that originate in these 'festivals'.

MB Could you talk about challenges of organising such a project?
AW There are many; it is a challenging project. Acknowledging differences and overcoming borders in all senses: cultural, linguistic, social, geopolitical, economic, ecological, and artistic; time restraints; dealing with translating and negotiating 'the other'. There are many dichotomies to deal with: outside versus inside, visitor versus local, West versus East, to name a few.
HM I think working with Dark Ecology has made it more clear to me that the relationship between curation and production is blurred when working within a complicated reality without the 'protection' of a physical space. I enjoy seeing how landscapes, surroundings and sometimes even bureaucratic issues are negotiated and taken up in an artwork. Together with the encounters between the audiences, the participants, the lectures, the in-between moments, the practicalities — all these become an organic mix where everything filters into everything else as if there were no clear endings or beginnings.
AW I embrace this — indeed the Journey is a 'Gesamtkunstwerk'.
GK As Hilde points out, the 'trap' of doing these logistically complex projects is that the effort of overcoming those challenges somehow becomes the experience of the Journey itself. I think our real challenge is to enable ourselves as organisers as well as our fellow travellers to move beyond

Panorama of Murmansk and its harbour, taken from the hill overlooking the city. Photo by Telcosystems, 2015.

these obvious challenges, in order to provide enough space to experience, concentrate and communicate on levels that are necessary for this project to be worth the effort.

MB What was the most interesting aspect of Dark Ecology?
AW Seeing what this project has triggered in artists and thinkers and how this was and is mediated through residencies, journeys, experts and various (international) spin-offs. And also how it contributed to and influenced the scene of local cultural actors.
GK Although I've experienced a Russian version of reality before by travelling in and around Saint Petersburg and Moscow quite a few times, it took these Journeys to make me realise, almost on a physical level, how fundamentally different reality can be for people who actually live only a few kilometres away from each other. No documentary or book can prepare you for the actual experience. It's like stepping through a mirror into an alternate reality. The past three editions have, in a way, mostly been spent on establishing a 'ground base', paving the way for what will hopefully become a permanent portal, through which journeys by entities from the other reality will become just as feasible.
AA It is also very interesting to see how much the situation has changed in just three or four years. When we started the project the predominant discourse — which was driving the economic activities — was about how much more important this area would become, economically and geopolitically. The feeling was that this remote area, which is mostly hidden from the scrutiny of the mass media, was set to become even more important with continuing global warming. It's been way too warm up there for a long time already, so the idea that climate change is happening is old news. It has been fuelling economic speculation for many years. So still in 2012 the thinking was that soon it would be financially feasible to exploit even more oil and gas fields in the Barents Sea. The Northeast Passage would become vital for global trade. Kirkenes would be an important harbour — they were already working on a new one. Investors were advised to put their money into the Arctic, as it was the future. (Well, that last bit hasn't changed, maybe. And Russia is again planning to invest a lot in Arctic projects). At the end of 2015 the iron ore mine and processing plant in Kirkenes were declared bankrupt, and most of the working

population faced immediate unemployment. The majority of the envisioned new oil and gas exploitation in the Barents Sea have been put on hold or postponed for at least several years because oil prices are too low. The Northeast Passage was used less in 2015 than in the years before. Trade with Russia — the second source of income for Kirkenes — declined dramatically due to the economic sanctions. And in the summer of 2015 Kirkenes became one of the entry points to the West for refugees from Syria and elsewhere. All of this was not completely unexpected (and not all of it is negative), yet the speed with which this transformation happened was surprising.

MB What are your best memories of Dark Ecology?
GK From the perspective of a participant, a fellow traveller and artist, the best experiences I had were when I was able to escape the mediated group experience. Lucas and I deliberately intended to use this project not only to further the agenda of the Sonic Acts platform, but also to explore new territories for our own artistic endeavours. Each time we went we tried to stay a few days longer, or organise time so that we could go out and harvest audiovisual material for our projects as Telcosystems. Those moments, out there by ourselves in the middle of nowhere, on our own adventure, have had the most enduring impact. Coming from an artistic practice that for most of the past fifteen years has mostly taken place inside machines, inside coded virtual spaces, this engagement with the very real has opened up a fundamental new approach to thinking about our own work, which we've only just begun to understand. And of course these private journeys are embedded in the larger Journey project. We could never have escaped if there was nothing to escape from. In that sense the group journey also creates the possibility of an escape, as well as a safe space to return to. And I think this approach is vital for my own curatorial practice. Sonic Acts is in essence a festival that is curated by artists for fellow artists, by creators for other creators. In order to understand what it is that we're good at as a group of organisers, what it is that we're trying to do, I also need to experience our own projects from the perspective of a participant, or as a visitor.
HM It's great to watch artistic works unfolding, to learn and exchange, to see that people are enjoying the exploration and are fuelled with energy despite the intensity.

AW It's the collaborative curatorial and producing experience; learning from a great bunch of collaborators and participants, and having deep conversations and experiences that I feel would happen nowhere else. It's about finding out that what we prepared in a laborious collaborative effort really does work throughout the Journey. It's about creating shifts and leaving traces. If I had to recall some special moments: Signing a contract for the building of an outdoor screen in a garage with a carpenter (and one of Murmansk Region's best beatboxers). Dancing with the police mayor of Zapolyarny until the early hours in the Pechenga Hotel. The concert in Nikel School with Franz Pomassl creating violent sounds, strobing youngsters who refused to go home and small kids chasing each other through the sports hall tanked up on soft drinks and eclectic sounds. The trip from the border to Murmansk when we listened to a careful selection of podcasts. Stopping off in Titovka to pick up fresh apple pirogs. Setting up our production unit anywhere. Being covered in reindeer skins and drinking tea while phoning about permissions and waiting to set up the *lavuu* (a Sami tent) for a soundwalk. Exploring sites with artists and the team. Dreaming up wild plans and developing seemingly impossible ideas together.

What Is Dark Ecology?

Timothy Morton

In this essay, which draws on his book *Dark Ecology, For a Logic of Coexistence*, Timothy Morton — who originally coined the term dark ecology — explains what dark ecology is. He also argues how agrilogistics underpins our ecological crisis and our view of the world.

Lighten up: dark ecology does not mean heavy or bleak; it is strangely light.

> Progress means: humanity emerges from its spellbound state no longer under the spell of progress as well, itself nature, by becoming aware of its own indigenousness to nature and by halting the mastery over nature through which nature continues its mastery. — Theodor Adorno

> Dark is dangerous. You can't see anything in the dark, you're afraid. Don't move, you might fall. Most of all, don't go into the forest. And so we have internalized this horror of the dark. — Hélène Cixous

The ecological era we find ourselves in — whether we like it or not, and whether we recognise it or not — makes necessary a searching revaluation of philosophy, politics and art. The very idea of being 'in' an era is in question. We are 'in' the Anthropocene, but that era is also 'in' a moment of far longer duration.

What is the present? How can it be thought? What is presence? Ecological awareness forces us to think and feel at multiple scales, scales that disorient normative concepts such as 'present', 'life', 'human', 'nature', 'thing', 'thought' and 'logic'. I shall argue there are layers of attunement to ecological reality more accurate than what is habitual in the media, in the academy and in society at large.

These attunement structures are necessarily *weird*, a precise term that we shall explore in depth. Weirdness involves the hermeneutical knowingness belonging to the practices that the Humanities maintain. The attunement, which I call *ecognosis*, implies a practical yet highly non-standard vision of what ecological politics could be. In part ecognosis involves realising that nonhumans are installed at profound levels of the human — not just biologically and socially but in the very structure of thought and logic.

Coexisting with these nonhumans is ecological thought, art, ethics and politics.

We can trace the ecological crisis to a logistical 'programme' that has been running unquestioned since the Neolithic. Ecological reality requires an awareness that at first has the characteristics of tragic melancholy and negativity, concerning coexisting inextricably with a host of entities that surround and penetrate us; but which evolves paradoxically into an anarchic, comedic sense of coexistence. Ecological awareness has the form of a loop. In this loop we become aware of ourselves as a species — a task far more difficult than it superficially appears. We also grow familiar with a logistics of human social, psychic and philosophical space, a twelve-thousand-year set of procedures that resulted in the very global warming that it was designed to fend off. The logistics represses a paradoxical realm of human–nonhuman relations. The realm contains trickster-like beings that have a loop form, which is why ecological phenomena and awareness have a loop form. The growing familiarity with this state of affairs is a manifestation of dark ecology. Dark ecology begins in darkness as depression. It traverses darkness as ontological mystery. It ends as dark sweetness.

I

The Arctic Russian town of Nikel looks horrifying at first, like something out of Tarkovsky's *Stalker*, only on bad acid. A forest devastated by a nickel smelting factory. Soviet buildings stark and bleak. Mounds of garbage sitting on hills of slag. A solitary tree, last of the pines destroyed by the sulphur dioxide. We were a small group of musicians, artists and writers. We had travelled there in late 2014 to start a three-year art and research project called Dark Ecology.

Then Nikel becomes rather sad and melancholic. A collection of broken things. Past things. Garages repurposed as homes. Broken metal structures in which people are living. Holding on to things for no reason. Peeling paint tells stories of decisions and indecisions and non-decisions.

And then for some strange reason it becomes warm. There is a Palace of Culture, full of wonderful kitschy communist art, Terry Gilliam sculpture-like lampshades, hauntingly luminous pale blues, pinks and yellows, the building grooving as hard as a Tibetan stupa. And on the

outskirts the reality of death is so explicit. It's a charnel ground almost identical to the one on Mount Kailash, another very friendly place where offerings (or are they huge piles of garbage?) litter the space at the top and nuns meditate in a land strewn with bits of corpses like an emergency room. People are dying, or are they going to live, or are they already dead? There is a lot of blood, severing and severed limbs. A lot of care.

It's even a little bit funny. A drag queen poses for a photographer outside a metallic building. Some kind of joy is here. The demons and ghosts aren't demons or ghosts. They are faeries and sprites.

II

What is dark ecology?[1] It is ecological awareness, dark-depressing. Yet ecological awareness is also dark-uncanny. And strangely it is dark-sweet. Nihilism is always number one in the charts these days. We usually don't get past the first darkness, and that's if we even care.

What thinks dark ecology? *Ecognosis*, a riddle. Ecognosis is like knowing, but more like letting-be-known. It is something like coexisting. It is like becoming accustomed to something strange, yet it is also becoming accustomed to strangeness that doesn't become less strange through acclimation. Ecognosis is like a knowing that knows itself. Knowing in a loop; a *weird* knowing. *Weird* from the Old Norse, *urth*, meaning twisted, *in a loop*.[2] The Norns entwine the web of fate with itself; Urðr is one of the Norns.[3] The term *weird* can mean *causal:* the spool of fate is winding. The less well-known noun *weird* means *destiny* or *magical power*, and by extension the wielders of that power, the Fates or Norns.[4] In this sense *weird* is connected with *worth*, not the noun but the verb, which has to do with *happening* or *becoming*.[5]

Weird: a turn or twist or loop, a turn of events. The milk turned sour. She had a funny turn. That weather was a strange turn-up for the book. Yet *weird* can also mean *strange of appearance*.[6] That storm cloud looks so weird. She is acting weird. The milk smells weird. Global weirding.

In the term *weird* there flickers a dark pathway between causality and the aesthetic dimension, between doing and appearing, a pathway that dominant Western philosophy has blocked and suppressed. Now the thing about seeming

1. In 2013, Paul Kingsnorth published an essay called 'Dark Ecology: Searching for Truth in a Post-Green World' in *Orion* magazine (January–February 2013). *Dark ecology* is a term I coined in 2004 and wrote about in *Ecology without Nature* (2007).

2. *Oxford English Dictionary*, 'weird', adj. http://www.oed.com.
3. S.N. Hagen, 'On Nornir 'Fates', *Modern Language Notes*, vol. 39, no. 8 (December 1924), pp. 466–69.
4. *Oxford English Dictionary*, 'weird', n. 1.a., 1.b., 2.a. oed.com.
5. *Oxford English Dictionary*, 'worth', v. oed.com.
6. *Oxford English Dictionary*, 'weird', adj. 1, 2.a., 3, oed.com.

Top–Main square in Nikel. Photo by Rosa Menkman, 2015. Middle left–A bear monument in Nikel. Photo by Annette Wolfsberger, 2015. Middle right–A whale bone on top of the hill overlooking Nikel. The bone was left there when the nearby museum closed down. Photo by Rosa Menkman, 2015. Bottom–Wrecked car on the roof of a row of garages on the top of the hill in Nikel, next to the smelter plant. Photo by Rosa Menkman, 2015.

Top–Central square in Nikel, Russia. Statue of Lenin in front of the Nikel Culture Palace Voshod. Photo by Konstantin Guz, 2014. Middle left–Photo of the interior of the Nikel Culture Palace Voshod. Photo by Annette Wolfsberger, 2014. Middle right–Femke Herregraven presenting her research during the first Dark Ecology Journey. Photo by Konstantin Guz, 2014. Bottom–Discussion panel during the second Dark Ecology Journey. Photo by Michael Miller, 2015.

is that seeming is never quite as it seems. Appearance is always strange.

Though the web of fate is so often invoked in tragedy, that default agricultural mode, words such as *weird* and *faerie* evoke the animistic world within the concept of the web of fate itself. We Mesopotamians have never left the Dreaming. So little have we moved that even when we thought we were awakening we had simply gathered more tools for understanding that this was in fact a lucid dream, even better than before.

Ecological awareness is weird: it has a twisted, looping form. Since there is no limit to the scope of ecological beings (biosphere, Solar System) we can infer that all things have a loop form. Ecological awareness is a loop because human interference has a loop form, because ecological and biological systems are loops. And ultimately this is because to exist at all is to assume the form of a loop. The loop form of beings means we live in a universe of finitude and fragility, a world in which objects are suffused and surrounded by mysterious hermeneutical clouds of unknowing. It means that the politics of coexistence are always contingent, brittle and flawed, so that in the thinking of interdependence at least one being must be missing.

What kind of weirdness are we talking about? Weird weirdness. Weird means *strange of appearance*; weirdness means the *turning* of causality. There are many kinds of loops. There are *positive feedback loops* that escalate the potency of the system in which they are operating. Antibiotics versus bacteria. Farmers versus soil, creating the Dust Bowl in the Midwestern United States in the 1930s. Such loops are common in human 'command and control' approaches to environmental management and they result in damage to the ecosystem.[7] Some of them are unintended: consider the decimation of bees in the second decade of the twenty-first century brought on by the use of pesticides that drastically curtail pollination.[8] Such unintended consequences are *weirdly weird* in the sense that they are uncanny, unexpected fallout from the myth of progress: for every seeming forward motion of the drill bit there is a backwards gyration, an asymmetrical contrary motion.

Then there are the *negative feedback loops* that cool down the intensity of positive feedback loops. Think of thermostats and James Lovelock's Gaia. There are *phasing*

7. C.S. Holling and Gary K. Meffe, 'Command and Control and the Pathology of Natural Resource Management', *Conservation Biology*, vol. 10, no. 2 (April 1996), pp. 328–37
8. Michael Wines, 'Mystery Malady Kills More Bees, Heightening Worry on Farms', *New York Times*, 28 March 2013, http://www.nytimes.com/2013/03/29/science/earth/soaring-bee-deaths-in-2012-sound-alarm-on-malady.html?pagewanted=all&_r=0. Brad Plumer, 'We've Covered the World in Pesticides: Is That a Problem?', *Washington Post*, 18 August 2013, http://www.washingtonpost.com/blogs/wonkblog/wp/2013/08/18/the-world-uses-billions-of-pounds-of-pesticides-each-year-is-that-a-problem.

loops. We encounter them in beings such as global warming, beings that are temporally smeared in such a way that they come in and out of phase with human temporality.[9]

Yet there is another loop, the dark-ecological loop. Ecognosis is a *strange loop*. A strange loop is a loop in which two levels that appear utterly separate flip into one another. Consider the dichotomy between moving and being still. In Lewis Carroll's haunting story, Alice tries to leave the Looking Glass House. She sets off through the front garden yet she finds herself returning to the front door via that very movement.[10] A strange loop is weirdly weird: a turn of events that has an uncanny appearance. And this defines emerging ecological awareness occurring to 'civilized' people at this moment.

9. Suzanne Goldenberg, 'Americans Care Deeply about "Global Warming"—But Not 'Climate Change', *The Guardian*, 27 May 2014, http://www.theguardian.com/environment/2014/may/27/americans-climate-change-global-warming-yale-report/print, accessed 2 June 2014.

10. Lewis Carroll, *Alice Through the Looking Glass* in *The Annotated Alice: The Definitive Edition*, ed. Martin Gardner, New York: Norton, 2000, p. 157.

III

The Anthropocene is the moment at which we humans begin to realise that the correct way to understand ourselves as a species is as a hyperobject. This is a truly non-racist and non-speciesist way of thinking species, which otherwise is a problematically teleological concept: ducks are for swimming, Greeks are for enslaving non-Greeks…that's the traditional Aristotelian mode in which we think species. In a twisted way it's fortunate that the Anthropocene happened, because it enables us to drop the teleology yet preserve the notion of species, upgraded from something that we can point to directly (*these* beings rather than *those* beings). The Anthropocene enables us to think at Earth magnitude. Unless we try this, unless we endeavour to think the concept species differently, which is to say think humankind as a planetary totality without the soppy and oppressive universalism and difference erasure that usually implies, we will have ceded an entire scale — the scale of the biosphere, no less — to truly hubristic technocracy, whose 'Just let us try this' rhetoric masks the fact that when you 'try' something at a general enough level of a system, you are not *trying* but *doing* and *changing*, for good.

The concept of species, upgraded from the absurd teleological and metaphysical concepts of old, is not anthropocentric at all. Because it is via this concept, which is open, porous, flickering, distant from what is given to my perception, that the human is decisively deracinated from its pampered, ostensibly privileged place set apart from all other beings.[11]

11. This idea is occurring to a number of people simultaneously. See for instance Charles C. Mann, 'State of the Species: Does Success Spell Doom for Homo Sapiens?', *Orion* (November–December 2012), http://www.orionmagazine.org/index.php/articles/article/7146.

'Anthropocene' is the first fully anti-anthropocentric concept.

The Anthropocene is an anti-anthropocentric concept because it enables us to think the human species not as an ontically given thing I can point to, but as a hyperobject that is real yet inaccessible.[12] Computational power has enabled us to think and visualise things that are ungraspable by our senses or by our quotidian experience. We live on more timescales than we can grasp.

We are faced with the task of thinking at temporal and spatial scales that are unfamiliar, even monstrously gigantic. Perhaps this is why we imagine such horrors as nuclear radiation in mythological terms. Take Godzilla, who appears to have grown as awareness of hyperobjects such as global warming has taken hold. Having started at a relatively huge fifty metres, by 2014 he had grown to a whopping one hundred and fifty metres tall.[13] Earth magnitude is bigger than we thought, even if we have seen the NASA 'Earthrise' photos, which now look like charming and simplistic relics of an age in which human hubris was still mostly unnoticed; relics of, precisely, a 'space age' that evaporates in the age of giant nonhuman places. We have gone from having 'the whole world in our hands' and 'I'd like to buy the world a Coke' to realising that the whole world, including 'little' us, is in the vice-like death grip of a gigantic entity — ourselves as the human species. This uncanny sense of existing on more than one scale at once has nothing to do with the pathos of cradling a beautiful blue ball in the void.

12. I use the term 'ontic' as Martin Heidegger uses it in *Being and Time*, tr. Joan Stambaugh, Albany, N.Y: State University of New York Press, 2010, p. 11.

13. I'm grateful to my talented Ph.D. student Toby Bates for pointing this out.

IV

Global warming is a symptom of industrialisation and industrialisation is a symptom of massively accelerated agriculture. Of what is this acceleration a symptom? We could say that it was capitalism, but that would be circular: accelerating agriculture and subsequent industrialisation are symptoms of capitalism, not to mention existing forms of communism. So we are looking for the problem of which these things are symptoms. What is it? Why, if so influential, is it so hard to point to?

Two reasons: it is everywhere, and it is taboo to mention it. You could be labelled a primitivist even for bringing it up. Yet foundational Axial (agricultural) Age stories narrate the

origin of religion as the beginning of agricultural time: *an origin in sin*. The texts are almost shockingly explicit, so it's strange we don't think to read them that way. Pretty much out loud, they say that religion as such (was there 'religion' beforehand?) was founded in and as *impiety*. We witness the extraordinary spectacle of 'religion' itself talking about itself as a reflective, reflexive loop of sin and salvation, with escalating positive feedback loops. Like agriculture.

There's a monster in the dark mirror and you are a cone in one of its eyes. When you are sufficiently creeped out by the human species you see something even bigger than the Anthropocene looming in the background, hiding in plain sight. What on Earth is this structure that looms even larger than the age of steam and oil? Isn't it enough that we have to deal with cars and drills? It is *the machine that is agriculture as such*, a machine that predates Industrial Age machinery. Before the web of fate began to be woven on a power loom, machinery was already whirring away.

The term *agrilogistics* names a specific logistics of agriculture that arose in the Fertile Crescent and that is still plowing ahead. Logistics, because it is a technical, planned, and perfectly logical approach to built space. Logistics, because it proceeds without stepping back and rethinking the logic. A viral logistics, eventually requiring steam engines and industry to feed its proliferation.[14]

Agrilogistics: an agricultural programme so successful that it now dominates agricultural techniques planet-wide. The programme creates a hyperobject, global agriculture: the granddaddy hyperobject, the first one made by humans, and one that has sired many more. Toxic from the beginning to humans and other lifeforms, it operates blindly like a computer program.

Agrilogistics promises to eliminate fear, anxiety and contradiction — social, physical and ontological — by establishing thin rigid boundaries between human and nonhuman worlds and by reducing existence to sheer quantity. Though toxic it has been wildly successful because the program is deeply compelling. Agrilogistics is the smoking gun behind the (literally) smoking gun responsible for the Sixth Mass Extinction Event.

The humanistic analytical tools we currently possess are not capable of functioning at a scale appropriate to

14. Timothy Morton, *Dark Ecology*, New York: Columbia University Press, 2015.

agrilogistics because they are themselves compromised products of agrilogistics. The nature–culture split we persist in using is the result of a nature–agriculture split (*colo, cultum* pertains to growing crops). This split is a product of agrilogistical subroutines, establishing the necessarily violent and arbitrary difference between itself and what it 'conquers' or delimits. Differences aside the confusions and endlessly granular distinctions arising therefrom remain well within agrilogistical conceptual space.[15]

15. There are far too many texts to mention, but two reasonably recent ones that have stood out for me have been Geoffrey Hartman, *The Fateful Question of Culture*, New York: Columbia University Press, 1997; and Terry Eagleton, *The Idea of Culture*, Oxford: Blackwell, 2000.

V

Agrilogistics arose as follows. About 12,500 years ago a climate shift experienced by hunter-gatherers as a catastrophe pushed humans to find a solution to their fear concerning where the next meal was coming from. It was the very end of an Ice Age, the tail end of a glacial period. A drought lasting more than a thousand years compelled humans to travel farther. It happened that in the Fertile Crescent of Mesopotamia, barley and wheat were growing wild beneath the trees. The same can be said for rice growing in China, corn, squash and beans growing in America, and sorghum and yam in Africa. Significantly, the taro of New Guinea is hard to harvest and low in protein, not to mention hard to plant (you have to plant taro one by one), and so the farmers in the highlands never 'advanced' from hunter-gathering. The taro cannot be *broadcast*. Incidentally, so many terms from agrilogistics have become terms in media (*field* among them), not to mention the development of that very significant medium, writing. How we write and what we write and what we think about writing can be found within agrilogistics.

Humans in Mesopotamia established villages with granaries. The storage and selection of grain pushed the harvested plants to evolve. Humans selected grain for its tastiness, ease of harvesting and other criteria favoured by the agrilogistical program. Scaled up the evolutionary pressure was substantial. Nine thousand years ago humans began to domesticate animals to mitigate seasonal variations in game, a modification to the agrilogistical programme that kept it in existence.[16] Several agrilogistical millennia later, domesticated animals far outweigh (literally again) the number of non-domesticated ones. Humans represent

16. In New Guinea, native pigs can't plough, so agrilogistics was stymied there again.

roughly 32% of vertebrate biomass. The other 65% is creatures we keep to eat. Vertebrate wildlife counts for less than 3%.[17] The term *cattle* speaks to this immensity and to a too-easy ontology humming away in its background.

Miserable social conditions were the almost immediate consequence of the inception of agrilogistics yet the virus persisted like an earworm or a chair, no matter how destructive to the humans who had devised it.[18] Private property emerged based on settled ownership and use of land, a certain house and so on. This provided the nonhuman basis of the contemporary concept of self no matter how much we want to think ourselves out of that. Agrilogistics led rapidly to patriarchy, the impoverishment of all but a very few, a massive and rigid social hierarchy, and feedback loops of human–nonhuman interaction such as epidemics.[19]

The human hyperobject (the human as geophysical species) became a machine for the generation of hyperobjects. Precisely because of the sharp imbalance between the 'civilisation' concept and actually existing social space (which was never fully human), agrilogistics itself having produced this difference, 'civilisations' (the human structures of agrilogistical retreat) are inherently fragile.

VI

Three axioms provide the logical structure of agrilogistics:

(1) The Law of Noncontradiction is inviolable.
(2) Existing means being constantly present.
(3) Existing is always better than any quality of existing.

We begin with Axiom (1). There is no good reason for it. There are plenty of ways to violate this law, otherwise we wouldn't need a rule. This means that Axiom (1) is a prescriptive statement disguised as a descriptive one. Formulated rightly Axiom (1) states, *Thou shalt not violate the Law of Noncontradiction*. Axiom (1) works by excluding (undomesticated) lifeforms that aren't part of your agrilogistical project. These lifeforms are now defined as pests if they scuttle about or weeds if they appear to the human eye to be inanimate and static. Such categories are highly unstable and extremely difficult to manage.[20]

17. Jan Zalasiewicz, 'The Geological Basis for the Anthropocene,' The History and Politics of the Anthropocene, University of Chicago, 17–18 May 2013.
18. Jared Diamond, 'The Worst Mistake in the History of the Human Race', *Discover Magazine* (May 1987), pp. 64–66. Derek Parfit, *Reasons and Persons*, New York: Oxford University Press, 1984. He offers a slightly revised discussion in 'Overpopulation and the Quality of Life', in *Applied Ethics,* ed. Peter Singer, New York: Oxford University Press, 1986. Giorgio Agamben, *Homo Sacer*: *Sovereign Power and Bare Life*, Stanford: Stanford University Press, 1998.
19. On the patriarchy aspect insofar as it affects philosophy as such, Luce Irigaray is succinct: woman has been taken '*quoad matrem*... in the entire philosophic tradition. It is even one of the conditions of its possibility. One of the necessities, also, of its foundation: it is from (re)productive earth-mother-nature that the production of the logos will attempt to take away its power, by pointing to the power of the beginning(s) in the monopoly of the origin.' *This Sex Which Is Not One*, tr. Catherine Porter and Carolyn Burke, Ithaca: Cornell University Press, 1985, p. 102.

20. See, for instance, Pedro Barbosa, ed., *Conservation Biological Control*, San Diego: Harcourt Brace, 1998.

Axiom (1) also results in the persistent charm of *the Easy Think Substance*. Agrilogistical ontology, formalised by Aristotle, supposes a being to consist of a bland lump of whatever decorated with accidents. It's the Easy Think Substance because it resembles what comes out of an Easy Bake Oven, a children's toy. Some kind of brown featureless lump emerges, which one subsequently decorates with sprinkles.

The lump ontology evoked in Axiom (1) implies Axiom (2): to exist is to be constantly present, or the *metaphysics of presence*. Correctly identified by deconstruction as inimical to thinking future coexistence, the metaphysics of presence is intimately bound up with the history of global warming. Here is the field, I can plough it, sow it with this or that or nothing, farm cattle, yet it remains constantly the same. The entire system is construed as constantly present, rigidly bounded, separated from nonhuman systems. This appearance of hard separation belies the obvious existence of beings who show up ironically to maintain it. Consider the cats and their helpful culling of rodents chewing at the corn.[21] The ambiguous status of cats is not quite the 'companion species' Haraway thinks through human coexistence with dogs.[22] Within agrilogistical social space cats stand for the ontological ambiguity of lifeforms and indeed of things at all. Cats are a *neighbour* species.[23] Too many concepts are implied in the notion of 'companion'. The penetrating gaze of a cat is used as the gaze of the extra-terrestrial alien because cats are the *intra-terrestrial* alien.

The agrilogistical engineer must strive to ignore the cats as best as he (underline *he*) can. If that doesn't work he is obliged to kick them upstairs into deity status. Meanwhile he asserts instead that he could plant anything in this agrilogistical field and that underneath it remains the same field. A field is a substance underlying its accidents: cats happen, rodents happen, even wheat happens; the slate can always be wiped clean. Agrilogistical space is a war against the accidental. Weeds and pests are nasty accidents to minimise or eliminate.

Agrilogistical existing means being there in a totally uncomplicated sense. No matter what the appearances might be, essence lives on. Ontologically as much as socially, agrilogistics is immiseration. Appearance is of no consequence.

21. Rebecca J. Rosen, 'How Humans Invented Cats', *The Atlantic*, 16 December 2013, http://www.theatlantic.com/technology/archive/2013/12/how-humans-created-cats/282391. Gerry Everding, 'Cat Domestication Traced to Chinese Farmers 5,300 Years Ago', Washington University St. Louis Newsroom, 16 December 2013, https://news.wustl.edu/news/Pages/26273.aspx. Carlos A. Driscoll, 'The Taming of the Cat', *Scientific American*, vol. 300, no. 6 (June 2009), pp. 68–75. Yaowu Hu et al., 'Earliest Evidence for Commensal Processes of Cat Domestication', *PNAS*, vol. 111, no. 1 (7 January 2014), pp. 116–20.
22. See, for instance, Donna Haraway, *When Species Meet*, Minneapolis: University of Minnesota Press, 2007.
23. For arguments in support of this hypothesis, see Terry O'Connor, *Animals as Neighbors: The Past and Present of Commensal Animals*, East Lansing, MI: Michigan State University Press, 2013.

What matters is knowing where your next meal is coming from no matter what the appearances are. Without paying too much attention to the cats, you have broken things down to pure simplicity and are ready for Axiom (3):

> (3) Existing is always better than any quality of existing.

Actually we need to give it its properly anthropocentric form:

> (3) Human existing is always better than any quality of existing.

Axiom (3) generates an Easy Think Ethics to match the Easy Think Substance, a default utilitarianism hardwired into agrilogistical space. The Easy Think quality is evident in how the philosophy teacher in Stoppard's *Darkside* describes the minimal condition of happiness: *being alive instead of dead*.[24] Since existing is better than anything, more existing must be what we Mesopotamians should aim for. Compared with the injunction to flee from death and eventually even from the mention of death, everything else is just accidental. No matter whether I am hungrier or sicker or more oppressed, underlying these phenomena my brethren and I constantly regenerate, which is to say we refuse to allow for death. Success: humans now consume about 40 percent of Earth's productivity.[25] The globalisation of agrilogistics and its consequent global warming have exposed the flaws in this default utilitarianism, with the consequence that solutions to global warming simply cannot run along the lines of this style of thought.[26]

24. Tom Stoppard, *Darkside: A Play for Radio Incorporating The Dark Side of the Moon* (Parlophone, 2013).

25. Richard Manning, 'The Oil We Eat', *Harper's Magazine*, 4 February 2004, http://www.wesjones.com/oil-weeat.htm. See Richard Manning, *Against the Grain: How Agriculture Has Hijacked Civilization*, New York: North Point, 2005.

26. Gardiner, *Perfect Moral Storm*, pp. 213–45.

VII

The Philosopher Derek Parfit observes that under sufficient spatiotemporal pressure Easy Think Ethics fails. Parfit was trying to think about what to do with pollution, radioactive materials and the human species. Imagine trillions of humans, spread throughout the galaxy. Exotic addresses aside all the humans are living at what Parfit calls *the bad level*, not far from Agamben's idea of *bare life*.[27] Trillions of nearly dead people, trillions of beings like the Musselmäner in the concentration camps, zombies totally resigned to their fate. This will always be absurdly better than billions of humans living in a state of bliss.[28] Because more people is better than happier people. Because bliss is an accident, and existing is a substance. Easy Think Ethics. Let's colonise space — that'll solve our problem! Let's double down! Now we know that it doesn't even take trillions of humans spread throughout the Galaxy to see the glaring flaw in agrilogistics. It only takes a few billion operating under agrilogistical algorithms at Earth magnitude.

27. Giorgio Agamben, *Homo Sacer: Sovereign Power and Bare Life*, Stanford: Stanford University Press, 1998.

28. Derek Parfit, *Reasons and Persons*, Oxford: Oxford University Press, 1987, pp. 433–41.

To avoid the consequences of the last global warming, humans devised a logistics that has resulted in global warming.

The concept Nature isn't only untrue; it's responsible for global warming! Nature is defined within agrilogistics as a harmonious periodic cycling. Conveniently for agrilogistics, Nature arose at the start of the geological period we call the Holocene, a period marked by stable Earth system fluctuations.[29] One might argue that Nature is an illusion created by an accidental collaboration between the Holocene and agrilogistics: unconscious, and therefore liable to be repeated and prolonged like a zombie stumbling forwards. Like Oedipus meeting his father on the crossroads, the cross between the Holocene and agrilogistics has been fatally unconscious.

Nature is best imagined as the feudal societies imagined it, a pleasingly harmonious periodic cycling embodied in the cycle of the seasons, enabling regular anxiety-free prediction of the future. Carbon dioxide fluctuated in a harmonious-seeming cycle for 12,000 years — until it didn't.[30] We Mesopotamians took this coincidence to be a fact about our world, and called it Nature. The smooth predictability allowed us to sustain the illusion. Think of how when we think of nonhumans we reminisce nostalgically for a less deviant-seeming moment within agrilogistics, such as fantasies of a feudal worldview: cyclic seasons, regular rhythms, tradition. This is just how agrilogistics feels — at first. The ecological value of the term Nature is dangerously overrated, because Nature isn't just a term — it's something that happened to human built space, demarcating human systems from Earth systems. Nature as such is a twelve-thousand-year-old human product, geological as well as discursive. Its wavy elegance was eventually revealed as inherently contingent and violent, as when in a seizure one's brain waves become smooth.[31] Wash-rinse-repeat the agrilogistics and suddenly we reach a tipping point.

29. It is well accepted that concentrations of O^{18}, an oxygen isotope, track climate stability. O^{18} concentrations were remarkably stable from the start of agrilogistics until the start of the Anthropocene.

30. Jan Zalasiewicz, presentation at 'History and Politics of the Anthropocene', University of Chicago, May 2013.

31. I am grateful to Jan Zalasiewicz for discussing this with me.

Frozen landscape close to Nikel.
Photo by Lucas van der Velden, 2015.

The Anthropocene doesn't destroy Nature. *The Anthropocene is Nature* in its toxic nightmare form. Nature is the latent form of the Anthropocene waiting to emerge as catastrophe.

VIII

Let's now explore another key term, the *arche-lithic*, a primordial relatedness of humans and nonhumans that has never evaporated. Bruno Latour argues that we have never been modern. But perhaps *we have never been Neolithic*. And in turn this means that the Palaeolithic, adore it or demonise it, is also a concept that represses the shimmering of the arche-lithic within the very agrilogistical structures that strive to block it completely. We Mesopotamians never left the hunter-gathering mind.

What is required to remember is that this is a *weird essentialism.*

Earth isn't just a blank sheet for the projection of human desire: the desire loop is predicated on entities (Earth, coral, clouds) that also exist in loop form in relation to one another and in relation to humans. We are going to have to rethink what a thing is. We require a Difficult Think Thing. That I claim humans exist and made the Anthropocene by drilling into rock does indeed make me an essentialist. However, if we must attune to the Difficult Think Thing, such a thing wouldn't cleave to the Law of Noncontradiction, agrilogistical Axiom (1). Which in turn implies that while beings are what they are (essentialism) *they are not constantly present*. Demonstrating this would constitute a *weird essentialism* in the lineage of Luce Irigaray, whose project has been to break the Law of Noncontradiction so as to liberate beings from patriarchy.[32]

As a performance of not seeming an idiot in theory class one is obliged to convey something like, 'Well of course, I'm not an *essentialist*' (make disgusted face here). Compare the ridicule that greets the idea of creating social spaces that are not agrilogistical (so not traditionally capitalist, communist or feudal). Such reactions are themselves agrilogistical. Both assume that to have a politics is to have a one-size-fits-all Easy Think concept. If you don't, you are called a primitivist or an anarchist, both derogatory terms, and deemed unserious. Or you want to regress to some utopian state that

32. See also Hélène Cixous, *The Laugh of the Medusa*, tr. Keith Cohen and Paula Cohen, *Signs*, vol. 1, no. 4 (Summer, 1976), pp. 875–93 (882).

