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Bjørn Inge Melås

Ecologies of urban gardening

NTNU
Norwegian University of Science and Technology
Thesis for the Degree of
Philosophiae Doctor
Faculty of Architecture and Design
Department of Architecture and Planning



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Science and Technology

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Trondheim, December 2022

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Ecologies of urban gardening

an artistic research project

Bjørn Inge Melås, 2022
Department of Architecture and Planning
Faculty of Architecture and Design
Norwegian University of Science and Technology

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Contents

Introduction	10
Eating is an agricultural act	12
Ecomodernism	18
Degrowth	22
Guattari`s Ecosophy	24
Overview	30
Prologue - dead soil	44
Havnehagen - making a garden	48
Dead Soil	64
New soil	78
The nature of urban gardens	82
A framework for the political ecology of urban gardening	86
Ecologies of urban gardening	92
Spring, aesthetic experiences	94
Capitalist subjectivity	100
Gardens and the production of subjectivity	104
The garden sculpture	122
From rocks to garden - heterogenesis	142
Production of sameness	146
Heterogenesis	156
Plant diversity	184
Soil diversity	194
Urban gardens as refugia	204

Rescaling the metabolism	212
Metabolic rift	218
Propositions for mending the metabolic rift	228
Futurum	250
Communities of Compost	264
Temporalities of the urban garden	300
Timescapes	304
Progress	312
Times of the garden	320
Future of urban gardens	370
The potential of peri-urban fields	376
New Roots	380
Three Lenses	400
Détournement	416
Growing food is a legitimate use of urban space	428
Reviving imaginary dead soil	446
Dead soils of the imagination	448
Reviving dead soil	452
Speculations	456
Reflection	486
Dissemination	518
Bibliography	532

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“The inferno of the living is not something that will be; if there is one, it is what is already here, the inferno where we live every day, that we form by being together. There are two ways to escape suffering it. The first is easy for many: accept the inferno and become such a part of it that you can no longer see it. The second is risky and demands constant vigilance and apprehension: seek and learn to recognize who and what, in the midst of the inferno, are not inferno, then make them endure, give them space.”

- Italo Calvino, Invisible Cities, 1978





Introduction

“Eating is an agricultural act.”

- Wendell Berry, *The Pleasures of Eating*, 2018

The words run through my head as I wander the aisles of the supermarket. What kinds of agricultural acts does my dinner perform? I look at the packages. It's quite easy to find out where the food comes from. The salad is made in Norway, the tomatoes come from Spain, avocado from Peru. It gives me a clue about the distance traveled, but nothing about the stops and the methods used. The ecological black beans I usually buy comes from China/Russia. It worries me how the producer couldn't really decide which country the beans come from. How ecological is that? For me, there is no way to know, but still, the ecological mark serves its purpose and calms my mind enough to put the case in the basket and move on with my shopping.

Through the swipe of a card or the push of a button I control a vast array of technologies - a huge infrastructure stretching the globe. As my money is transferred to the supermarket I command the fridges to keep freezing, the workers to fill the aisles, the refrigerated trailers to keep coming, the processing facilities to keep running, the slaughterhouses to kill, the tractors to plow, the ships to sail, the exhausted workers in mines to keep harvesting rare minerals, the chainsaws to clear rainforests for plantations, the factories to make the advanced machines that drill deep beneath the sea to find and release fossil fuels. This technological infrastructure, the global food system is responsible for 32% of all greenhouse gas emissions (*Tubiello et al., 2021*) and agricultural acts are the largest driver of the so-called sixth extinction. (*Brondizio et al., 2019*)

I pay for the food at the supermarket, but the cost of the cheap food is hidden somewhere else. As ecological or social debt in the past - or as future consequences for someone, somewhere else. My agricultural acts in the supermarket has unforeseeable consequences for the conditions of life for future inhabitants of all species on the planet. The workings of the capitalist food system are complex, and it is easier to close our eyes and not think too much about it. This way of feeding ourselves rests upon the exploitation of some kind of labor, and it is crucial that we don't know about the destructive consequences - and that we, the supermarkets or governments choose not to care or take responsibility for these actions.



Kiwi supermarket, Strinda Hageby

The supermarket is the front end of the industrial food system, an important player in setting the rules for how large parts of humanity feeds itself. It is responsible for marketing and selling the food, it decides what fills the aisles, what prices the farmers get and what relations they have to the land. The supermarket can also be seen as the first of many layers of *technologies of alienation*, a set of tools that in different ways separates us from both the consequences of our actions and from the conditions of our existence. These technologies apparently free us from the “*constraints of distance and the frustrations of waiting*”, reinforcing the cravings for “*instant gratification: not of this or that desire, but all of them*”. (Vetlesen, 2011, p. 29) This annihilation of limits is perfect for a capitalist economy able to manipulate and create insatiable desires among consumers. Through this technological infrastructure our surroundings become «*raw material for manipulation.*» (Heidegger, 1954) The capitalist food system runs on alienation and a constant widening of the gap between humans and the rest of nature, physically, socially and mentally. Nature becomes a resource, nature becomes cheap, nature becomes something outside of us, something we are above and independent from, and something we could use and exploit.

Gregory Bateson calls this division between humans and the rest of nature an *epistemological pathology* - a sickness in how we perceive and understand the world, a sickness that is integrated in the world around us and is constantly reinforced. A thought error like this is not very dangerous in the small scale, but when the entire society and economy is built around such an error it becomes catastrophic. It is not just the limits of time and space that are gone, so are the limits of destruction. Everything is possible. We can drill for oil under the bedrock of the sea, make nuclear bombs capable of immense destruction and design complicated systems where our everyday actions become ecocidal. (Bateson, 1972, p. 485) The industrial food system is a giant example of this pathology. The way we feed ourselves threatens our existence.

«We depend just as much on our gas-guzzling, chilled plug-in, “just in-time” food deliveries as ancient Romans did on foreign conquests, shipping and slaves - and our food system is no more secure, ethical or sustainable than Rome’s was.»

- Carolyn Steel, Hungry City: How Food Shapes Our Lives, 2013

Fatalistic passivity

The thought that it is hard to even eat without taking an active part in the destruction of the world is indeed depressing. It shows how embedded we are in the ecological crisis and why it is so hard to deal with. Faced with constant reminders of the deteriorating state of the world it is easy to lose hope. The easiest thing is to slip into a kind of *fatalistic passivity*, to acknowledge that the future looks bleak, but still react with a shrug. The radical psychoanalyst, philosopher and activist Felix Guattari used this term to describe one of the mental manifestations of ecological crisis and points to how we seem to accept the degradation, loss and destruction around us. (*Guattari, 2000, p. 41*) Fatalistic passivity explains the apathy, the powerlessness, the inability to do something about the catastrophe that is creeping in. The missing connections keep us from reacting emotionally, from questioning, protesting, screaming, mourning or acting, as the world around us is destroyed.

I can see this fatalistic passivity in at least two forms. One that invites us to deny or ignore the urgency, to let others in the future or somewhere else suffer, a passivity assured in the belief that someone will deal with this, that it will not affect me, an assurance that new technologies, new generations, someone else, will handle it - a constant displacement of responsibility to companies, governments, politicians or activists. Another type of fatalistic passivity is the one that comes after the urgency is acknowledged - an increasingly wide-spread feeling that it's too late, there is nothing to do about it, a feeling of surrender. The avalanche has started and there is nothing we can do to stop it. This in turn becomes a self-fulfilling prophecy, floating along with the status quo towards what seems like an unavoidable catastrophe. This project is an attempt to deal with the fatalistic passivity, to explore one way of reacting to the ecological crisis and to do something about the roots of the problem.

«The increasing deterioration of human relations with the socius, the psyche and 'nature', is due not only to environmental and objective pollution but is also the result of a certain incomprehension and fatalistic passivity towards these issues as a whole, among both individuals and governments. Catastrophic or not, negative developments are simply accepted without question.»

-Felix Guattari, Three Ecologies, 2000, p41

Ecomodernism

How to deal with a problem depends on how it is perceived. For ecomodernists the *epistemological pathology* that Bateson describes makes no sense. If there was a pathology it would be that humans still cling to nature. The ecomodernist ideology, most clearly stated in The Ecomodernist Manifesto, claims that we can create a *Good Anthropocene* where humans with our «*extraordinary powers*» (Asafu-Adjaye et al., 2015) are finally able to master our environment. In this vision of the future humans rule the world as managers or gods of nature. The central claim of ecomodernism is that human behavior can be decoupled from ecological consequences through new technologies. The limits of nature can be stretched by technological innovation and human ingenuity, and this will allow us all to live in prosperity. If the world runs out of minerals, no problem, we can just mine asteroids. (Bastani, 2019) Too much CO2 in the atmosphere? We'll invent a machine that sucks the carbon out of the air, and then pump it back into the ground. And if that doesn't work, we will spray chemicals into the atmosphere to reduce the incoming sunlight. Solving the ecological crisis is «*fundamentally a technological challenge*» (Asafu-Adjaye et al., 2015) and can be fixed within our economic and political system, with brand names such as Green Growth or Green Capitalism.

Underpinning ecomodernist visions of the future are dreams of unlimited energy and infinite growth. To limit growth is reactionary and backwards. Growth, (in the economy, in the use of energy) is good in itself. Economic growth is also seen as necessary to finance the advanced technological innovations that will solve environmental challenges. (Nordhaus, 1991) Ecomodernists acknowledge that economic growth has its challenges but stands firmly in the belief that the economy can be *decoupled* from the ecology and therefore there are no reasons to limit growth. The «*fixed physical boundaries to human consumption*» are so «*theoretical as to be functionally irrelevant*». (Asafu-Adjaye et al., 2015)

The problem for ecomodernists is that there are no empirical examples of this kind of decoupling happening at a global level, in the scale and pace that is needed, (Hickel & Kallis, 2020, p. 470) (Haberl et al., 2020) and such decoupling «*appears unlikely to happen in the future*». (Parrique et al., 2019) For ecomodernists, this doesn't matter, because the technological breakthrough is always right around the corner, and innovation will, when it is crucial enough, provide us with the tools we need.

Ecomodernism and agriculture

However, it is not just the economy that should be decoupled from nature in ecomodernist visions of the future. The ecomodernist ideology also rests upon a physical separation of humans and nature. One such idea is the Half Earth proposition. (Wilson, 2016) In this narrative the countryside is abandoned to free up half of the space on earth for rewilding and conservation, which implies a total urbanization of the global population. Humans find their habitats in cities, while nature is something outside, which keeps us alive, provides us with food, water, air and materials. This top-down approach ignores the people already living in the countryside, indigenous people and peasants who have their livelihoods in these «empty» areas. In these territories «indigeneity can be sacrificed for novelty and biodiversity» (Asafu-Adjaye et al., 2015, p. 26) Depopulating the countryside is seen as a necessary step towards progress, without considering how rural people want to live their lives, without acknowledging how small farmers feed the world or that areas managed by indigenous people are among the most biodiverse on the planet (Schuster et al., 2019) and capture twice as much carbon per hectare of land as land that is not managed. (World Resources Institute & Climate Focus, 2022) Also ignored are the worldviews, practices and knowledge of peasants and indigenous people, as it falls outside of the only valid kind of knowledge, the narrow western Scientific Knowledge.

A similar approach is envisioned for food production. According to ecomodernists agricultural labor is something that humans have been «liberated from» and these «enormous human resources have been freed up for other endeavors.» (Asafu-Adjaye et al., 2015, p. 13) Whether the peasants and farmers want this liberation is not clear, the possibility that some might find meaning in the work of producing food seems to be unthinkable. What other endeavors we these farmers take on after being liberated is not pondered upon, there are no considerations for the growing class of urban poor, of producers turning into consumers in the ever-growing cities, working in factories rather than farms or find themselves struggling to get back to the land in movements such as the Landless Farmers (MST) in Brazil. In the ecomodernist future, agriculture is done by as few people as possible. The goal seems to be a hyper-intensified automated agriculture, that uses as little space as possible while freeing up the rest of the planet to rewilding.

Ecomodernist visions of the future rests upon a deep faith in humans and our ingenuity, but it is only a particular type of human knowledge that is counted as valuable. The sustainable lifestyles of peasants and indigenous people are seen as irrelevant and backwards, as barriers to the ecomodernist future. The Good Anthropocene and the Ecomodernist discourse envisions a future where Western lifestyles, values and worldview become universal. It rests upon a firm belief that the direction of progress today is the best possible option for humanity, and that this development should be made available to everyone. Other paths, lifestyles and cultures are seen as underdeveloped, and it is the western responsibility to steer these towards cultures into the only true path to sustainability.

The impact of ecomodernism

The main problem with the ideology of ecomodernism, however, is that these are not the future visions, dreams and manifestoes of a minority. This is the dominant strain of thinking. Ecomodernism is the way major institutions like the OECD, United Nations Environment Program, and the World Bank envision sustainability. (Hickel & Kallis, 2020, p. 470) It is in this picture the politicians and governments and NGOs, and many scientists imagine and create the future. These are the directions pushed forward by Nobel Prize Winners, the ideas picked up by newspapers and politicians. Ecomodernist visions of eternal «green» growth and techno-optimism is the basis of mainstream policies, SDGs, green shifts and new green deals proposed as the pathway towards a more sustainable future. This is a convenient narrative because it allows the power structures to remain intact, maybe most clearly seen in fossil fuel companies rebranding themselves as green and suddenly find themselves selling both the problem and the solution.

When an ideology is so widely adopted it becomes more than visions and ideas, it seeps into policies and plans and starts to create this future. One example is the carbon capture technology, BECCS, introduced as a «*risk-management strategy*» or a «*backstop technology*» (Obersteiner et al., 2001) - a safety brake in case it turns out to be impossible to reduce the emissions in any other way. However, this technology became an expectation that CO2 could be removed from the atmosphere sometime in the future. It spread quickly and made its way into 101 of the 116 IPCC AR5 scenarios for how emissions need to fall, despite of any «*firm evidence of its feasibility*». (Hickel & Kallis, 2020, p. 478) The promise of this technology allows fossil fuel companies to continue to drill, anticipating a technology that can capture and store the excess carbon later. (Anderson & Peters, 2016; Peters, 2017) If BECCS doesn't deliver on its lofty promises, we have not just painted ourselves into a corner, we are standing in a house without a roof or walls to protect us from the violent weather that will ravage earth.

BECCS is one example of how techno-optimism can delay climate action by offering «*non-transformative solutions*» by diverting the «*focus of our efforts on current and future technologies, which will unlock great possibilities for addressing climate change*» (Lamb et al., 2020) Techno-fixes are put forward as easy fixes by promising to deal with the symptoms, but without treating the underlying disease. The main problem is not the technologies in themselves, but that the solutions allow the disease to grow and spread. See also (Muraca & Neuber, 2018) This is not a rejection of technologies that we probably will need in the future, it is more a call for precaution, and treating technologies like BECCS as bonuses, instead of promises. If these machines are just plugged into the growth machinery of capitalist societies it will mainly serve as band aids that keep the myth of eternal growth alive in peoples, companies and governments heads.

The promise of technological fixes is popular because it offers a transcendent solution, something outside us, which gives hope. It assures us that things don't have to change, becoming «*a magic elixir that can fix the problem, with no need for societal change*». (Asayama & Ishii, 2017). We can go on, relax and live our lives, which is very convenient for powerful and affluent people in the core, whose comfort rests upon the continuation of the status quo and the destruction of the future.



The road to 0 is together.
To get to net-zero in 2050 we have to work together.
Best regards, Your Local Oil Company

Degrowth

Many of the debates around sustainability issues today can be distinguished by an ideological rift between two camps. On one side we find the ecomodernists with their faith that the crisis can be solved within the current political and economic system with unlimited energy, human ingenuity, technological fixes and unlimited growth, decoupled from environmental destruction.

On the other side there are advocates of eco-socialism/degrowth, pushing for more radical social and political transformations of society. This camp doubts that energy and material consumption can be decoupled from the destruction of the environment and rather argue that the solution might be found in an “*equitable downscaling of production and consumption that increases human well-being and enhances ecological conditions*”. (Schneider et al., 2010) This will enable humanity to live within the biophysical limits of the planet, while ecomodernists claim that technology can push or remove these limits. The two camps have fundamentally different views on technology, sustainability and science, a different understanding of the past and visions of the future and importantly, different perceptions of how humans relate to the rest of nature.

Degrowth is an umbrella for practices, activism and research that sets out to reveal how never-ending pursuit of growth is ruining the world around us - proving that any societal system based upon endless economic growth is unsustainable. Degrowth scholarship and practice attacks capitalist growth from all angles, with empirical evidence and philosophical arguments that shows how the growth economy is not just destroying the physical world, but also the social and psychological spheres. It reveals the inequality of the growth economy, how some people's luxury depends upon exhaustion and exploitation of nature and people elsewhere. It shows how the constant pursuit of more makes us unhappy, how striving for growth limits our possibilities to live meaningful lives, and how our bodies and landscapes become unhealthy by the overconsumption that capitalism depends on for its survival. See (D'Alisa et al., 2014; Demaria et al., 2013; Kallis, 2018; Schmelzer et al., 2022)

«We live in capitalism, its power seems inescapable – but then, so did the divine right of kings. Any human power can be resisted and changed by human beings.»