'we couldn't possibly even imagine'. 'Of course, I'm not advocating that we *actually* try a social space that includes nonhumans in a noncoercive and nonutilitarian mode.' Or its inverse, ridiculing 'civilisation': insisting that humans should 'return' to a pre-agrilogistical existence (John Zerzan, archivist of the Unabomber Ted Kaczinski). 'Eliminate the evil loops of the human stain. Anyone with prosthetic devices such as glasses is suspect.'[33] Once one has deconstructed civilisation into agrilogistical retreat it is tempting to think this way. But imagine the Year Zero violence of actually trying to get rid of intellectuality, reflection, desire, whatever we think is a source of evil, so we can feel right and properly ecological. The assertion that this problem has something to do with 'domestication' — which is how Zerzan and others frame it — avoids the genuine agrilogistical problem. 'Domestication' is a term from some kind of fall narrative: once upon a time, we let things be wild, but then we took some into our homes and unleashed evil. Neanderthals lived in homes. Primates make beds of leaves. Dogs were fused with humans hundreds of thousands of years ago. 'Domestication' is a canard that is itself agrilogistical, straight out of a theistic fall narrative.

The question of origins is complicated by the way in which that question is contaminated in advance by agrilogistics. We need to figure out how we fell for it, in order not to keep retweeting it. What seems to be the case is that a default paranoia about existing — an ontological uncertainty — was covered over as a survival mechanism, and the compelling, almost addictive qualities of that mechanism of covering-over has provided enough ontological comfort, until very recently, so as to go unexamined.

33. See, for instance, John Zerzan, 'The Catastrophe of Postmodernism', *Future Primitive Revisited*, Port Townsend, WA: Feral House, 2012, pp. 64–90. The first demon named is the loop of 'Consumer narcissism' (64). In contrast, Neanderthal mind was fully present to itself and to its environment in a pure, non-deviant circularity, compared to which even the pre-Neolithic divisions of labour and cave paintings seem like original sin: 'Running on Emptiness: The Failure of Symbolic Thought', *Running on Emptiness: The Pathology of Civilization*, Los Angeles: Feral House, 2002, pp. 1–16 (2–3).

IX

To think in this new-old way, we will need to restructure logic. Nietzsche argues that logic itself is 'the residue of a metaphor'.[34] Despite the concept of logic 'as bony, foursquare, and transposable as a die', logic is saturated with fossilised social directives. Hegel had an inkling of this when he distinguished between logic and thinking, that is to say between the mind's movement and the manipulation of preformatted thoughts. Nietzsche asserts that language is caught up in the caste system — and let's not forget that that system is a direct

34. Friedrich Nietzsche, 'On Truth and Lies in a Nonmoral Sense', *The Nietzsche Reader*, ed. Keith Ansell Pearson and Duncan Large, Oxford: Blackwell, 2006, pp. 114–23 (118).

product of agrilogistics. With uncanny insight, Nietzsche himself seems to confirm this when he then asserts that logic as such is a symptom of caste hierarchies. Without doubt, these hierarchies oppress most humans. The human caste system, itself a product of agrilogistics, sits on top of a fundamental caste distinction between humans and nonhumans, a founding distinction wired into the implicit logic of agrilogistics.[35]

Recall, furthermore, that some of the most common words for thinking and apprehension — *gather, glean* — derive from agriculture.[36] What is required is no less than a logic that is otherwise than agrilogistical. A logic that is fully eco-logical. If you want ecological things to exist — ecological things like humans, meadows, frogs and the biosphere — you have to allow them to violate the logical 'Law' of Noncontradiction and its niece, the Law of the Excluded Middle. If we don't, then it won't be possible to explain the existence of vague, heap-like beings such as lifeforms and ecosystems, because they are not entirely self-identical.

According to the rigid agrilogistical logic format, there is no single, independent, definable point at which a meadow (for example) stops being a meadow. So there are no meadows. They might as well be car parks waiting to happen. And since by the same logic there are no car parks either, it doesn't really matter if I build one on this meadow. Can you begin to see how the logical Law of Noncontradiction enables me to eliminate ecological beings both in thought and in actual physical reality? The Law of Noncontradiction was formulated by Aristotle, in section Gamma of his *Metaphysics*. It's strange that we still carry this old law around in our heads, never thinking to prove it formally. According to the Law of Noncontradiction, being true means not contradicting yourself. You can't say *p* and *not-p* at the very same time. You can't say *a meadow is a meadow and is not a meadow*. Yet this is what is required, unless you want meadows not to exist.

35. Cary Wolfe, *What Is Posthumanism?*, Minneapolis: University of Minnesota Press, 2012.

36. *Oxford English Dictionary*, 'gather', 4.a., b., c.; 'glean', v. oed.com: '1. To gather or pick up ears of corn which have been left by the reapers.'

X

First peoples don't live in holistic harmony without anxiety; they coexist anxiously in fragile, flawed clusters among other beings such as axes and horses, rain and spectres, without a father sky god or god-king. Yet because anxiety is still readily

available — because agrilogistics has far from eliminated it — the divergence is an unstable, impermanent construct. We glimpse the space of the *arche-lithic*, not some tragically lost Palaeolithic. The arche-lithic is a possibility space that flickers continually within, around, beneath and to the side of the periods we have artificially demarcated as Neolithic and Palaeolithic. The arche-lithic is not the past.

The arche-lithic mind is immersed in a non-totalisable host of patterns that cannot be bounded in advance: lifeforms, ghosts, phantasms, zombies, visions, tricksters, masks. The idea that we might be deceived is intrinsic to the agrilogistical virus. The possibility of pretence haunts arche-lithic 'cultures' of magic as a structurally necessary component of that culture: 'The real skill of the practitioner [of magic] lies not in skilled concealment but in the skilled revelation of skilled concealment.'[37] (I must put 'culture' in quotation marks because the term is hopelessly agrilogistical.) Skepticism and faith might not be enemies in every social configuration. In arche-lithic space they might be weirdly intertwined.

There is an *ontological* reason why the play of magic involves epistemological panic giving rise to hermeneutical spirals of belief and disbelief. The dance of concealing and revealing happens because reality as such just does have a magical, flickering aspect. It is as if there is an irreducible, story-like hermeneutical web that plays around and within all things. An irreducible uncertainty, not because things are unreal, but because they *are* real.

37. Michael Taussig, 'Viscerality, Faith and Skepticism', in Birgit Meyer and Peter Pels, eds., *Magic and Modernity: Interfaces of Revelation and Concealment*, Stanford: Stanford University Press, 2003, pp. 272–341 (273).

XI

What the Law of Noncontradiction polices most is the profound ambiguity and causal force of the aesthetic dimension. The aesthetic has been kept safe from something that looks too much like telepathic influence, though that is strictly what it is if *telepathy* is just passion at a distance.[38] Right now, visualise the Mona Lisa in the Louvre — see what I mean? Something not in your ontic vicinity is exerting causal pressure on you. So the aesthetic and its beauties are policed and purged of the 'enthusiastic', buzzy, vibratory (Greek, *enthuein*) energies that shimmer around its fringe, forever turning beauty into something slightly strange, even 'disgusting' (at least at the edges) insofar as it can't shake off its material embodiment, shuddery, rich, affective and effective.

38. See, for instance, Nicholas Royle's magnificent *Telepathy and Literature: Essays on the Reading Mind*, Oxford: Blackwell, 1991.

Three different views of the landscape: the top and middle images are of Neitijärvi lake on the border crossing between Norway and Russia. The photo at the bottom is the area near Zapolyarny. All photos by Rosa Menkman, 2015.

This telepathic Force-like zone of nonhuman energy keeps nuzzling at the edge of modern thought and culture, as if with enough relaxed religious inhibitions and enough enjoyable products humans default to the arche-lithic.

There is something profound and perhaps disturbing about the aesthetic–causal dimension. And about life: 'life' is not the opposite of death. The homology between cancer cells and embryo growth bears this out. The only difference is that an embryo becomes shapely through another death process, apoptosis: the dying-away of superfluous cells. There is no final resting spot: there is always something excessive about the pattern.[39] Life is an ambiguous spectral 'undead' quivering between two types of death: the machination of the death drive and the dissolution of physical objects.

And going down a level, this is because of the structure of how things are. Being and appearing are deeply, inextricably intertwined, yet different. This means that beings are themselves strange loops, the very loops that ecological awareness reminds us of. Much philosophical and cultural muscle has been put into getting rid of these loops, which are often decried as narcissistic, because they are self-relating, self-referential. But what is required for caring for nonhumans is precisely an extension of what is called narcissism! So attacking narcissism is something dark ecology won't do: 'What is called non-narcissism is in general but the economy of a much more welcoming, hospitable narcissism…without a movement of narcissistic reappropriation, the relation to the other would be absolutely destroyed, it would be destroyed in advance' (Derrida).[40]

We have to accept the disturbing excess of the aesthetic dimension as an intrinsic part of everything in the universe, and indeed as the part that has to do with causality itself.

39. George Johnson, 'A Tumor, the Embryo's Evil Twin', *New York Times*, 17 March 2014. http://www.nytimes.com/2014/03/18/science/a-tumor-the-embryos-evil-twin.html?_r=0.

40. Jacques Derrida, 'There Is No *One* Narcissism: Autobiophotographies', *Points: Interviews 1974–1994*, ed. Elisabeth Weber, tr. Peggy Kamuf et al., Stanford: Stanford University Press, 1995, pp. 196–215 (199).

XII

We think that existence means solid, constant, present existence. It is based on the fantasy that all the parts of me are me: that if you scoop out a piece of me, it has *Tim Morton* inscribed all over it and within it, just as sticks of English Brighton rock contain a pink word all the way through their deliciously pepperminty tubes. This is not the case. All entities just are what they are, which means that they are never quite as they seem. They are rippling with *nothingness*.

A thing is a strange loop like a Möbius strip, which in topology is called a *non-orientable surface*. A non-orientable surface lacks an intrinsic back or front, up or down, inside or outside. Yet a Möbius strip is a unique topological object: not a square; not a triangle. Not just a lump of whateverness, or a false abstraction from some goop of oneness. When you trace your finger along a Möbius strip you find yourself weirdly flipping around to another side — which turns out to be the same side. The moment when that happens cannot be detected. The twist is *everywhere* along the strip. Likewise beings are intrinsically twisted into appearance, but the twist can't be located anywhere.

So things are like the ouroboros, the self-swallowing snake. The Norse myth is pertinent: when Jörmungandr, the Midgard Serpent, stops sucking its own tail this is the beginning of Ragnarok, the apocalyptic battle. Agrilogistics has been a constant process of trying to un-loop the loop form of things. Finally to rid of the world of weirdness is impossible, as is devising a metalanguage that would slay self-reference forever. Violent threats can be made: 'Anyone who denies the law of non-contradiction should be beaten and burned until he admits that to be beaten is not the same as not to be beaten, and to be burned is not the same as not to be burned.'[41] You are either with us or against us. Torture isn't an argument any more than kicking a pebble is, and the threat of torture is no way to display intelligence, let alone proof. The violence of the threat is in proportion to the impossibility of actually ridding the world of contradiction. Beating and burning, something done to cattle and corn, witches and weeds, is not the same as thinking and arguing. Still, in the margins of agrilogistical thought, we cannot but detect the disturbingly soft rustling of the arche-lithic and its serpentine beings. Beings inherently *fragile*, like logical systems that contain necessary flaws, like the *hamartia* of a tragic hero.

The modern upgrade of the Cadmus myth is the idea of progress, for instance, the idea that we have transcended our material conditions. I'm Harold and the Purple Crayon, 'I am the lizard king, / I can do anything', 'I'm the Decider, goo-goo-ga-joob.'[42] (Harold and the Purple Crayon is a US children's character who can draw whatever he likes with his crayon in the void. Say he is drowning: he can draw a boat.) But if things are nonorientable surfaces, philosophy had better get

41. Avicenna, *Metaphysics* I.8, 53.13–15.

42. The Doors, 'The Celebration of the Lizard', *Absolutely Live* (Elektra, 1970). The Beatles, 'I Am the Walrus', *Magical Mystery Tour* (EMI, 1967).

out of the mastery business and into the allergy medicine business. We need philosophical medicine so as not to have allergic reactions before we mow the allergens down and build a parking lot. To remain in indecision.

XIII

The more philosophy attunes to ecognosis the more it makes contact with nonhuman beings, one of which is ecognosis itself. The world it discovers is nonsensical yet perfectly logical, and that is funny: the sight of something maniacally deviating from itself in a desperate attempt to be itself should remind us of Bergson's definition of what makes us laugh.[43] And this is because, in a sense, to say 'Being is suffused with appearing' is the same as saying *being is laughing with appearance*. Ants and eagles cause philosophy to get off its high horse and smile, maybe even laugh. The name of this laughter is ecognosis. You begin to smile with your mouth closed. To close the mouth in Greek is *muein*, whence the term *mystery*, the exact opposite of *mystification*.

We find this ecological smile within in the horror, disgust, shame and guilt of ecological awareness itself, because strangely, that joy is the possibility condition for all the other, more reified forms of ecological awareness. It goes like this. We have guilt because we can have shame. We have shame because we can have horror. We have horror because we can have depression. We have depression because we can have sadness. We have sadness because we can have longing. We have longing because we can have joy. Find the joy without pushing away the depression, for depression is accurate.

43. Henri Bergson, 'Laughter', in Wylie Sypher, ed., and intro., *Comedy: 'An Essay on Comedy' by George Meredith and 'Laughter' by Henri Bergson*, Baltimore: Johns Hopkins University Press, 1956, pp. 59–190.

XIV

We live in a reality determined by a one-size-fits-all window of time, a window determined by some humans' attempts to master anxieties about where their next meal was coming from. As Agrilogistical Axiom (3) states, the logistics of this time window imply that existing is better than any quality of existing. So it's always better to have billions of people living near to misery, than even millions living in a state of permanent ecstasy. Because of this logic industrial machines were created. The small rigid time tunnel now engulfs a vast amount of Earth's surface and is directly responsible for much global warming. It's a depressive solution to anxiety:

cone your attention down to about a year — maybe five years if you really plan 'ahead'. One of the most awful things about depression is that your time window collapses to a diameter of a few minutes into the past and a few minutes into the future. Your intellect is literally killing little you by trying to survive. Like a violent allergic reaction, or spraying pesticides.

We live in a world of objectified depression. So do all the other lifeforms, who didn't ask to be sucked into the grey concrete time tunnel. No wonder then that we find mass extinction depressing and uncanny.

XV

Let's have more time tunnels of different sizes. Let's not have a one-size-fits-all time tunnel. Let's get a bit playful. Which also means, let's not have a one-size-fits-all politics. We need a politics that includes what appears least political — laughter, the playful, even the silly. We need a multiplicity of different political systems. We need to think of them as toy-like: playful and half-broken things that connect humans and nonhumans with one another. We can never get it perfect. There is no final, correct form that isn't a toy. There is no one toy to rule them all. And toys aren't exclusively human or for humans. We don't have to get back to a mythical time of need as opposed to want. That binary is an agrilogistical artefact, which means that not everything about consumerism is bad, ecologically speaking. There are some ecological chemicals in consumerism, because consumerism provides an ethical pathway for relating to nonhuman beings for no particular reason (that is, for aesthetic reasons). The ecological future is going to be about *more* playful pleasure for no reason, not less. Think about it this way. I recently switched my power provider to 100% wind. For the first few days I felt efficient and virtuous and pure, until I realised that what was really the case now was that I could have a rave in every single room of my house and do no harm to Earth. Efficiency and sustainability, which is how we talk to ourselves about ecological action, are just artefacts of our oil economy version of agrilogistics. Change the energy system, and all that changes.

Lighten up: dark ecology does not mean heavy or bleak; it is strangely light. Lifeforms play ('This is a bite and this is not a bite'), because play is structural to reality, because things shimmer.[44] A disturbing imbalance and fragility haunts this play in order for it to be play. This is why play isn't just candy or glue but structural to reality. If you think of (agrilogistical) civilization as normative you have already decided that it is inevitable, and this means that you have decided that agrilogistical retreat is the only way to move across Earth.

44. Gregory Bateson, 'A Theory of Play and Fantasy', *Steps to an Ecology of Mind*, foreword Mary Catherine Bateson, Chicago: University of Chicago Press, 2000, pp. 177–93.

XVI

The trouble with consumerism isn't that it sends us into an evil loop of addiction. The trouble is that *consumerism is not nearly pleasurable enough*.[45] The possibility space that enables consumerism contains far more pleasures. Consumerism has a secret side that Marxism is loath to perceive, as Marxism too is caught in the agrilogistical division between need and want. Consumerism is a way of relating to at least one other thing that isn't me. A thing is how I fantasise it. And yet…I fantasise, not onto a blank screen, but onto an actually existing thing, and in any case my fantasy itself is an independent thing. This thing eludes my grasp even as it appears clearly. *You are what you eat*. Doesn't the mantra of consumerism (concocted by Feuerbach and Brillat-Savarin, almost simultaneously) put identity in a loop?[46] Doesn't this formula hide in plain sight something more than (human) desire? That the reason-to-buy is also a relation to an inaccessible yet appearing entity, to wit, *what you eat*? I imagine what I eat gives me luxury, or freedom, or knowledge. Yet there I am, eating an apple. *I coexist*. This can't be! The formula for consumerism *kat' exochēn* is underwritten by ecology! What a fantastic loop *that* is. Once we discover that what is called subjectivity is a cleaned, stripped, devastated version of something much vaguer and more spectral that includes the *abjection* that the idea of subject is meant to repress, then we are in the phenomenological space of ecological awareness. It is at first horrifying (to white patriarchy), because ecological awareness means noticing that you are profoundly covered in, surrounded by and permeated by all kinds of entities that are not you. That horror then becomes strangely ridiculous, like watching someone trying to escape the inevitable. This sense of the ridiculous is the first hint that at its deepest, ecological awareness has some kind of laughter in it. The laughter of ridicule subsides into a melancholic laughter in

45. Kate Soper 'Alternative Hedonism, Cultural Theory and the Role of Aesthetic Revisioning', *Cultural Studies*, vol. 22, no. 5, Taylor and Francis, September 2008, pp. 567–87.

46. Jean-Antheleme Brillat-Savarin, *The Physiology of Taste*, tr. Anne Drayton, Harmondsworth: Penguin, 1970, p. 13. Ludwig Feuerbach, *Gesammelte Werke II, Kleinere Schriften,* ed. Werner Schuffenhauer, Berlin: Akadamie-Verlag, 1972.

which we curate all the nonhumans that surround and permeate us without knowing exactly why, a bit like Wall E, the robot in an ethereal, goth-y realm of (other people's) toys, like J.F. Sebastian's apartment in *Blade Runner*. This not-knowing-why becomes beautiful and we sense the ungraspability of things. This sense in turn leads to a kind of joy. Abjection has been transfigured into what Irigaray calls *nearness*, a pure givenness in which something is so near that one cannot *have* it — a fact that obviously also applies to one's 'self'.[47]

47. Luce Irigaray, *This Sex Which Is Not One*, tr. Catherine Porter and Carolyn Burke, Ithaca: Cornell University Press, 1985, p. 31.

Grey Zone

Marijn de Jong

Marijn de Jong travelled to Kirkenes and Nikel in the autumn of 2014. His series of photographs *Grey Zone* is a portrait of the area. The series was first published in the book *The Geologic Imagination* (2015). *Grey Zone* was commissioned by Dark Ecology–Sonic Acts & Hilde Methi. All photos by Marijn de Jong, 2014.

Top left–Marijn de Jong. Photo by Konstantin Guz, 2014. Top right and bottom–Views of Kirkenes.

Top and bottom left–Kirkenes. Bottom right–Nikel.

Scenes
from Nikel.

Scenes from
Kirkenes.

Flats and houses in Nikel, and the road leading to Nikel.

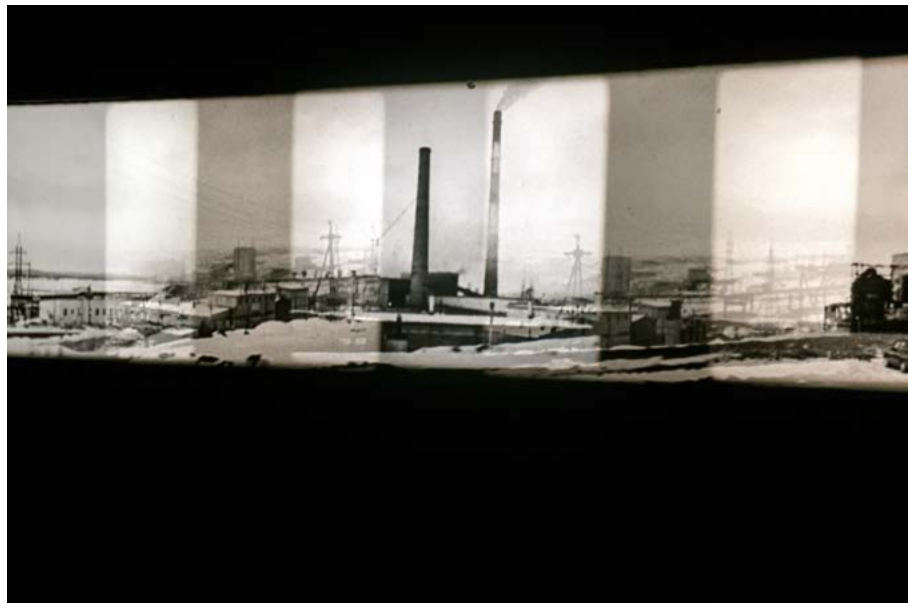
Top–Nikel. Bottom left–Zapolyarny. Bottom right–Nikel.

unearthed

Karl Lemieux & BJ Nilsen

Prirechny, an abandoned city.

The border area of Norway and Russia, where the sparse beauty of the Arctic landscape meets industrial decay and heavy pollution, is where BJ Nilsen and Karl Lemieux collected material for their audiovisual collaboration *unearthed*. The sound piece was released on a USB-device with the publication *The Geologic Imagination*, accompanied by images from a 16mm film made by Karl Lemieux, and a text by Lemieux and BJ Nilsen. They wrote: 'Nikel's red and white chimneys hiss and growl as they spew out clouds of smoke. The air is difficult to breath today. With little wind, the acoustics are more noticeable and sound travels in unexpected patterns between the blocks of buildings. There is also an interesting short echo effect in some open-air locations, perhaps resulting from the reflective façades on the buildings and the lack of vegetation.'



Premiere of *unearthed* by Karl Lemieux (16mm film) & BJ Nilsen (sound) in Muziekgebouw aan 't IJ, Amsterdam, Sonic Acts Festival, 2015. Commissioned by Dark Ecology–Sonic Acts & Hilde Methi. Photo © Ed Jansen.

Live performance *unearthed*, Sonic Acts Festival, 2015. Photos © Pieter Kers | Beeld.nu.

Live performance *unearthed*, Sonic Acts Festival, 2015.
Photo © Ed Jansen.

Factory in Nikel. 16mm film still from *unearthed* by Karl Lemieux.

Barents (Mare Incognitum)

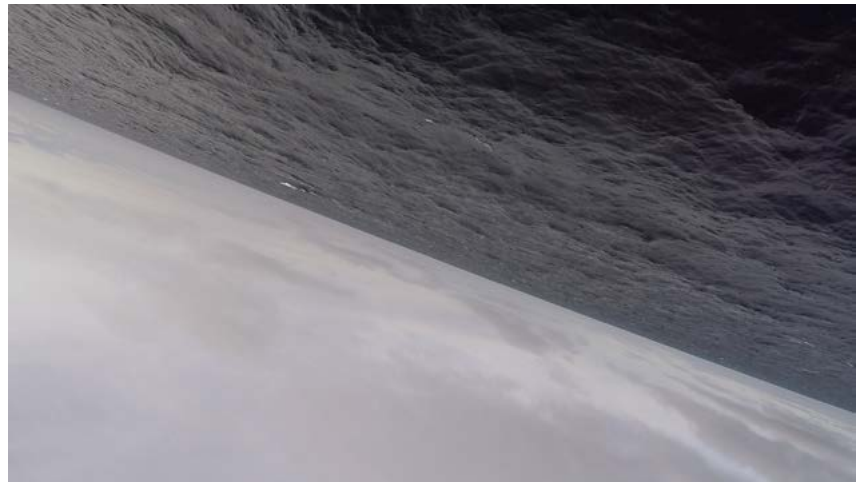
HC Gilje

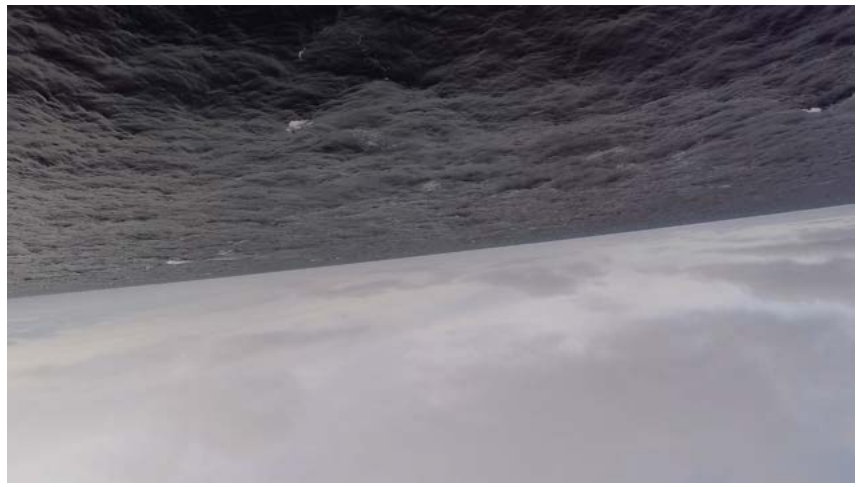
A slowly rotating view of the Barents Sea: up becomes down, East becomes West. Borders and thresholds are invisible. The ocean as a border between countries and continents. Earth as the ocean planet. The ocean as a hyperobject, existing long before and after humans. The potential for disaster inherent in the ocean with rising sea levels, acidification, increasing temperature, plastic pollution, risky petroleum activity, and the extreme decline in marine biodiversity. HC Gilje shot the footage for *Barents (Mare Incognitum)* in the border zone between Norway and Russia, facing the North Pole. He used his custom-built orbital camera, which slowly rotates around its own axis and captures the world that revolves around it.

Custom-made orbital camera used to capture a revolving panorama of the Barents Sea for the installation *Barents (Mare Incognitum)* by HC Gilje. Commissioned by Dark Ecology–Sonic Acts & Hilde Methi. Photo by HC Gilje, 2014.

HC Gilje testing the camera in Nikel during the first Dark Ecology Journey. Photos by Nik Gaffney, 2014.

Film stills from *Barents (Mare Incognitum)*, 2015. Courtesy of the artist.





Top–Installation view, Nikel. Photo by HC Gilje, 29 November 2015. Middle–Installation in Nikel. Photo by Lucas van der Velden, 2015. Bottom–HC Gilje, *Barents (Mare Incognitum)*, presented during the programme on climate change titled *Weather Report* in EYE Filmmuseum, Amsterdam, December 2015. The programme was co-curated by Sonic Acts. Photo © Pieter Kers | Beeld.nu.

Machine Synaesthetics

Interview with Joris Strijbos

by Nicky Assmann

In this interview the Dutch artist Joris Strijbos (JS) talks about *IsoScope*. He developed this kinetic sculpture for the second Dark Ecology Journey in 2015. It was installed on top of the hill overlooking the town of Kirkenes.

NA You were invited to join the first Dark Ecology Journey in 2014 to make a proposal for a site-specific work in the subarctic landscape in Kirkenes. How did you experience this first trip and can you name some of the aspects that inspired you?
JS When I first received the invitation to join the Dark Ecology Journey I didn't really know what to make of the project since it covers a very specific field that I didn't know much about at the time. But I immediately liked the idea of working on a commissioned piece and an artist's residency after having intensely experienced the landscape. A couple of ideas came together during the Journey and functioned as the basis for my proposal. The first one was to make a man-made-phenomena. Being in the vast landscape and experiencing Arctic natural phenomena like the aurora inspired me to create a work that could only be experienced under specific weather conditions. The second one was to use alternative energy sources. The third factor that I wanted to include was my research on artificial and machinic life. I aim to create robotic communities that perform generative compositions in light, sound, and movement through an interaction between themselves and their surroundings. The idea that a machinic population can maintain and perform an endless and evolving composition sounded like a poetic challenge to me.

NA How does this relate to your previous work and research?
JS *IsoScope* is an important next step in my work since it combines different topics that have captured my interest over the past few years. I've always been inspired by natural phenomena and have been trying to capture their behaviour and quality in the machine domain. Most of the works I make consist of some sort of interaction between sensors and actuators resulting in what I like to see as life-like behaviour.

NA Themes like cybernetics, emergent systems, artificial and machinic life and the communication of networked groups recur in your work. What fascinates you about these?
JS The idea that it's possible to create something like an autonomous or creative machinic system. I like it when lifelike or natural behaviours can be recognised in artificial systems. Mostly I think I'm looking for similarities between the natural and artificial world. I'm specifically interested in systems that are open to receive energy but are closed off from control data. On the one hand you can create these systems and predict the outcome to a certain degree; on the other, they tend to surprise you with a result that couldn't have been predicted. An approach I use a lot is to create multiple cells or units that all have certain inputs and/or outputs that are connected to each other through simple rule-sets. The complexity that emerges from these systems becomes the tool for composition. By manipulating the rule-sets I can have control over how the composition behaves, although the outcome is generative and self-organised.

NA What was it like to make a work under the pressure of a commission for a location you had only seen once during a short residency after the first Journey, which was also during the summer, so in fact the 'opposite' season in which you presented the work, with its polar nights and snowy and windy conditions?
JS I experienced the landscape during the first Dark Ecology Journey in October 2014. It was not as cold or as dark as it was when I presented the work in November 2015. During my residency period in the summer, I talked a lot with the local residents to find out what we could expect during the presentation period. Moreover, I had also stayed in Finland for a while in December 2014 for a BioArt Society artist's residency at the Biological Research Center Kilpisjärvi. This gave me quite a good impression of what to expect from the weather during the presentation in Kirkenes.

NA Can you explain how the installation works and how the system behind it functions?
JS The installation consists of twelve identical machinic objects. Every object is equipped with a wind turbine, a microcontroller, a LED, a speaker and a light sensor. The electrical energy that is generated by the wind turbine is measured by the microcontroller and distributed through simple rules to the speaker and the LED. The light sensor is the second input for the sound and light synthesis that

Joris Strijbos, *IsoScope,* kinetic sound and light installation, 2015. View of the installation on Langøra hill in Kirkenes. Commissioned by Dark Ecology–Sonic Acts & Hilde Methi. Photo by Jeroen Molenaar.

happens in the microcontroller. The result is that the sound and light are influenced by the power of the wind and by the brightness of the surroundings, mainly the other objects. In this way the group of objects works together to create a constantly evolving sound and lightscape.

NA How did the cold influence the process of making the work and the final workings of the installation?
JS The weather played a major role in the design process. Knowing that some electronic parts wouldn't function in low temperatures, a lot of ingenuity was needed to make the system stable. Luckily I could work with Daan Johan, who designed the electronics for the piece, and he managed to build circuits that were very efficient in using the limited energy that the wind turbine generates to power the sound and light.

NA You mentioned the idea of using alternative energy sources. You've worked before with the elements and *IsoScope* is powered by the wind. In which way is using alternative energy important for the work, and do you see it in a larger context?
JS There are of course multiple environmental and political reasons why it makes sense to work with alternative energy sources. But besides the environmental aspect, I like to strive to create a truly self-sustainable artificial population that could act in the world like any other lifeform. Being able to generate its own energy to act is an important part of the work.

NA Why is it important for you that the sound, light, and wind are connected in one system?
JS I think the basis of this idea comes from my time at the Interfaculty of ArtScience where I was introduced to the phenomenon of synaesthesia. The fact that the input into one of our sensory pathways can cause an involuntary experience in a second sensory pathway inside our brain, combined with my interest in relations between the natural and the machinic, made me wonder how this concept would work inside artificial living systems or machines. It's a topic I like to call 'machine synaesthetics' and with this idea in mind I've been working on a series of installations of which *IsoScope* is one. It resulted from connecting different kind of sensors, like light sensors, microphones, and pressure sensors to other

Top–Joris Strijbos, *IsoScope* at night. Bottom–Joris Strijbos and Daan Johan setting up *IsoScope* on Langøra hill in Kirkenes. Photos by Jeroen Molenaar.

actuators, like electrical motors, speakers, and light sources, to mimic the phenomenon of synaesthesia in machines. I like the fact that complex and emergent behaviour can be the result of very simple rule-sets and algorithms.

NA *IsoScope* also highlights the importance of the audience's sensorial experience. Can you elaborate on this aspect?
JS A lot of effort was put into the technical side and researching the topics I'm working with. But the main goal was to create an audiovisual artwork. The sound field and the lightscape that the installation produces are in the first place meant as an experience of abstraction. The programming of the interactive behaviour of the robotic community is foremost a tool for creating a generative composition. That one can wander around in a wind-driven and responsive robotic installation feels to me in the first place like an experience of abstraction. In the studio I build a lot of prototypes that behave very unpredictably; these practical experiments are a large component of my empirical research into machinic behaviour.

NA To me seeing the finished work on top of the hill in the Arctic landscape felt like a group of aliens had landed on this deserted, snow-covered landscape, and it seemed as if they were trying to communicate with us in some way. How did you experience the final result?
JS When creating a work like this for a place like that it's quite hard to predict the outcome. Of course we did lots of tests and knew how the group of modules would look. To install them in this remote place gave the installation an extra dimension. During the design phase it was clear to me that the installation had to stand out and be a contrast with the landscape. I didn't want to try and compete with the terrain and its beauty, but rather accentuate it by placing something there that would seem strange in this kind of landscape, and thus be in contradiction with it.

krysning / пересечение / conflux

Signe Lidén

A light journey through complex territories. An expedition with bow and arrow across pastures, mountains as well as manmade landscapes, military zones, harbours, mining areas and settlements in the border zone between Norway and Russia. On the arrow, there is a flute; in the flute, a microphone. The arrow lands somewhere and that somewhere becomes a recording station and a point of view until a new arrow-shot determines the next site of recording. The journey is filmed horizontally and vertically, as a camera attached to a balloon is fixed to the traveller's backpack films the movements from the wind's perspective.

Signe Lidén, *krysning/* пересечение*/conflux*, 2014 (30'), film and video installation. Co-commission Dark Ecology (Sonic Acts & Hilde Methi) and Arctic Encounters. Stills from the film (pp. 86–89). Photos courtesy of the artist.

Top–Screening of *krysning/*пересечение*/conflux* in a garage in Nikel. Bottom–Walking back to the city after the screening. Photos by Konstantin Guz, 2014.

Vilgiskoddeo-ayvinyarvi: Wolf Lake on the Mountains

Justin Bennett

The Kola Superdeep Borehole is the deepest man-made hole on Earth — it descends more than 12 kilometres. It was a Soviet geological research project started during the Cold War. In addition to gathering data about the geology of the Earth's crust it formed part of Project Globus, a network of seismic listening stations which was to function as an early-warning system for natural disasters and for monitoring enemy nuclear tests. After the fall of the Soviet Union the project was slowly wound down and the site was abandoned in 2008.

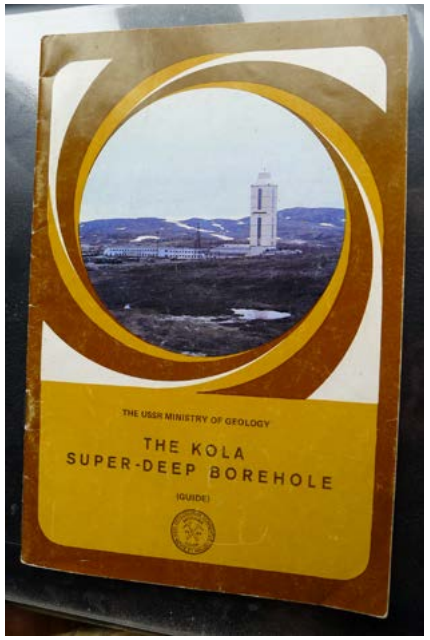
The rock strata that are visible in the core samples extracted from the borehole are seemingly inert to humans but on another timescale they are very much alive. They tell the story of the formation of the Earth and of ultra-slow processes that are still occuring within its crust. Thinking at this geological timescale puts human endeavour and progress into perspective: the Kola Super Deep (KSD) becomes a mere pin-prick in the Earth's body.

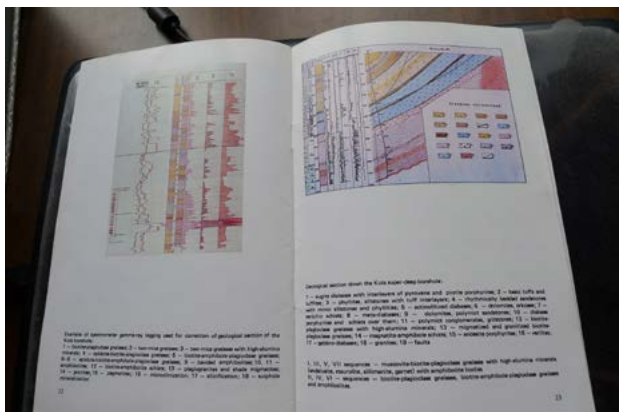
Still, the image of drilling so deep into the Earth inflamed the imagination of evangelical Christians with visions of Hell. Purporting to have been recorded by Russian scientists, the sounds of screams emanating from the inferno circulated on the Internet, but these were probably a montage of horror film soundtracks. The layers of rock penetrated by the drill resound with Dante's descent into the Inferno with Virgil as his guide — where each circle of Hell is reserved for different kinds of sinners. In which circle can conspiracy theorists be found? Which one is reserved for climate change deniers?