- Ursula K Le Guin

According to eco-modernists we can have the cake and eat it too, (*Caradonna et al., 2015, p. 8*) and the bigger cake we make, the more everyone can have. Degrowth advocates point to the fact that the cake will anyways be eaten by those who had too much cake already, they will describe the many ecological consequences of the cake-baking and argue that as a society we might need less cake, but more healthy, nutritious and locally grown, decommodified food for all. Importantly it is not just a multi-faceted critique of the cake-eating society, it also offers alternatives and propositions for other kinds of societies and ways to get there. Degrowth is a movement constantly developing alternatives to the hegemony of growth. It involves a plethora of real, ongoing alternatives that work and develop new ways of organizing housing, economy, urban planning, agriculture, production and consumption outside of the capitalist economy. It involves theoretical ideas and practical examples of how these can be developed and expanded, and how they might work together. Degrowth conceptualizes how existing practices and movements could contribute and be spores of a different society, highlighting how to move towards a world that is not obsessed with growth, and how this would be a better world to live in, both for us in the West that will need to reduce our material consumption, but also for those in the global south who might have conceptual space and real opportunities opening up as they are no longer being colonized by our *«imperial way of life»*. (*Brand & Wissen, 2017*)

This work is a contribution to such a production of alternatives and aims to place urban gardening more firmly within the degrowth discussion and development. In this effort Félix Guattari's ecosophy plays a central part.

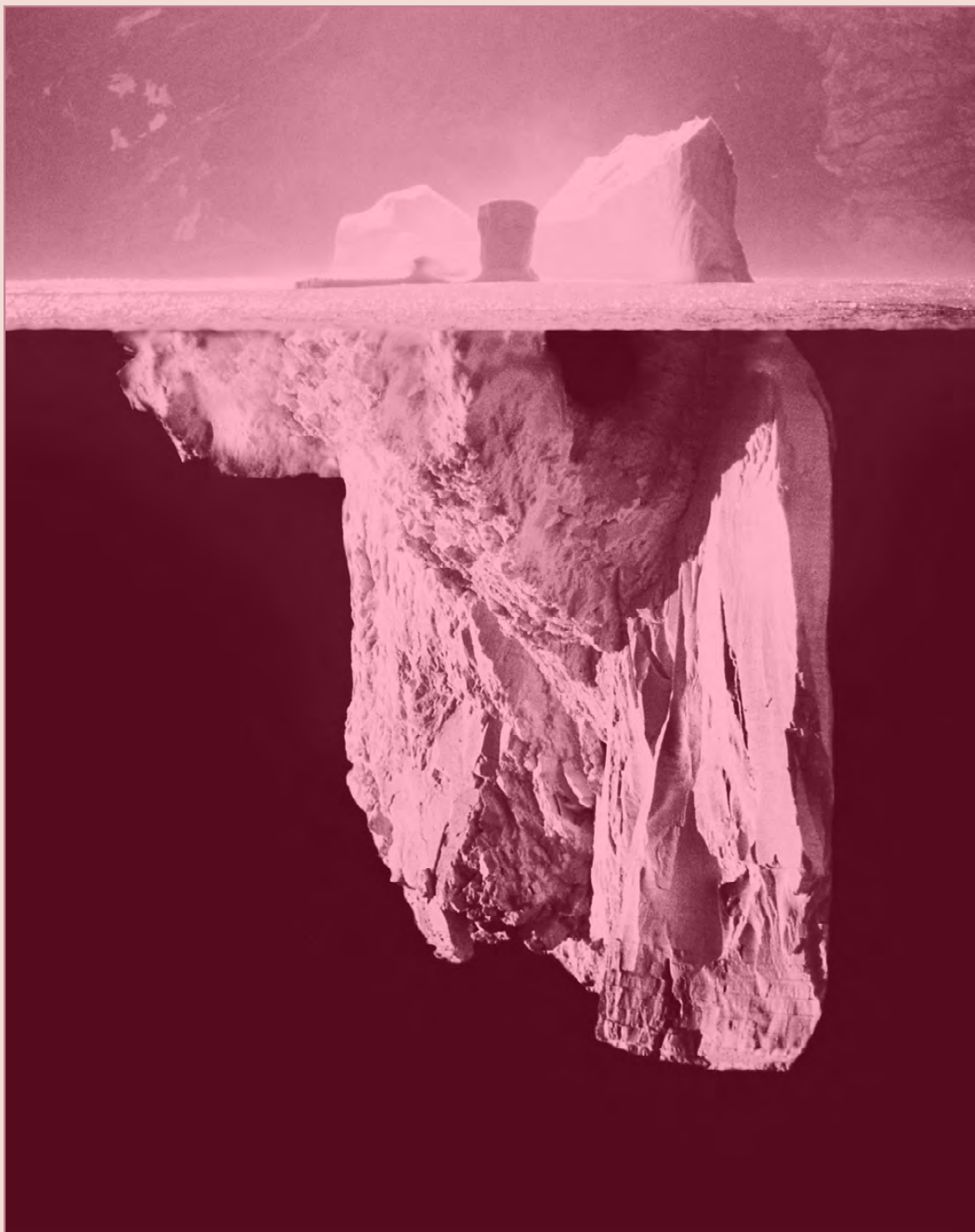
Guattari's Ecosophy

“It is quite wrong to make a distinction between action on the psyche, the socius and the environment... We need to kick the habit of sedative discourse... in order to apprehend the world through the interchangeable lenses of the three ecologies.”

- Félix Guattari, *Three Ecologies*, 2000, p41

Ecologies of urban gardening departs from the ecosophy of Félix Guattari. For Guattari, the destruction of a livable climate, the mass extinction of species and the deterioration of the living world is only the tip of an iceberg, physical manifestations of a much deeper ecological crisis. Under the surface looms a crisis in the mental and social ecologies, the way we act and think, how we relate to each other and the environment. One of the key messages in Guattari's ecosophy is the perception of the ecological catastrophe as an interrelated crisis of the mental, social and physical ecologies. The three ecologies cannot be separated from each other, they are interdependent and entangled, an ecosystem where they constantly interfere with each other, impact each other and depend upon each other.

The crisis is driven forward by what Guattari calls *integrated world capitalism*. This term describes both the way capitalism has spread all over the globe, and the way it is integrated in us, all the way into our unconsciousness. Capitalism is not just an economic system, it is a way of organizing nature. (Moore, 2015) The false division between nature and culture, where humans are seen as above, independent of or outside of nature, is necessary for the capitalist system. It grows by perceiving and treating nature as external, cheap, something to be exploited or somewhere to get rid of the waste afterwards. Capitalism externalizes nature and not just oceans, forests, soils, atmosphere, but also other people are invisible, unvalued, exploited, by appropriating «*women, nature and colonies*». (Mies, 2014, p. 77) Our cheap clothes rely on child labor, our flights are destroying the climate, our consumption makes floating islands of plastic in the oceans, and our agricultural system drives the extinction of insects. These are not externalities, unfortunate byproducts of humanity or civilization. This deterioration is at the core of the growth economy, fundamental for the reproduction of the system. Maybe one could say that capitalism and its insatiable hunger for growth is the engine of the ecological crisis, while its ever-expanding production and exploitation of external nature is the fuel. What we tend to forget is that we are also part of this nature, so by fueling the engine we are at the same time destroying ourselves.



The destruction of a livable climate, the mass extinction of species and the deterioration of the living world are just the tip of an iceberg, physical manifestations of a much deeper ecological crisis in the social and mental ecology. All these aspects of the crisis must be handled simultaneously.
Original image: Uwe Kils, Wiska Bodo, CC BY-SA 3.0(edited)

This is also why it makes little sense to talk about the Anthropocene, which stage humans as the most powerful force in nature. This force is not humanity as such - the economic system is the force that gets onto the scene and takes over. It makes more sense to perceive our current epoch as the Capitalocene, «*the historical era shaped by the endless accumulation of capital*» (Moore, 2017, p. 596) It is not «we» - an undefined humanity, that are devastating the earth at will, it is capitalism's insatiable hunger for growth. The growth economy and its ways of organizing nature is responsible for most of the transformations on earth, moving more mass than rivers, volcanoes, winds and oceans combined. We live in a world where all "natural" landscapes on the planet are impacted by humans, where the weather is human made, in a world of *frenados* and *pyrocumulonimbus*. The air we breathe is filled with waste, microplastics runs through our blood, lungs and guts, and there are more broiler chickens on earth than all wild birds combined. Guattarian ecosophy is a way of understanding the complexity of the ecological crisis. It makes clear that the crisis is mental and social as well as physical, and therefore it cannot be solved solely by technological innovations. The crisis must be dealt with at all levels and the capitalist ways of organizing human and more-than-human nature must be challenged.

I read Guattari as a degrowth thinker. His ecosophy is a multidimensional attack on capitalist growth, not just by showing the environmental problems it creates, but also including social problems like inequality, poverty and degraded relations and mental problems like loneliness, neurosis and anxiety. This critique is combined with an insistence that alternatives are possible and that these alternatives would be better for both people and planet.

The ecosophical way of handling the environmental problems moves the focus away from techno-fixes, market-based solutions and extrapolations of the status quo. Guattarian ecosophy rejects solutions that individualize, generalize and de-politicize the ecological crisis. Capitalist ways of handling the crisis internalizes both the problems, like our ecological footprint and the solutions like changing lightbulbs, recycling and green consumerism. This individualization fits capitalism perfectly. First it makes us feel bad since we are causing the crisis, then lets us off the hook by selling us the solution: carbon offsets, electrical cars, vegan falafels (produced by Nestlé) or net-zero fossil fuels. Consuming our way out of the ecological crisis is an advertising move that we have just seen the beginning of. Still, the injustice, irresponsibility and inequality should not become a reason to give up - it could also be an opportunity to re-politicize the ecological crisis and understand that it is the system that needs to be replaced, not just the lightbulbs in our homes.

Guattarian ecosophy posits that humans need to «recouple» to nature instead of the ecomodernist call for decoupling. It rests upon a faith in humanity, a belief that people can change their way of thinking, relating, feeling and acting, as well as the social and physical structures they are part of. Instead of individualizing the responsibility, Guattari insists that it is possible to undermine the destructive system of capitalism. To withstand the pressure of sameness, carelessness and passivity and rather develop and experiment with a kind of creative resistance, which opens up for new and revived visions, desires, practices, politics, and ways of relating - that sketches the path beyond the status quo.

“Without a change in mentalities, (...) there can be no enduring hold over the environment. Yet, without modifications to the social and material environment, there can be no change in mentalities. Here, we are in the presence of a circle that leads me to postulate the necessity of founding an “ecosophy” that would link environmental ecology to social ecology and mental ecology.” (Guattari, 1992)

Guattari’s ecosophy is radical in the sense that it seeks to go to the roots of the problem, to change the subjectivities that constantly reproduce capitalism, the ways humans relate to each other and to the world under capitalism, and to change the physical structures that make up, limit and control our everyday life, and to do so from our own positions, our own situations, our own desire and creativity. It offers ways of handling the environmental crisis that are not oriented around lack or reduction, but rather emerges out of fun, play and constant construction of worlds that we rather want to live in. The Guattarian ecosophy offer lenses for seeing this kind of experimentation and acknowledge the revolutionary and transformative potential of everyday practices and actions. As Guattari asks:

“Where are the new vitamins of meaning? How to repolarize the socius and the psyche? Perhaps by opening our eyes, and beginning to take stock of the thousands of initiatives – sometimes microscopic – which teem, stagnating or proliferating, within the social fabric: all the attempts to change life in certain areas, imagine a different urbanism, create a different kind of school, a different kind of business, a less desperate old age – not to forget, certainly, the prisons, or the psychiatric lock-up. In short, always, and now more than ever: the molecular revolution. Socialism will place at the centre of its preoccupations changing daily life, close relations and solidarity. It will show concretely how “something can be done”, even in the most difficult situations, or it will disappear from the charts of hope, and move aside, possibly in favour of a new ecological pole.” (Guattari, 1990, p. 22 (via {Genosko, 2002 #246}))

Through this project I argue that urban gardening might be one such initiative producing «vitamins of meaning», showing how something can be done in the desperate situation we find ourselves in. I argue that urban gardening can change the way we think, the way we relate to others and to the rest of nature. It can change how our physical surroundings work and the way we feed ourselves. Urban gardening offers practices that might work transversally, across all three ecologies, affecting the mental, social and physical at the same time, dealing with the ecological crisis at its roots by trying to create and envision a world where the way we feed ourselves doesn’t threaten our existence. An impossible task of course, but still, I think it’s worth pursuing, not only because it’s necessary to deal with the ecological crisis, but also because it could produce a future that is better for people and other critters to live in.

Urban gardening can be seen as a hobby, a leisure activity like golfing or soccer or hiking that privileged people can spend time on when all other needs are met. But it can also be perceived as a technology or a tool. I borrow the definition of a tool from Ivan Illich who argues that “*tools are all means or instruments with which modern humans try to realize their goals*” (Samerski, 2018, p. 1638) and such a definition includes everything from institutions, to supermarkets and shovels. I perceive urban gardening not just as an efficient tool for producing food within cities without destroying our ecology, it is also a tool for dealing with the other aspects of the ecological crisis, the mental ecology, the social ecology and the physical ecology. This implies developing alternatives to capitalist obsession of growth - and ways of breaking down the artificial division between humans and nature, urban gardening as a *de-alienating technology*. I do not believe that this automatically happens when people start growing their own food, but I will argue that there is a potential for dealing with these multiple aspects of the crisis, as alternative ways of thinking, relating and living might be developed.

I perceive urban gardening as a set of practices under the umbrella of agroecology. Agroecology is a science, a social movement and a practice, an approach to growing food «*grounded in ecological thinking where a holistic, systems-level understanding of food system sustainability is required*». (Gliessman, 2018) Agroecology might be what Murray Bookchin defined as radical agriculture, in the sense that it is not just «new» techniques in food production, but a «*but a new non-Promethean sensibility toward land and society as a whole*» (Bookchin, 1976)

Agroecology can be contrasted by industrial agriculture, with characteristics such as monoculture, large scale, concentration, energy-intensive, labor-light and a focus on productionism and profit with little or no regard to the larger ecological or societal consequences. These two poles of the spectrum are also based upon different worldviews, different epistemologies. In agroecological systems humans are part of a much bigger web of life, an ecology we cannot control or master, but where we can learn how to cooperate with the rest of nature. This approach is as much about the reproduction and maintenance of the ecosystems as the production of food - agroecology claims to be able to produce food while simultaneously contributing to the ecologies we depend upon. This makes agroecology into a knowledge-intensive system. The practitioner needs to learn, to get to know the place and the ecology and the plants. This requires triple-loop learning that could lead to a reconsidering of values and beliefs, and in turn - a transformation of institutions. (Bharucha et al., 2020) As the fragility and insecurity of the industrial way of feeding ourselves is revealed, as we learn that there is nothing inevitable about the industrial way of producing food - we also realize that there is a need for alternative, and find that this alternative is already here, has always been here, and that it also has the potential to deal with some of the root causes of the ecological crisis. Urban gardening is one branch on the tree of agroecology. It often employs the same logic, the same thinking behind the actions, and invites people in urban environments to experiment with and contribute to the agroecological ways of producing food.

Guattari's ecosophy is not concerned with building consensus for government's environmental policies, since *"ethical and aesthetic values do not arise from imperatives and transcendent codes"*. (Guattari, 1992) It is rather an ecosophy of action and creativity, a call for *"invention of new modes of being, new ways of living in the molecular space of existence, within urban spaces, family, relationships, work, etc."*. (Brunner et al., 2013, pp. 10-11) Small acts of everyday resistance emerge out of local situations, local struggles, personal frustrations. Creative responses that are available to everyone happening in all scales of society, a *«million minor revolutions»* (Elliott, 2012, p. 105) in the social, mental and physical ecologies that *"challenge the status quo from the inside, subverting it and exposing its own internal fissures"* (Elliott, 2012, pp. 104-105) while forming spores of other mental, social and physical worlds. It offers not just ways of understanding the complexity of the ecological crisis, but also ways of responding to it. More than an environmental philosophy it is:

"a blueprint, a map, for a relationship to the world. Ecosophy suggests that we need to approach environmental issues in a heterogeneous way, spanning traditional boundaries of science, art, educational practice, architecture and so on." (Elliott, 2012, pp. 129-130)

To be able to create lasting change it is necessary to confront the three areas together and understand them as part of the same integrated problem as *"solutions at one level entail changes at the others: earthly spheres, social issues, and worlds of ideas are not compartmentalized"*. (Genosko, 2009, p. 104) Dealing with the ecological crisis is not possible unless its mental, social and environmental ecologies dimensions are addressed. This would not just give us a chance of survival of our species, it might also offer a pleasant one, in which we could thrive, develop and find meaning in a myriad of different ways. *Ecologies of urban gardening* is an attempt at using the three ecologies as lenses to explore urban gardening as a transversal practice, able to work across and repair the mental, social and physical ecology simultaneously.

The aim of my project is not to claim a complete theory or a holistic understanding of urban gardening or the ecosophy of Felix Guattari. Rather it is to open up for seeing urban gardening (or other practices) through these lenses. I believe that this offers a hopeful way at looking at the ecological crisis, not just as thick clouds of smoke looming in the horizon, but how trying to deal with these issues at a fundamental level could offer us joy, meaning and real and lasting change. That it helps us envisioning not just that it is possible to avoid the most catastrophic prospects, but at the same time build a better society to live in. And that this will anyways be necessary practices, skills and relations in a future where we need to live in, with and through this crisis. This is an alternative to the desperate catastrophism, where the urgency of the situation allows all kinds of risky, racist and techno-optimist solutions, like geo-engineering, eco-fascism and life-boat ethics, where everything goes as long as we claim to save ourselves.

Overview

With a growing frustration and sadness on how the world around me is devastated and how future possibilities are diminished, I started this research project five and a half years ago. Even though I grew up on a farm and have spent all my childhood summers doing farm work I knew nothing about gardening. I had barely touched a seed before and didn't know how a plant would grow or how to care for it.

Through the process I have been involved in transforming three spaces, one asphalt field has become a garden in Havnehagen, a lawn has become a garden in Ilens Hage, and a roof terrace has become a roof garden in Dropsfabrikken. These projects have been running since and have been the main tools for research. These projects, these three seeds, have grown and withered and thrived, and has fed the metaphoric soil, my research, with nutrition to break down and transform. The projects have given me experiences and challenges, reality checks and doubts, hope and disappointments.