At the KSD site, next to Vilgiskoddeoayvinyarvi, Wolf Lake, we meet Viktor, a geologist who worked on the project until it was shut down. Ever since, Viktor has stayed on-site as much as possible, carrying on the work started by Dr Huberman, the founder of the project. He recounts the history of the KSD, relating it to other cold-war science projects, discusses the geology and history of the area, and of his experiences living there alone. He shows us around the ruined site, his living quarters, his small laboratory, and of course the borehole itself. He explains his work: listening to vibrations deep within the earth, linking geology with Sami shamanism and divination.

Top–Landscape around the Kola Superdeep Borehole. Commissioned by Dark Ecology–Sonic Acts & Hilde Methi, 2016. Bottom–The borehole of the Kola Superdeep in 2015. Photos courtesy of the artist, 2015.

Tower of the Kola Superdeep Borehole, September 2007. Photo by Andre Belozeroff. Source: http://www.panoramio.com/photo/5162451. CC BY-SA 3.0.





Top–Sketch of the soundwalk score. Courtesy of the artist, 2015. Bottom–Booklet about the Kola Superdeep Borehole, published by the USSR Ministry of Geology in 1984. Photo by Annette Wolfsberger, 2012.

Nikel — The City as a Material

Interview with Tatjana Gorbachewskaja & Katya Larina

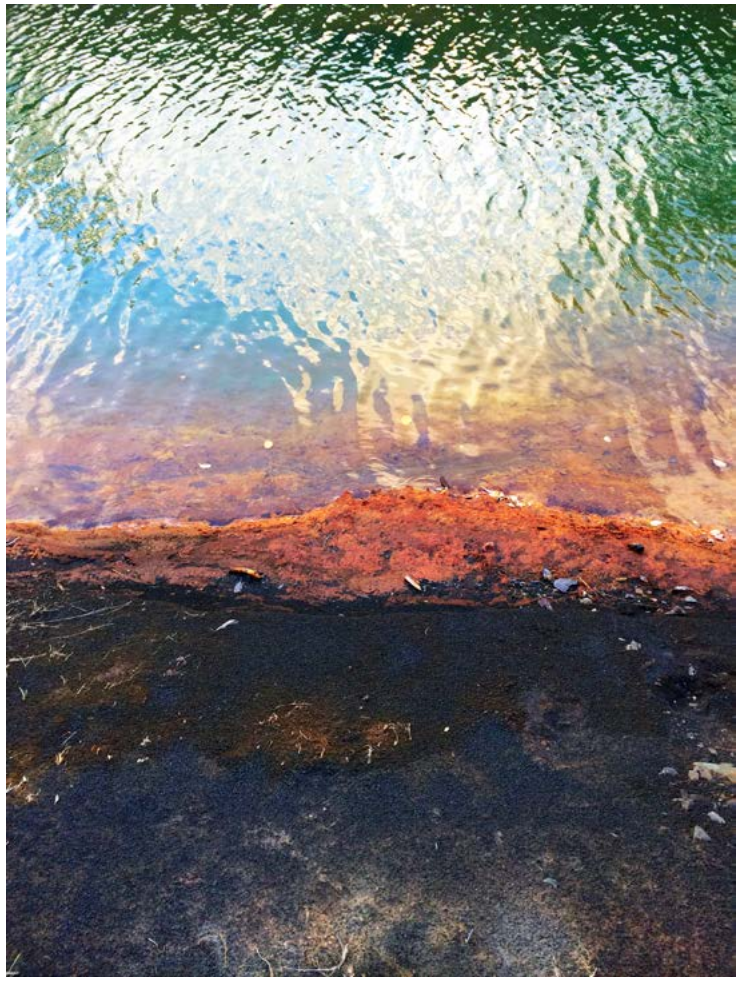
by Mirna Belina

Tatjana Gorbachewskaja (TG) is an architect who grew up in the Russian town Nikel, located in the far North near the Russian border with Norway. For Dark Ecology she researched the materials of her hometown together with Katya Larina (KL), resulting in *Nikel Materiality*, which consists of a small publication, a presentation and guided walk through Nikel. Mirna Belina (MB) interviewed them.

MB How did you start researching Nikel?
KL My interests come from two sides. One is the research I did for my studies in Landscape Urbanism at the Architectural Association in London, which is about understanding the city as a complex interconnected ecology. The other is my practical experience as an advisor and expert on strategies for industrial cities, closed cities, mining cities, or cities with heavy industry in Siberia. In the research into Nikel I managed to combine both interests.
TG My curiosity stems from my background: Nikel is my hometown. I also teach at the University of Art and Design in Offenbach, where we investigate various experimental design methodologies relating to the topic of 'new materiality'. In August 2015 I returned from a research residency in Nikel with a huge collection of material samples. Then Katya and I realised that the material phenomena and artefacts from Nikel could be structured using certain motifs relating to the idea of an ecological material system.

MB Nikel has a dynamic political history. Can you connect the dots for us?
TG The town emerged solely because of the nickel smelter. It's a young settlement, established around 1935. From the beginning, the town was a centre of advanced and innovative industrial production. American technologies were used for the construction of a chimney — apparently the tallest one in Europe at that time. Only Canadians had the construction technologies suitable for Arctic climatic conditions, so all the smelting plants projects were developed in Canada. The general plan was designed by Finnish architects and further developed by Soviet urban planners after the Second World War. The mining technology was the most advanced for its time. Life in Nikel was highly subsidised and therefore quite appealing to the residents. Nikel was built in an area of extreme living conditions. It materialised as an artificial organism covered by a top-down 'protective dome' of vital infrastructure provided by one supplier — the state. Nikel and the region have been maintained by the state for many years, but after 1991, due to more volatile economic and political circumstances, the town was left without central control. As a result the artificial ecology of the city collapsed, and had to adapt to survive.
KL I've worked with several Soviet industrial cities. They typically have separate districts which reflect different political epochs of Soviet and post-Soviet times. You can have a very distinguished Stalin or Khrushchev town. They are characterised by completely different ideologies and aesthetics. But Nikel, with its special Arctic weather conditions, is structured more rationally. At the same time, in Nikel, one epoch is resisting another one. The architectures use more varied resources and interact with each other. It's more about respecting what has been done, learning from others. In Nikel the epochs all exist simultaneously.
TG That is really rare for a Soviet city. For example, the first eight Finnish buildings in Nikel were integrated into the Soviet Promenade Axis. That's why they're still in good condition. Other early buildings were destroyed because they weren't fully integrated. Not being integrated means dying off.

MB You are working within a framework of 'new materiality'. Can you elaborate on the methodology and how you applied it to Nikel?
TG New Materialism is about rethinking relationships between object and subject, people and nature; moving from a focus on the human experience of things to things themselves. New Materialism is about acknowledging nonhuman forces in events. Important theorists in this field are, for instance, Jane Bennett, Manuel DeLanda and Graham Harman. In the case of Nikel, the methods of New Materialism help us to trace non-material social processes and transformations through the material agency. Technology and material fabrication can reveal very specific aspects in this context. We have explored different logics of material assemblies of the town's construction in different political epochs. Each epoch reveals its own sensibility to the fabrication of a material. The sources of energy used for construction also changed over the decades, depending on whether the town's relationships



Details, Nikel. Photos made during the residency in Nikel and commissioned by Dark Ecology–Sonic Acts & Hilde Methi. Photos by Tatjana Gorbachewskaja, 2015.

were externally regulated or self-sustaining. Through this perspective every piece of the town's construction can explain a lot on many different levels of interrelations.
KL The name of the city itself already suggests this. Nikel as a real material and a symbolic notion penetrates all levels of the existence of this settlement, manifesting the evolution of the artificial ecology the town has created. 'Nickel' as a non-physical entity provided an artificial immunity to the city in the form of high subsidies and pensions, twice the holiday time, earlier retirement, and good facilities for sports and education. The products of nickel have become unpredictable. We started looking into the variety of materials that make up the city on a micro level and expanded its qualities to social, economic and environmental processes on a large scale. For instance, an exciting part of the research was to trace a representation of larger processes, which were shaping the city in one material, such as the slag, a by-product of the nickel ore smelting. The pressure from the artificial and natural environment gave this material many shapes and forms: it became a building material, an agent of damage, it is also present as a component of the natural ecosystem. It has penetrated into the surfaces of the buildings and accumulated in cracks and dark corners. This dust mixed with the brightly painted surfaces in the city creates a specific texture typical of most of the buildings in Nikel.

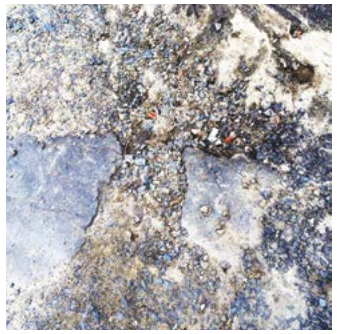
MB So we could see this city as a living system?
KL Nikel was initially set up as a very artificial system, controlled top down by the state. But in time it started behaving and expressing itself as a real living organism. All of its components, including the materials from which it is built, are changing and evolving to adapt to the transforming conditions. All materials behave dynamically in Nikel. They degrade faster than elsewhere. Nature is quite aggressive. It's all about the energy the city shares with nature and for which it competes with nature.
TG This city is slowly opening up to its environment. And this process is a self-organising process. No one controls it!

MB What about the pollution from the smelter?
TG The main ecological damage happened in the 1980s, when the company started smelting a non-local material,












Research for *Nikel Materiality*, an alternative city 'map', collected and organised by Tatjana Gorbachewskaja and Katya Larina. First row–Historical Clash. Second row–Energy Infrastructure. Third row–Self-Organising Boundaries. Fourth row–The Slag. Photos by Tatjana Gorbachewskaja, 2015.












the nickel ore imported from Norilsk (the mining city further to the East in Russia), with a high concentration of sulphur dioxide. It killed almost all the vegetation around the town within just a couple of years. Another cause of major damage was the collapse of the Soviet Union in the 1990s. That had an even worse impact on Nikel. The city lost its source of social security and its future perspective. People started leaving the city. It's still possible to trace the scars of these processes in the material tissue of Nikel. It's a city fighting to survive. Nature is slowly recovering because the company now mostly processes local ore. The city is also starting to take on its proper size. So it is stabilising. Let's hope!

MB You said in your lecture in Nikel during the second Dark Ecology Journey that one of the most interesting parts of your research was the perception of the city as an infrastructural element. Could you elaborate on that?
KL Infrastructures create comfortable spaces for people. An example is the heating infrastructure. Nikel needs such a comprehensive life-support infrastructure because it's located in such a hostile environment. It was supported by an infrastructure for a long time but at some point in the 1990s, when it stopped functioning properly and had to interact with nature, it began falling apart, it transformed, and developed another life. In other cities these life-support infrastructures are not visible, they are hidden below the surface, but here their presence above the surface emphasises the city's artificiality.
TG In the Arctic, the most important thing is the artificial energy network. Nikel's energy infrastructure requires very high maintenance; it is a high resource-consuming component of the city. For example, in Soviet times, buildings were regularly painted in bright colours so that the residents did not suffer from colour starvation. Now, because of the low maintenance financing and the harsh climatic conditions, all the layers of paint on the façades have cracked to expose the surface beneath them. Also, heating pipes are not underground in Nikel, they are built above the ground because of the permafrost. It's like an exposed artificial organism. You see the flow, the veins. That's how we set up our map of Nikel — we tried to show the infrastructure veins of the city.

MB You made a very elaborate and different map of the city, with several interesting structural elements. What was the framework you used for mapping?
TG The original idea was to create an alternative map of the city. Instead of mapping the classical city's highlights, we tried to map a material agency representing the power of the city. We took material artefacts as witnesses that are able to describe the history of natural, political and social processes of the settlement. The artefacts we found were extraordinary and very expressive. Through the map and catalogue of the artefacts we present Nikel as a 'material system', as a multi-scalar expression of new materials that appeared and evolved while embedded in the town's fabric. We organised the artefacts into four sections.
KL As said, the material entity of Nikel has been shaped by successive ideological paradigms of the Soviet and the Post-Soviet political context. In the first group (Historical Clash) we presented artefacts and materials related to the history of social and political rhythms which structured the physical territories of the town. The second group (Energy Infrastructure) is related to the organisational concept of the ecosystem which is a function representing a 'flow of energy and materials'. Here, we perceive Nikel as an infrastructural element for the resource-development industry, a life-support mechanism of a large industrial machine. In the third group of materials (Self-Organising Boundaries) we draw the boundaries of 'competing patterns of existing ecosystems'. This part of the research reveals the fragmented character of the city and traces boundaries and borders that evolved naturally in the town as a response to the overlay and resistance of different elements of Nikel's artificial ecology. In the last group (The Slag), we consider a physical representation of a new material that has appeared in Nikel, copper-nickel dust. For this section we created a wind simulation map, which helped us to understand how the environmental forces spread slag and pollution through the city. It shows how the urban tissue reacts to it.

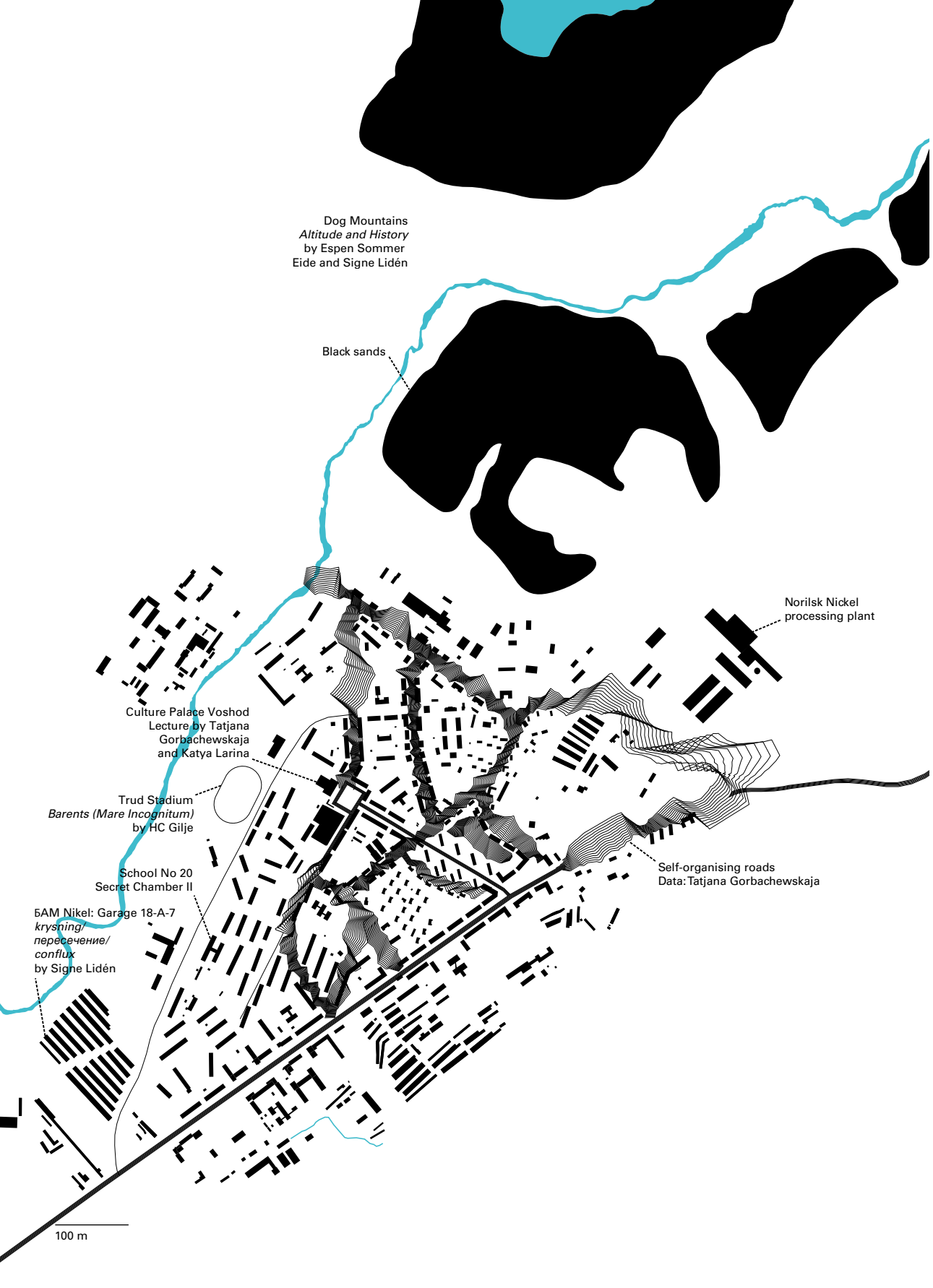
MB Did you present your insights about Nikel to locals?
KL Yes, we had a presentation in Nikel for the local people. For us, the process of the environmental degradation indicates an evolutionary process of the city's artificial

system, revealing its qualities. For inhabitants, it's mostly a personal tragedy. We were worried that we would be misunderstood, but surprisingly, we had quite a positive response.

TG A teacher from the art school pointed out one more important energy resource in Nikel, another important resource of Nikel materiality: the people. And that is true: they really are the driving force of the city.

Material Vision — Silent Reading

Espen Sommer Eide









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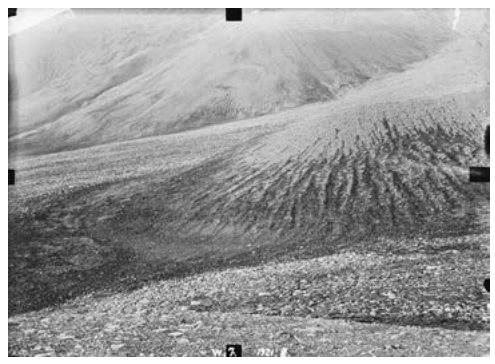


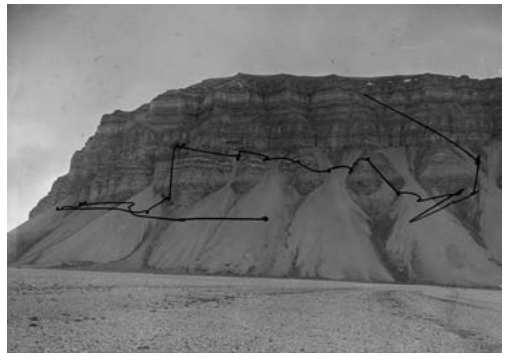



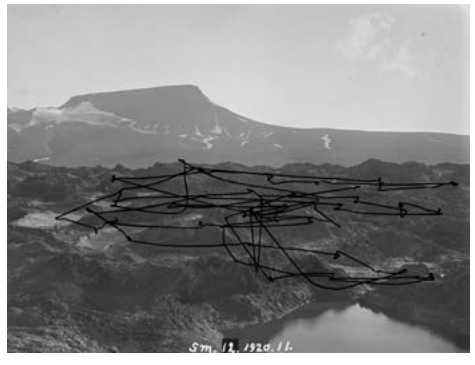
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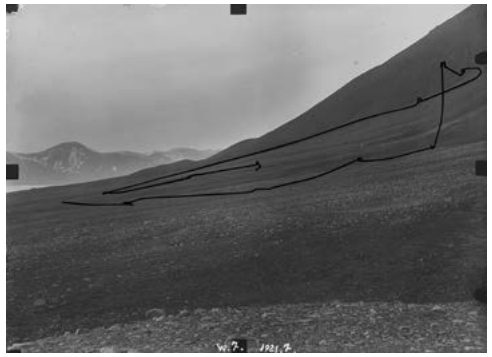
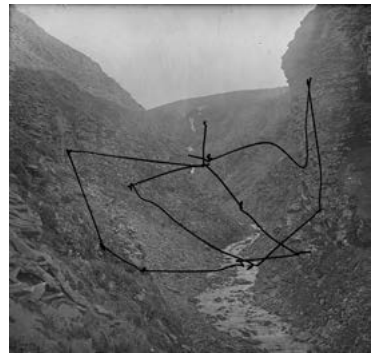
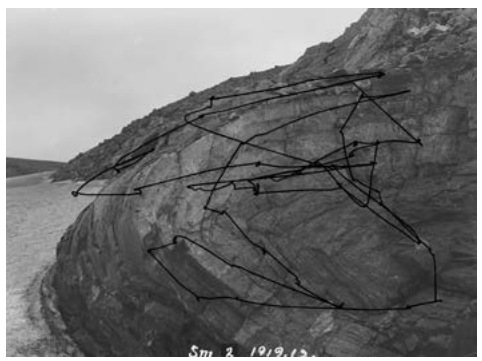
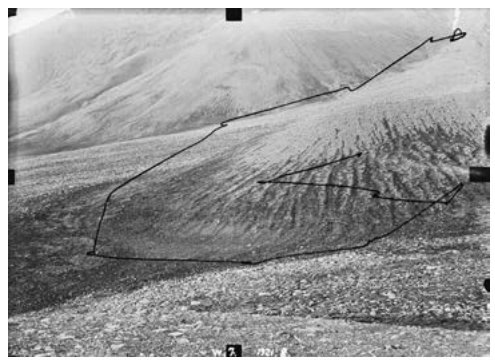




Material Vision — Silent Reading (2014–2015) is a film and series of prints by Espen Sommer Eide based on the creation of new musical instruments and a performance developed on Bjørnøya (Bear Island). Using eye-tracking instruments to investigate the polar landscape of Bjørnøya, the work documents the explorer's gaze and the desire to possess and master the object in view. Espen Sommer Eide talked about this work in his presentation during the first Dark Ecology Journey, as well as at Sonic Acts 2015.

pp. 110–11 – Series of archival photos of Bjørnøya, collected by Espen Sommer Eide from the Norwegian Polar Institute.
pp. 112–13 – Same archival photos of Bjørnøya with a line made by an eye-tracking device following the movement of the artist's eyes. This page – Testing the eye-tracking device on Bjørnøya. Photos by Päivi Pihlaja, 2014. Photo of the device, courtesy of the artist.

Magic Uexküll

Graham Harman

Graham Harman discusses the notions of environment and magic as they are formulated by the biologist Jakob von Uexküll in his influential book *A Foray Into the World of Animals and Humans* and pushes Von Uexküll's ideas in an object-oriented direction.

My topic here is Jakob von Uexküll's marvellous book from 1934, *A Foray Into the World of Animals and Humans* (hereafter, *Foray*) as seen from the standpoint of Object-Oriented Ontology (OOO).[1] The word 'magic' in the title of this essay refers in part to 'Magical Environments', the title of a section in Uexküll's beloved classic, perhaps the best place to see both the power and the limits of his approach. But the phrase 'Magic Uexküll' also refers in passing to Timothy Morton's book *Realist Magic*, which introduces many of the themes that would be most useful in pushing Uexküll in an object-oriented direction.[2] Let's begin by articulating Uexküll's major idea, concluding with an account of the unsolved problem to which it leads. From there we can briefly revisit Morton's ideas on aesthetics, causation, and magic. Quite aside from whatever insights might result from this procedure, it is simply a pleasure to write about Uexküll: *Foray* is one of those books that stays in one's mind across the years, changing the way one looks at the everyday world.

The key distinction for Uexküll is that between surroundings (*Umgebung*) and environment (*Umwelt*). While every animal is surrounded by trillions of entities, only a small number of these beings are relevant — or even noticeable — to the animal. Uexküll's most famous example is that of the pesky tick, introduced in the opening pages of *Foray.* (pp. 44–52) Experiment had established that the environment of the tick is relatively poor, consisting of only three significant elements. First, the tick can smell the presence of butyric acid, emitted only by mammals. For the mature tick it makes no difference whether the butyric acid in question comes from a rabbit, deer, dog, mouse, or human; any of these creatures will serve its purpose equally well. Second, there is the warmth of skin unconcealed by hair or fur. Once the tick has landed successfully on a given mammal, it seeks an exposed piece of skin suitable for drilling. Third and finally, the tick knows when it has begun to successfully suck warm liquid from the mammal. Oddly, however, experiment has also determined that the tick has no sense of taste: under laboratory conditions it can be tricked into sucking other warm liquids not capable of nourishing it, as long as these liquids are the same temperature as mammalian blood. Once the tick feels itself sated it falls to the ground, lays its eggs, and dies.

This life of the tick may sound depressingly primitive to us. But in the first place, it is already far richer than other animal lives, such as that of the paramecium. (pp. 73–74) This simple organism reacts to all contact with a flight response, except in cases where it makes contact with the one thing in its environment that gives no stimulus: putrefying bacteria, the paramecium's favoured nutrient. Almost as primitive is the life of the sea urchin (pp. 76–77) which encounters all objects as nothing but overhead shadows giving rise to alarm: whether it be the shadow of a shark, a boat, or the more dangerous starfish. The urchin even lacks a central nervous system, so that each of its quills reacts separately to yield collective protection. We might speak as well of the medusa jellyfish (pp. 74–75), which does nothing but make repeated pumping motions. These motions serve the dual purpose of keeping the creature afloat and sucking a perpetual stream of plankton-rich water through its body.

All of these creatures I have mentioned seem to belong to an impoverished range of entities in comparison to humans. But humans, too, are locked into their own environment, unable to smell like dogs or navigate like migrating birds or butterflies. In fact, for Uexküll such oversimplification is the very essence of life. Though we are normally inclined to think of animals as more *open* to their surroundings than inanimate objects, there is a sense in which the opposite is the case. A lifeless stone, for all its evident lack of vitality, still responds to numerous causal forces in numerous different ways: it can be shattered, broken, heated, punched, or rattled, with each of these actions resulting in very different effects on the stone. Uexküll notes that the peculiarity of a *muscle* is that it responds to *all* stimuli with one and the same reaction: namely, the muscle contracts. (p. 47) And it is not just a question of muscles: 'Johannes Müller showed further that all external effects that hit our optic nerve, whether these are waves in the ether, pressure, or electric currents, cause the sensation of light…' (p. 47) Though Uexküll always succeeds in increasing the reader's sense of wonder at the rich

1. Jakob von Uexküll, *A Foray into the Worlds of Animals and Humans with A Theory of Meaning*, tr. J.D. O'Neil, Minneapolis: University of Minnesota Press, 2010.

2. Timothy Morton, *Realist Magic: Objects, Ontology, Causality*, Ann Arbor, MI: Open Humanities Press, 2013.

diversity of the animal kingdom, the heart of his teaching is the inherent *stupidity* of the animal organism. This obviously extends even into the human realm, where Uexküll notes that even each particular branch of scientific knowledge is an inherently limited 'environment', fruitfully ignoring the equally stubborn facts of neighbouring disciplines as if it were the only form of knowledge in the world. (pp. 133–35)

In short, Uexküll defines the animal in terms of environmental closure. This leads him to make overt alliance with the philosophy of Immanuel Kant, (p. 52) who is praised by Uexküll for his awareness that space and time are not objectively outside us, but are inherent forms by which all humans automatically perceive the world. Uexküll easily extends this analogy to the world of animals, claiming that each has its own way of perceiving time and space. For instance, humans seem unable to experience moments of time shorter than one-eighteenth of a second, to judge from the fact that lights flashing more rapidly than this are perceived by humans as steady rather than flashing. (p. 70) By contrast, fighting fish are apparently able to perceive moments somewhere between one-thirtieth and one-fiftieth of a second. At the other extreme, experiment suggests that snails can only perceive three or four events per second. One can imagine a whole research programme springing from this insight, with precise measurements being taken of the temporal capabilities of each species and perhaps the freak individual variants within each species. And of course there are many examples aside from the case of time. The anatomical structure of a fly's eye gives it a different form of visual perception from our own (pp. 68–69), while the superior sense of smell in dogs leads them to inhabit an environment — so unappealing to humans — in which urine is constantly smelled and deposited. (p. 106)

By defining environments in terms of their relative closure, Uexküll sets forth an idea later developed by other prominent authors. In the autopoietic biology of Maturana and Varela, the cell knows nothing of the world beyond its walls.[3] It aims only at homeostasis, maintaining a constant situation inside its own boundaries. If an outside force throws this state out of equilibrium, the cell reacts like a thermostat to maintain constancy. The systems theory of the German sociologist Niklas Luhmann, influenced by Maturana and Varela, works along similar lines.[4] Luhmann speaks of an 'operational closure' in the workings of any thing, to such an extent that society is made up of 'communications' rather than of humans. We make contact only with communications pre-coded in terms that we can understand, not with an objective outside world. In Uexküllian terms the life of any animal — including humans — can be compared to a bubble, with each one containing a new world with different features from the others, even if they all happen to exist in the same flowering meadow. (pp. 43, 69)

But although this focus on closure gives us powerful methodological tools, it also leads to a disturbing theoretical imbalance. In Uexküll's case, the notion of animals as trapped within pre-defined bubbles makes it difficult to understand how evolution could ever occur, and thus his model seems better equipped to deal with the pre-Darwinian notion of eternal species. How do bacteria, mosquitoes, or bears adapt to newly emergent realities that are not easily coded as familiar parts of their environment? In the even clearer case of the environments of the different sciences, how does a science evolve if not through taking account of realities previously unknown or unaccounted for by its previous environment? How are *new* sciences generated if not through taking account of that which was previously undiscussed? The problem, in short, is how one accounts for openness to what lies outside the currently established environment. As we will see a bit later, Uexküll gives us a hint of such an opening in his brief but stirring account of 'magical' environments.

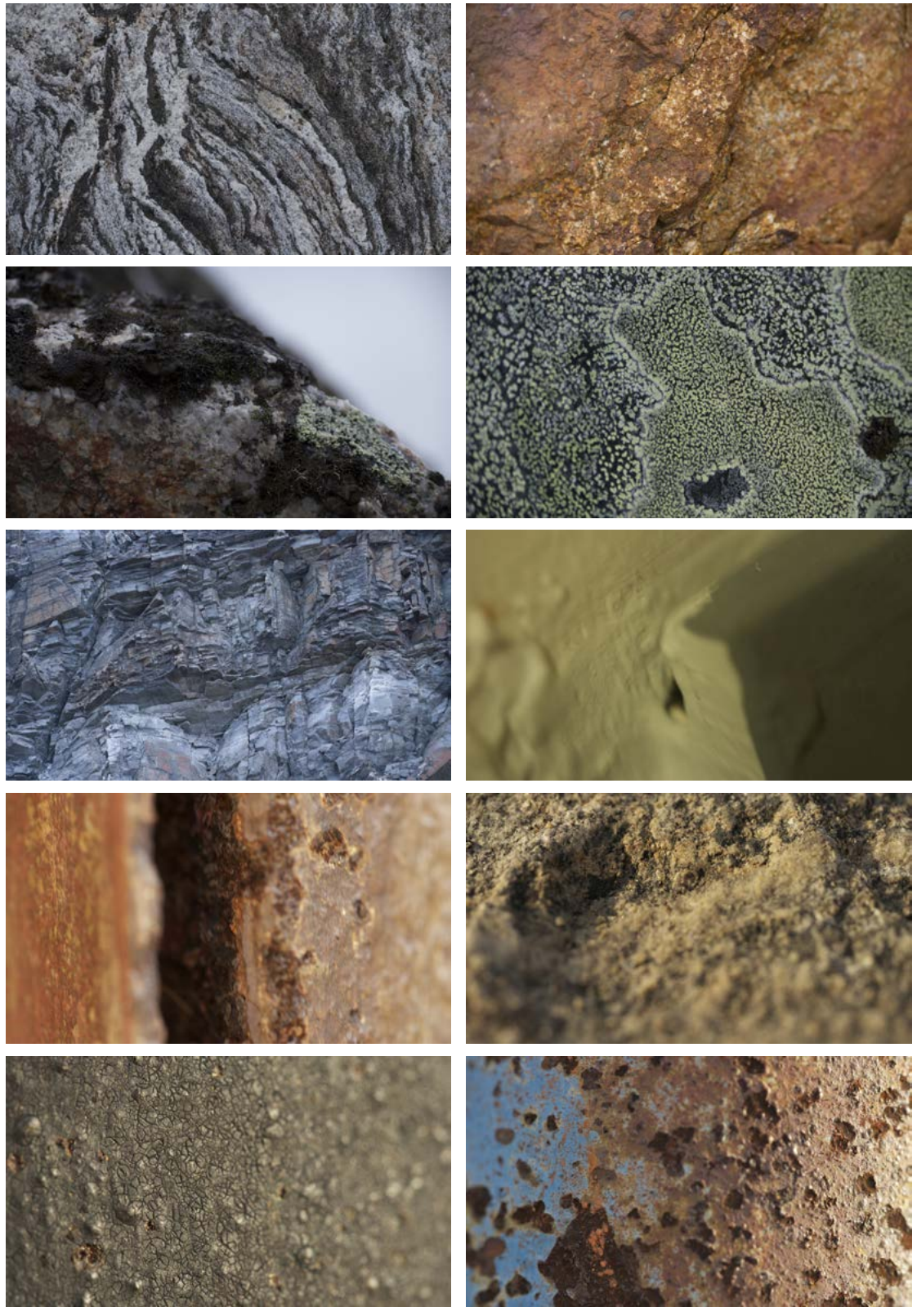
But before we turn to that topic, let's spend some more time enjoying some of Uexküll's other examples and insights. There seems to be some variation between one human and another, even in their perception of space. Human subjects are asked to close their eyes and move one of their hands in each of the three spatial dimensions in succession, with the goal of discovering where the person locates the midpoint of each dimension. If we hold our hand upright and move it back and forth across our face, it is easy to determine where the midpoint of our horizontal space is located: 'This boundary practically coincides with the body's median plane.' (p. 55) There is more variance with the other two dimensions. When moving a hand up and down in front of our closed eyes in

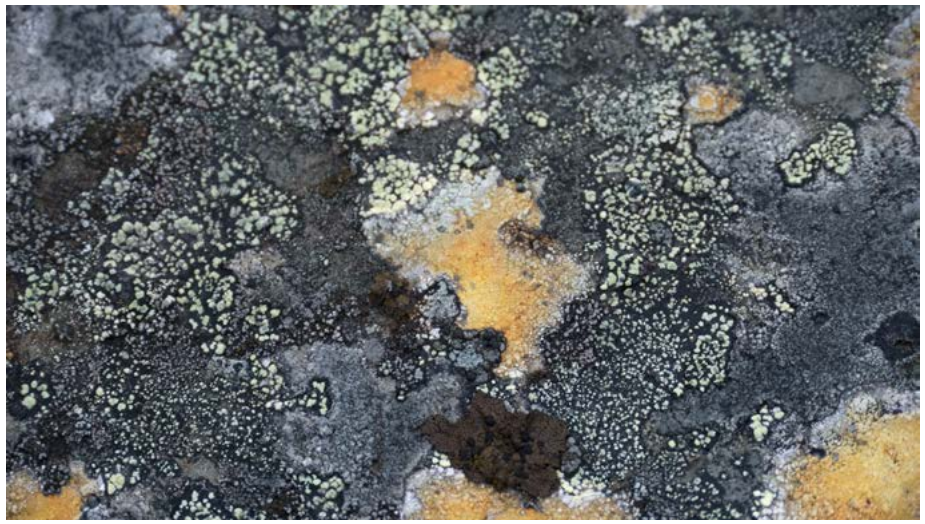
3. Humberto R. Maturana & Francisco J. Varela, *Autopoiesis and Cognition: The Realization of the Living*, Dordrecht: D. Reidel, 1980.

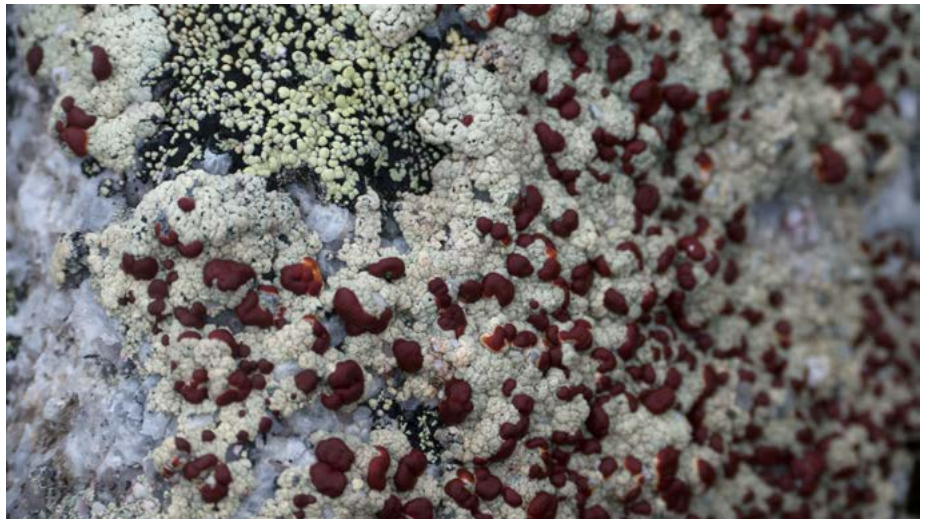
4. Niklas Luhmann, *Social Systems*, tr. J. Bednarz Jr. with D. Baecker, Palo Alto, CA: Stanford University Press, 1996.

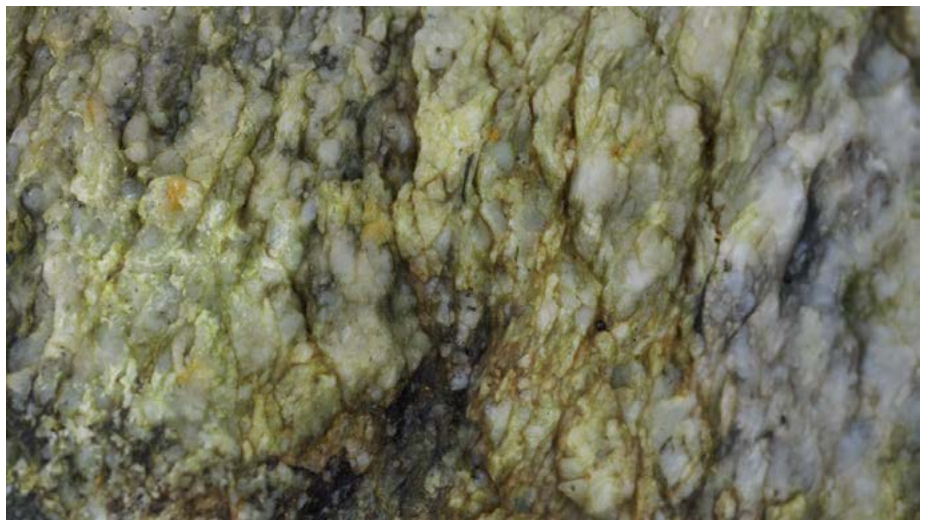
order to determine the midpoint of vertical space, it is found that 'this boundary is located at eye level in most people. Nonetheless, a great number of people place this boundary at the height of the upper lip.' (p. 55) But the greatest variation of all occurs in the case of the midpoint of front and back: 'A large number of people say that this plane is located at the opening of the ear, while others designate the zygomatic arch as the boundary plane, and others still place it at the tip of the nose.' (p. 55) Already in Uexküll's time it was known that this three-dimensional co-ordinate system relies on the semicircular canals in the ears. These organs are viewed as crucial by Uexküll, who concludes that 'all animals that have these semicircular canals also have available a three-dimension effect space.' (p. 56) Other animals have semicircular canals, or some equivalent that allows them to orient themselves in three-dimensional space. In one case noted by Uexküll involving bees (and summarised incompletely by Heidegger), a beehive is moved two metres after all the bees have left. 'As it happens, the bees gather again at that place in the air where the exit hole — their house door — was previously located. After five minutes, the bees shift course and fly toward the hive.' (p. 57) But even more interesting than this is a cruel variant on the experiment in which a number of bees have their feelers removed. These bees, apparently deprived of their three-dimensional orientation, fly *directly* to the relocated hive rather than joining the unmutilated bees at its former location. Uexküll's conclusion is that in the case of the mutilated bees, visual orientation replaces the usual tactile kind. Related examples are cited. Blind cats and rats continue to move with relative ease as long as they still have their whiskers. More generally, 'all nocturnal animals and all animals living in caves live predominantly in tactile space, which represents a melding of places and directional steps.' (p. 61)

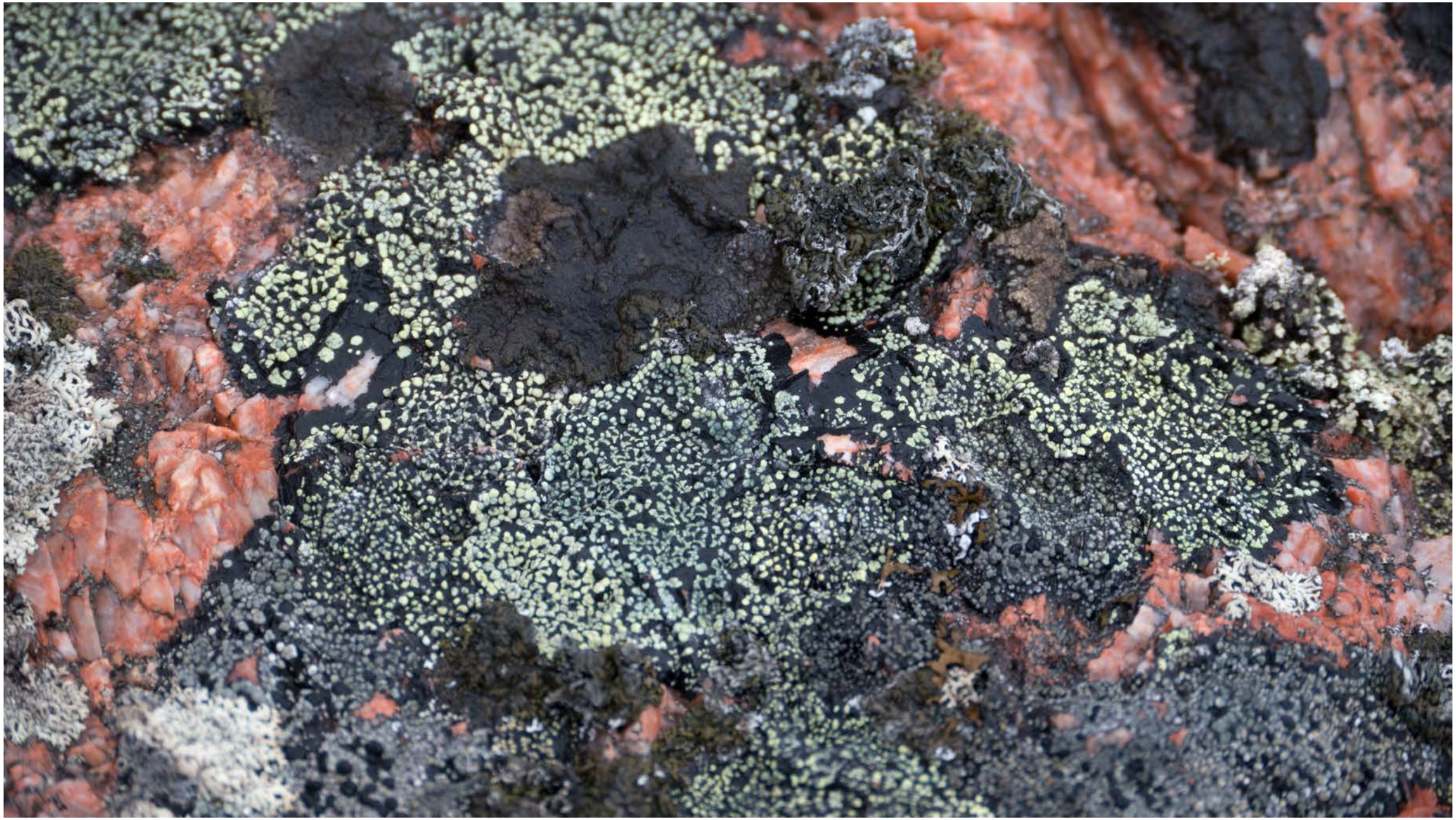
Even the perception of visual space differs from species to species and even from child to adult. One point of difference concerns the distance of the furthest visual plane. Uexküll says that the structure of the muscles in the eye yields a situation in which 'near' and 'far' is a distinction that works under natural conditions only within a radius of ten metres. (p. 66) Beyond this, objects only seem large or small rather than near or far. Hermann von Helmholtz tells a story from











pp. 121–25–Close-ups of rocks, algae, lichens, and sand made in 2014 by Telcosystems nearby Grense Jakobselv, Finnmark. The area is close to the river that forms the border between Norway and Russia. Photos by Telcosystems, 2014.

his childhood in which he saw workers high on a church steeple in Potsdam, and asked his mother to grab the dolls for him. In his childish perception, he was unable to grasp that the workers were far away rather than small, since only with maturity do we learn to push the furthest visual plane further outward from the initial ten-metre radius. 'Only bit by bit do we learn to push the farthest plane ever farther with the help of distance signs, until the adult's visual space ends at a distance of six to eight kilometres and the horizon begins.' (p. 66) By contrast, houseflies only seem to flee a swatting hand when it approaches within half a metre, which raises the possibility that this is the distance of the fly's furthest visual plane. (p. 68)

Such is the richness of Uexküll's book that we cannot cover all of his marvellous examples, but will content ourselves with one more, since it leads directly to our central theme: magic. Earlier we saw that visual space is often cancelled by tactile space, as in the case of the bees who gather near the former site of their hive rather than seeing that it has simply been moved to a nearby location. A related case is when the visual image is superseded by what Uexküll calls the *search image*. He relates a personal experience that most of us have probably had in some form or other:

> When I spent a while as a guest at a friend's house, an earthen water pitcher was placed at my place at the table every day at lunch. One day, the butler had shattered the clay pitcher [without my knowing it] and, instead, placed a glass carafe in front of me. When I looked for the pitcher during the meal, I did not see the glass carafe. Only when my friend assured me that the water was in its usual place did different sparkling lights scattered on knives and plates shoot through the air and come together to form the carafe. (p. 113)

In another case, Uexküll reports paying at a shop with a 200-Mark note that he balanced on its edge rather than laying it flat on the counter in the usual way. The annoyed shopkeeper insisted that Uexküll had not yet proffered the money, until he knocked the money flat and it was immediately recognised. 'Every reader will surely have had similar experiences', he adds, 'which seem like witchcraft.' (114)

This note of witchcraft brings us directly to Uexküll's important section on 'Magical Environments'.

By magical, Uexküll refers to experiences that go beyond the perceptual structure of the environment: 'there is always a fundamental opposition between the surroundings that we humans see spread all around animals and the environments which they have built themselves and filled with their perceptions of things. Until now [in this book] environments had been the product of the perception signs that were awakened by external stimuli.' (p. 119) The cases just cited from Uexküll's own experience, in which the 'search image' obscured the direct perception of a water carafe and a 200-Mark note, already point toward the magical environments that Uexküll now aims to discuss. But here I would object to Uexküll's assumption that magic is always something 'added by the subject', since this merely threatens to drive his model of the environment even further into an internal, subjective bubble. I would suggest instead that magic is the way that an animal is able to move to some extent *outside* its environment. I would add further that *aesthetics* — a word not used by Uexküll in *Foray* — is already a form of magic, following the central argument of Morton's *Realist Magic*.

Uexküll gives examples of varying degrees of usefulness for our purposes. One concerns a typical example of childhood magic: a little girl who was playing Hansel and Gretel, and the witch with three matchsticks, who suddenly shouted 'Get the witch out of here; I can't stand her repulsive face anymore!' (p. 119) Since the matchstick representing the witch presumably did not differ significantly in appearance from the others, Uexküll can easily claim that the 'repulsive face' of the witch matchstick is something 'subjectively added' by the little girl. A second example: a young starling has been raised in the room of a house and has never so much as seen a fly, but one day begins to snap at an imaginary fly. (pp. 120–21) But the most interesting example for our purposes is the third, in which Uexküll holds that perception is cancelled not by the addition of something 'subjective', but by an 'inborn path' corresponding to a mysterious plan of nature. This is the case of the pea weevil larva, which does something truly remarkable:

> [it] bores itself a channel up to the surface in the still-tender flesh of the young pea, a channel that it uses only after its transformation into an adult weevil to slip out of the pea, which has become hard by that time. It is completely certain that this is a matter of a totally planned activity which is, however, completely meaningless from the point of view of the young weevil, since no sensory stimulus of the future weevil can reach its larva. No perception sign announces to the larva the path which it has never been down and must follow nonetheless, if it is not to waste away miserably after its transformation to a weevil. The path stretches out clearly marked before it as a magical formation. The inborn path takes the place of the familiar path known by experience. (p. 122)

Uexküll seems to be correct in observing that no 'perception' can be driving the larva to create this tunnel that it will only need much later in life, since the larva surely has no perceptual image of its future adult needs. What I question is whether perception can only be countered by subjective projections (as in the case of the little girl with the matchsticks) or by inborn proclivities — especially since Uexküll himself holds that 'instinct' is an empty notion that no one really understands. (p. 92) If we agree with him to use the term 'magic' for non-perceptual access to the world, the question remains as to what this 'magic' really is. The question is crucial for Uexküll's theory, since without these magic leaps beyond the given environment, animals are entrapped in their respective bubble-like closures, frozen out from access to any surroundings that are not yet environment.

Magic has a bad reputation in the modern period even among many who have studied it the most closely. The anthropologist J.G. Frazer comes to mind, who wrote:

> If we analyse the principles of thought on which magic is based, they will probably be found to resolve themselves into two: first, that like produces like, or that an effect resembles it cause; and, second, that things which have once been in contact with each other continue to act on each other at a distance after the physical contact has been severed… In short, magic is a spurious system of natural law as well as a fallacious guide of conduct; it is a false science as well as an abortive art.[5]

5. James G. Frazer, *The Golden Bough*, London: MacMillan & Co., 1920, pp. 52–53.

Yet Frazer's basically rationalist critique does not hit home in the present case, since we need not endorse magic in the literal sense of sorcery or the brewing of potions. We are simply following Uexküll in using 'magic' as a placeholder term for cases when a human or other animal seems to act beyond the perceptual givens of their current environment, while also rejecting Uexküll's assumption that this 'going beyond' requires either subjective projections or the obscure inheritance of mysterious plans from our ancestors.

Object-Oriented Ontology (OOO) would put it as follows. An object is not a bundle of perceptual qualities, as the empiricists have always held. Indeed, while perceptions belong to the structure of our environment, the object does not appear in that environment at all: it *withdraws*, to borrow a term from Heidegger.[6] A human perceives chairs in one way, and dogs and mosquitoes in another, and human perception is sometimes opposed — as by Heidegger — to a human praxis that merely uses or relies on the chair rather than explicitly perceiving it. But in none of these cases of theory or praxis do animals or humans ever make direct contact with the chair. As Uexküll would be the first to note, any contact of a living species with a chair can only be *environmental*, in the sense that he develops from Kant's theory of a completely finite perceptual environment for every species. The chair itself belongs to the unknown *surroundings* of an animal, utterly incapable of being adequately inscribed in its *environment*.

This is where *aesthetics* enters the picture. Whereas knowledge works by defining an object in terms of its qualities, aesthetics does no such thing. Our encounter with a painting or sculpture, for instance, does not amount to our redescribing these artworks in discursive prose terminology, as if a piece by Picasso or Brancusi could be adequately understood in the same way as a neutron: by listing all the experimentally and theoretically determined true facts about it. Instead, the art objects remain partly opaque or mysterious, as a surplus over and above its perceived qualities. But this means that in aesthetic experience, unlike

6. Graham Harman, *The Quadruple* Object, Winchester, UK: Zero Books, 2011.

the everyday or scientific kinds, the artwork as object is severed from its qualities. The sculpture withdraws into inscrutable depths, while nonetheless preserving a series of tangible qualities that allow us, as if by magic, some form of indirect access to its depths. This is why OOO holds that aesthetics is first philosophy.[7] More than this, OOO claims that not only animals and humans inhabit a finite environment that limits their access to things themselves, as Kant already knew. Instead, inanimate objects also have their environments, even if not 'consciously' so, in the sense that no such object can exhaust the reality of a chair when touching or colliding with it. A fire that burns the chair interacts only with its flammability, and destroys that chair from a state of relative ignorance no different in kind from our own. One of the best sources on this relation between aesthetics, causality, and magic is Morton's *Realist Magic*. In that book, Morton lays out the necessity of relations between things that would be based not on the explicit properties of those things, but on a manner of passing beyond the given environment whose clearest human example is found in the arts.

But let's return in closing to Uexküll. What is really happening when the pea weevil larva digs a tunnel in advance, though it seems impossible for the larva to know that it will someday need that secure path to vacate the pea? It would be strange to call this a 'subjective projection' in the manner of the little girl who sees an evil witch's face on a matchstick. Moreover, this would fail to account for the role of the *object* in providing materials that enable such projection in the first place. Nor is it satisfying to reject credit for the tunnelling to the larva itself by ascribing it to some sort of murky ancestral plan, since this would place us too close to the concept of 'instinct', which Uexküll rightly rejects as a mere asylum of ignorance. The only remaining option is to view the larva's tunnelling in *aesthetic* terms: as a sort of artistic access to the pea beyond any usefulness for its current perceptions. Even the larva does not just experience the pea as a bundle of present qualities, but as a mysterious space of possibilities that forms a surplus beyond its current aspect. If we were to rewrite Uexküllian ecology in aesthetic terms, we would learn to see the environment not in terms of seamless closure, but as what Morton would call a 'perforated' environment filled with objects, which we have seen are never environmental.

7. Graham Harman, 'Aesthetics as First Philosophy: Levinas and the Non-Human,' *Naked Punch*, no. 9 (Summer/Autumn 2007), pp. 21–30.

Living Land — Below as Above

Britt Kramvig & Margrethe Pettersen

Living Land — Below as Above is a work by Margrethe Pettersen for Dark Ecology that was co-commissioned with Arctic Encounters. The soundwalk was performed outside Kirkenes, on a frozen lake, during the second Dark Ecology Journey in November 2015.[1] This text was written by Britt Kramvig in dialogue with Margrethe Pettersen.

The environment is full of free and non-teleological energies — trade winds and storms, ocean currents flowing around the planet, drifting continental plates and glaciers that melt and break off as blocks of ice that fall into the Arctic Ocean. Global warming is now happening more than twice as fast in the Arctic than anywhere else in the world. Higher temperatures will lessen the snow cover, decrease the sunlight reflected back into the atmosphere and increase warming.[2] About half of the Arctic areas will see vegetation change, and areas currently populated by shrubs may find woody plants taking their place. This means pastures for reindeer, but the habitats of moose, sheep, goats, seals, whales and polar bears are also undergoing massive changes, with unpredictable effects on animals and the people who co-exist with these animals. We watch whales returning in numbers to areas they have not been seen for decades, following herring that also move north in reaction to warming water temperatures. Environmental organisations are concerned with the amount and level of seismic soundings — sound waves transmitted into the seabed, mapping oil in the Arctic — the sound is so loud that the whales cannot communicate with each other.[3] We do not know much about the effect on whales and all the other creatures living in the deep sea that we aren't aware of. What we do know, however, is that the sonic environment has been drastically changed and disturbed by all these new actors in the Arctic seas. Cod, so important for the livelihood of Arctic people, is also moving differently due to changes in sea temperature. As the ice melts, the oil and gas installations move in.

International mining companies such as Beowulf Mining plc are one of the many that are proceeding with plans to start mining for iron ore, despite protests from environmental organisations and the indigenous people.[4] In Kvalsund in Norway, the company Nussir ASA[5] has been given permission to dump the tailings from the copper mine in Repparfjord,

1. For a sound recording of the soundwalk, see https://soundcloud.com/margrethe-pettersen/living-land-below-as-above-english-version.

2. http://www.livescience.com/28406-arctic-tundra-turning-green.html.
3. Britt Kramvig, Berit Kristoffersen, Anniken Førde, 'Responsible cohabitation in Arctic Waters. The Promise of a Spectacle Touristic', in Abram, S. & K. A. Lund, eds., *Green Ice*, Palgrave (in print), 2016.
4. This is in the area of Gállok in Sweden on land considered as a homeland by the indigenous and local people alike. Indigenous people who are dependent on such areas in Norway and Finland also protest against international investments supported by national governments.
5. In total, the company intends to dump over 30 million tons of copper mine tailings into the fjord. Environmental organisations argue that previous experience with submarine tailings disposal in the Reppar fjord has shown that the local fishing community was hit hard by the disposal of heavy metals and mining tailings. The quantity of heavy metals in the tailings is so high that it will be acutely toxic for marine life.

Different views of the frozen Postmestervatn lake, Kirkenes. Photos by Michael Miller, 2015.

Top–A rock near the lake. Photo courtesy of the artist, 2015.
Bottom–*Lavuu* (a Sami tent), set-up for the soundwalk.
Photo by Michael Miller, 2015.

despite the objections of the Sami Parliament as well as environmental organisations such as Natur og Ungdom.

As in other places, the protesters in Gállok are defending the landscape, the animals, other species and the future. They insist that the centuries-long exploitation of indigenous lands has to stop. In addition, they argue that besides being important pastures for reindeer, these are areas with cloudberries, blueberries, lakes full of fish, clean water to drink, surrounded by swamps and an old-growth forest with many species now extinct in other places.[6]

These conflicts should not be seen as conflicts of interests. These are ontological conflicts, where encounters with different ways of knowing and living with the land are central. Marisol de la Cadena provides a helpful concept by bringing the 'anthropo-not-seen' to our attention. With this concept she wants to highlight the world-making process in heterogeneous worlds that are not conceived through the distinction between humans and nonhumans, though both are obliged to participate in that distinction and surpass it, and do not necessarily regard the different entities in their assemblages through such a division.[7] The anthropo-not-seen does not only refer to the particles of the world that are often not seen, and for that reason risk destruction; the anthropo-not-seen, as Cadena formulates it, includes both the assemblage of human and nonhuman, but can also be understood as 'articulated collectives' of nature and humans, while perhaps also expressing a condition of 'no nature, no culture'. She claims that the antropo-not-seens are protests against world-making practices that insist on dividing entities into nature and culture.

The antropo-not-seen is a helpful tool to approach Margrethe Pettersen's soundwalk *Living Land — Below as Above*. The piece departs from this (im)possible position of entering into the life and communication beneath the snow and ice during the Arctic's dark period, when a silent carpet covers everything and most species exist in different shapes or are hibernating. What sounds do they make? Can we as humans hear the stories of the plants; the stories told by spirits living on the land; the sound of the atmosphere and the sounds calling from the ice? This was Margrethe Pettersen's starting point and it defined her process of creating and recalling the sound-landscape in *Living Land —*

6. https://kolonierna.wordpress.com/the-struggle-in-kallak-gallok.

7. Marisol de la Cadena, 'Uncommoning Nature', in *Apocalypsis*, 2015, http://supercommunity.e-flux.com/texts/uncommoning-nature.

Below as Above. During the soundwalk, voices tell us many stories, some in her native dialect, some in English and some in Sami. Multiple voices speak: 'I am snow'; 'I am a water plant'. The voices do not necessarily speak *for* them, but rather show the importance of listening, and of letting them speak. Perhaps in this way it helps people to think differently about things they do not think about or hear in their surroundings — to move beyond the obvious in the here and now. 'This is also connected to my childhood', Margrethe emphasises, 'when I used to lay down in the snow for hours, spacing out or just being connected to something bigger without words'. Still the words are what we have, besides sounds, to tell stories.

krrrrriiiiizsckrrrrrriiiiiizsckrrrrriiiiizsck
rrrrriiiiiizsckrrrrrriiiiiizscriszckkriszzz

Isen gjør landskapet større og mer tilgjengelig, da kan man farte over vann og elver.
Bevege sæ over, istedenfor rundt. Når isen smelte forandres områdan og bevegelsan blir begrensa.

wuuuuoooopwuopwuopwuopuuuuuuooooo
pwuuuooooopwuuuuuooooopwuuuuuoop

I am a water plant — *Blærerot* — *Utricularia vulgaris* — I am rootless and floating around. During the cold and dark days I leave the surface shaped like a ball and sink to the bottom of the lake — I call it my home. It is nice to save energy, you should try it — at least slow down.

In the dark time life is at rest, hidden, and the spectrum of what is visual and audible is scaled down, inviting us to direct our senses to nuance. We walked one November night on a frozen lake. We were warned that the ice could be unsafe, so many of us crossed the ice one step at a time, listening for the crack that comes before the ice breaks. Others who do not know the ice need only trust the storyteller, the water plant, the frozen flowers — the *háldi* and the other spirits — and encounters with other (non)humans when they experience the trails and the soundscape *Living Land — Below as Above*.

sssssssssssssssuuuuuuuououooooo
sssssssssssssssssuuuuuouoououoss
uouuouosssuouosssssssssssssssssss
uuuuuuooooossssssssssssssssssssss
uuuuuihhhiihiiuuuusssss

I am snow — *muhottit* — I come in all kinds — dry and light, wet and heavy, crisp and hard, calm or birching. Like a silent carpet I surround everything and hopefully I calm you down. I give brightness in a period when everything is dark and give shelter if you form me properly.

sssssssssssssssuuuuuuuououooooo
sssssssssssssssssuuuuuouoououo
ssuouuouosssu

Living Land includes stories told in Sami, to remind us that we also need to connect to this place as a border zone and as Sami territory. These Sami stories are not translated in the soundwalk. For Margrethe, it was important for participants to hear the language of indigenous people and to allow them to walk in darkness on the ice and listen to the rhythms of the language as sounds that become part of the bodies that move in this particular landscape. Can we become aware of the existence of radical differences through land/language/story/rhythm assemblages?

Go hárdojuvvojit cubbot, de álget boahtit ollu ja loahpas boahtá cuoppomáddu, ja dat goddá dan, gii lea hárdán daid cubbuid. Juohke diŋggas lea máddu. Ruovdegáranasas lohkket maid máddu. Go ruovdegáranasa goddet, go ii leat olbmuid diŋggaid alde, de álget boahtit, ja maŋemuš boahtá vel dat máddu nai ja njamista olbmos vara, nu ahte dat jápmá dakkaviđe.[8]

Another consideration is to preserve the originality of these stories out of respect for the oral tradition and the ancient mother tongue of the North. These have a specific logic, storytelling structure and words that are not easily translated without losing meaning. Margrethe Pettersen also wanted

8. Johannes Larsen Bringnes, Jon Larsen Olderfjord, in Just Qvigstad, *Lappiske eventyr og sagn*, 1928. Oslo: Aschehoug, 1927–29, 2, Instituttet for sammenlignende kulturforskning (trykt utg.), Serie B Skrifter, 10.

people to feel connected to the site and the history while not understanding it all, because we cannot control and understand everything. We all have to be reminded of the 'anthropo-not-so-obvious-seen', but still be sensitive to it too.

One of the stories is about the Maddo, a term used for a spirit animal, an enormous version of an animal. For instance, if you mistreat a frog, at first, many frogs will appear and in the end, the Maddo. This huge frog will suck your blood and you will die. To learn about life is to learn about death. To be able to live in the Arctic, with its (near) unpredictable changes in weather conditions, one has to respect nature, and be sensitive as well as respectful toward others who live on the same land. This must be learned. There are anthropo-not-seen Sami ontologies and concepts of the land as a homeland. Saíva is the sacred lake consisting of two lakes on top of each other, with an opening in between. The gate opens up into another world — a different realm. There, distinctions between life and death are blurred and transitional. It presents an opening — a passage — in the landscape, a land where borders are done differently. Other figures in the landscape are Gofitar and Háldis, unknown entities that live with the Sami people as well as with others who learn to know not Gaia, but Ednam, as the planet is known in the Sami ontology.

> Ráissajávrri davvelis lea okta jávri, mii gohččoduvvo Reahpenjávri. Dat lea dakkár: das leat guokte botni. Go goalki lea, de oidnojit guolit bákŋame hirbmadit, ja go olmmoš vuolgá suhkat dan jávrri, de mannet dat guolit dain reahpeniid sisa. De olmmoš oaidná, go mannet: Dušše beahcehat oidnojit, go mannet vulos. Go muorra coggá dohko, de ii gullo botni, ja go fierpmi bidjá dan jávrái, de eai darván guolit ovdal go jándor geažes, ja go nuohtti suhppo, de galgá nuohtti orrut jándora ovdalgo geassigoahtá. De galgá geassit nu johtilit go vejolaš lea, vai eai háhppet mannat vulos daidda reahpeniidda.[9]

In order to face global warming, and take on the responsibility that we humans have for the future of the planet, we could learn from Arctic ontologies where people live with the land, the animals, with Gofitar and other

9. Elen Ucce, Kautokeino, in Just Qvigstad, *Lappiske eventyr og sagn*, 1928. Oslo: Aschehoug, 1927-29, 2, Instituttet for sammenlignende kulturforskning (trykt utg.), Serie B Skrifter, 10.

Top–Langøra hill, Kirkenes. Photo by Sam Nightingale, 2015. Middle and bottom–Details observed and photographed by Margrethe Pettersen, 2015. Courtesy of the artist.

entities.[10] *Living Land — Below as Above* gives us as partakers access to a responsible relationship with the land — where nature asks people to listen and be respectful.

Colonisation has for centuries been the condition for most Arctic people, animals and places.[11] It has made predatory claims on the earth's geological flows and processes without regard for the reciprocities through which they were formed in the Earth's sphere. Technologies of investment transformed the people and the land, and continue to do so; reciprocity and gifts are replaced with commodities. We have to start decolonising knowledge itself.

Listening to the land is a possible route on this track, we need to refocus our attention on the voices of the others who often go unheard; where it could be that our ears have become dull to the sounds of the land speaking through our feet, it is now incumbent upon us to remember.[12]

We have to continue to resist the growing tendency of making multiple worlds into one, and respect other ways of knowing and living on the land, as well as other ways of listening to it. Breathe. Disturb speed. Destruct the making of one timeline. Sense. Listen. Feel. Reflect, and work hard to tell other stories. Only if the land decides to stop speaking to us will we enter the world of our own dislocation.

10. B. Kramvig, 'Gifts of Dreams, Connecting to Sami Epistemic Practice', in B. Miller, ed., *Traditional Sami Health and Healing Practices*, Edmonton: Polynya Press/University of Alberta Press, 2015, pp. 183–209.
11. Lesley Gree, 'The Changing of the Gods of Reason: Cecil John Rhodes, Karoo Fracking, and the Decolonizing of the Anthropocene', 2015, http://supercommunity.e-flux.com/texts/the-changing-of-the-gods-of-reason.

12. Vanessa Watts, 'Indigenous Place-Thought & Agency Amongst Human and Non Humans (First Women and Sky Women go on a European World Tour!)', in *Decolonization: Indigeneity, Education & Society*, vol. 2, no. 1, 2013, pp. 20–34.

Murmansk Spaceport / Мурманский Космодром

Hilary Jeffery

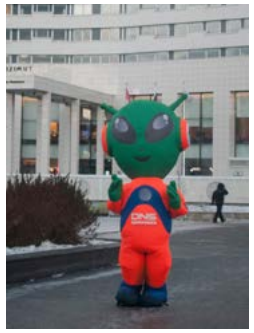
Trombonist and composer Hilary Jeffery worked in Murmansk on a new music piece for Dark Ecology: *Murmansk Spaceport/Мурманский Космодром*. In this text he relates his experiences working in Murmansk with a group of Russian and Norwegian musicians, and explains the ideas behind *Murmansk Spaceport*. The work premiered at the Roxy on Saturday night, 28 November, in Murmansk, after an introductory presentation in the afternoon.

On Saturday, 28 November 2015, we travelled to Jupiter. This momentous voyage was preceded by two weeks of intensive preparation at the Roxy, our home base and the location of *Murmansk Spaceport*. During the afternoon presentation on 28 November I introduced the musicians and the pieces of music that together would propel us on our journey. We simultaneously made the final preparations for our journey into the previously unknown, priming the space and inviting the Dark Ecology travellers to join us. That evening we succeeded in opening portals to a multidimensional reality. I understood my role to be an instructor in the art of Lysn-ing, training sensitive musicians and transmitting Jovial music to open-minded audiences.

Lysn is an ever-changing ensemble designed for this purpose, which plays music for the 'inner-space age' — an era in which people turn inwards. The experience of opening one's personal and unique space enables individuals to acknowledge their core and inherent self-worth. The external world is a mirror of our internal worlds. When people are enabled to reset, reprogram and redesign their inner world, they create a centre which is not affected by external distortions, and activate new parameters for a challenging and utopian task — to take complete responsibility for the reality they live in. These ideas inform the music of Lysn, how we work together and allow us to travel far into the Cosmos.

My co-cosmonauts in Lysn, who were carefully pre-selected, were: Ekaterina Efremova (voice, guitar, electric bass, electronics), Andrey Gaiduk aka 23:59 (computer), Svetlana Matveeva (voice, keyboards, electronics), Timur Mizinov (electric guitar, alto horn, trumpet, electronics), Anna Rotar (trombone), Maria Rusinovskaya (production, logistics, co-curator and facilitator), Victor Skorbenko (voice, guitar, trumpet, conducting), and Kristin Alsos Strand (cello).

Top–'Murmanski kosmodrom' graffiti by Pavel Polyakov on the wall in front of the Roxy, Alexandra Nevskogo Street 93, Murmansk. Photo by Rosa Menkman, 2015. Bottom–Evening concert by Lysn, an ensemble of musicians from Murmansk (RU) and Bodø (NO) brought together for Dark Ecology, Roxy. Photo by Michael Miller, 2015.



Top left–Afternoon presentation in the Roxy, 28 November 2015. Photo by Fridaymilk. Top right–Alien in front of the Hotel Azimut, Murmansk. Photo by Rosa Menkman, 2015. Middle–Evening concert. Graphic scores for each phase of the 'voyage' projected on the wall behind the audience. Photo by Michael Miller, 2015. Bottom–A view from the Roxy balcony during the afternoon presentation. Photo by Rosa Menkman, 2015.

At the Roxy — an autonomous zone located just outside the centre of Murmansk — a group process was initiated in which we created our own environment, a unique ecology of that specific place and time. We worked there all day, every day and many nights too, gradually building up an environment which literally became a Spaceport infused with our energy, concentration, conversations, sounds, thoughts and exchanges. During the rehearsal process our set-up went through several permutations; instruments and equipment were moved around continuously. The Roxy crew built a stage and members of the group painted it. Many features of the space were already in place as part of the Roxy's own fantastic design, such as the balcony, the huge mirror on one side of the room which reflected everything happening in a magical parallel space, and the fantastically colourful light installation which was already installed in the ceiling, providing a great mood for our daily work and for our first presentations.

Our journey was greatly assisted by the Roxy crew: Anton Shamshin (sound technician), Igor Trofimov (sound and video technician, electrician), Ivan Dubovsky (hospitality, stage building, logistics), Roman Vasin (hospitality, stage building, logistics), Pavel Polyakov (graffiti artist, designer of the Murmansk Spaceport banner), and Sergey Golubev (light technician).

Murmansk Spaceport was conceived as the composition of a situation in which each musician could play their own music in a new way, and also go beyond what they already knew and any apparent limitations. The composition was divided into eleven phases, interconnected spaces, which featured each musician individually and the ensemble as a whole. A video score — created with help from Oleg Khadartsev and Zhanna Guzenko of Fridaymilk in Murmansk — functioned as our 'navigation screen' as we traversed this sequence of multi-level spaces. Ten of the sections were represented by images I made, depicting the areas we were travelling through, and which slowly melted into one another. The central section was a group space, subdivided into a series of superimposed personal maps made by each musician, expressing in pictures aspects of their experience of working in the Spaceport. Our movement through these areas provided sounds and settings, which enabled everyone — musicians and all the listeners

present — to enter their own personal zones of reflection, each one unique. Rather than creating more sound, the music of Lysn is designed to create more space, which is how music ideally functions — a way to navigate through dark internal realms, inside the body, into the brain, inside the mind and into the beyond, travelling to what feels like 'distant planets', and experiencing this as a very real journey.

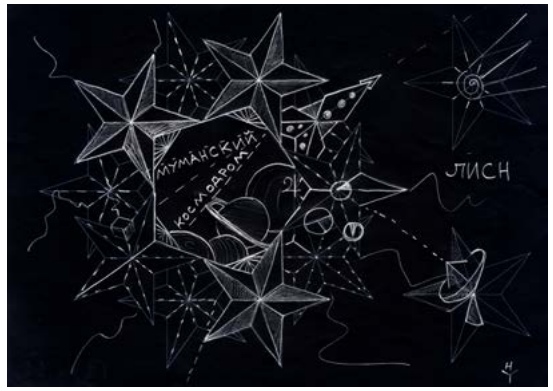
The eleven phases of our voyage, from *Murmansk Spaceport* to *Jupiter* are described below.[1]

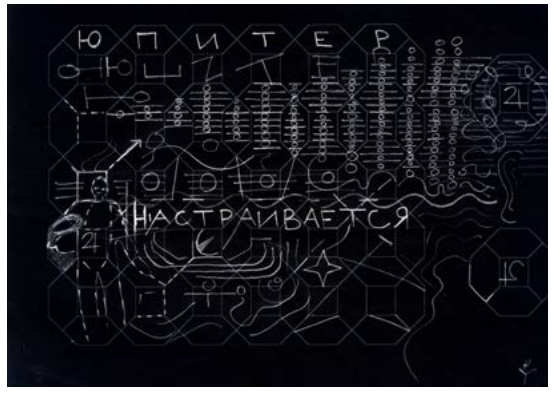
1. Audiovisual clips accompanying these descriptions can be viewed online at www.hiljef.com/lysn/spaceport.