The garden projects have also been the basis of the other explorations that I will present through this document. The experience of being active in gardens spurred new initiatives, demanded action, a change of habits and sparked my curiosity. What follows is part description and documentation of my process, part development of theory, part artistic result and part reflection upon the artistic research process, and these parts often intermingle. This is one way of telling the story of my project. I have tried to gather what I find most important, but by choosing I also leave aspects out of the story, stories that I would like to tell, projects that are not mentioned, things I wanted to do, but didn't have time to - and things that were cut the last minute. Still, I hope this story can communicate what I have been doing, how I have been doing it and why I think it is important.



Allium proliferum in Havnehagen

I start at the beginning, by introducing Havnehagen, one of the garden projects I have initiated and been involved in throughout the research. A garden doesn't happen by itself, and to organize, negotiate for and establish the garden spaces was important in the beginning of the process. For me, this meant not just getting a steep introduction to the world of gardening, but I also in a new role as organizer and facilitator.

After introducing the garden at Nyhavna I stop and reflect upon one important moment of the research, an experience that became decisive for the rest of the process. This is the experience of dead soil in Havnehagen, which represents my inexperience in gardening, and points towards some of the fundamental problems of the ecological crisis, a lack of basic knowledge of the ecologies that sustains us. The dead soil triggered several explorations that became important for my research. In this prologue, entitled *dead soil*, I trace the soil back to its origins, try to find out why it was dead and what to do about it. This leads to a reflection on what nature is, a question central to the process and a theme that I also explore in the video *new soil*, in the final exhibition.

In the introduction I argue, with Guattari, that one of the foundational problems of the ecological crisis is the false division and failed relation between nature and culture. In the central part of the thesis, entitled *Ecologies of urban gardening*, I reflect upon the nature in urban gardens. What kind of spaces and environments do urban gardening make, and how might these spaces and their practices allow us to start to start to tear down the division between culture and nature?

This main part is divided into five themes which I think characterize the ecologies of urban gardens. The first is an exploration of the *aesthetic experiences* that are made available to us through urban gardening. These experiences work on our senses and might be able to change us deeply. In urban gardens these aesthetic experiences become part of everyday life, they become habits, and through the practices of urban gardening we might learn how to better relate to the rest of nature. In this chapter I also frame *urban gardens as sculptures*, shaped by the humans and more-than-humans that creatively rework the garden sculpture.

The second theme is called *rocks to gardens*, and it reflects upon how urban gardens might be spaces where diversity is produced, what Guattari refers to as heterogenesis. Capitalism grows by homogenization, the production of sameness, but urban gardens are spaces that let humans become part of the production of diversity, a very different process, which also shows how humans might play another role in nature.

Urban gardens also offer chances of healing all aspects of the metabolic rift. In the third part I show how I have tried to *rescale and mend the metabolism* in several ways and argue that these practices and new flows are not just turning waste into resources, it might also work on us transversally, changing the mental, social and physical ecologies - at the same time. In this chapter I describe two exhibition projects that grew out of the experience of the dead soil. These installations, the *Bioreactor* at the Futurum Science Festival in 2019 and the *Communities of Compost* at the Oslo Architecture Triennale in 2019 explore how humans and microbes can cooperate to revive soil through composting.

In the third theme I reflect upon the *temporalities of urban gardens* and argue that the time of the garden beats in completely different clocks than the supermarket and the industrial agriculture that feeds us today. To be able to relate better to nature, we must learn to adapt to all the more-than-human temporalities around us, many of which we find in urban gardens.

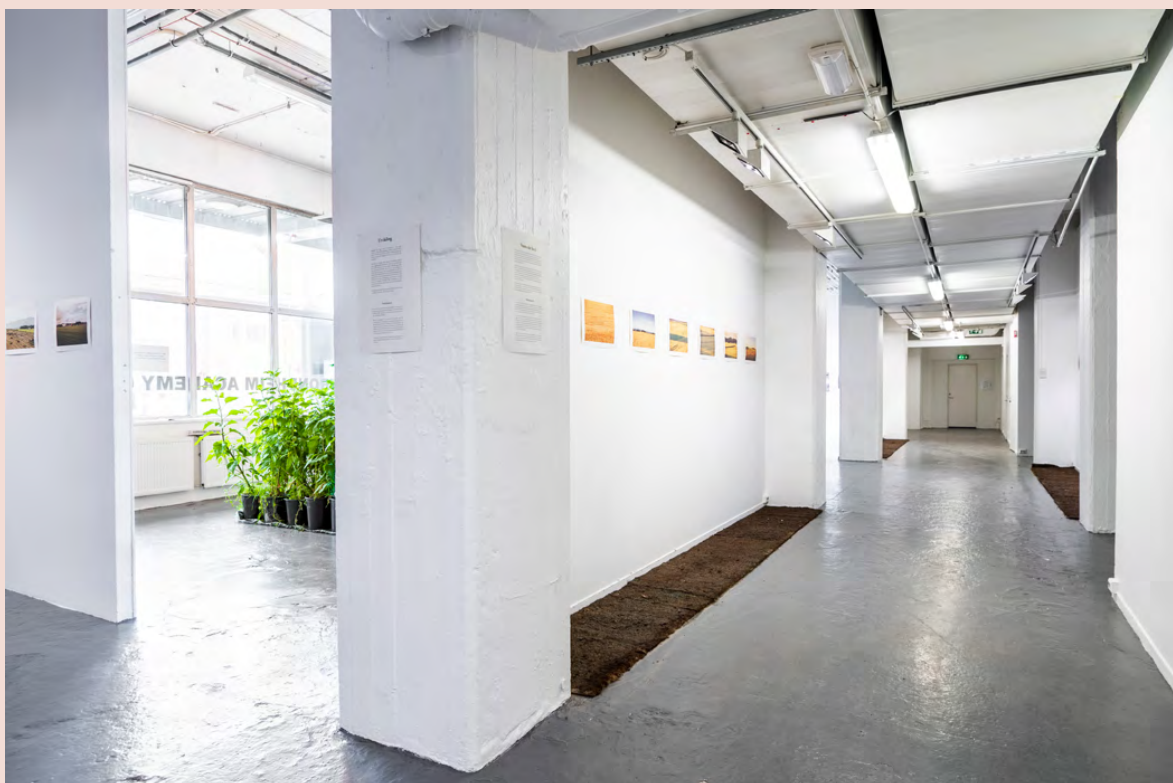
In the last chapter of the main part, I end the reflection on the nature of urban gardens by arguing that food production is a legitimate use of urban space and point to how it might become a more «natural» part of cities. In Trondheim, the *peri-urban lands* are central for such outscaling, and I introduce one example of how this future possibility is actively undermined by the neoliberal recuperation of urban gardening. In this chapter I also introduce the exhibition *Do Earthworms Dream of Android Lawn Mowers?* which was shown at the Artistic Research Forum in 2021. This photo-video-installation is a documentation of the destruction of soil in the peri-urban fields of Trondheim, what I call the *Waiting Lands*, a development I have been following and reacted to in different ways throughout the project. One of these reactions is the détournement of the magazine *New Roots*, which speculates in other futures for these fields through subverting the material of the developers.

The last chapter is called *reviving dead soil*, and in this part, I argue that there are other ways of speculating than destroying peri-urban soil. I describe an effort to counter the destruction of soil and use experiences from my research to transduce the potential of urban gardening, making a speculative journey into the future of the peri-urban fields. This speculation is continued in the development and speculation rooms in the final exhibition, which shows two different scenarios for future development.

I end with a reflection upon the process where I discuss some of the specificities of artistic research on urban gardening as an architect/urban planner and try to position myself and reflect upon the many roles that I have played during this process.

Final exhibition

In August 2022 I opened the final exhibition, entitled *Ecologies of urban gardening*. As the title indicates, this was an attempt at to make a section through the work, to connect some of the themes and highlight some of the findings. More importantly it was a way to communicate (in other ways than writing) the work to a larger public, especially to my fellow gardeners and potential gardeners of the future. I have chosen to relate the documentation and description of the different parts of exhibition to the chapters where I find it most relevant. However, the different parts of the exhibition often relate to more than one theme and could fit in more than one chapter. The following plan shows the different rooms and parts and how they fit in with the themes and chapters of the rest of the thesis.



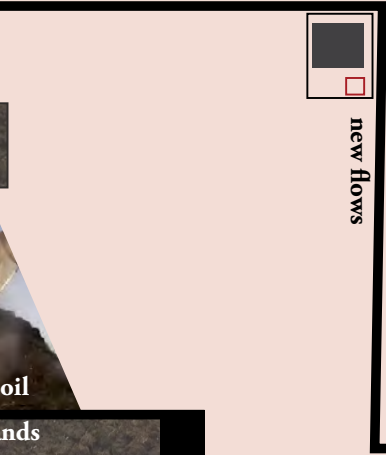
Final exhibition in Galleri KiT
Photo: Harald Wanvik

Dead soil
Rescaling the metabolism
Temporalities of urban gardening
Nature of urban gardens



Waiting lands
The potential of peri-urban fields
Temporalities of urban gardening

Heterogenesis
Aesthetic experiences
Temporalities of urban gardening
Nature of urban gardens
Garden People



new flows

Rescaling the metabolism
 Aesthetic experiences
 Heterogenesis
 Nature of urban gardens

Waiting lands
 Temporalities of urban gardening
 Potential of peri-urban fields



waiting lands

Losæter
speculation

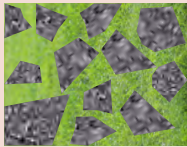


Ilens Hage

Transduction

Rotvoll

construction
development



Solsletta

Strinda Hageby

Reviving dead soil
 New Roots
 Potential of peri-urban fields

Temporalities of urban gardening
 Potential of peri-urban fields
 Waiting lands

Floor plan of exhibition

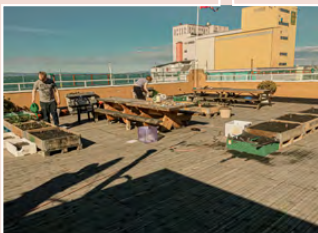
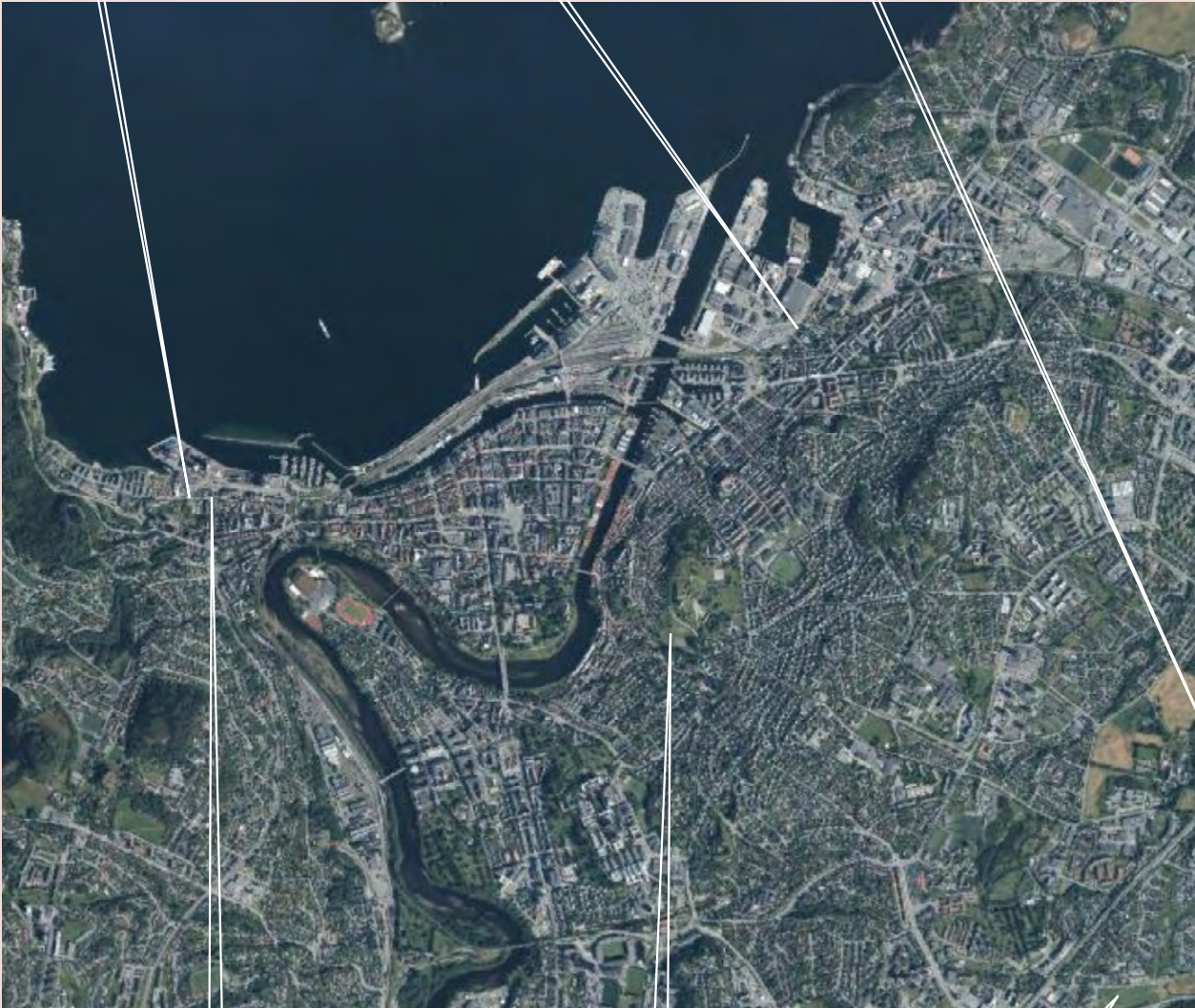
Ilens hage