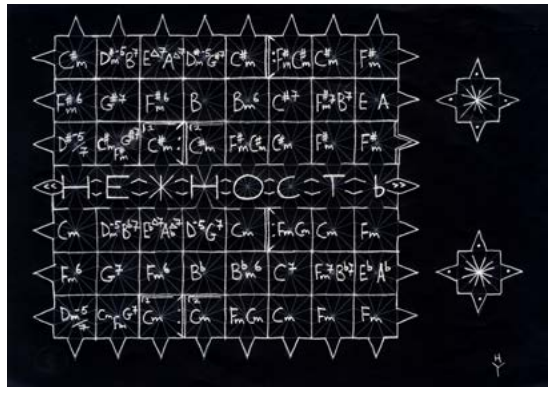
1. Murmansk Spaceport — Departure
Featured musician: Andrey Gaiduk
The setting for our departure from Murmansk and our arrival on Jupiter. An installation environment of sound and light designed for personal inner-space journeys. A sound installation created by Andrey Gaiduk for the entrance to the Spaceport, is illuminated by blue and red lights forming a pathway to the central space. Andrey performs live, playing music that connects directly to the sounds in the hallway as the music builds up, each musician enters one by one, playing into the mood gradually, finding their poise, tuning up and tuning into the environment.

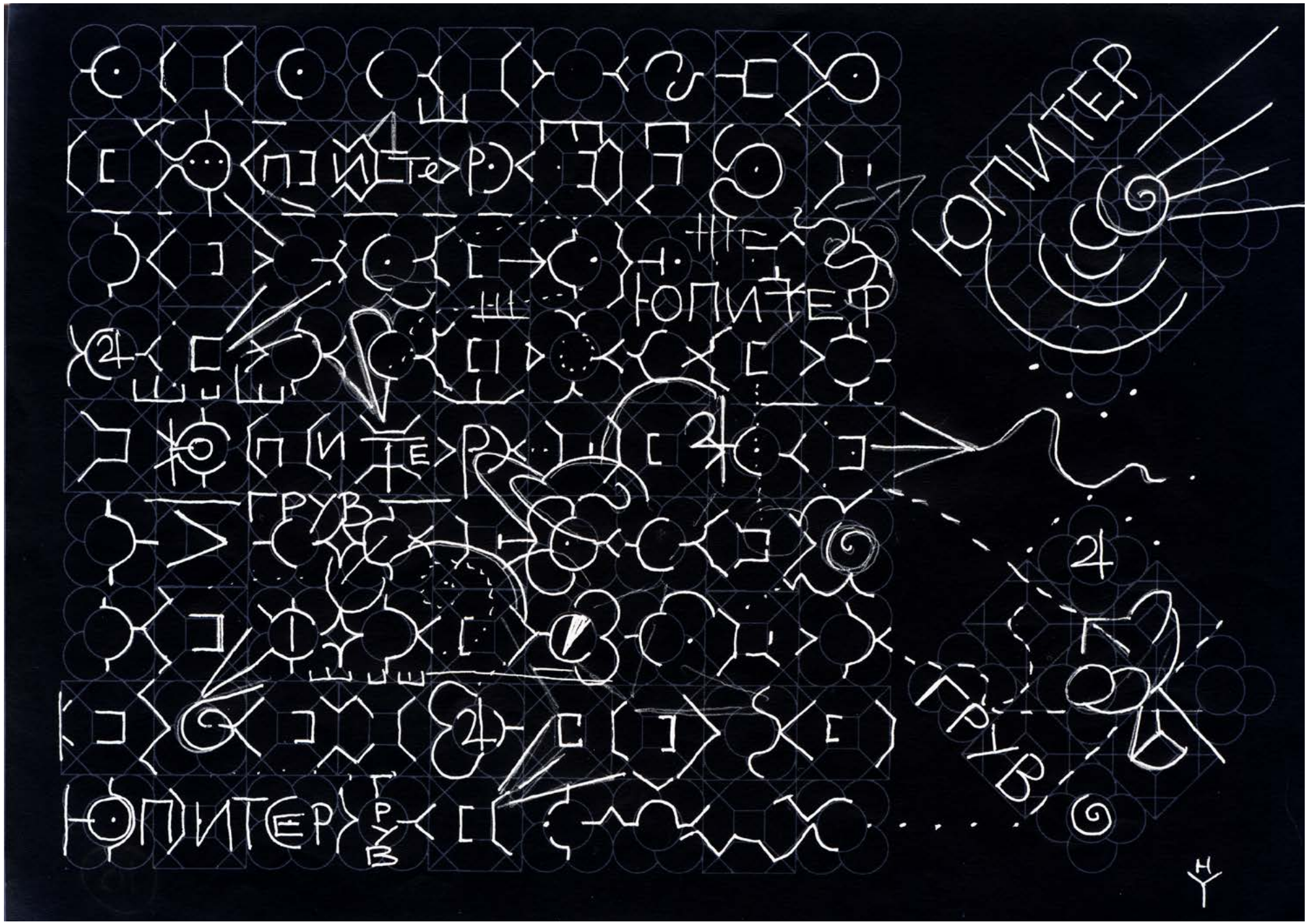
2. Goodbye Gravity
Lysn Ensemble, conducted by Victor Skorbenko
Lift off into abstract space. We leave gravity using breath sounds and noise, filtered recordings of the Roxy heating system accompany our uplifting crescendo, resonating the building and the bodies inside it. Victor is the conductor, we channel his natural charisma and energy, creating a really huge sound like a spaceship taking off.

3. In The Stars
Featured musician: Svetlana Matveeva
Goodbye Gravity reaches its apocalyptic peak and Svetlana begins her song, it appears out of the clouds like a jewel, floating in space. By now we are already drifting in a non-gravity state, our internal antennas start to function as Sveta sings about the beauty of being in the stars.









Previous page–Graphic scores for *Murmansk Spaceport*, by the members of Lysn Ensemble. From top to bottom: *Murmansk Spaceport*; *Goodbye Gravity*; *In The Stars*; *Northern Dark*; *Jupiter Tuning*; *I Float*; *Tenderness*; *I Give Co-ordinates*. This spread–Graphic score for *Jupiter Groove*. Project commissioned by Dark Ecology–Sonic Acts & Hilde Methi. Pictures courtesy of Lysn, 2015.

4. Northern Dark
Featured musician: Kristin Alsos Strand
A journey into space means a journey into the dark. To enter the dark one must activate one's internal light. Working in the far North at a time when the light is rapidly diminishing creates a particular mood and throughout our experience in *Murmansk Spaceport* we have been challenged to do something we don't normally do, to literally go into the dark of the unknown and find out what is there, travelling introspectively into ourselves, discovering inner archaeologies with several layers and levels, a real 'dark ecology'.
Kristin — an inhabitant of Northern Norway and a highly accomplished cello player — initiates high harmonics which light up the dark paths on which we find ourselves.

5. Jupiter Tuning
Lysn Ensemble, conducted by Hilary Jeffery
Huge Jovial harmonies emerge from the far distance and slowly fill our inner ears. We utilise these orchestral emanations for tuning into our destination.

6. Drift Maps
Lysn Ensemble, group improvisation
Once again the darkness of deep space surrounds us, and deep breaths accompany our dreaming. We drift through this central space as our individually drawn maps melt into one another on the navigation screen — images created as reflections of the Spaceport experience. This is a multi-layered zone in which we improvise together as a group, by now we have developed a very sensitive sense of our environment and how we inhabit it, so that the whole music breathes by itself and opens up spaces within spaces.

7. I Float
Featured musician: Ekaterina Efremova
We have established a highly sensitive group awareness, yet at the same time are increasingly aware of our separate individuality, we are together on this journey and yet we are also all alone, this feeling can create real anxiety. Katya assists this difficult phase of the journey through her heart-warming melodic singing, allowing us to accept the solitude we experience inside, she simply sings of her experience as a unique individual, acknowledging that she is afloat on her own inner sea.

8. Tenderness
Lysn Ensemble, performing a Russian popular song composed in 1965. (Words by S. Grebennikov and N. Dobronravov. Music by A. Pakhmutova.)
Another existential crisis in the form of homesickness wells up; in the darkness of the unknown we naturally crave to hear something familiar. Once again Katya comes to our assistance and sings *Tenderness* — a popular song from Soviet times about a woman who misses her boyfriend — an astronaut who is far away from Earth. From our perspective we experience this song the other way around, as astronauts who remember this warm song from home, from the perspective of deep space. Our memories of Earth become memories of our departure — we hear and feel the massive rushing sounds of our spaceship taking off again, we re-experience *Goodbye Gravity* and move into overdrive, going further outwards and deeper inwards.

9. I Give Co-ordinates
Featured musician: Timur Mizinov
We have now arrived in a place we've definitely never been to before. It's time to pull ourselves together and get our bearings. Timur gives co-ordinates via archaic alto horn tones, transformed with electronic devices. We lock-in and set our sights on the heavenly body appearing on our inner horizons.

10. Jupiter Groove
Featured musician: Victor Skorbenko
The co-ordinates have been set and our destination is clear, we have found the perfect tempo and shift individual gears in parallel, working as a group — we are now in *Jupiter Groove*. Victor's hypnotic voice chants a song of the planets, urging us towards our landing port.

11. Murmansk Spaceport — Arrival
Lysn Ensemble, conducted by Hilary Jeffery
We arrive back at and recognise *Murmansk Spaceport*, accompanied by the massive orchestral sounds of *Jupiter*

The Crossing

HC Gilje

Tuning, which we had heard from the distance during phase 5. This looks like the Spaceport, but we were told our journey's destination was Jupiter... A moment of uncertainty clouds the clarity of our apparent arrival, so I have to check and ask Vitja in my very bad Russian: 'Where's Jupiter?'. He answers: 'Here!' I'm not sure if I believe my ears so I repeat to him: 'Here?' He confirms it — and I am very happy. Very good. Thanks everyone. We have arrived!

Our journey to 'Jupiter' was a fantastic and intense experience, Lysn played for a packed Spaceport with a huge crowd of local people, gathered together with the Dark Ecology travellers, it was a real trip and many people reported still being on Jupiter several days later... I arrived back on 29 November and it was a smooth landing, facilitated by a fascinating guided tour through an abandoned district of Murmansk, an area full of ghosts and memories of other times. During this walk we saw some fantastic sci-fi graffiti, witnessed the sight of the moon below us as we approached Earth, took photos of many ruined wooden houses and met a local woman who is in contact with alien intelligences — she informed us that the area where we were walking has a direct connection to the Cosmos, which was not surprising. On arrival, at least two strange and other worldly figures were seen — a bright Red Heart walking around a shopping mall and an alien traversing Five Corners Square. Both were indications that our externally perceived reality had indeed shifted and there were already clear signs of a new reality manifesting on 'Earth'.

The Crossing explores and re-activates an abandoned construction site using light and motion: ephemeral light meets physical structures. As opposed to traditional land art, I'm not interested in leaving a permanent mark but in creating a temporary and non-destructive transformation of an existing location. I'm interested in motion itself, how motion passes through spaces, objects, bodies and landscapes, partly inspired by a quote from the Dutch architect Lars Spuybroek: 'We no longer look at objects, whether static or moving, but at movement as it passes through the object', from his essay 'Motor Geometry'.

Location for the installation *The Crossing* by HC Gilje, commissioned by Dark Ecology–Sonic Acts & Hilde Methi. Abandoned construction site near Zapolyarny. Photos by HC Gilje, 2015.

Top–HC Gilje, *The Crossing*, light installation, 29 November 2015. Photo by Michael Miller, 2015. Bottom–Photo by HC Gilje, 2015.

HC Gilje, *The Crossing*, 2015.
Photo by Michael Miller, 2015.

Top–HC Gilje, *The Crossing*, 2015. Photo by Michael Miller, 2015. Bottom–Photo by HC Gilje, 2015.

Long Wave Synthesis

Raviv Ganchrow

Long Wave Synthesis is a land-art-scale sound installation that investigates infrasound, and probes the relations between how we perceive the landscape and long-wave vibrations. The piece creates a complex topography of acoustic waves in a range of 4 to 30 Hz (mostly in the infrasound range, below the threshold of human hearing) that spread out from an array of custom-built, very low frequency generators. *Long Wave Synthesis* focuses on material properties of sound, and investigates ways in which a location manifests itself through interactions between walking, territory and sonic attention. The long waves physically interact with the topography and atmospheric conditions, while simultaneously 'oscillating' our sense of the surroundings.

A view of the site near Kirkenes Airport, Høybuktmoen, where Raviv Ganchrow's *Long Wave Synthesis* prototype was presented in 2014. Commissioned by Dark Ecology–Sonic Acts & Hilde Methi. Photo by Konstantin Guz, 2014.

Top–Raviv Ganchrow, *Long Wave Synthesis*. Photo by Konstantin Guz, 2014. Bottom–Prototype loudspeakers for *Long Wave Synthesis*. Photo by Raviv Ganchrow, 2014.

Raviv Ganchrow, *Long Wave Synthesis*, infrasound installation presented in Australiëhaven, Amsterdam, during the Sonic Acts Festival–The Geologic Imagination, 2015. Photos © Pieter Kers | Beeld.nu.

A Vertical Perspective

Espen Sommer Eide

Espen Sommer Eide reflects on the research for *Altitude and History* (2016), a soundwalk made in collaboration with Signe Lidén.

I lean back, looking up. What does it consist of, this nothingness, this transparency above us? A constant movement rushes through it, changing its state from one moment to the next. Aerosols. Minuscule particles, snow crystals, dust and bacteria, pollutants and mosquitoes. I breathe them in effortlessly — like cycling down a hill with my mouth open.

I walk together with my collaborator Signe Lidén on Dog Mountain, west of Nikel. She knows this area well, having visited it several times. She leads us through the deforested hillside, recently ravaged by fire, towards the top. The wind is blowing hard so we mostly walk in silence, struggling to keep upright. I brought my bagpipe which I try to keep filled with air, emitting an uneven drone. The idea was to tune the bagpipe to the hum of the factory, and investigate how it changes as we move to different altitudes. But today a western wind is blowing the sound towards Murmansk. All we can hear is the blustering of the wind in our ears. Still, carrying the bagpipe somehow makes me feel connected to the wind, like in old myths where someone catches the wind in a bag and later lets it out. There are also stories about the local Sami population (most of whom were evacuated into permanent exile in Finland after the war). Apparently they would catch the wind with a piece of cloth (or just a leather thong) and then tie it with three knots. This was sold to fishermen; untie one knot for a light breeze, another for a stronger one and the third for a storm.

We pause at the top to let the wind activate various mobile meteorological music instruments. Signe demonstrates her special field recording technique of inserting miniature microphones into natural enclosures, cracks and cavities.

Defining boundaries is often a first step of any study. Boundaries shape the object of study. Winds and air-fronts reveal their characteristics only in the effects they have on other things. Edges howl and fencing wire starts vibrating. Bringing an enclosed space of any size into air will immediately result in standing waves inside it, and resonances appear like the rush of the ocean trapped in a seashell. Invisible thermals ascend the mountainsides and reveal themselves in the upward trajectory of hawks and seagulls. Even the cavities of your body, your lungs and mouth, make low temperatures visible as breath hanging in the air.

Sometimes the boundaries are set by the range of the instruments. In a local weather station, like the one in Nikel, the instruments mainly record the wind strength and direction, temperature, and the rainfall on an enclosed plot of land. But in larger research facilities the instruments are even more sophisticated. Maybe the best example of such a remote sensing boundary is at the Cesar Observatory in the western part of the Netherlands, which I recently visited. A rectangular plot is populated with maybe 50 types of sensing instruments, in addition to a few dozen sheep and cows. Rising up from the centre of the plot is the 213-metre-high weather mast with sensors and weathervanes on each level, which take measurements across the vertical plane of the *planetary boundary layer*. It took me seven minutes to reach the top using the elevator inside. Even higher altitudes than this are reached by the remote sensing instruments, such as lidar (using laser), vertical radar, sodar (using sound wave echolocation) and more, which measure the movement, content and density of clouds, or temperature fluctuations and turbulence.

The data forms a cube that we the visitors were shown on a computer screen, a cube in which the visible and the invisible are constantly recorded and analysed. The computer renders a model of this cube, where changing weather phenomena arise and dissipate over and over again. We do not know anything about what is outside this 'box of weather'. The unknown grey mass outside the box seems to put some pressure on the sectional areas, as if the walls of the box are bent slightly inwards.

Aerial Linguistics

I think we should build instruments that assist sounds to write themselves in the air.

Wind, weather, atmospheric pressure, air temperature, and refraction, diffraction and reverberation of the landscape all affect how sound propagates in air.

The most obvious effect is caused by the wind itself, refracting or bending the sound back towards the ground because of the increasing wind speeds that come with altitude (or more complex patterns in the case of turbulence). Not much reverberates in a flat landscape with soft bogs and mining residue, so the effects of refraction are free to work their magic. Temperature bends sound like a lens. In the deforested areas around Nikel, sound travels further by being bent down by the layers of temperature. Everything is magnified, the surrounding sounds feel intimate and close to the ear, as if you are enshrouded in nature.

Early folk music recordings made in areas such as this had large amounts of reverb added in post-production, either because the colonialist-recordists wanted to match the exotic visual impression of a huge space, or maybe because they found the effect of these de-convoluted sounds claustrophobic and scary.

During winter, sounds travel further because the air close to the ground is cooler. Colder temperatures slow down the speed of sound. In the extreme cold temperatures of the Arctic winter on the Kola Peninsula the speed of sound (usually around 343 m/s in twenty degrees summer) can drop towards 300 m/s, tuning most sounds down in pitch (roughly three keys on a piano). This Arctic pitch only affects wind instruments such as flutes and the human voice, not string instruments (even though the strings might freeze and the fingers playing get frostbite). The local speed of sound contributes to the sense of place, the sense of home. Old oral music from the area, like Sami *yoiks*, cannot be transported out of this local context without being drastically retuned. When local people make jokes and imitate the 'southerners' who live in more central areas of Norway and Russia (the ruling class that gets rich from the North's resources), they always do so in a high-pitched voice, as if the southerners have children's voices.

The human body is encased in a thin layer of air that acts as insulation, but the wind can penetrate it. In a calm atmosphere this layer varies in thickness from four to eight millimetres but it quickly thins in even a light breeze. After passing through this layer, and reaching my inner ears, the sounds leave the air, and vibrate through thousands of tiny hairs inside the cochlea, and the nerve cells transform them

Altitude and History is a project by Espen Sommer Eide and Signe Lidén. It is a 3-hour soundwalk in the Dog Mountains above Nikel. Images show the research of the terrain and preparations for the walk. Commissioned by Dark Ecology–Sonic Acts & Hilde Methi. Photos courtesy of the artists, 2015.

into electrical signals for the brain to interpret. Both hearing and touch rely on nerves set atwitter by vibration. Some even speculate that the ears evolved out of the skin to facilitate more finely tuned frequency analysis. I am touching what has been shaped by the air. Hearing is touching the weather.

Altitude and history

What does it mean to be present in a place, to sit still, listening to faraway cries of dogs and shouts of children carried by the wind. Your memories are not invited, yet still they come. Like the instant formation of resonance within a chamber, there is no present without a past. The present is always the past presented.

Tracing Nikel's audible past, Lidén and I organised the 'Nikel Sound History Club' in the autumn of 2015, bringing together a group of local residents who have lived here most of their lives. We asked them to remember the sounds and soundscapes of Nikel in certain eras and areas, and try to put into words what they sounded like. In our imaginations we brought back the old soundscape of Nikel. The sound of wood chopping in the apartments before lighting the morning stove. The boiling of tea urns. The animal clamour from the collective farms. The lost bird sounds of the forests now burnt away.

> I worked underground, and there are sounds there. We worked in shifts, so weekends and holidays, too... and then there is nobody in the mine, no electromotives, no people. Yet there are sounds, as if somebody was speaking. The ventilation shafts that have been drilled everywhere and are connected to the surface utter these sounds, like talking, walking, or even sometimes as if someone was knocking. You know, I wasn't afraid...but I never closed the doors too tight...and the rats! they made quite a lot of noise...you know, there are cable channels in the mines...but not only animals, I tell you, it was like somebody was there, those kinds of sounds... because the air gets everywhere, and, obviously, creates all of it. — Marina Iljinishna, mine-worker

Border messianism

One day I decide to call Viggo Rossvaer, my old philosophy professor, and still the main source of inspiration for many of us working on subjects related to the Northern regions. Viggo has spent his entire life working on questions relating to the Northern parts of Norway. Since his retirement he has primarily been busy with curating the study of 'borderology' in Kirkenes, Nikel and Murmansk. He has developed a unique approach of combining philosophy with the landscape and politics of the border areas starting at Nikel and stretching all the way down to the Adriatic. Hopefully he would be able to answer my questions. What I find particularly difficult, is how to reconcile the old perspectives of Culture Studies and Humanities within the Dark Ecology project and its Object-Oriented 'mantra'. What role, if any, can the history and culture of an area play when confronted with darkness? In short: How can horizontal and vertical perspectives be activated as one? As is always the case with Viggo Rossvaer, he never answers directly but just leaves a string of clues for me to pick up on.

He starts by enthusiastically explaining what the Green Belt is, a recent concept invented to describe the nature along the former Iron Curtain. Because it divided the European continent into East and West for nearly 40 years, and was heavily guarded and virtually undisturbed by human intervention, the border zone granted nature an anthropogenic pause. The once-divided Europe unwittingly enabled the conservation and development of valuable habitats, and the border area served as a safe haven for many endangered species. According to Rossvaer this also affects the human culture close to this belt, and it should also be a future subject of study. This cultural green belt has unique qualities that defy the general neo-capitalistic fashions of central areas. Art and culture are not to be found in the usual places, because they are more closely integrated into people's lives. Rossvaer argues further that this belt is the only place where it is possible to experience something truly contemporary. In many ways it has appropriated a Russian style of messianism, where the *end is always near* and is completely integrated into everyday life. The philosophical roots of this unique culture can be traced to writers such as Dostoyevsky, Bakhtin, and cosmists like Solovyov.

Nikel Sound History Club organised in Nikel by Espen Sommer Eide and Signe Lidén during their autumn residency in 2015. Photo courtesy of the artists.

Language-shapers on other shores

Nikel itself is a wind tunnel where winds from all directions gather to surge through the wide empty streets. There is a story that Nikel at one point in its early growth had to change direction 90 degrees. Could this have been because of the wind? What does it mean for a city to change direction? A visit to the local meteorological office in Nikel informs us of a remarkable place just outside the city limits — a place where *there is always wind*. We decide to investigate further.

Arriving at *the place where there is always wind*, we observe a special phenomenon in the grass (perhaps dog grass) that is called scratch circles and was first described by geologists in the early 1900s. These are microforms found on the surfaces of aeolian sands. Signe says it reminds her of a tiny organic version of the machinery in her kinetic sound installation *Writings*.

As the sand is deposited around the roots of the grass, the leaves of the plants come into contact with the sand and etch circles on the sand's surface. In periods with strong winds, the opposite may happen: sand is blown away and the roots of plants are laid bare and the plants collapse onto the surface. In both cases, the wind blows the plants around their roots so that a circle is described in much the same way as one might draw a circle using a drawing compass.

The diameter of the circles varies between 10 and 40 centimetres. Some of them are only semicircles while others are almost complete or, in some cases, completely closed circles. The wind direction does not vary while they are being formed but variations in the strength of the wind and its persistence, or blusteriness, create the closed circles. The circles are deeper on the lee side of plants, indicating specific wind patterns.

One precondition required for the formation of scratch circles is doubtless the existence of sufficient groundcover, so that the wind can easily blow the plants around their axes. The area around Nikel is an ideal terrain for this. It should be possible to find fossilised sheets of these wind-writings in the layered sandstone, but we have not been able to confirm this.

Allergenic

The ancient landscape of the area is ground flat by the retreating ice, which means the atmosphere is the only thing that influences the dispersion of the plume of smoke from Nikel's smelter. If the atmospheric layers are stable, the smoke is pushed back down towards the ground. If they are unstable it rises into the sky and dissipates

If the wind direction is north-eastern or perhaps northeast by north, it will propel the sulphur dioxide and heavy metal fumes from the smokestacks away from Norway and inwards towards the centre of Nikel. An eastern or a southern wind (especially in wintertime) will blow the plume of smoke over the border across the Pasvik River into Norway or northwards into Karpdalen where we fished for trout in the summers of my childhood.

During the Cold War when we drove to my grandfather's cabin in Pasvik, we always stopped at 96-høyden, an old military observation post looking into Russia, to gaze at the shiny white city on the distant hill across the border Steadying the binoculars I felt like a spy in a Le Carré novel, imagining that I was doing something secret and dangerous. My whole family has nickel allergy. When I got my first wristwatch, my mom painted a layer of clear nail varnish underneath it to prevent a rash where the stainless nickel steel touched the skin. Still, I am attracted to this place — *my allergenic capital.*

Sodar of history

When using a sodar instrument to measure the wind profile, loudspeakers on the ground emit three loud audio signals vertically and slightly at an angle to each other. This way, the echo that returns to the microphones can be used to build a three-dimensional profile. Pushing sound upwards and waiting for an echo from the sky isn't part of our everyday experience. Usually we orient ourselves by sound in the horizontal plane, on the human level. The sound of boredom. Sundays. A stack of cards. Mosquitoes. A small fish breaking water. Similarly, history is often envisioned as a straight line of days or years with events lined up in a row. Is it possible to push history upwards, to create a space for multiple stories, layered on top of each other? *What is the height of history?* When we asked the participants in the Sound History Club to

describe their memories of sounds it took some time for them to re-orient their experience to this new perspective. The notion of sound being at all integral to storytelling or concrete memories is a novel one for most people. But precisely because of this, they recalled a number of forgotten moments and surprising associations unhinged from chronological time. The vertical perspective is to aim the sodar upwards, while listening to returning memories. Not as nostalgia, but as a sudden change in the weather.

Prospecting: a Geological Survey of Greys

Cecilia Jonsson

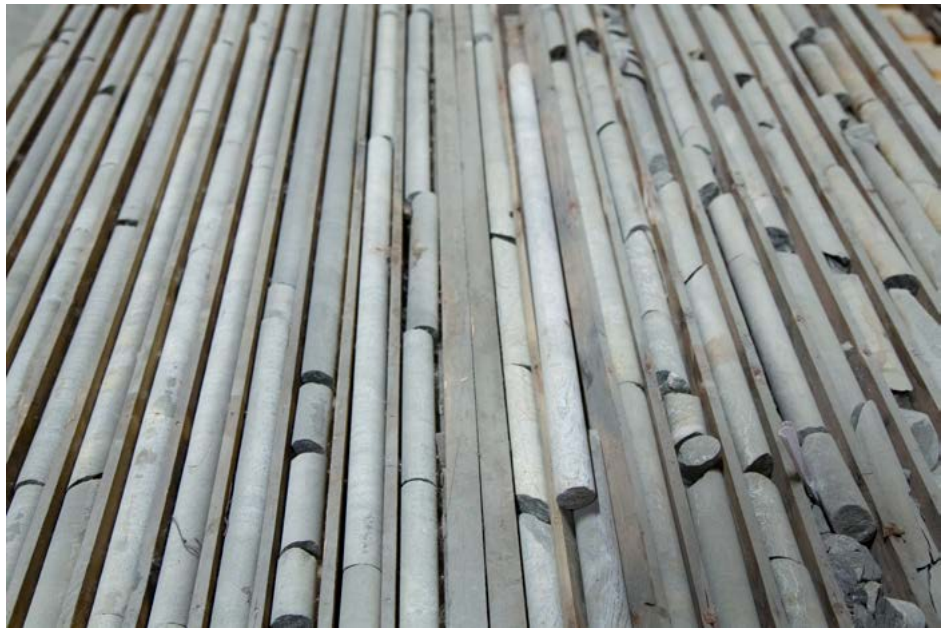
> Geology is the study of the Earth, the materials of which it is made, the structure of those materials, and the processes acting upon them. It includes the study of organisms that have inhabited our planet. An important part of geology is the study of how Earth's materials, structures, processes, and organisms have changed over time. — *Geology & Earth Science Dictionary*

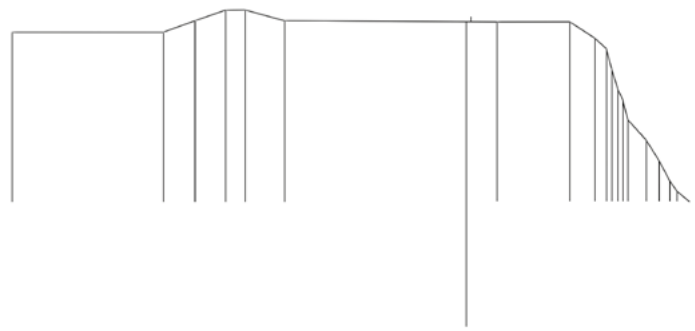
> In principle the locality looks good; it is Kirkenes-gneiss with several generations of granite folds, veins and ribbons with Amphibolites acting locally, a homogeneous rock with little visible cracks in the surface. — Øystein Nordgulen, Geological Survey of Norway

Prospecting: a Geological Survey of Greys is an interdisciplinary and site-specific art project that appropriates geological methods of extracting, analysing and ordering mineral specimens. It addresses distinctions between objective scientific methods and subjective approaches. The work attempts to explore drilled rock core samples beyond their commercial viability to identify the bedrock's gray tones. Drilling is the culmination of the mineral exploration process where the third dimension, the subsurface geometry is defined. Diamond core drilling uses a rotating hollow diamond bit to drill through the rock, which enables a solid column of rock to move up into the drill pipe that is recovered at the surface. The drilling to 150 metres depth at Prestefjellet outside Kirkenes in Sør-Varanger Municipality explores the thick foundation of ancient basement rock. Geologists say that this is 2500 million year-old migmatitic gneiss, which means that the temperature was so high that light minerals in the gneiss melted. The work visualises a temporary juxtaposition in the landscape with the residues of the drilling: a massive cylindrical column of rock cores shadowed by its negative, an adjacent five-centimetre hole in the basement rock.

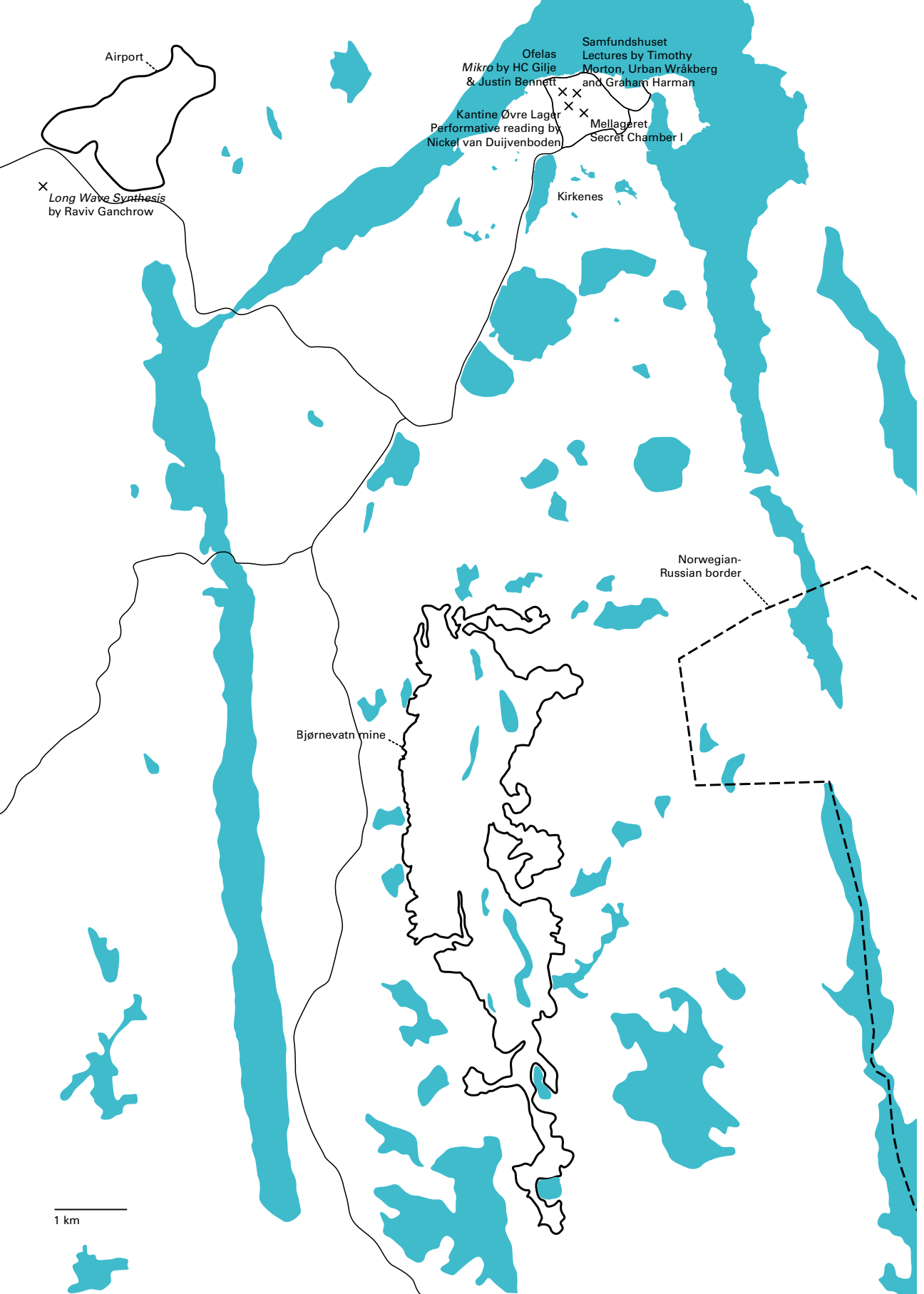
Cecilia Jonsson's research for her outdoor site-specific installation *Prospecting: a Geological Survey of Greys*, Prestefjellet, Kirkenes. Commissioned by Dark Ecology–Sonic Acts & Hilde Methi. Photos courtesy of the artist, 2016.

Site research for the installation.
Photo courtesy of the artist, 2016.





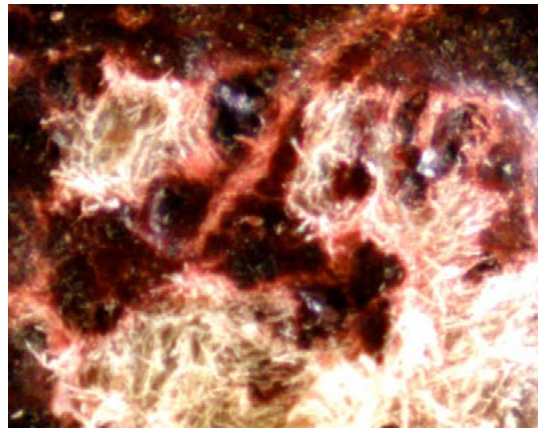
Top and middle–Photos of rock core samples. Photos made during Cecilia Jonsson's residency at the archive of Sydvaranger Mine, 2016. Photos courtesy of the artist. Bottom–Cross-section of Prestefjellet Mountain near Kirkenes, located at 69°43'02.6"N 30°04'26.3"E.

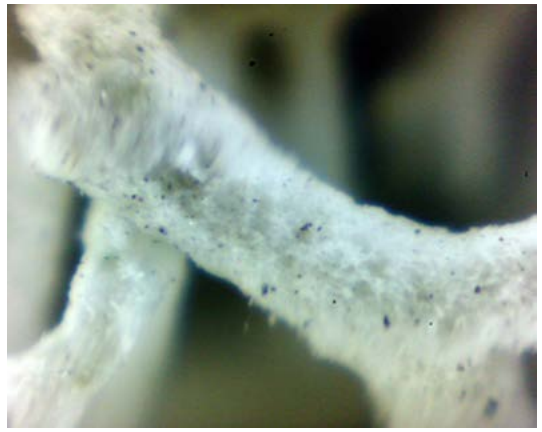


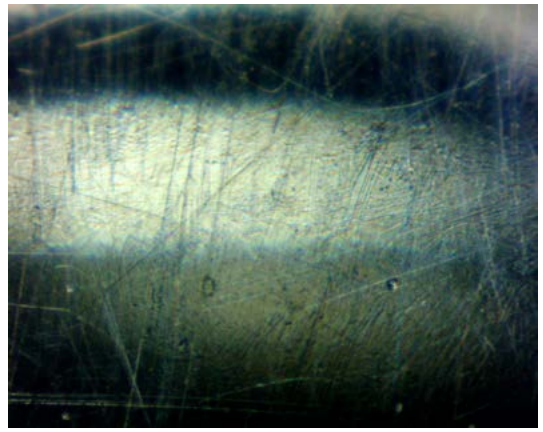
Mikro

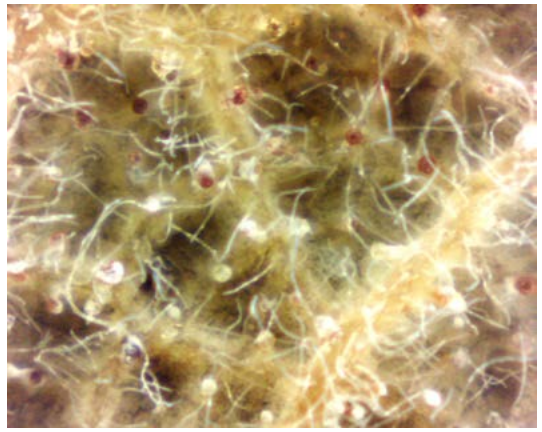
HC Gilje & Justin Bennett

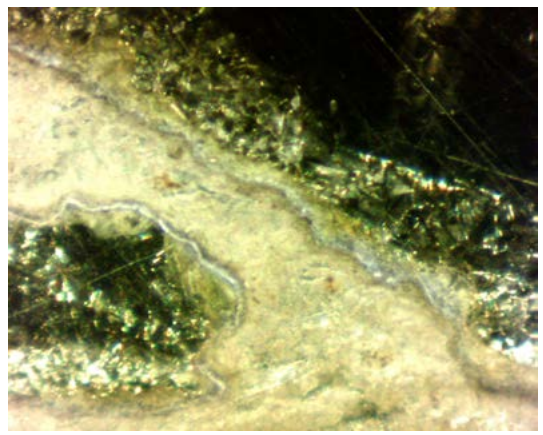
Mikro is a series of improvised performances using the immediate surroundings as raw material. HC Gilje (video) and Justin Bennett (sound) use materials they found during the third Dark Ecology Journey (2016) in these performances. Gilje uses a microscope to examine and capture textures of various found materials, which are added to a continuously changing video loop: new images constantly replace old ones. Organic, mineral, synthetic, processed: dead and live materials come together in a flicker bonanza. The modus operandi for the sound in *Mikro* is similar to and inspired by Gilje's video processing. It comes from manipulating found materials — metal, paper, plant material, stones, and other objects to reveal their textures and resonances. Very quiet sounds are amplified using different kinds of microphones: miniature mics, contact mics, ultrasonic detectors, etc. The sounds are then processed digitally in a computer. Just as with the video, short memory buffers are filled with audio data and then the data is 'read' in different ways: Bennett uses techniques such as granulation, brassage, delays, rhythmical 'step sequencers' and convolution. Different buffers can send audio to each other so that feedback loops occur within the software as well as through the loudspeakers and microphones. The form of the performance comes from the interaction between players, material, and the performance space.

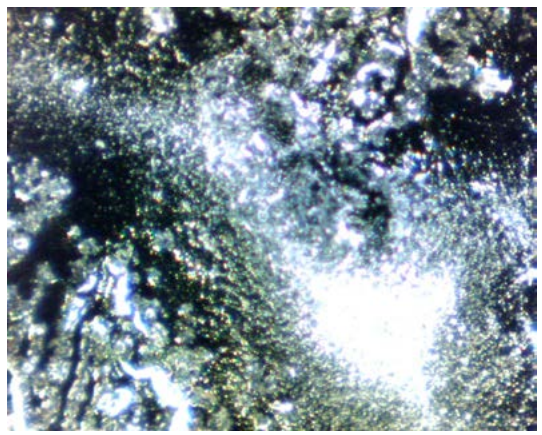




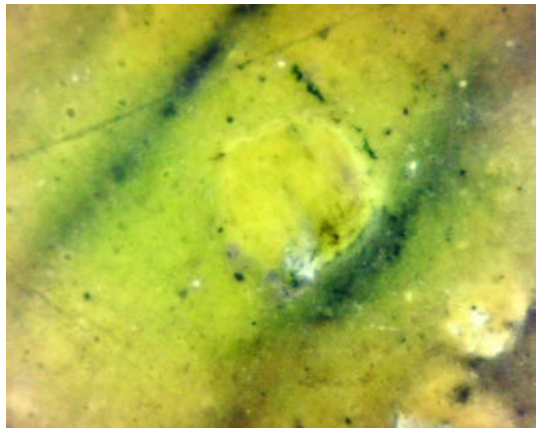
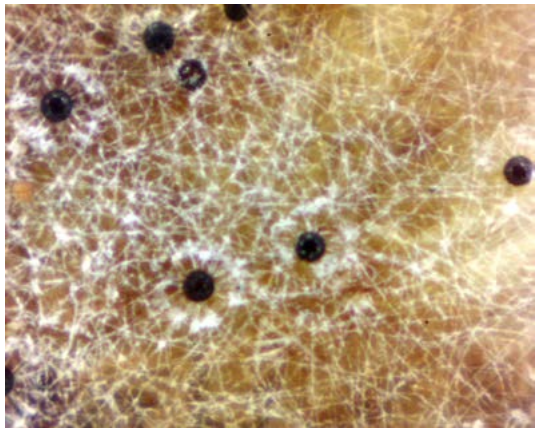
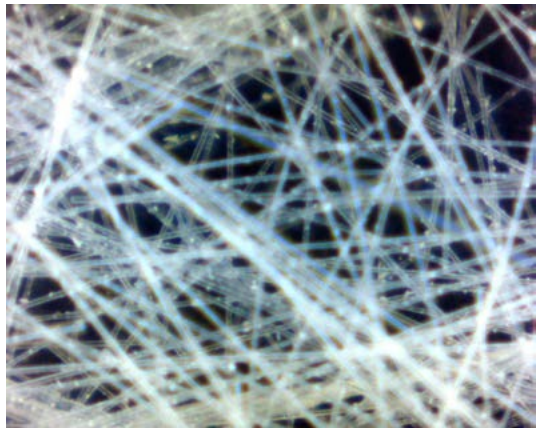
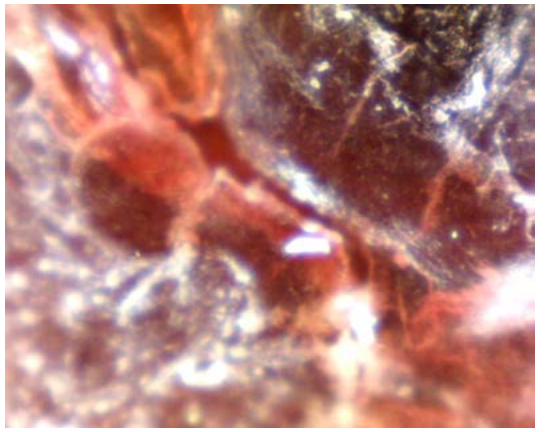
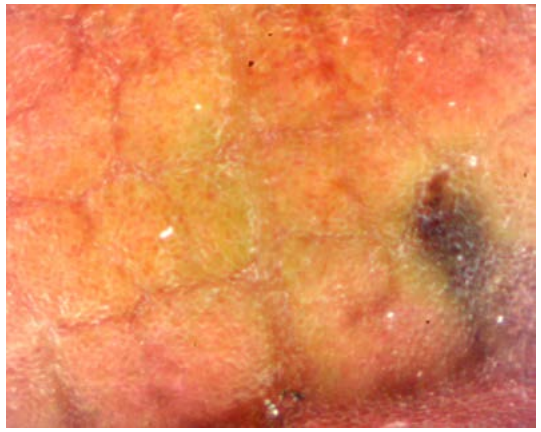
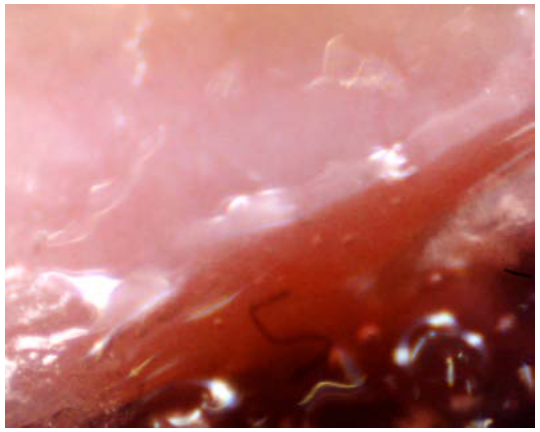


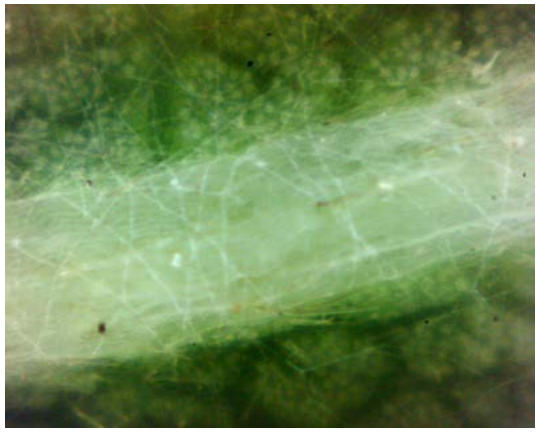
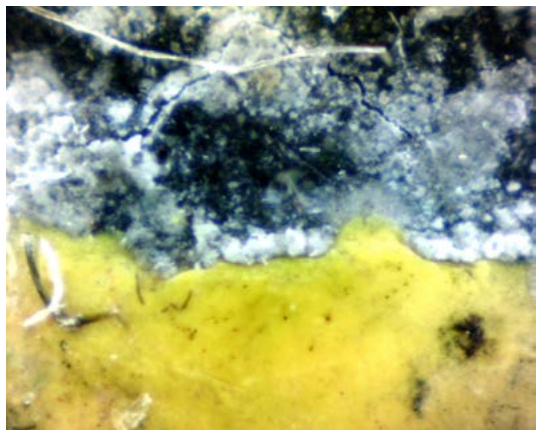
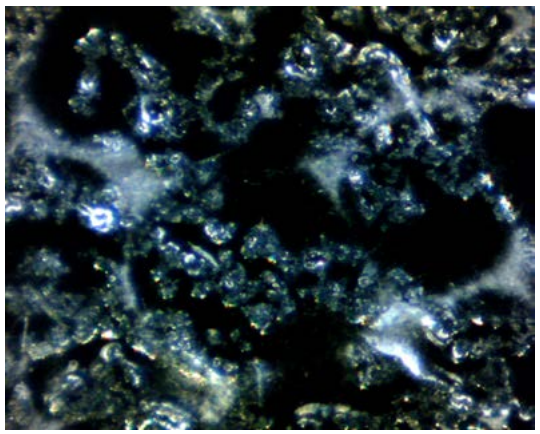
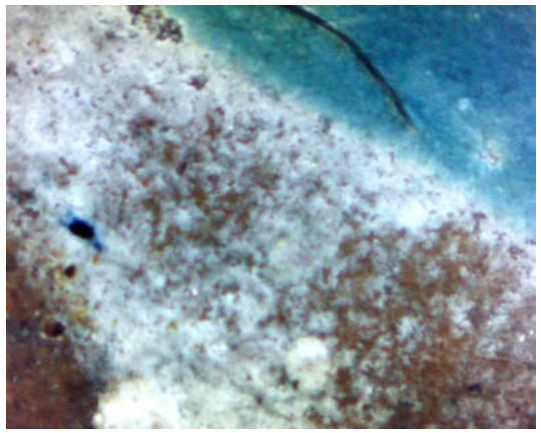
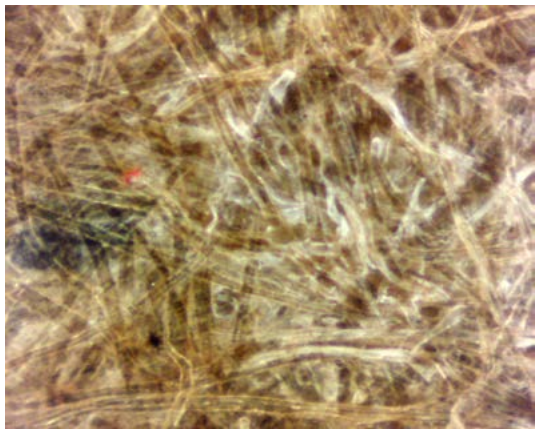


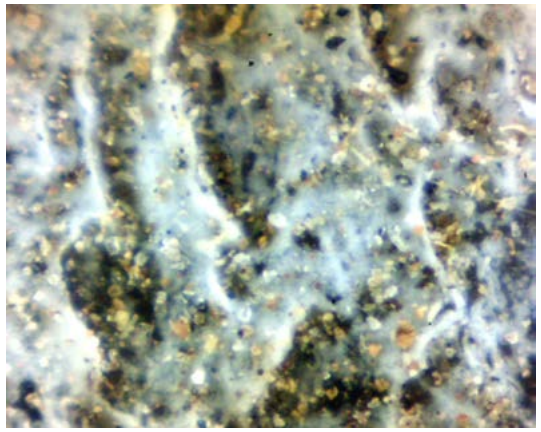
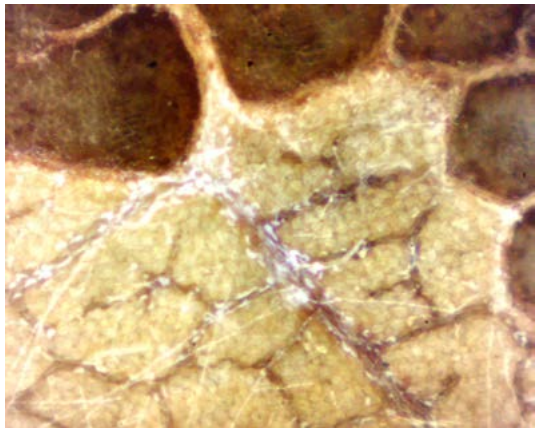


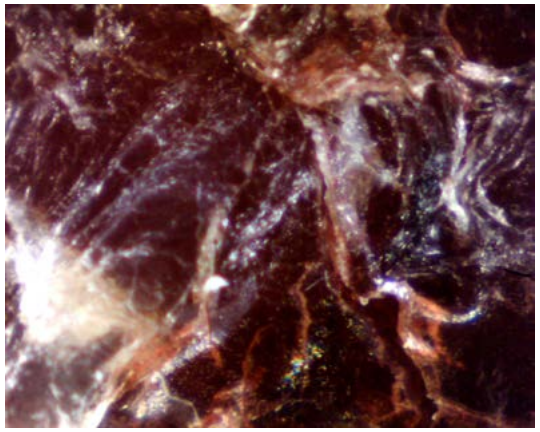
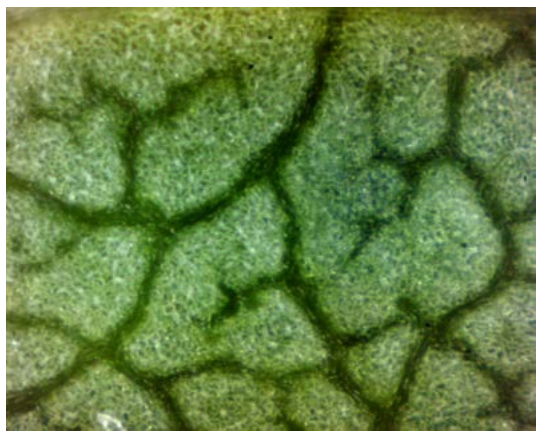
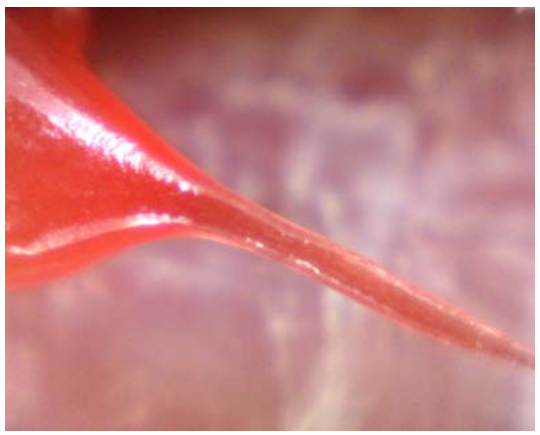


Images made by Justin Bennett and HC Gilje during their Dark Ecology residency in Norway and Russia and elsewhere, September 2015. Photos courtesy of artists.

Dirty Pictures

Susan Schuppli

In her essay 'Dirty Pictures', artist and researcher Susan Schuppli turns our attention to the fundamental visual dynamics of material transformations caused by the Anthropocene. She argues that it is possible to claim that global warming is producing a new optical regime. The 'dirty pictures' she is interested in are immense: for instance, she considers polluted environments as vast photosensitive arrays that register and record the changes caused by modern industrialisation.

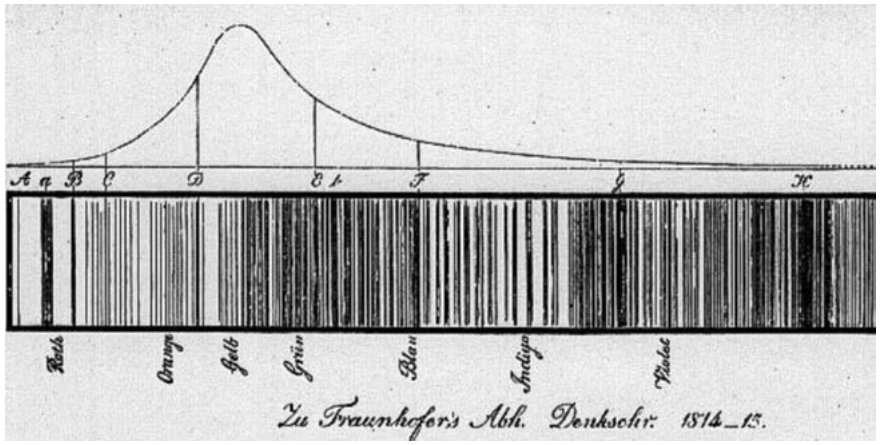
At the turn of the nineteenth century in Germany, Joseph von Fraunhofer embarked upon a series of experiments exploring the optical spectrum of the sun. His work would eventually come to be used by scientists to determine the chemical composition of a remote object — our sun, some 149.6 million kilometres away — not through direct testing but by treating it as an image, one whose chromatic variance could be translated into the complex language of chemistry. Fraunhofer's absorption and emission lines enabled scientists to conduct spectral analyses of different gases suffused by sunlight as they passed through the Earth's atmosphere over the course of a day's rotation, thus changing the ways in which sunlight would come to be studied and known today. His bold assertion that the essence of objects could be determined by virtue of the aesthetic judgment of chemistry would prevail, setting the course for the primacy of the visual in deliberating truth claims. In their search for Earth-like planets, contemporary astronomers scour the night skies looking for ways in which the light spectrum changes as dust swirls around the 'habitable zones of stars', which would indicate the potential presence of water. The behaviour of light as it is refracted by the lens-like particles of stardust provide essential clues as to the whether an environment that could sustain life exists within this veil of cosmic fog. This is planetary-photography on a grand scale.

As scientists today ponder whether we have entered a new geological epoch — the Anthropocene — to reflect humanity's considerable impact upon Earth, aesthetics remains a largely overlooked feature in this debate despite the fact that the term designates a condition in which cultural production writ large — terraforming and human industrial activity — is its constitutive force. By contrast the concept's considerable uptake within the arts and humanities has spurred wide-ranging theoretical work and cultural

imaginaries. Anthropogenic matter is relentlessly aesthetic in throwing disturbing material re-arrangements back at us: dirty pictures of dramatically warped landscapes and polluted atmospheres that both intoxicate and repulse. Approaching these transformations solely in terms of their radical geological reorganisation neglects their fundamental visual dynamics. I suggest that any discussion that lays claim to the possibility that we have entered a new geologic era should by extension also consider the ways in which new conceptions of the aesthetic, including the ways we observe and make sense of such massively entangled nature-culture hybrids, are increasingly being brought about. Might we have also entered a geo-photo-graphic era in which polluted environments operate as vast photosensitive arrays that register and record the changes brought about by industrialisation and its contaminating processes? An epochal shift that demarcates a photographic condition rather than a metaphoric attribution in which environments are merely read as inscriptive surfaces? An era in which images move beyond their accepted role as representations of events, but are themselves an integral part of the unfolding action? Etymologically 'aesthetics' is a twofold concept referring to the senses' capacity to perceive external phenomenon as well as to the ways in which the mind itself is attuned to such appearances. It is both the apprehension of things by the senses and the cognitive awareness of things. Does the emergence of such extreme forms of environmental image-making, considered in light of the original Greek conception of aesthetics as both sensing and knowing, also break with older forms of naturalised human vision and thus construct new ways of perceiving events?

Toxic landscapes

An ongoing strand of my research focuses on compromised landscapes whose material technicity and toxicity is suggestively mediatic and thus explicitly concerned with visuality as its dominant mode of expression, although the aesthetic dimension of these anthropogenic events need not privilege the visual *per se*. In order to understand the specific conceptual move that I am proposing, an example is needed. When an explosion ripped through the Deepwater Horizon oil rig on 20 April 2010, releasing chains of carbon and hydrogen



Top–Spectrum of the Sun as sketched by Fraunhofer, 1814–15. Source: https://thecuriousastronomer.files.wordpress.com/2013/11/image4.jpg. Bottom–Stardust in Perseus, 2015. A cosmic expanse of dust, gas and stars in the constellation Perseus. Source: http://apod.nasa.gov/apod/ap151010.html. Photo © Lynn Hilborn.

atoms into the Gulf of Mexico, their natural photonic properties began interacting with the unstable and energetic surface molecules of the water, recombining to produce an iridescent image of creeping dread: a horror film, in effect. The image-making capacity of an oil spill refers to more than an ability to mirror or project some kind of image-like event back at us — abstracted and lurid patterns of reflected light — but is also a cinematic feature of its very ontology, its molecular structure and behaviour.

> The film of oil creates two imperfect mirrors — surfaces that are flat, approximately parallel, but only partially reflecting. A light wave first encounters the surface between the air and the oil; some of it reflects, some continues on into the oil and encounters the surface between the water and the oil. Here again, some reflects and some continues. When we look at an oil slick, we see the combination of reflected light waves. Because the two mirrors are close — the distance between them is similar to the wavelength of light — light reflecting from them interferes with itself: that is, waves of light reflecting from one mirror augment or annihilate waves reflecting from the second.[1]

The natural chromatic potential of hydrocarbon atoms is activated by the change in density of the oil film's molecules as they spread and thin-out, thus modulating the degree to which light wavelengths interact and interfere with one another to produce their rainbow-like effects. The interference patterns that are visible on the surface of an oil slick are an aesthetic expression of the optical conceits that the oil film shares with other technical forms of media production. While analogous to the workings of the cinematic apparatus, the oil spill is perhaps better understood as engaged in the production of a new form of cinema organised by the found footage of 'nature' itself. One whose indexical operations are pushed to the extreme insofar as the external event to which it gestures — in the case of the Deepwater Horizon the release of an estimated 4.1 million barrels of crude oil into the Gulf — is literally transformed into its very mode of image-production. The conditions that brought about the disaster are thus re-expressed as an

1. Felice Frankel and George M. Whitesides, *On the Surface of Things: Images of the Extraordinary in Science*, London: Harvard University Press, 2007, p. 14.

ontological re-arrangement of molecular matter: a shift from the representation of the damaged drilling rig and its gushing crude to the actualisation of a ruinous image.

Reconceptualising these kinds of toxic ecologies as fully realised aesthetic agents demands that we, in turn, revise the ways in which we apprehend our relationship to the world; that we come to recognise the myriad ways in which we are visually or aesthetically continuous with it. Irmgard Emmelhainz suggests that the Anthropocene designates more than the entanglement of images within the geological strata as e-waste or the afterlives of cultural products such as media, but requires the development of an 'optical mind', which she understands as the ways in which images intensify presence.[2] I agree with her:

> The anthropocene has meant not a new image of the world, but rather a radical change in the conditions of visuality and the subsequent transformation of the world into images. These developments have had epistemological as well as phenomenological consequences: while images now participate in forming worlds, they have become forms of thought constituting a new kind of knowledge — one that is grounded in visual communication, and theory dependant on perception, demanding the development of the optical mind.[3]

2. Irmgard Emmelhainz, 'Conditions of Visuality Under the Anthropocene and Images of the Anthropocene to Come', *E-Flux*, vol. 63 (2015), p. 2.

3. Ibid., p. 2.

The dirty pictures that I am interested in researching operate at such immense scales that we can no longer look at them or grasp them as whole and bounded images unless perhaps by virtue of the distance of Earth observation satellites. They are not available to us as distinct pictorial representations — images fixed in time and space — that can be represented in their singularity and contained within the planar morphology of what we might conventionally understand as an image, but are multi-scalar and multi-planar stretching back in time as well as throwing their contaminates forwards into the far distant future. Such toxic ecologies are only made 'present' to us, that is to say, 'presented' to us, as fields of experience and through augmented modes of sense perception involving the development of new techniques for detection and measurement. Although we encounter them as pure

Stills from the film *Inuit Knowledge and Climate Change* directed by Zacharias Kunuk and Ian Mauro, Canada, 2010 (54'). Stills courtesy of TV Isuma.

presence, our contact with or apprehension of them is always partial. The hole in the ozone layer is but one such image; its vastness escapes easy capture except by simulation and data visualisation and thus is only ever experienced as a localised 'aesthetic effect', a sunburn, as Timothy Morton suggests in his thesis of the hyperobject.[4]

4. See Timothy Morton's discussion of 'nonlocality' in his book, *Hyperobjects: Philosophy and Ecology after the End of the World*, Minnesota and London: University of Minnesota Press, 2013.

Matter as sensors

Oftentimes the stealth-like behaviour of many environmental hazards resulting from industrial processes and accidents are only observable under certain technical conditions in which the molecular structure of water samples or the metastasisation of cells is made to reveal the presence of an unwanted external agent, higher than acceptable levels of contamination, or an aberrant genetic sequence. What, for example, would an image of the radiological fallout from Chernobyl look like? Presumably we would find ourselves examining some sort of data visualisation charting the movement of atmospheric particles across the Ukraine into Belarus and beyond. But given the temporal and spatial complexity of such an event, this dataset could only ever enable a partial glimpse. Rendering these kinds of images perceptible usually requires the intercession of technical probes and sensors that can detect slow or invisible changes over time. However, alternate modes of perception that come out of entirely different cultural contexts suggest that ways of knowing and ways of seeing need not be bound to ocular-centric traditions or technological systems. Indigenous people for example, may have intergenerational knowledge of the land that is guided by an acute sensitivity to the many changes taking place in their immediate environment. But even when technological sensors are deployed, their acquired data must be integrated into a broader network of sensing agents that includes the observations and lived experiences of humans as well as information gleaned from nonhuman entities that are also engaged in the direct sensing of their environments such as plants and animals.

Jennifer Gabrys has referred to certain forms of sensor technology, such as the Moss Cam, a webcam for monitoring growth patterns of Starr Moss in the James Reserve in California, as producing a conception of images as a 'data layer' rather than as a representation.[5] By this she means that

5. See 'From Moss Cam to Spillcam: Techno-geographies of Experience', in Jennifer Gabrys, *Program Earth: Environmental Sensing Technology and the Making of a Computational Planet*, ed. Krapp Hayles, Raley, Weber. London: Minnesota, 2016, pp. 57–80.

the image information provided by the webcam contributes a dataset derived from the technical observation of a living organism that is itself 'expressing sensory responses to human-altered worlds'. This image-data is then combined with an array of other distributed sensor technologies to produce a more complex understanding of the many changes taking place within a given environment.

> Similarly, the Moss Cam generates images and daily records that contribute to a picture of seasonal patterns and 'event effects'. These effects might include lack of moisture in the summer, which contributes to mosses 'burning through' their CO2 reserves — in other words, higher temperatures can correlate to an increased release of CO2 by mosses, as they consume stored energy and move toward states of dehydration and dormancy. Here, what counts as 'sensing' is not a simple matter of observing mosses through a web camera over time, but instead involves observing how the moss is a sensor, or a biomonitor that is itself detecting and responding to changes in the environment.[6]

6. Gabrys, p. 44.

The data layer of the Moss Cam image enables a shift in scale from an expression of situated local conditions to its aggregation within planetary processes, allowing it to be further modelled and computed. This insight is helpful for conceptualising how images are always part of a larger sensorial assemblage and therefore any local particularities they record only make 'sense' when considered within the expanded network in which they are enfolded. In all likelihood my adapted usage of the terms 'dirty pictures' or 'extreme images' isn't sufficient to break with prevailing understandings of what constitutes an image or a picture, but I think they may be useful in helping us understand the particular aesthetic operations that are at stake when visuality morphs into dynamic highly dispersed image-matter hybrids that also include us and thus decentre the vantage points of objective human vision.

All matter that has undergone a transformation of some kind acts as a sensor that can record its contact and interaction with external agents and forces. However, not all

A ship floats in a sea of spilled oil in the Gulf of Mexico after the BP Deepwater Horizon oil spill disaster, 16 June 2010. Source: https://www.flickr.com/photos/49503002894@N01/4710168879. CC BY-NC-SA 2.0. Photo by Kris Krüg.

material registrations and reconfigurations organise themselves according to the technical operations of the geo-photo-graphic in the sense that is being advanced herein. The contaminated environments and polluted atmospheres I work with stand as paradigmatic case studies because their material constitution responds to and registers change in uniquely mediatic ways — what some scientists have elsewhere referred to as the 'optical design processes' of nature.[7] By this I mean the specific ways in which damaged matter harbours many of the technical capacities — chemical processes and optical properties — identified with the lens-based technologies of film and photography. It is this aesthetic condition that I would like to explore in the remainder of this text while considering the ways in which matter can bear witness to events as a registration system that documents ongoing change internally within its material substrates and molecular rearrangements, as well as externally as visible transformations. The conviction in a materialist aesthetic that expresses itself as a kind of mediatic system has been central to all of my research and proceeds from the premise that things have agency and that matter is capable of narrating its histories if we realign the modes by which we, humans, attend to its particular forms of expression. When we take seriously the premise that anthropogenic environments are documenting their own damaged condition, as I do, and that their mode of expression or method of narration includes an aesthetic dimension that operates according to certain image-making practices, as I demonstrate in various art projects, then we assign a new status to the image as not merely a device for mirroring surface effects, but as a productive agent in generating new knowledge.

7. Andrew R. Parker, 'A Vision for Natural Photonics', *Philosophical Transactions of the Royal Society*, vol. 10, 2004.

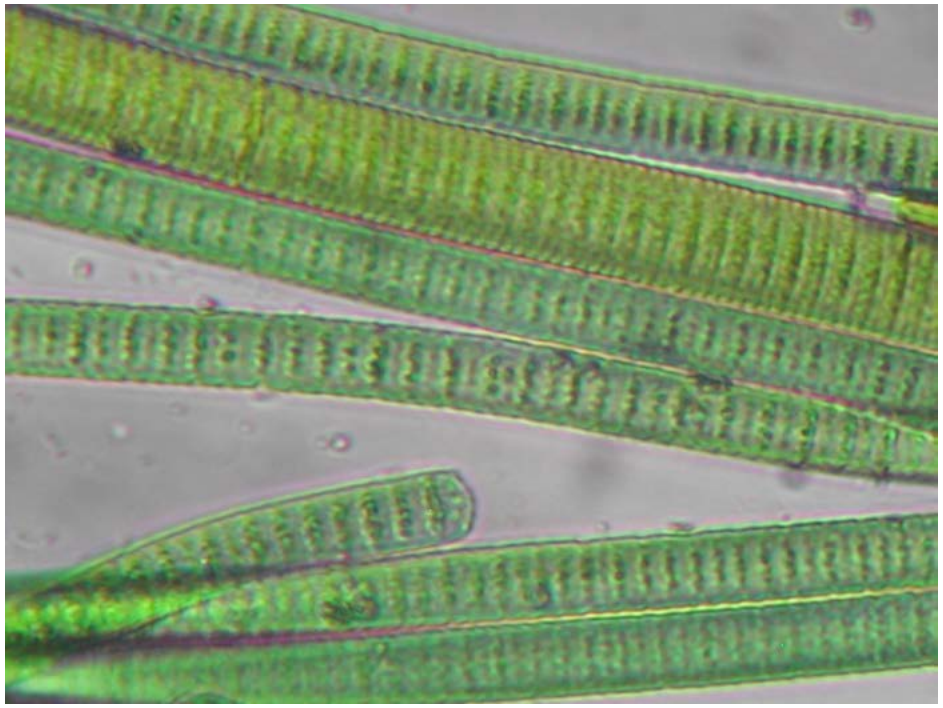
A new optical regime

Early experiments in photography certainly treated visual information in this much more radicalised way, as efforts to arrest and capture natural phenomena were used as analytic methods for producing scientific insights. Not only are the 'dirty pictures' of my research to be considered proto-photographic assemblages capable of generating new insights into the material production of images, they are also transforming the very conditions of visuality — our mind's eye, such that it is possible for me to claim that global warming is bringing about a new optical regime in the North.[8] In the Canadian Arctic the sun is setting many kilometres further west along the horizon and the stars are no longer where they should be. Sunlight is behaving differently in this part of the world as the warming Arctic air causes temperature inversions and throws the setting sun off-kilter. The crystalline structures of ice and snow that once reflected an image of a stable and predictable world are twisting and morphing, producing an aesthetic phenomenon borne out of climate change. For the Inuit, the world that they once knew finds no analogue — no mirror image — in the world that they see now. Not only is light bending and deceiving the eyes that have tracked the position of the sun for generations, but as black carbon deposits accrue throughout the Arctic regions and rising temperatures diminish sea ice, melt glaciers, liquefy snow packs, and thaw permafrost, the natural indexicality of such Northern topographies has also become increasingly suspect. Ecological registration systems that formerly directed Inuit hunters home with cartographic certainty are distorting as the contours of snow-encrusted landscapes are resurfaced by climatic aberrations. No longer can the wind-carved tongues of snowdrifts offer up the icy signs that permit confident action. Matter is dramatically out of place in these mutating Arctic environments and nature has itself become a hostile witness, antagonistic to the deep historical testimonies evinced by its once frozen landscapes.[9]

Although climate scientists and the Inuit share a concern for the changes occurring in the North, the seemingly self-evident fact of the sun's slow migration was initially rejected by the scientific community, despite the perceptual habits of the Inuit who relied entirely upon its constancy and were therefore ideal witnesses. Indeed, who better to testify on behalf of the vagaries of the sun? Tropospheric warming and temperature inversions have, it turns out, trapped ever-greater concentrations of atmospheric pollutants within particles of ice and snow. It is *this* phenomena that is altering the visible spectrum of light refracted by the snow and thus also the pathway of the setting sun. Corroborated by the optics of snow science, the dynamics of solar energy and frozen matter have retroactively testified to the 'propositional fiction' advanced by the Inuit that the 'sun now sets past the highest peak'. The epistemic convictions that have organised

8. Susan Schuppli, 'Can the Sun Lie?', *Forensis: The Architecture of Public Truth*, ed. Forensic Architecture, Berlin: Sternberg 2014.

9. My insight into this solar dispute is fully indebted to the events documented in the film *Inuit Knowledge and Climate Change*, dir. Zacharias Kunuk and Ian Mauro, Isuma TV, 2010.



Top–Cyanobacterial filaments of the genus Oscillatoria form a Cyanobacterial Mat in the salt marsh at Heron's Head Park, San Francisco. Cyanobacteria (formerly called blue-green algae) are large photosynthetic bacteria. Bottom–Wild Fennel, salted paper print by William Henry Fox Talbot, 1841–42. Talbot's earliest pictures were photographic traces of botanical specimens laid on sheets of chemically sensitized paper that were exposed to sunlight. The paper darkened wherever it was struck by light but remained white wherever the sun's rays were blocked. Photo by Gilman Collection, 2005.

the material world in order to render it sensible and thus knowable, especially within legal and scientific discourses, must be supplemented by a detailed consideration of the ontological arrangements that matter itself evinces as a sensate mediator and material witness to historical events without direct recourse to the linguistic forms of expression deemed constitutive for the production of human subjectivity or to positivist notions of the physical world as directly given through observation and measurement. Whereas the Inuit are often positioned as having recourse to aesthetic events only through the sense-making operations of myths and stories such that their 'knowing' is disavowed and their 'sensing' denigrated as a feeling for nature rather than a form of radical empiricism.[10]

10. See William James, *Essays in Radical Empiricis*, Mineola: Dover Publications, 2003.

Material witnesses

Investigating the rise of these geo-photo-graphic entities allows me to intervene in a set of fields, discourses, and histories in which images and aesthetic effects were only ever entrusted with the reproduction of reality. Instead I would like to suggest that new kinds of image-making agents have been and are actively re-making our world — creating new perceptual realities — which in turn also function as material witnesses to the radical environmental transformations taking place all around us. While the concept of 'media ecology' has by now a reasonably long history tracing back to Marshall McLuhan (1964) and Neil Postman (1968) who proposed the term to account for the ways in which media and codes of communications organise our perceptual habits and structure the social environments in which we live, more recent adaptations have shifted its meaning closer towards the life sciences in stressing the entanglement between biological systems and technological processes.[11] In all cases ecosystems are invoked to describe the highly networked architectures of media information. However, thinking of and treating ecologies non-organically as machinic and image-producing devices — the provocation of my research — deviates from organicist paradigms that are arguably more metaphoric than actual and insists that environments *are* media systems and that toxic ecologies in particular constitute forms of extreme, perhaps even obscene images, hence the dual meaning of 'dirty' as both polluted

11. See Eugene Thacker, *Biomedia, Electronic Mediations*, ed. N. Katherine Hayles, vol. 11. Minneapolis: University of Minnesota Press, 2004; Matthew Fuller, *Media Ecologies: Materialist Energies in Art & Technology*. Cambridge: MIT Press, 2005; Richard Doyle, *Wetwares: Experiments in Postvital Living, Theory Out of Bounds*, eds. Sandra Buckley, Michael Hardt and Brian Massumi, vol. 24. Minneapolis: University of Minnesota Press, 2002.

and transgressive. For example, the photochemical smog that engulfs many contemporary cities modifies the visible spectrum of light when pollutants interfere with the chemistry of the atmosphere as it interacts with the sun. What is significant is not that we can actually 'see' these smog-shrouded cities from afar, but rather that photochemical smog alters the optical properties of the atmosphere such that the 'way' we actually see is modified along with the thing itself. Shifting the emphasis towards an understanding of environments as engaged in practices of image-making and comprised of sensors that register external events as visible transformations in their ontological makeup (but not always) invokes an anti-documentary mode of representation in which the indexical nature of an image such as a polluted landscape doesn't point to an event outside of the field of the image but is itself folded into its image-matter as the instantiation of its material substance in aesthetic form. Likewise with the BP oil spill in the Gulf of Mexico.