Havnehagen



Strinda Hageby



Dropsfabrikken

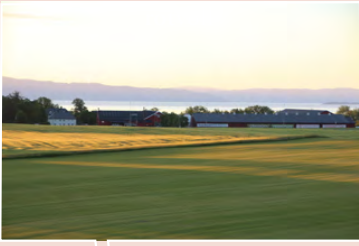


Kneiken Fellehage



Voll Gård

Rotvoll



Overvik



Væres Venner



A map of some of the places that will be mentioned



Solsletta



Presthus Gård

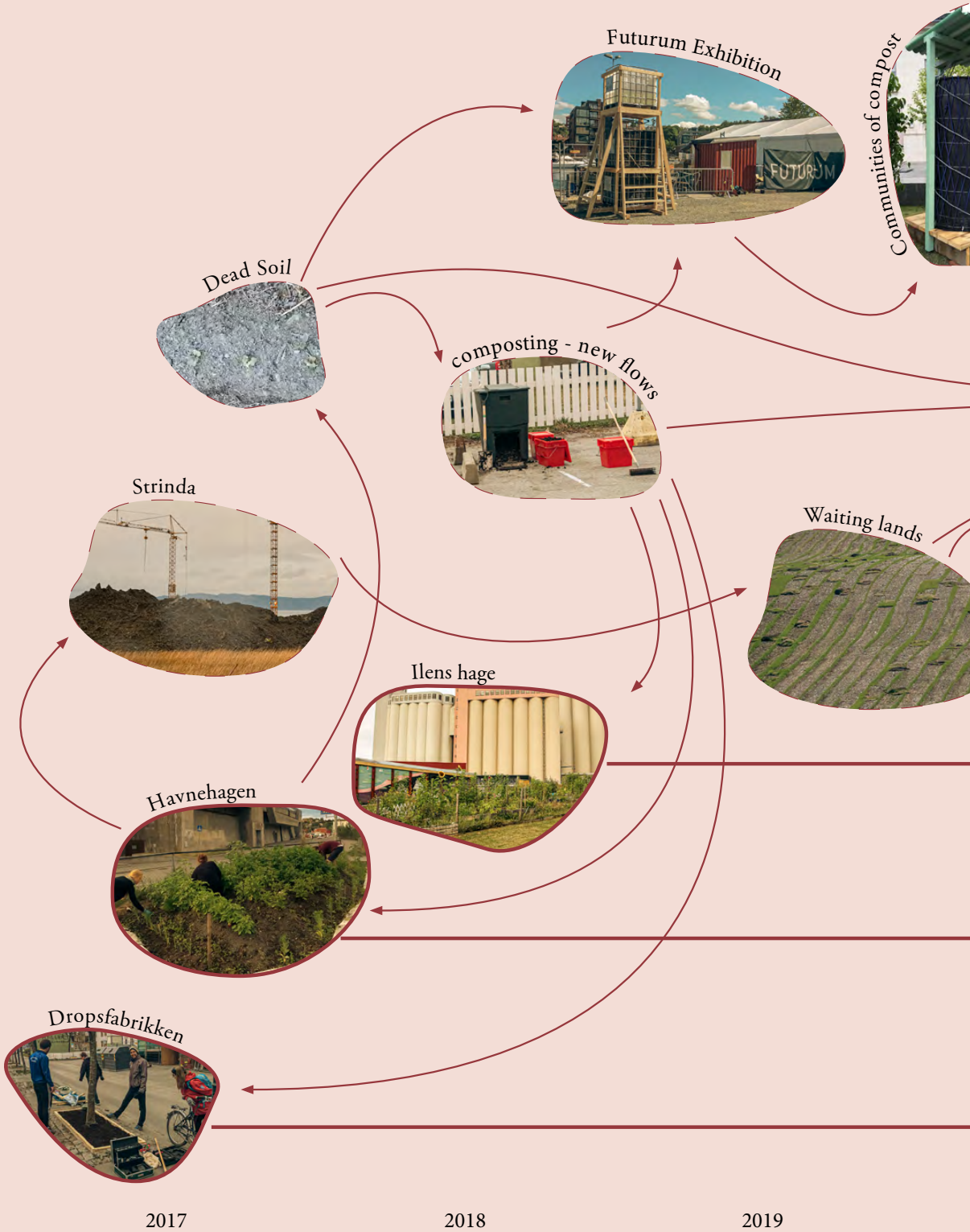


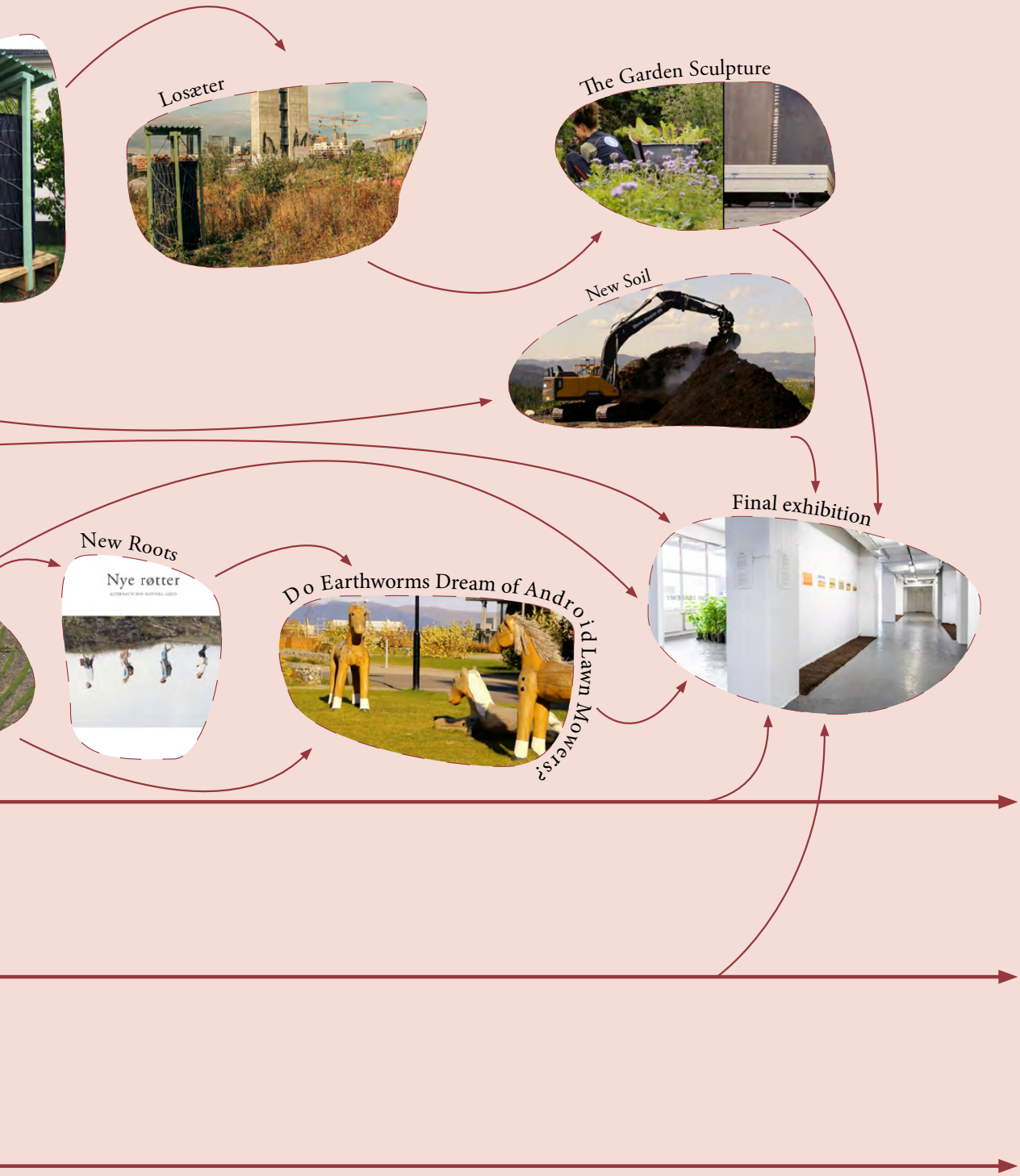
Reppe Søndre

Timeline of ongoing garden projects, events and exhibitions

Events and exhibitions

Ongoing garden projects



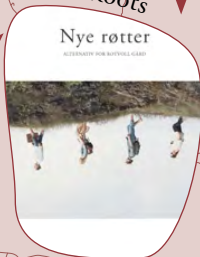


2020

2021

2022





Writing

Ökologien des urbanen Gärtnerns

Hvorfor skal vi bygge ned matjorda?
Og de skal belære oss om etikk og moral?
Rotvoll: Mat for framtida?
Fløringsuttalelse: Rotvoll

Ta et oppgjør med arbeidsmanien
Grenser er frihet

Exhibitions



Prologue: dead soil



11.05.2017

Looking for garden space,
- a *dérive* through the industrial areas at Brattøra and Nyhavna





Havnehagen - making a garden

Nyhavna, 11.05.2017

We are at the beach. Or, at least on what used to be a beach. Sometime, someone decided that they would make the beach into a port, and they called it the new port (Nyhavna). A large piece of new land was built, and two new piers were constructed, straightening out the flow of the river. The new land was covered in asphalt and industries started popping up. During the second world war the Nazis built two enormous submarine bunkers. After the war someone built a post terminal here, and right outside the fence of the terminal, a tree finds a glitch in the asphalt. Miraculously the tree survives. From the aerial photos it looks like someone must have looked out for the tree as they were placing containers and backing up trucks. Probably someone was annoyed that the tree was always in the way, since it has several scars, but no one decided to cut it down. Later we learn that the tree is a goat willow and is actually two trees, one female and one male, which we can clearly see in the spring. Now, the post terminal is gone, and the only thing left in the large asphalt field are these two trees. Maybe this could be a good spot for a garden?



Trondheim, 1867



1999



2005



2008



2013



2014



2020

New surroundings for the tree, new trajectory for the space
Historiske kart, finn.no

I am cycling around Trondheim with Ingrid Engan Nøren and we have ended up here. She is the leader of The Climate Festival (Klimafestivalen) and together we plan to establish a garden for the festival.

We like the place. We like that it is big, that it is central, and located in Nyhavna, which is one of the big development projects in Trondheim. This industrial area is going to become city, with apartments, supermarkets, cafes and shops, and the train tracks that runs parallel to the asphalt field is supposed to be removed and become a new public park in the plans for the area. We stand in the field, dream and envision how our garden might spread out and become a productive park sometime in the future.

But first we need to get permissions to establish the garden. We find out that the area is owned by Bane Nor, a government agency responsible for the railway network. After several rounds, our request is rejected. Bane Nor wants to rent out the area and don't want any gardeners interfering with the plans. However, since we really want to be here, we decide to contact the renters instead: the municipal parking company is planning to establish a camping van parking lot. After some new rounds we get the permission to use a small corner of the parking lot to establish a garden.



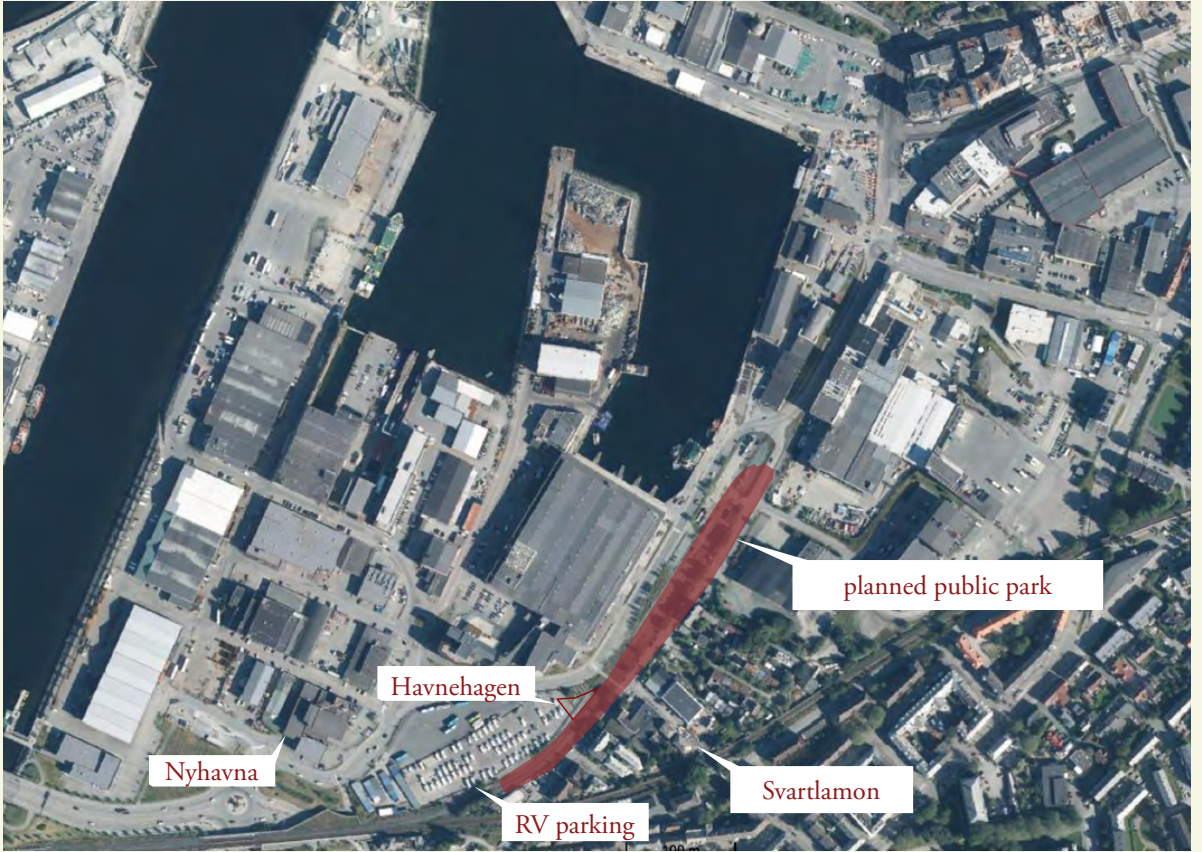
Could this become a garden?