The history of photography, from its very inception, was indebted to phenomena and processes located in nature. The geological fissures that enabled the shadow play of light most famously theorised as Plato's Cave is after all photography's founding myth and origin story. All early experimentation to capture and play with sunlight drew inspiration from observing the atmospheric effects of weather. Even with the invention of photography in 1839, the primacy of nature's agency in bringing about a direct likeness of external events continued. Henry Fox Talbot, one of its first practitioners, referred to the camera as a 'pencil of nature' and photographs as 'sun pictures'.

Arguably the chlorophyll found in algae and plants is the proto-photographic technology par excellence, given that it provides the means for the direct capture of light, which brings about a set of visible transformations. However, the dirty pictures that I research are unnatural in the extreme. They have evolved out of a particularly twisted exchange between human agents, their industrial practices, consumptive appetites, and the environmental systems in which they all interact. Yet the emergence of these extreme images can be slow, taking decades to coalesce into sufficiently coherent entities to register as events worthy of our (Western) attention, although indigenous peoples may well have noted gradual changes in the natural world for decades with little credence paid to their lay observations. In his writing on the structural violence of resource extraction and biospheric modification, Rob Nixon contends that 'there is a representational bias against slow violence' in favour of spectacular eruptions. 'The representational challenges are acute, requiring creative ways of drawing public attention to catastrophic acts that are low in instant spectacle but high in long-term effects.'[12] The slow accretion of black carbon dust particles on Arctic ice sheets resulting in the phenomena known as 'dark snow' is another case in point. Dirty pictures, such as these vast swaths of carbon-encrusted snow, are often 'massively distributed in time and space' (Morton's characterisation of the hyperobject) and thus exceed our capacity to grasp them by traditional documentary means. New scientific probes and modified methods for deducing their presence, such as photometric sampling in the case of dark snow, are needed and/or are being developed. Oftentimes the means by which toxic ecologies generate their image-fields isn't directly perceptible to human eyes. In a response to the nuclear accident at the Fukushima Daiichi plant in March 2011 and the problem of detecting radiation leakage in large open spaces, Toshiba invented the portable gamma camera to render visible radioactive isotopes. I was able to demo this camera at their Nuclear Division in Yokohama a few years ago. While we humans might need mediating devices to comprehend the technical reorganisation of matter that something like a nuclear or industrial accident has brought about, other organisms can sense these changes without technical augmentation. The Mantis shrimp, for example, has more photoreceptors than any other species on the planet and is thus able to perceive light from near infrared across our entire visible spectrum and into the realm of ultraviolet light.

Much of my work over the past few years has explored the evidential role of matter in registering external events as well as exposing the partisan practices and procedures that enable such materials to testify publicly and bear witness. Thus the concept of the 'material witness', which refers to the double agency of matter as both harbouring direct evidence of events as well as providing circumstantial evidence of the interlocutory methods and epistemic frameworks whereby

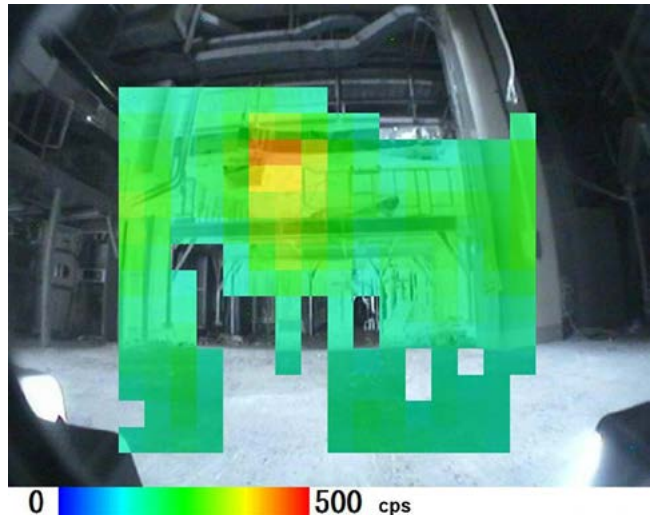
12. Rob Nixon, *Slow Violence and the Environmentalism of the Poor*. Cambridge: Harvard University Press, 2011, pp. 10, 13.

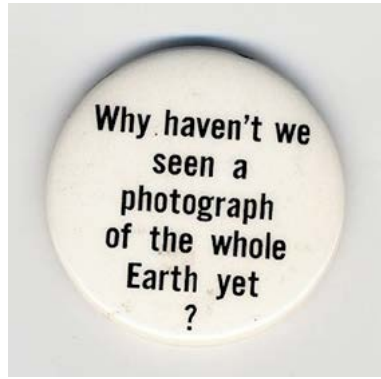
such matter comes to be consequential. Material witnesses are nonhuman entities and machinic ecologies that archive their interactions with the world, producing ontological transformations and informatic dispositions that can be forensically decoded and reassembled back into a history.[13] In pursuing this research, I have examined a wide range of materials that record trace evidence of the violence that generated their context and explored the institutional and disciplinary protocols that enable their latent histories to be rendered visible and made to speak, even if their 'speech acts' fall on deaf ears or challenge accepted truths. While I began with inquiries into the ways in which mediatic matter records evidence of events, my work has shifted to include matter more generally and in particular toxic ecologies.

Troubling the events of climate change

Although I agree with Rob Nixon and his thesis of 'slow violence' as lacking the perceptual intensity that characterises the kinetic violence of conflict and war, the demand that he raises for new kinds of slow representations could perhaps be met by the environmentally damaged and dirty pictures I am invoking here. Such ontologically complex nature-culture hybrids break with pictorial conventions that place the perceiving subject outside and at a distance from that which is perceived, stressing instead the ways in which we are deeply implicated in the unfolding action of events. In doing so they also call for alternate conceptions of the visual in which aesthetic sensibilities are themselves conditioned and transformed through our collective and mutual entanglements. Taking seriously the provocations of the extreme image might entail giving up on thinking of ecology in terms of the holistic blue marble exemplified by Stewart Brand's question: 'Why haven't we seen a photograph of the whole Earth yet?' Rather than picturing the Earth as a discrete object floating in space that can be perceived as whole and thus made available to our managerial control, would it not be more relevant to consider all of the ways in which its Earthly image-matter exceeds such singular capture. Surely the complex and non-linear modes of causation that give rise to the Earth's dynamic forms of material expression — its evidential and damaged surplus which is also a consequence of our excess — produces a surfeit of image-matter that

13. Susan Schuppli, *Material Witness: Forensic Media and the Production of Evidence*, ed. Douglas Sery. London: MIT Press, Forthcoming.





Top–Inside the Reactor Building, Unit 1, Fukushima Daiichi Nuclear Power Station. Toshiba Gamma camera view from the large equipment service entrance to the south-side airlock, 22 May 2011. Photo by TEPCO. Middle left–Campaign button by Stewart Brand urging NASA and the Soviet Union to release a photograph of the whole earth, 1967. Source: https://www.researchgate.net/figure/281088430_fig1_Figure-1-Campaign-button-1967-by-Stewart-Brand-Urging-NASA-and-the-Soviet-Union-to. Photo courtesy of Stewart Brand. Bottom–Snow on top of sea ice near Barrow, Alaska, measured by University of Washington researchers in 2012. Source: https://www.flickr.com/photos/uwnews/14749728039/in/photostream/. Photo © Chris Linder.

adamantly refuses coherency and objectification. Only when the world is transformed into a scalar dataset and simulated do we get a glimpse of these planetary processes interacting as one unified whole, whereas our actual lived experience of these events remains partial and local to the end.

It is doubtful that the Anthropocene, narrowly conceived as a geological reordering, can do the considerable work that is required to address matters of environmental harm and global warming. However when combined with the ways in which it is being adapted by artists and practitioners outside the physical sciences to include aesthetic rearrangements, it offers an initial attempt at inventing a new operative concept. A much more radicalised understanding of the term might emphasise different ethical relations between entities and environments, generate novel forms of action, and even give rise to alternate political imaginaries.

> For this reason, the creation of new concepts is a means to a new earth and people that do not exist. A practice of philosophy which would be 'worthy' of the event does not simply respond to social events as they appear: it creates new concepts in the attempt to give expression to the underlying problems or pure events.[14]

The extreme yet relentlessly proximate image-fields that I have been conjuring throughout this text as 'dirty pictures' are one such modest attempt to create a new concept worthy of troubling the events of climate change.

14. Paul Patton, 'The World Seen From Within: Deleuze and the Philosophy of Events', *Theory & Event*, vol. 1, no. 1, 1997, p. 11.

Cumulative oil slick footprint from the BP/Deepwater Horizon oil spill, based on satellite images taken between 25 April and 16 July 2010. Source: blog.skytruth.org/2010/07/bp-gulf-oil-spill-68000-square-miles-of.html

Staring into the Ice

Femke Herregraven

Chernobyl radioactive fallout in the Northern Hemisphere. Source: Livermore National Laboratory data, from A. Yablokov, I. Labunska, and I. Blokov (eds.), *The Chernobyl Catastrophe–Consequences on Human Health*, Greenpeace, Amsterdam, 2006.

For her 2014 Dark Ecology commission *Staring into the Ice*, Femke Herregraven examined the relations between the financial world and global warming, and how the melting Arctic ice has opened up new investment opportunities and trading routes for financial markets by making it possible to lay submarine data cables on the Arctic seabed. Governments in the Arctic can use this new network to expand their political influence, surveillance capabilities, and financial markets. High-frequency traders will benefit from it enormously. The Arctic submarine cables will basically be constructed for one thing only: speed. Herregraven pinpointed the construction of the Arctic submarine cables and their political, infrastructural and ecological consequences. She visited and documented planned locations of the Murmansk cable landing point and researched what will be affected by the construction of this cable.

The All Infrared Line, 2012–2014, film stills. Potential landing point for the Russian Optical Trans-Arctic Cable System (ROTACS). This picture shows the Murmansk harbour. Commissioned by Dark Ecology–Sonic Acts & Hilde Methi. Courtesy of the artist, 2014.

pp. 213–16–Remote village Teriberka on the Barents Sea, 100 kilometres northeast of Murmansk. Potential strategic landing site for gas pipes and submarine cables. *The All Infrared Line*, 2012–2014, film stills. Courtesy of the artist, 2014.

The Workable Arctic of Ice and Oil

Berit Kristoffersen

The Norwegian geographer and specialist on Norwegian environmental and oil politics Berit Kristoffersen outlines the Norwegian discourse about oil and gas exploration of the Barents Sea, and its implications and consequences.

Norway's oil fairytale is rooted in a linear story of wealth, where the accounts of climate change tend to be kept at arm's length. But Norway didn't stick to its most important promise of the 1970s, namely to maintain a moderate pace of extraction. When oil production peaked in 2000, the peak was nearly three times higher than the upper limit set by politicians in 1975. But despite a tripling in investment and well exploration since 2000, the amount of oil tapped from the ground has more than halved. (The extraction of more gas has counterbalanced this). In the same period, oil-related employment has nearly doubled, meaning that the Norwegian economy and a great share of its workforce is still dependent on oil, but it is dependent on less and less oil. This situation was sustainable only because of the considerable increase in the price of oil during the past decade, but it also means that more seascapes have to be made available to prevent abrupt changes to the petroleum sector. With the decade-long boom in oil and gas prices now over, the oil industry and the government are intensifying efforts to drill in new locations. Two areas in Arctic Norway are believed to have the most potential: the Lofoten Islands, and a completely new area for oil exploration in the Northern part of Norway, where ice presents a new challenge for petroleum explorers. The petroleum industry and Norwegian politicians want to use the hydrocarbons to create a new petroleum region: the Gulf of the Barents, as the Norwegian Enterprise organisation called it in 2006. How can the Arctic, which is especially exposed to climate change, be secured for oil production? How should politics position itself in relation to the anticipated growth in activities on the Russian side of the Barents Sea?

Workable future

When oil production peaked at the turn of the millennium, the industry wanted to gain access to the Barents Sea to address what they perceived as an energy crisis, while the government talked about future possibilities. As a strategy, this has primarily been encapsulated in the flexible political and territorial term the 'High North', officially launched by the government in 2005. The High North policy focuses on oil and gas, bilateral relations with Russia, climate change and knowledge generation. The High North provided a new lens through which future domestic and foreign policy-making could be combined and linked to international scenarios of opening up the Arctic to a wide range of economic activities. This was indeed a time when ideas about the economic potential in the Arctic, as well as of the Arctic as a frontier for human progress, proliferated. In many ways, Norway's High North narrative is typical of Arctic statecraft over the past decade, which has also taken various forms in re-constituting Arctic identities. It positioned Norway as a provider of environmental stewardship in the Arctic, in contrast to Russia's attitude towards the Barents Sea.

What I will analyse as a growing perception of Russia as an Arctic Other relates to the above policy and ambitions of future Arctic governance as being 'the best manager' of the Arctic.[1] Important for Statoil, Norway's two-thirds government-controlled oil company, is to have long-term ambitions for Arctic drilling. In their analysis the Barents Sea belongs to the 'workable' Arctic. Looking at oil and gas prospects on the 'Russian side' of the Barents Sea has therefore been an important part of their strategy, and is often thought to be the primary reason for its merger with the other partly state-owned oil company, Hydro, in 2007. The new Statoil became a partner in what was believed to be the world's largest gas field, Shtokman (Штокмановское месторождение). In 2012 its exploration was postponed until further notice, citing high costs and low gas prices as reasons. In Statoil's workable Arctic the explorations in the Barents Sea are characterised by technological improvements, which can take the industry into new areas categorised as *stretch* (Alaska, for example, where not all the technology is in place). In turn, this could enable developments in the 'extreme' Arctic, such as Eastern Greenland, for which the industry is not yet technically equipped. As such, the government facilitates a 'deeper knowledge of the Arctic', as Minister of Foreign Affairs, Jonas Gahr Støre (now leader of the Labour Party), wrote in his 'secure geography' commentary on Norwegian–Arctic matters.[2] In the same year the Exploration Director of Statoil,

1. For this analysis I draw on the work of Leif Christian Jensen. See Leif Christian Jensen, *International Relation in the Arctic. Norway and the Struggle for Power in the New North*, New York: I.B Taurus, 2016.

2. 'Sikker geografi', *Dagsavisen*, 31 May 2012.

Tim Dodson stated that technological progress in the Barents Sea would enable oil companies to move 'deeper and more broadly into the Arctic' in his talk 'The Gateway to the Arctic' at Arctic Frontiers.[3]

A key event, as pointed out in the most recent report by the industry coalition organisation Konkraft called *Northwards*, is the resolution of the long-standing offshore border dispute between Norway and Russia in 2010: 'The agreement enables petroleum operations on both sides of the border, in a promising area in terms of its resources.'[4] This event has been important to the social contingency of these 'bordering' natural resources, as they are *also* products of cultural, economic and political work.[5] Through actively intervening to secure what Ben Anderson calls a 'workable future' in the uneven geographies of oil and gas developments in the Barents Sea,[6] Norwegian statecraft has been performed through extensive territorial mapping processes that — in its rhetoric — prevent Russia from setting the operational and environmental standard. Five minutes after the treaty that ended the border dispute between Russia and Norway was officially ratified, Norway's Petroleum Directorate started surveying the seabed of the entire area for oil and gas deposits (through seismic air guns), and it was officially opened up for petroleum-related activities in 2013.

3. Available at www.arcticfrontiers.com.

4. Konkraft, 2016, Nordover, report available online at: www.konkraft.no.

5. Gavin Bridge, 'Resource Geographies 1. Making Carbon Economies, Old and New', in *Progress in Human Geography,* vol. 35, no. 6, 2011, pp. 820–34.

6. Ben Anderson, 'Preemption, Precaution, Preparedness: Anticipatory Action and Future Geographies', in *Progress in Human Geography,* vol. 34, no. 6, 2010, pp. 777–98.

'New Norway'

During an interview that I conducted the same year with Erik Solheim, a former Minister of the Environment (2007–12, Socialist Party), he emphasised that with these mapping tactics Norway can avoid problems with Russia. The agreement was considered to be a positive step because there is 'all reason to believe that Norway will have better control and technology and systems to handle [all aspects of petroleum development], and therefore building up a parallel enterprise as a whole can lead to more responsible management of oil resources on the Russian side.' Understood as an anticipatory logic, this suggests that if Norway maps all its resources, the government would be in a better position to face an uncertain future with its Eastern neighbour. Still, as Solheim emphasised, there are many uncertainties, and certain conditions will have to be in place:

Top–Exploratory drilling in Shtokman field, one of the world's largest natural gas fields. It is located in the north-western part of the South Barents Basin. Source: http://www.gazprom.com/press/news/2012/december/article151657. Photo © Gazprom, 2012. Bottom–The world's first offshore ice-resistant stationary oil platform (MISP) Prirazlomnaja in the Pechora Sea, operated by Gazprom Neft, 2013. Source: https://en.wikipedia.org/wiki/Prirazlomnoye_field#/media/File:МЛСП_Приразломная_зимой.jpg. CC BY-SA 4.0. Photo by Krichevsky.

In February 2015 the Goliat platform began its voyage from South Korea to Norway aboard the Dockwise Vanguard, the world's largest heavy lift vessel. Goliat started production on 12 March 2016. Source: http://www.eninorge.com/en/News--Media/Multimedia-archive/Photos1/?dir=Goliat. Photo © Eni Norge, 2015.

> ...while it is important for Norway to gain a better knowledge base and understanding of the situation in the border areas, we will have to move forward very gently when it comes to opening up for oil drilling or shipping. As of today, we don't have any technology to recover oil in areas with ice. And as we know, Arctic nature is extremely vulnerable.[7]

Solheim's statement points to the current challenge of drilling in areas where there could be ice, and underscores the perception of Russia as the 'Arctic Other'. Leif Christian Jensen's thorough analysis shows how Norwegian policymakers developed the precondition for action through the construction of *binary oppositions* between Norway and Russia over the past fifteen years.[8] First, in the early 2000s by co-opting the discourse of environmentalists who argued that no drilling should take place in protected ecosystems in the area. By turning the discourse on its head, and continuously repeating it, the second argument comes into play. By getting a head start on Russia in the Barents Sea, Norway can and should supervise Russian petroleum development in the Barents Sea based on its environmental standards and knowledge. As explained by Jensen, Russia was in a difficult economic situation and their environmental problems became visible to the world after the dissolution of the Soviet Union. These problems (especially across the border from Norway in Northwest Russia) became an important issue in the Norwegian public debate, and fostered a perception among the Norwegian public of Russia as an environmental laggard. The two logics of Norway drilling with the highest environmental standards and the importance that Norway placed on anticipating Russia in the Barents Sea were behind the 'drilling for the environment' discourse. The discourse was revitalised in May 2015, when the new head of Norwegian Oil and Gas (the joint industry organisation), Karl Eirik Schjøtt-Pedersen, made his first public appearance. Whether and where to drill in areas close to ice in the Barents Sea in the previously disputed area was about to be debated in parliament. Schjøtt-Pedersen claimed: 'If the Russians are the only ones conducting exploration activities and we do not have an equivalent knowledge about the resources and the geology, then the negotiations with the

7. As referenced in Berit Kristoffersen 'Opportunistic Adaptation: New Discourses on Oil, Equity and Environmental Security'. In O'Brien Karen and Elin Selboe, eds., *The Adaptive Challenge of Climate Change*, New York: Cambridge University Press, 2015, pp. 140–59.
8. See Jensen, 2016.

Varangerfjord. Photo by Konstantin Guz, September 2015.

Russians will occur from different bases and starting points. This means that Norway could lose enormous wealth.'[9]

This echoes a static approach towards state space, or the 'territorial trap': the notion of the political as tied in with the state, and the state being a bounded spatial entity, a container of the political.[10] This binary, which is quite the opposite of seeing foreign and domestic policies as intertwined, reflects a complete separation where order is maintained within its own boundaries, and contrasted with the foreign anarchy beyond them. Conceiving of Russia as a 'radical other' separates Norway from the 'irresponsible, primitive, impatient and unpredictable' Russia, where Norway simultaneously takes steps 'to defend its well-ordered domestic identity in the face of a potentially anarchic unregulated Arctic, and a revitalised, but uncontrollable Russia'.[11] The Norwegian approach therefore aims to prevent Russia from setting the environmental and operational standards in the Barents Sea by actively intervening to secure a workable future.

9. http://e24.no/energi/hoering-om-oljevirksomheten-i-barentshavet-oljebransjen-advarer-om-at-russland-kan-komme-oss-i-forkjoepet/23450809.
10. For this concept, see John Agnew, 'The Territorial Trap: The Geographical Assumptions of International Relations Theory', in *Review of International Political Economy*, vol. 1, no. 1, 1994, pp. 53–80.
11. See Jensen, 2016, p. 171.

Objects that move

At this point, we could turn the question around. Two weeks after Schjøtt-Pedersen proposed his geopolitical construct of losing money because of Russian aggressiveness in the Barents Sea, the Russian specialist and vice-president of the Fridtjof Nansen Institute, Arild Moe, examined the numbers: Norway had drilled almost twice as many exploration wells by the end of 2014 as Russia, and almost two-thirds of these were on the Norwegian side of the Barents Sea (118 versus 60). The reality was the opposite of what was presented in Norwegian public debate. Environmentalists responded by stating that Russia had been used as a decoy for Norways' own opening up of new areas in the Barents Sea.[12] Another reality is that only two projects have materialised, the *Snow White* gas field and the *Goliat* oil field. Other potential prospects are currently on hold, because of both their size and cost. As the Norwegian government covers almost four-fifths of the exploration drilling costs, they also assume the major economic risk when exploring the Barents Sea. 'You may be able to deceive public opinion, but you can't fool the specialists within the industry', an industry representative who had worked for one of the international oil companies

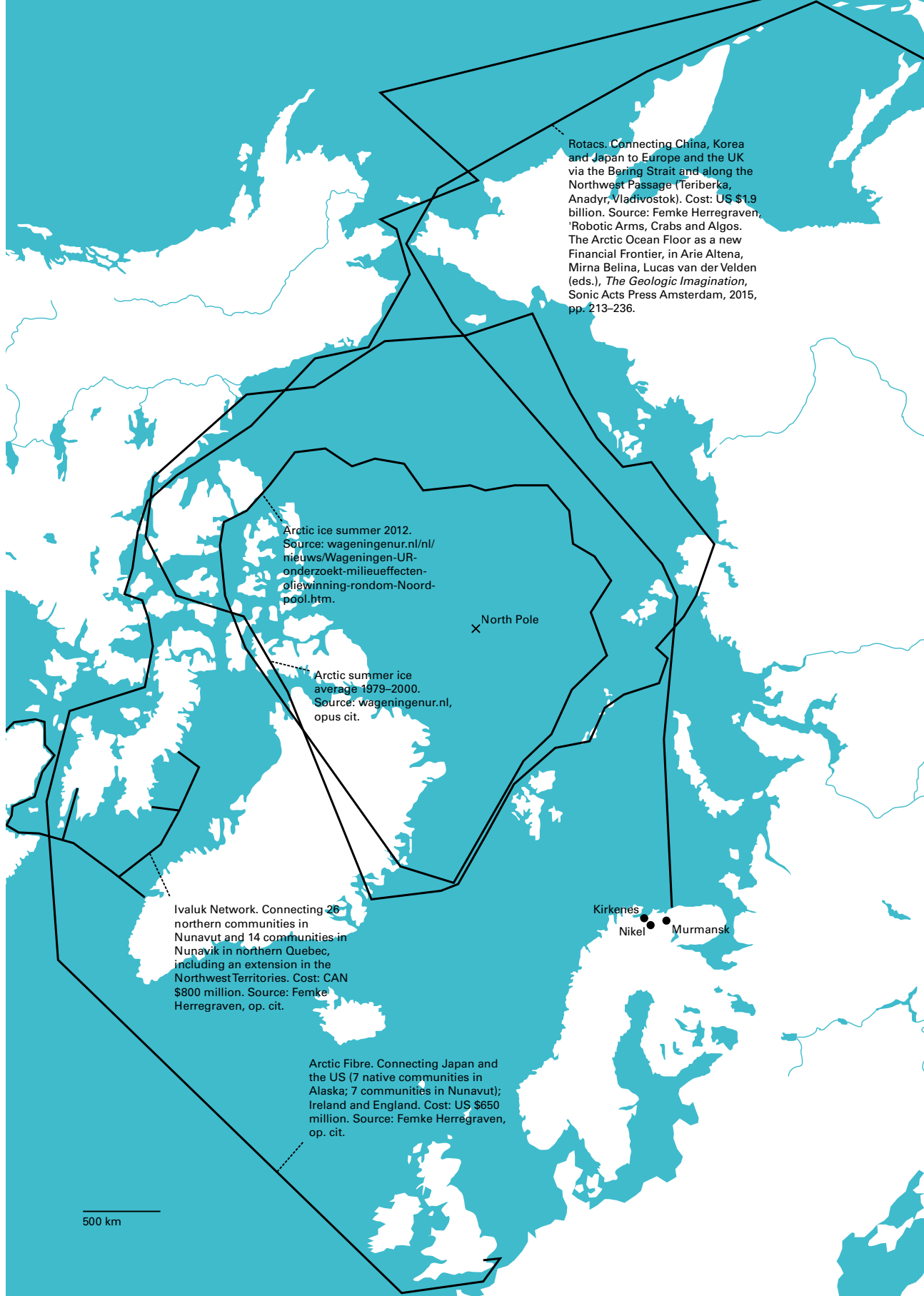
12. http://e24.no/energi/bellona-slaar-tilbake-mot-oljenaeringen-russland-brukes-som-et-paaskudd-for-aa-gaa-lenger-nord/23459162.

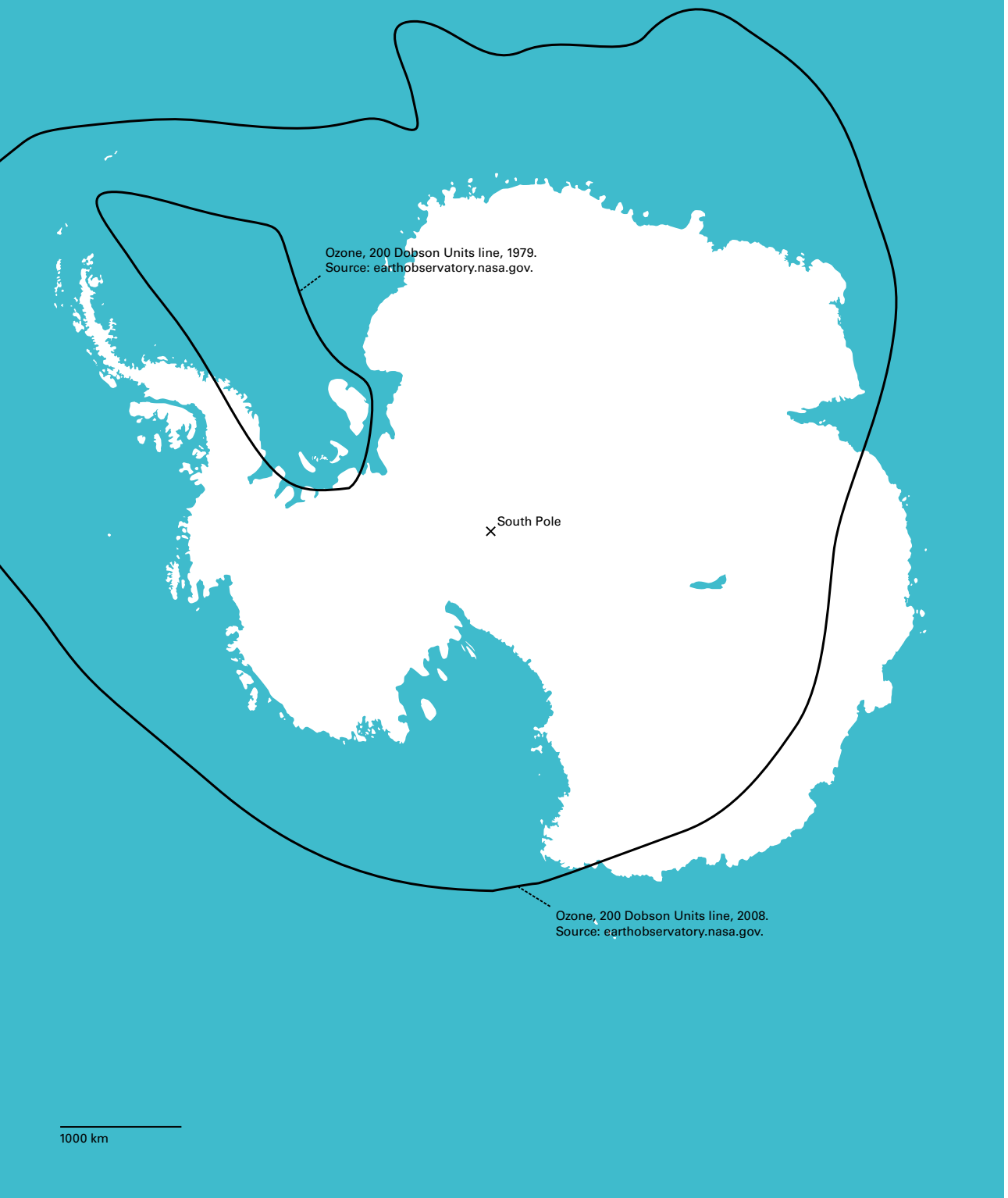
told me in 2011.[13] They had all downscaled their exploration activities, as the Barents Sea could not compete with other regions in the world. What industry representatives in 2011 did agree on though was that the 'New Norway' (as suggested by oil executive Vassmyr at a public meeting in Tromsø) has potential.

While there is still rhetorical power in setting up a division between Norwegian and Russian state space, creating order (and ontological stability) in icy seascapes is a greater challenge for the Norwegian government, as well as for those trying to protect objects that move. If the moving ice edge (*iskant*) in the Barents Sea — which Norwegian polar scientists study as the *marginal ice zone* — is a frontier for human progress, then it requires reevaluating the boundaries to enable new developments. Such work was undertaken on 20 January 2015 when the government announced that they had moved the ice-edge some 70 kilometres further northwards on the map, opening up the whole Barents Sea Southeast for petroleum development, including the area previously disputed with Russia ('the New Norway'). As part of the 23rd concession round, 54 new exploration licenses for this area were announced for which oil companies could compete. The Polar Institute and other governmental and scientific agencies had advised against twenty of these, partly because these were in areas where ice could appear, which is extremely difficult to predict due to seasonal and annual rhythms. In Norwegian policy papers however, the ice edge is put forward as a fixed phenomenon: a line on the map of the Barents Sea. In 2015, the government updated a twelve-year-old definition of measuring ice-cover, reflecting a method of drawing the line on the basis of a *30 percent or more* likelihood of ice in the month of April over the past 30 years. This was why the ice edge could be moved 70 kilometres northwards, which in turn allowed for oil drilling. The Polar Institute had argued in their consultation document that the scientific approach to minimising the risk of encountering ice is to use the *maximum* ice extent over the past 30 years. In a TV2 interview on the day of the announcement, Norwegian's Prime Minister Solberg argued that: 'We [the government] are not moving the borders of the ice edge, it is nature that is moving the boundaries of the ice-edge.' Making sense of ice in Solberg's world, means arguing that 'nature' does things.

13. Berit Kristoffersen, 'Securing' Geography: Framings, Logics and Strategies in the Norwegian High North', in Powell, Richard and Klaus Dodds (eds.), *Polar Geopolitics? Knowledges, Resources and Legal Regimes*, Cheltenham and Northampton: Edward Elgar, 2014, pp. 131–48.

To make sense of and re-assert control over the potentially ice-covered areas, the strict division between humans and nature, between nature and culture is preserved. The basis for being able to do this is paradoxically a consequence of climate change. Thus politically, this Norwegian map falls into the political category of *opportunistic adaptation*, where the benefits of climate change are prioritised over the efforts to address and act on the causes, reflecting how geophysical changes are reframed as geopolitical opportunities in the workable Arctic of oil and ice.





Queer Kinship

Interview with Heather Davis

by Rosa Menkman

In this interview by Rosa Menkman the Canadian theorist Heather Davis discusses the value of artistic experimentation, the Anthropocene, the importance of queer theory and the ecology of plastics.

RM In your writing, you often use art to unpack and contextualise the otherwise abstract conditions and processes of the Anthropocene. Do these works inspire you to write about these subjects, or do you search for these works to illustrate the subjects you would like to write about?
HD My writing usually doesn't follow a uniform process. The way I write is maybe not so dissimilar from the ways in which certain people produce art. It evolves by constantly asking new questions, and through the shifting of scales and perspectives. In one of my latest texts, *Molecular Intimacy* (2016), I write about *Inhale/Exhale,* which was part of an installation at the Nordic Pavilion of the Venice Biennale of Art in 2013, by Finnish artist Terike Haapoja. I met Haapoja at a residency in Lapland a few years ago and I was really struck by her work. Haapoja connects the different levels through which the carbon cycle operates, to illustrate the ways in which carbon both enables life and is 'exhaled' in the processes of decomposition. While carbon is a rather abstract element that usually can't be perceived by the human sensorium, this work asks us to consider breathing, through the process of decomposing leaves, in a much more visceral way. We hear the carbon release from the leaves, and it sounds uncannily like breath. This work made me reconsider how breath passes through my own body, as well as my thinking about carbon dioxide. *Inhale/Exhale* prompted me to ask what happens to our understanding of climate change and the carbon cycle when we approach it not just as scientific data, or as a series of graphs, charts and numbers? How can we make this data more intimate and how would this influence our imaginary? This work by Haapoja suggests a shift in discourse towards affective attunement — towards an intimate engagement with the molecular and the different strata at which carbon ecologies, economies and molecules operate — one that is useful to elaborate in contemporary theory. I would have never arrived at this question if not for my conversations with Haapoja.

RM Lucy R. Lippard reviewed the compendium *Art in the Anthropocene* (2015) which you co-edited as: 'an art book like no other (…) Visual artists are, for once, equal participants in these imaginative, intelligent, and informative discussions of the most pressing issues of our time, and deep time.' How does the work of artists within the realm of climate change relate to the work of scientists?
HD The featured texts are all written by philosophers, curators and artists who are very knowledgeable about scientific processes and climate change. We did, however, purposefully not invite any scientists to contribute to the book. One of the main things my co-editor, Etienne Turpin, and myself wanted to highlight is the difference in methodology between the ways in which artists and scientists contribute to understanding climate change. While the sciences often aim to produce the 'truth' and research questions that are directed towards very specific aims and outcomes, artistic work has this amazing ability to embrace contradictions that don't have to be resolved. I believe that this is what the best forms of art do. Art can contain contradictory thoughts without falling apart. This can be incredibly useful when thinking about the affective and political implications of climate change. Besides that, artists are able to create work in ways that scientists can't: scientists have to follow specific rules when they conduct scientific experiments. Artists can experiment with materials and use scientific practices in non-traditional ways and, in doing so, contribute to scientific breakthroughs. Artists can open up avenues of scientific research that were previously not up for discussion in a manner that can be explicitly political or with the aim of engaging a wider audience.

RM Earlier you also mentioned 'affect' and 'intimate engagement' as vital to the understanding of climate change. Could you elaborate on this?
HD I believe that there is an absolutely crucial element, namely the affective register, missing from the scientific engagement with climate change. Art can play an important role in negotiating this absence. I was trained in the traditions of Deleuze and Spinoza, so I understand affect as a pre-emotional, pre-verbal intensity. Affect moves me with a certain energy that cannot be attributed to a specific emotion

Top–Terike Haapoja, *Inhale–Exhale*, installation, 2008/2013, *Falling Trees* exhibition, Nordic Pavilion, 55th Venice Biennale, 2013. Photo by Ugo Carmeni. Bottom–Photo by Sandra Kantanen, courtesy of the artist.

or any particular sensibility. Affect can describe this state of hovering on the edge of emotion, or the kinds of emotions that don't really posses a descriptive language, that can't be categorised. Affect describes this intensity. In relation to climate change, there is an eerie sense that things are going horribly wrong, even among those of us who are disconnected from natural cyclical processes. We see unprecedented weather in the places we grew up. We see shifting patterns among animals and plants. Because humans are such adaptable creatures, we can accommodate these changes, but the speed at which they are happening remains in this register of intensity, in the register of something going wrong that we can feel, that we are cognizant of, even as we think of other things. This kind of bodily knowing is what art can make us aware of: the feelings of rapid change, and the sense of great unease that we share in the face of dramatic destabilisation.

RM In your Sonic Acts Academy presentation on 28 February 2016 in Amsterdam *The Queer Futurity of Plastic*, you used queer theory to create an awareness of the affective intimacy between humans and our plastic spawn. You asked: what can we learn if we embrace our non-filial plastic progeny and the plastisphere ecosystems that evolve in our man-made, plastic environments? Could you elaborate on this?
HD Queer theory, especially the realm of queer kinship, creates an incredibly important space for queerness not (just) as an identity, but as a politics. Queerness doesn't just question heteronormative practices, but asks to open up space for who our intimate partners can be beyond a binary gender system, the conventions of the couple, and the nuclear family. We need ways to express intimacy within and beyond our legal systems; ways that allow for more plurality in terms of who can be understood as our life partners or our kin. These questions are also tied to questions of inheritance and the sense of obligation and care that we have towards those who came before us and those who will come after us. The question of who we think our kin are, in part determines this sense of responsibility. This ties into ecological thinking because if we presume that our kin are not just human, then we have an obligation towards our companion species, including those we have unintentionally brought into being.

Plastics have been around for 110 years, and bacteria have evolved to deal with these new environments. There is, for instance, a type of plastic eating waxworm that has two different kinds of bacteria inside its gut that allow it to digest polyethylene. Specific communities of bacteria have developed on the tiny pieces of plastics in the ocean. This is called the plastisphere. The waxworm and the plastisphere can be understood as a kind of non-filial human progeny, as I have suggested, and we should ask ourselves what kind of responsibility we have towards them. There has to be an ethics of acknowledgement and maybe even an ethics of care towards these particular kinds of bacterial communities, because of the fact that we inadvertently created them. This is not to suggest a godlike capacity and I certainly don't mean that we should produce more plastic to accommodate these bacteria, but we do need to rethink the scales on which humans act and create. We are responsible for the life and deaths of so many creatures, regardless of our intentions. These questions are really essential.

Queer theory is a movement that pushes for entirely different configurations of intimacy, belonging, attachment and gendered identity or sexuality, which move beyond heteronormative frameworks that serve, among many other things, to uphold anthropocentrism. Queer kinship makes us aware of the responsibility we have towards the beings we create, and those that live and die, including humans and nonhumans. It calibrates a new political space to reconsider the state and presence of our relation to time, space and plastics. Thinking in these terms can help us to re-situate the place of the human, at least in dominant Western understandings; in essence the narrative of the human becomes less a narrative of mastery and moves towards ethical engagement and responsibility.

RM How can we actually be ethical about plastics?
HD Surprisingly, I find this a really hard question. I've been thinking about plastics for three or four years now; however, I've been using the materiality of plastic to explore larger questions in terms of ecology and human hubris in relationship to technology. I think the important thing about plastic is to think of it as incredibly valuable, rather than infinitely disposable. The ecological problem with plastics

is that they are incredibly recalcitrant in the face of change. Plastic objects can break, but on a molecular level, unless you burn them (which is really toxic), there aren't many ways of turning plastics into something else. Plastics are impermeable to their environments, yet those same environments are deeply affected by plastics. The fact that within the 110 years since the invention of thermoplastics we suddenly discover this plastic-eating waxworm — I find that really heartening: it shows that life has a generative capacity that is far greater than humans. It puts us in our place in a really important way.

RM Can we re-value plastic from a perspective of deep time and attribute value through the ecological consequences plastics have on our ecologies?
HD I find it unbelievable that we use this material, which is incredibly valuable and definitely finite, as disposable and cheap. I have no idea how this happened in terms of economic logic but somehow it did, even though we don't have adequate waste management systems and despite knowing the havoc that plastic waste wreaks in the world. It isn't the only chemical material product out there that I wish didn't exist, but…

While I'm saying this, I am thinking about what would happen if plastics suddenly disappeared. Our world as we know it would collapse — there would be no Internet, computers or airplane travel. Our clothes would evaporate, our buildings would fall apart. Materials, including food, could not be cheaply or effectively shipped around the globe. Plastic is the material infrastructure of the 20th and 21st centuries. It is this contradiction of plastic that really fascinates me. On the one hand, I see how much damage it does and on the other, it is an incredibly important, life-saving material. Plastics are so much a part of our everyday lives, they literally become us.

Tom Cohen, who is co-editor of the Critical Climate Change series at Open Humanities Press, uses the term *tempophagy*, meaning time-eating. We are burning up so much time through our dependence on oil, which results in these incredibly destructive accelerations in terms of climate, evolution, extinction, movement, and technology. We are producing this crazy kind of time, that exists only because we keep consuming the evolutionary and decomposed matter

that is many hundreds of thousands of years old. Oil is a kind of compressed time. I think an inversed theory of planned obsolescence could play a role here: what if we used oil-based materials to build technologies with a planned continuum, that were meant to last for hundreds or thousands of years?

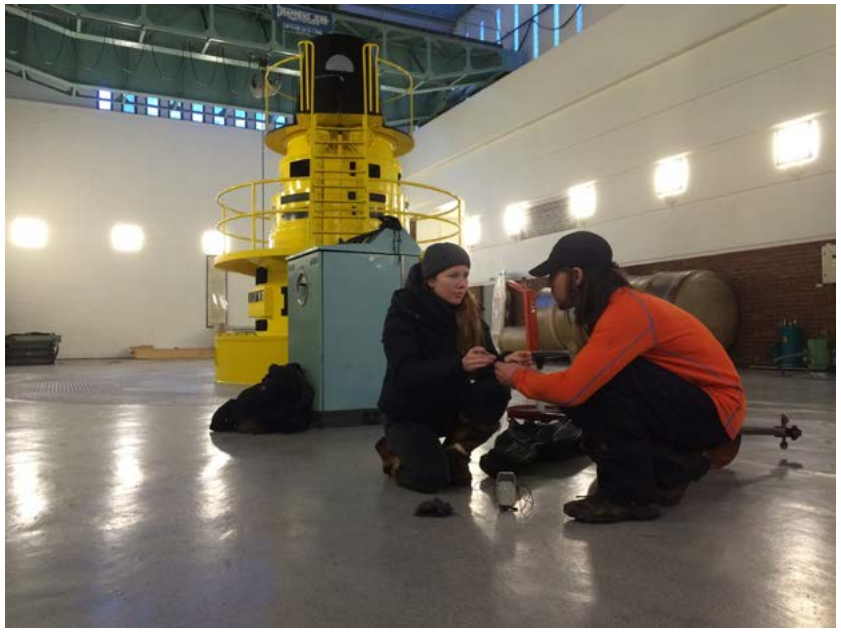
RM With Dark Ecology we travel in the Arctic Barents Region, also to heavily polluted sites, to explore an area that illustrates how intimately connected humans can be with pollution.
HD In the Canadian High Arctic, things decompose at an incredibly slow rate because of the cold and the lack of microbes. You can find a Coke can from the 1940s and it will look like it was left there last week. There is something really amazing about the fact that time has a completely different pace in this part of the world. However, the Arctic is warming faster than anywhere else on Earth. It's experiencing a rate and intensity of change on a scale that is unprecedented.
I wonder how time in this part of the Arctic will make itself felt and seen. I think a lot about understanding the self as porous, so if we pollute the world, we pollute our own bodies. There is something really fruitful about confronting the fact that we cannot barricade ourselves off from toxicity, especially those of us with the privilege to do so.

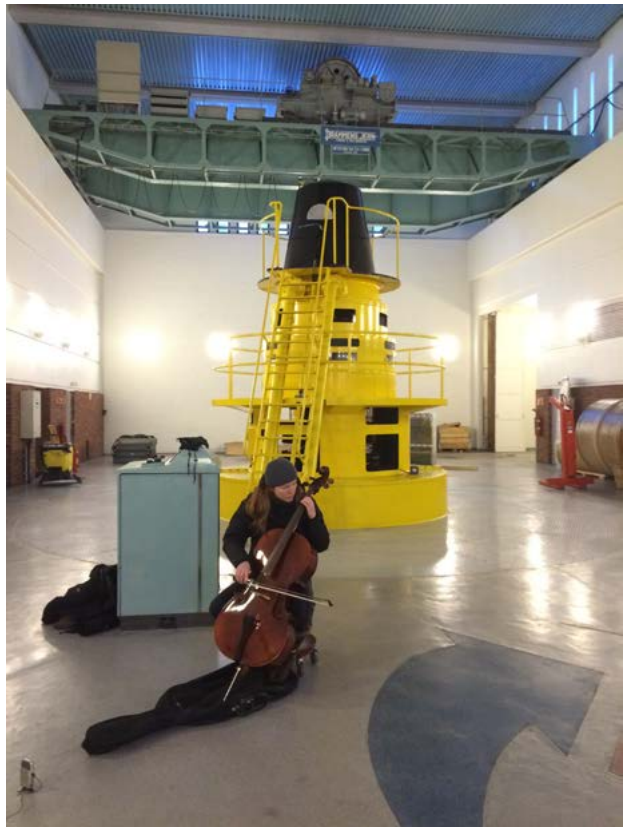
Unknown

Lucy Railton & Russell Haswell

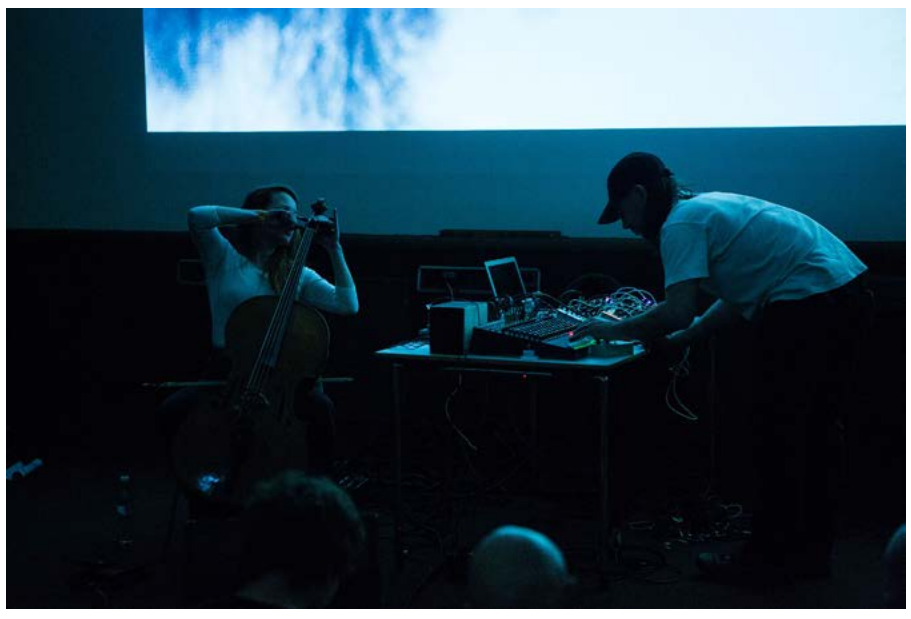
In residency in Kirkenes, Lucy Railton & Russell Haswell (UK) researched, recorded and developed a new work that premiered at the Borealis Contemporary Music Festival in Bergen on 14 March 2015. Their collaboration exploited the languages of contemporary instrumental music and hybrid analogue/digital synthesis. In their performance Railton and Haswell brought a collection of material conceived in the empty landscapes of the North together with the more immediate interplay of their improvised performance practise. The work drew on their time in the industrial and natural surroundings of the Barents Region, creating a conceptual and musical link between Kirkenes in the Northeast of Norway, and Bergen, over 2000 kilometres to the Southwest.

Russell Haswell in Langøra hill above Kirkenes. Commissioned by Borealis Festival in collaboration with Landmark/Kunsthall Bergen and Dark Ecology–Sonic Acts & Hilde Methi. Photo by Hilde Methi, 2015.





Top–Lucy Railton and Russell Haswell in the Pasvik Kraft machine hall. Bottom–Lucy Railton improvising in the machine hall in the Pasvik Kraft, Skogfoss, one of the seven hydroelectric stations on the Pasvik River (two on Norwegian and five on the Russian side of the river). Photos by Hilde Methi, 2015.



Unknown by Russell Haswell and Lucy Railton premiered at the Borealis Contemporary Music Festival, March 2015. Photos by Henrik Beck/Borealis, 2015.

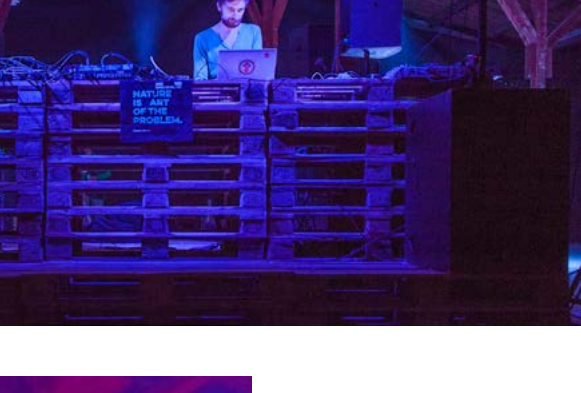
Secret Chamber I & II/Тайная Комната I & II

Anya Kuts & Ivan Zoloto

‘Secret Chamber’ — in Russian *Тайная Комната* (Tainaya Komnata) — is the name for the audiovisual events in unexpected, ‘secret’ locations, curated by Anya Kuts and Ivan Zoloto from Petrozavodsk. The Secret Chambers are a never-ending experiment. They started in Karelia (Northwest Russia) as an attempt to break with the concept of a ‘gig’, and to challenge music lovers to find new ways of appreciating sonic art. Previous Secret Chambers took place in an old courthouse, in attics, living rooms of wooden cabins in forests, industrial lofts, desolate beaches, public libraries, cinemas, art galleries, independent venues and bars. The first Secret Chamber in the Dark Ecology programme in 2014 featured performances by Chikiss, one of the most versatile artists on the Russian electro-indie scene; slow ambient techno by Sergey Suokas; and a set by electronic master Andreas Nordenstam. The second Dark Ecology–Secret Chamber took place in the gym of School No. 20 in Nikel few days later, and featured live performances by Tromsø’s Phonophani (Espen Sommer Eide), Franz Pomassl from Vienna, Love Cult from Petrozavodsk, as well as a collaboration between Mnogoznaal and TILMIL, representing the cloud wave generation from Komi, Russia.

Performance by Chikiss, Secret Chamber I, Kirkenes, curated by Anya Kuts and Ivan Zoloto from Petrozavodsk. Commissioned by Dark Ecology–Sonic Acts & Hilde Methi. Photo by Konstantin Guz, 2014.

Top–Performance by Phonophani (NO). Bottom–Performance by Mnogoznaal and TILMIL (RU). Secret Chamber II, Nikel. Photos by Konstantin Guz, 2014.



Top–Performance by Sergey Suokas (RU). Bottom–Andreas Nordenstam (NO). Secret Chamber I, Kirkenes. Photos by Konstantin Guz, 2014.

Phonophani (NO), Secret Chamber II. Photos by Konstantin Guz, 2014.

Performance by Franz Pomassl (AT), Secret Chamber II, Nikel. Photos by Konstantin Guz, 2014.

Dark Ecology 2014–2016

Dark Ecology is a three-year art, research and commissioning project, initiated by Sonic Acts from the Netherlands and Kirkenes-based curator Hilde Methi, and realised in collaboration with Norwegian, Russian and other European partners. Dark Ecology unfolded through research, the creation of new artworks, and a public programme presented in the zone on both sides of the Russian-Norwegian border in 2014, 2015 and 2016. Dark Ecology is informed by the idea that ecology is 'dark' (as Timothy Morton has argued), because it invites — or demands — that we think about our intimate interconnections with, for instance, iron ore, snowflakes, plankton, or radiation. What we now know about the impact of human beings on the planet has led to the need to rethink the concepts of nature and ecology, and how humans are connected to the world. This rethinking occurs in philosophy as well as in the arts. Though these issues are relevant anywhere in the world, they are especially pertinent in the Barents Region with its pristine nature, industrial pollution and open-pit mining, where disparate interests and 'approaches' from both sides of the border have to negotiate. This interaction informs the Dark Ecology project, and is a starting point for artists and theorists to develop new approaches and new works.

2014

PARTICIPANTS

Ivan Afanesyev, Arie Altena, Nicky Assmann, Mirna Belina, Pavel Borisov, Jasmina Bosnjak, Martijn van Boven, Tanya Busse, Anna Ceeh, Martin Clark, Alicia Cohen, Kristoffer Dolmen, Cocky Eek, Espen Sommer Eide, Camilla Fageri, Nik Gaffney, Raviv Ganchrow, Ida Lykken Ghosh, HC Gilje, Konstantin Guz, Zhanna Guzenko, Cal Harben, Femke Herregraven, Tom Hovinbøle, Marijn de Jong, Oleg Khardatsev, Roman Khoroshilov, Gideon Kiers, Danil Kozlov, Britt Kramvig, Berit Kristoffersen, Anya Kuts, Maksim Lazin, Karl Lemieux, Signe Lidén, Hilde Methi, Timothy Morton, Matthijs Munnik, Ketil Nergaard, BJ Nilsen, Andreas Nordenstam, Julia Nuesslein, Galina Ozeran, Margrethe Pettersen, Per Platou, Franz Pomassl, Joost Rekveld, Maria Rusinovskaya, Emilija Skarnulyte, Joris Strijbos, Sergey Suokas, Lucas van der Velden, Guro Vrålstad, Agatha Wara, Jana Winderen, Annette Wolfsberger, Urban Wrakberg

SCHEDULE

8 October
21:00 Welcome dinner at Boathouse, Kirkenes

9 October
10:00–11:00 Introduction by Arie Altena, at Samfundshuset, Kirkenes
11:00–12:30 Expanded Lecture by Timothy Morton: *Human Thought at Earth Magnitude*, at Samfundshuset, Kirkenes
14:30–15:00 Lecture by Urban Wråkberg: *Travelling the Borderland*, at Samfundshuset, Kirkenes
15:00–17:00 Guided walks Kirkenes
20:30–23:00 Secret Chamber I with Chikiss, Sergey Suokas, Andreas Nordenstam, at Mellageret, Kirkenes

10 October
10:00–14:00 Travel Kirkenes–Nikel
15:00–17:00 Guided walks Nikel
17:00–18:30 Conversations with Berit Kristoffersen, Britt Kramvig, Femke Herregraven, at Culture Palace Voskhod, Nikel

11 October
11:00–13:00 Film screening and installation view *krysning/ пересечение/conflux* by Signe Lidén, at БАМ Nikel: Garage 18-A-7, Nikel
14:30–17:00 Conversations with Espen Sommer Eide, Jana Winderen, Signe Lidén, Benny Nilsen, Anna Ceeh/Franz Pomassl, at Culture Palace Voskhod, Nikel
20:00–22:00 Secret Chamber II with Phonophani, Franz Pomassl, Mnogozmaal, TILMIL, Love Cult, at Nikel School No 20, Nikel

12 October
10:00–11:00 Travel Zapolyarny–Kirkenes
11:00–13:30 *Long Wave Synthesis* presentation by Raviv Ganchrow, at Høybuktmoen, Kirkenes
15:00–17:00 Reflection on the Journey, at Samovarteateret, Kirkenes

13 October
All day: Dark Ecology Academy, at Førstevannshytta, Kirkenes
20:00 *The Expedition to the End of the World*, at Kirkenes Kino, Kirkenes

14 October
All day: Dark Ecology Academy, at Førstevannshytta, Kirkenes

2015

PARTICIPANTS

Matti Aikio, Arie Altena, Nicky Assmann, Pierre Ballings, Mirna Belina, Sissel M Bergh, Nathaniel Budzinski, Antonio Cataldo, Zane Cerpina, Kristoffer Dolmen, Eve Dullaart, Ekaterina Efremova, Andrey Gaiduk, Katya Garcia-Anton, HC Gilje, Tatjana Gorbaschewskaja, Zhanna Guzenko, Graham Harman, Femke Herregraven, Christian Hollingsæter, Katrin Hornek, Hilary Jeffery, Oleg Khardatsev, Roman Khoroshilov, Gideon Kiers, Brent Klinkum, Anastasia Koluntaeva, Britt Kramvig, Berit Kristoffersen, Katya Larina, Elisabeth Færøy Lund, Lukas Marxt, Svetlana Matveeva, Rosa Menkman, Hilde Methi, Michael Miller, Timur Mizinov, Sam Nightingale, BJ Nilsen, Roger Norum, Viktor Pedersen, Anton Petruenin, Margrethe Pettersen, Camille Prunet, Joost Rekveld, Jacob Remin, Anna Rotar, Maria Rusinovskaya, Susan Schuppli, Nastassja Simenski, Victor Skorbenko, Ståle Stenslie, Kristin Alsos Strand, Joris Strijbos, Espen Tversland, Lucas van der Velden, Elin Øyen Vister, Guro Vrålstad, Simon Wenzel, Annette Wolfsberger

SCHEDULE

25 November
21:00 Welcome dinner at Boathouse, Kirkenes

26 November
10:30–13:30 Expanded Lecture by Graham Harman: *Morton's Hyperobjects and the Anthropocene*, at Samfundshuset, Kirkenes
17:00–19:00 Soundwalk *Living Land — Below as Above* by Margrethe Pettersen, and *IsoScope* installation by Joris Strijbos, at Langøra, Kirkenes

27 November
9:00–17:00 Travel Kirkenes–Murmansk, listening to podcast selection
20:00–22:00 Fridaymilk Talk Show, at Ledokol Club, Murmansk

28 November
11:30–13:30 Expanded Lecture by Susan Schuppli: *Dark Matters: Bearing Material Witness to Climate Change*, at Aurora Kinoteater, Murmansk
15:30–17:00 First performance by Hilary Jeffery & LYSN: *Murmansk Spaceport/Мурманский Космодром*, at Roxy, Murmansk
21:00–23:00 Second performance by Hilary Jeffery & LYSN: *Murmansk Spaceport/ Мурманский Космодром*, at Roxy, Murmansk

29 November
11:00–14:30 Guided walks Murmansk
18:00–19:00 Installation by HC Gilje: *Barents (Mare Incognitum)*, at Sports grounds, Nikel
19:30–20:30 Installation by HC Gilje: *The Crossing*, at Zapolyarny

30 November
11:30–12:00 Presentation by Tatjana Gorbachewskaja and Katya Larina: *Nikel Materiality*, at Culture Palace Voskhod, Nikel
12:00–14:00 *Nikel Materiality* city tour by Tatjana Gorbachewskaja
18:00–19:00 Travel Nikel–Kirkenes

2016

PARTICIPANTS

Pepijn Aben, Aleksandr Alekseev, Margrethe Alnes, Arie Altena, Nicky Assmann, Liv Bangsund, Mirna Belina, Justin Bennett, Heather Davis, Nickel van Duijvenboden, Eve Dullaart, Espen Sommer Eide, Rick Everts, Sebastian Frisch, HC Gilje, Zhanna Guzenko, Cecilia Jonsson, Oleg Khadartsev, Gideon Kiers, Brent Klinkum, Roman Khoroshilov, Martinus Kramer, Britt Kramvig, Berit Kristoffersen, Signe Lidén, Peter Meanwell, Rosa Menkman, Hilde Methi, Michael Miller, Dmitry Morozov, Timothy Morton, Marie Nerland, BJ Nilsen, Netta Norro, Roger Norum, Alexander Oey, Bjørnar Olsen, Marko Peljhan, Per Platou, Sabine Popp, Joost Rekveld, Arve Rød, Arthur Roeloffzen, Maria Rusinovskaya, Ivar Smedstad, Oleg Sobolev, Hilde Sørstrøm, Kristin Tårnesvik, Lucas van der Velden, Guro Vrålstad, Annette Wolfsberger

SCHEDULE

8 June
21:30 Welcome dinner at NIBIO Svanhovd, Svanvik
22:00 Publication Party, at firepit at NIBIO Svanhovd, Svanvik

9 June
11:00–12:30 Expanded Lecture by Heather Davis: *Plastic Geologies: The Problem of Universality*, at NIBIO Svanhovd, Svanvik
13:30–17:00 Curated walks Pasvik Valley
17:00–19:00 Installation by ::vtol:: aka Dmitry Morozov, Svanvik

10 June
10:30–12:00 *Dark Ecology* reading by Timothy Morton at NIBIO Svanhovd, Svanvik
13:30–18:00 Travel Pasvik–Nikel
21:00 Walk *Altitude and History* by Espen Sommer Eide and Signe Lidén, Dog Mountain, Nikel

11 June
14:00 Soundwalk by Justin Bennett: *Vilgiskoddeoayvinyarvi: Wolf Lake on the Mountains*, at Kola Superdeep Borehole

12 June
10:00–13:00 Travel Zapolyarny–Kirkenes
15:00–16:30 Installation by Cecilia Jonsson: *Prospecting: a Geological Survey of Greys*, at Langøra, Kirkenes
18:00–19:30 Performative reading by Nickel van Duijvenboden, at Kantine Øvre Lager, Kirkenes
21:00–22:00 Performance *Mikro* by HC Gilje and Justin Bennett, Kirkenes

At the time of print, the 2016 Dark Ecology programme was still subject to change.

Dark Ecology is a project by Sonic Acts and Hilde Methi.

The Dark Ecology project is curated, compiled and produced by Arie Altena, Nicky Assmann, Mirna Belina, Martijn van Boven, Gideon Kiers, Rosa Menkman, Hilde Methi, Lucas van der Velden & Annette Wolfsberger.

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Sonic Acts & Hilde Methi

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Technical Production
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Communication
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Documentation
Aleksandr Alekseev, Zhanna Guzenko, Oleg Khadartsev — Fridaymilk, Konstantin Guz, Michael Miller

Design
Femke Herregraven — Bitcaves

Website Development
Henrik van Leeuwen — de Gebroeders van Leeuwen

Translation & Copy Editing
Mark Poysden

Collaborators
Fridaymilk, PNEK, Paradiso Amsterdam, Roman Khoroshilov, Denis Shirshov, Childrens' Art School Nikel, School No 20 Nikel, Barents Travel, Full of Nothing, Sør-Varanger Filmklubb, NIBIO Svanhovd, Landmark/Kunsthall Bergen, Borealis Festival, Roxy Youth Centre, NGU — The Geological Survey of Norway, BEK — Bergen Center for Electronic Arts, Pikene på Broen, Murmansk kinopredpriyatie, Samovarteateret, Changing Weathers — networked responses to geophysical, geopolitical and technological culture-shifts across Europe, initiated by Arctic Perspective Initiative (API), coordinated by Zavod Projekt Atol (SI), and in partnership with Sonic Acts (NL), Hilde Methi (NO), RIXC (LV), Finnish Society of Bioart (FI), Times Up (AT) and Ljudmila (SI), and Arctic Encounters (University of Leeds, Leeds Beckett University, University of Iceland, Roskilde University, and UiT The Arctic University of Norway).

Supporters
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www.darkecology.net

Arie Altena (NL) is a curator at Sonic Acts and writes about the intersections between art, media and technology. He co-edited several Sonic Acts publications, including *The Geologic Imagination* (2015), *The Dark Universe* (2013), *Travelling Time* (2012) and *The Poetics of Space* (2010).

Nicky Assmann (NL) is an artist and part of the Sonic Acts curatorial team. She holds a BA in Film Science and an MA in ArtScience from the Interfaculty of The Royal Conservatory and the Royal Academy of Art in The Hague. With her installations she creates dynamic and temporary spaces that focus on sensory experience.

Mirna Belina (HR) is a researcher, writer and curator working in the field of experimental film and media art. She co-published a number of books on experimental film and expanded cinema and curated several film programmes for international film festivals and organisations. She studied literature and philosophy at Zagreb University and is currently pursuing her PhD in film.

Justin Bennett (UK/NL) works with sound and visual media. His work painstakingly examines the sounds of our everyday urban environments in the minutest detail.

Heather Davis (CA) is a researcher, writer, and editor from Montreal, who participates in expanded art practices that bring together researchers, activists, and community members to enact social change. A postdoctoral fellow at the Institute for the Arts and Humanities at Pennsylvania State University, she is currently researching the ethology of plastic and its links to petrocapitalism. She has written about the intersection of art, politics, ecological catastrophe, and community engagement for numerous art and academic publications. She is the editor of *Art in the Anthropocene: Encounters Among Aesthetics, Politics, Environment and Epistemology* (2015), and *Desire/Change: Contemporary Feminist Art in Canada* (forthcoming).

Raviv Ganchrow (US/NL) is a sound artist and researcher. His work focuses on interrelations between sound and space, aspects of which are explored through sound installations, writing and the development of acoustic-forming and vibration-sensing technologies. He is a faculty member at the Institute of Sonology, The Hague.

HC Gilje (NO) works with real-time environments, installations, live performance, set design and experimental video. Gilje's main interest lies within the perspectives on how different media resonate within a space, both physically and mentally. Gilje has presented his work via different channels throughout the world: in concert venues, theatres and cinemas, galleries, festivals, outdoors and through several international DVD releases.

Tatjana Gorbachewskaja (RU) is an architect and urbanist who grew up in Nikel, Russia. Before starting her own praxis in 2014, Gorbachewskaja worked as architect and leading designer at UNStudio in Amsterdam, under Van Berkel & Bos. She is currently a lecturer and PhD candidate at the Design School in Offenbach, Germany.

Graham Harman (US) is Distinguished University Professor at the American University in Cairo, where he has worked since 2000. He is a founding member of the Speculative Realism movement, and chief exponent of Object-Oriented Ontology. Amongst his most recent books are *Weird Realism: Bells and Whistles: More Speculative Realism* (2013), *Bruno Latour, Reassembling the Political* (2014), and *Immaterialism: Objects and Social Theory* (forthcoming).

Russell Haswell (UK) is an artist, record producer, free improviser, computer musician, noise aficionado, and curator. He was trained at Coventry School of Art, graduating in 1991. Russell has focused on the performance and methodology of large-scale sound works.

Femke Herregraven (NL) is designer and researcher who, as part of Bitcaves, probes borders and power structures through artistic interrogation. Concepts that run through her work are the geographies of avoidance and finance's ability to carve out new territories through spatial organisation.

Hilary Jeffery (UK) is a self-proclaimed 'desert trombonist' and composer. A central and sustaining influence on his music is a sense of 'silent space', which he first experienced in the Sahara in the 1990s. Jeffery aims to share this experience, creating inner spaces for listeners and fellow musicians to explore. Recently, his research expanded to new compositional forms, conceived as maps, to explore the spatial dimensions of sound. He is also interested in the inner dimensions and outer limits of intonation.

Marijn de Jong (NL) studied photography at the Rietveld Academy from 1996 to 2000. He is a photographer.

Cecilia Jonsson (SE) is an interdisciplinary artist living in Bergen in Norway. Informed by methods used in the natural sciences, Jonsson explores tensions between the mineral domain and living entities as both a method for observation and as a medium. Jonsson's projects are developed as investigations of physical and ideological properties of the raw materials that are fundamental to human existence, from their origins deep in the ground, to their extraction, transformation and global exploitation. Central to Jonsson's practice is the drawing out of the poetic from the connections between sciences, environmental politics, technology, materials and aesthetics.

Gideon Kiers (NL/HR) studied interaction design at the HKU and holds an MA in Interactive Multimedia. He later studied Image and Sound at the Interfaculty of The Royal Conservatory and the Royal Academy of Art in The Hague. He has worked as an independent filmmaker, musician, software programmer, curator, producer and teacher for the past fifteen years. He co-founded Telcosystems with David Kiers and Lucas van der Velden, and has been involved with Sonic Acts since 1998.

Britt Kramvig (NO) is an ethnographic researcher within the field of culture and planning and is a professor at the UiT: Finnmark faculty in the Department of Tourism and Northern Studies. She has undertaken ethnographic work, and written and made films on a range of different topics relating to indigeneity, gender and place as well as technology and innovation.

Berit Kristoffersen (NO) is a political geographer and a researcher in the Reason to Return and Arctic Encounters programmes, who explores issues of oil, fisheries, coastal tourism and political autonomy. Her PhD thesis is titled *Drilling Oil into Arctic Minds?*. Before starting her PhD studies, she worked with organisations and social movements such as Adbusters, and collaborates with artists to explore different approaches and new forms of communication through images, audio, video and text.

Katya Larina (RU) is an architect and urban designer who received her MA in Landscape Urbanism from the Architectural Association, London. She is co-founder of the research and education project U:Lab.spb, which develops tools that are used in the fields of design and analytics of critical urban environments in Russian cities. U:Lab.spb focuses on socioeconomic strategies in combination with knowledge from urban planning and ecology to foster the redevelopment of Russian industrial cities and knowledge centres.

Karl Lemieux's (CA) films, installations, and performances have been screened internationally in museums, galleries, music venues and film festivals. He is more widely known as the ninth member of Godspeed You! Black Emperor, for which he does live 16mm film projections. Together with Daïchi Saïto he founded Double Négatif, dedicated to the production and dissemination of experimental films.

Signe Lidén (NO) is an artist based in Bergen. Her installations and performances examine man-made landscapes and their resonance. She is interested in how places and their histories resonate: in memory, through narratives and various materials, and as ideological manifestations and political territories. Her work spans sound installations, sculpture, video and performance to more documentary forms such as sound essays and archives.

Rosa Menkman (NL) is an artist and theorist based in Amsterdam, the Netherlands. She has been part of the Sonic Acts curatorial team since 2013. She is the author of *The Glitch Moment/um*, a book on the exploitation and popularisation of glitch artefacts (2011), and co-facilitated the GLI.TC/H festivals in Chicago and Amsterdam.

Hilde Methi (NO) is an independent curator based in Kirkenes. Her work investigates the relationship of her own locale to a larger geopolitical setting. Based on her interest in local history, politics and economy, she develops ongoing projects and art collectives infusing artistic ideas into local contexts. She co-curated *russianmarket.info — Taking Inventory*, Uqbar, 2011; *Extreme Crafts*, Freies Museum, Berlin, 2012; and Nørrekærbiennalen, 2014. She is also involved in the art collectives Mobile Kultur Byrå (2006–), which looks at the trading climate, and the Rural Reading Room (2012–).

Timothy Morton (US) is a professor and the Rita Shea Guffey Chair in English at Rice University, Houston. He is the author of *Dark Ecology: For a Logic of Future Coexistence* (2016), *Hyperobjects: Philosophy and Ecology after the End of the World* (2013), *Realist Magic: Objects, Ontology, Causality* (2013), *The Ecological Thought* (2010), *Ecology without Nature* (2007), seven other books and 120 essays on philosophy, ecology, literature, food and music.

BJ Nilsen (SE) is a Swedish composer and sound artist based in Amsterdam. His work is primarily focused on the sounds of nature and how they affect humans. His solo albums *Eye Of The Microphone* (2013) — based on the sound of London — and *The Invisible City* (2010), explore the urban acoustic realm.

Margrethe Pettersen (NO) is a florist with a BA from the Academy of Contemporary Art in Tromsø. As an artist and cultural producer, she likes to take a place or landscape as a starting point from which she derives interdisciplinary narratives. By combining organic materials with sound she explores the connections between nature and culture, often reflecting on the themes of ecology and transformation.

Lucy Railton (UK) is a cellist and curator, who has been making sonic work since 2009. She was trained at the New England Conservatory in Boston, and the Royal Academy of Music in London. She has since been a leading figure in the development of contemporary music in the UK, performing with prominent UK soloists and groups, such as Ensemble Plus Minus and the London Sinfonietta. She founded the new music series Kammer Klang in 2008, and is co-director and founder of the London Contemporary Music Festival.

Arthur Roeloffzen (NL) designs books, magazines, posters and exhibition graphics for various cultural institutions, as well as for artists, architects and designers. Often these collaborations include editorial and research processes. He studied Graphic Design (BA) at the ArtEZ Academy of Arts in Arnhem, and Artistic Research (MA) at the University of Amsterdam and teaches at the Design Academy Eindhoven, Department of Information Design (MA).

Susan Schuppli (CH) is an artist and writer based in London, and Senior Lecturer as well as Deputy Director of the Centre for Research Architecture, Goldsmiths. She examines media artefacts that emerge out of sites of contemporary conflict and state violence to ask questions about the ways in which media enable or limit the possibility of transformative politics. She has exhibited throughout Canada, the US, Europe and Asia. She is the author of the forthcoming book *Material Witness* (MIT Press).

Espen Sommer Eide aka Phonophani (NO) is a musician and artist from Tromsø. As Alog (with Dag-Are Haugan) and Phonophani he has been among the most prominent representatives of experimental electronic music from Norway. He has also produced a series of site-specific pieces and artworks. He had a solo exhibition, *Dead Language Poetry*, at Bergen. Eide has also been involved in a series of art and archival projects associated with topics relating to the Barents and Arctic regions in Northern Norway.

Joris Strijbos (NL) is a Rotterdam-based artist whose work focuses on the synaesthetic relationship and interaction between moving image and sound. His work is inspired by the ongoing research in the fields of cybernetics, emergent systems, artificial life and the communication of networked groups. Strijbos studied ArtScience at the Royal Academy of Art in The Hague where he earned his BA. He received his MA at the Royal Conservatory of The Hague.

Lucas van der Velden (NL) is the director of Sonic Acts. He studied at Interfaculty Image and Sound at The Royal Conservatory and the Royal Academy of Art in The Hague. He is co-founder of the Rotterdam art collective Telcosystems and co-founder of Baltan Laboratories in Eindhoven.

Annette Wolfsberger (AT/NL) is an Amsterdam-based producer and curator. She is the producer of Sonic Acts and part of the curatorial team. Her areas of interest cover avant-garde art, and contemporary and popular culture.

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