Lonely seagull showing us the space

The train tracks runs between the experimental area of Svartlamon on the right and the industrial area of Nyhavna on the left, set for transformation to post-industrial city in the years to come.

Along the train tracks a new public park is planned.



11.06.2017

While working on permissions and applying for money we spread the word of the garden. We send out emails to everyone in the adjoining neighborhood of Svartlamon and through the climate festivals channels. Getting the final permissions takes time, the summer is approaching fast, and we decide to convert my office space into a green house. In this first gardening session, we get the seeds in the soil, letting the plants grow while we are waiting.



Turning the office into a greenhouse



The first gardening session



Looking for materials to build raised beds.



Temporary watering system in place, thanks to our neighbor - the car workshop.



The graveyard turns out to be a good place to find used pots for planting.



While the plants grow, we prepare the garden.





“We” are a new group of people, a mix of people from the adjoining neighborhood of Svartlamon, followers of the Climate Festival in Trondheim on social media, friends they have brought with them and people walking by who spontaneously decide to join us. From the outside however, we might look like a homogeneous group. Mostly white people, from 20-40, environmentally concerned, with an interest in growing our own food, but with little or no experience.



29.06.2017

Finally, time to get our hands in the soil.

«Trucks arrive and unload 50 tons of soil at an empty parking lot. It is the first warm week of the summer. We could have been anywhere. Yet, we are here, shoveling soil into wheelbarrows, filling up planting boxes and preparing a potato patch. It is hard work, but we have a plan and a goal. This summer we will turn this asphalt desert into a productive garden in the middle of the city.

A group of people, all with our individual needs, desires and motivations, has decided to take back (some) democratic control of food production, the production of our surroundings and everyday life. Consciously or unconsciously, we experiment with what Henri Lefebvre refers to as self-management:

«Each time a social group...refuses to accept passively its conditions of existence, of life, or of survival, each time such a group forces itself not only to understand but to master its own conditions of existence, self-management is occurring.» (Lefebvre, 2009, p. 135)



Two months later and it becomes painfully clear that we neither understand nor master these conditions. The plants have withered, we have desperately sown new seeds and plants, but it doesn't seem to help. Not even weeds will grow. We realize that we will not survive the winter on this yield.

We try to find out why we are failing. Among other things, we invite a permaculturist to the garden to help us. Together we look, touch, feel and smell. We learn that the soil is dead. There is not much here to cooperate with, no microbes, no plants to feed the soil, no humans with knowledge or experience.»* (Melås, 2021a)

There is nothing that kills the engagement of the emerging gardener like dead soil. The experience of failing, plants dying, things not working out as we hoped. The dead soil was one of the experiences that changed the project. The experience led to efforts to revive it, further explorations of soil, of compost, reflections, writing and exhibition projects.

The soil in our garden was dead, but why? Where did it come from? How did it become this way? I called the company, sent emails and pictures. They were sorry that their product did not work as promised and wanted to help. I asked if I could visit «the soil factory» and together with Ryan Wanamaker from the Competence Center for Urban Gardening at Voll Gård we got into his car and headed for the outskirts of the city.

*excerpt from *Ecologies of Urban Gardening* (Melås, 2021a)
and the first published German version,
Ökologien des urbanen Gärtnerns (Melås, 2021b)



The plants didn't seem to thrive



The permaculturist Jan Bang doing a course in the garden

Grønn Vekst, Vassfjellet, May, 2018

In a burgundy Ford Excursion we drive into the facility. Ryan is behind the wheel; I am in the passenger seat. We stop at a small shed with the sign «reception» and get out of the car. A thick layer of dust covers the asphalt. Huge piles of gravel, sand, rocks and stones in different sizes make up the landscape. We walk towards the small white house, watching our steps as trucks and machines, dumpers and conveyor belts roar around us. We knock on the door and ask for our guide. We are expected and welcomed and receive reflective vests and helmets. The guide takes us back outside and tells us to follow him in the car. We drive past huge chunks of rocks, silos containing different granulations and sizes, trucks getting loaded and unloaded. In the car we climb up, a journey through millions of years of geological movements, compressed and fossilized minerals. Everything is shades of grey. Dust, rock, different conjunctions of minerals, different time periods, our geological history written in stone. As we approach the top of the quarry a new landscape emerges. The gray piles of rocks and stones gives way for brown heaps - organic material - what we have come here to see. We get out of the car and our guide explains the process:

The garden waste in Trondheim is collected from private gardens and companies. Leaves from parks are collected, loaded onto trucks and driven here. The leaves are shredded and crushed and mixed by big machines and gathered into piles. This composition of materials sets in motion a composting process. A week after the material is piled it starts to get hot inside. It reaches 65-70 degrees, and the pile might get so warm that there is a danger it will self-ignite. To prevent this and provide the process with oxygen a loader regularly turns the piles. After some turns the piles become more passive, the nitrogen in the materials have burned out and the activity calms down. After a year the garden waste have turned into crumbling, dark compost.

This brown stuff is then mixed with sand from the quarry and peat moss from the development at Heggstadmyra, where the road and the industrial area with its shopping malls and warehouses are continually demanding more of what is left of the swamp. Big machines stir the ingredients together to create a product called Garden Soil, the same stuff that we received 50 tons of last year for the garden project in Nyhavna.

«Å kjøre bil er en helt ny måte for naturen å uttrykke seg på.»

«Driving a car is a radically new way for nature to express itself»

- Thure Erik Lund, Om naturen, 2000

















New soil

The exploration of these processes changed my conception of the soil in the garden and four years later I returned to Vassfjellet to document the process of making soil. This resulted in a video work for the final exhibition. The video explores the flow of organic matter through the city, some of the labor that goes into the process and how the soil that we often perceive as “natural” in the urban garden is the product of a variety of industrial processes.

This part of the exhibition is located in a large niche, halfway through the long corridor. No windows, darker than the hallway and the other rooms. One spotlight is pointed towards a hot compost container in one of the two corners. In the middle of the room, five pallet frames are stacked upon each other projecting a movie on one of the walls. The movie, entitled *New Soil* and springs out of the excursion in 2018. The video follows organic matter as it flows through the city and is re-organized into soil.



The video installation "New Soil" in the final exhibition
Video can be found in the attachments.
Photo: Harald Wanvik

The first scene, shot in the fall of 2021, is filmed in the University Park. It's late fall, a frosty morning and a tree is rapidly losing its leaves. Distant, in the background, the noise of engines. Soon it is revealed that the sound comes from leaf blowers. A crew of municipal workers are gathering all the leaves in the park to transport them away. I was fascinated by this work, of all the energy and time that goes into maintaining the park. The workers are actively redesigning the urban metabolism, moving matter that has been essential for making the soil that we have in the garden, but is also removing an important part of the ecosystem in the park.

The next part of the video starts with a close up shot of green birch tree leaves. Are we in the forest? The shot is followed up with other shots of green, a diversity of bushes and trees, but something is odd. Gradually the surroundings are explored and the characteristic brown paper bag that Trondheim's inhabitants use for garden waste reveals where we are. This part was shot at the garden waste depot Heggstadmoen in the summer of 2022. It documents the life in the pile of garden waste, where microbes and birds make temporary habitats as humans unload their grass clippings, twigs and branches, before the garden waste is crushed and transported away.

The third and final part of the video starts with a brown pile of dirt. An excavator enters the scene and start digging. It moves the matter to make a new pile right next to the existing one. As the excavator digs deeper into the pile, the steam rises. The center of the pile is 75-80 degrees, and the heat can almost be felt through the screen. This composting process is the last stage, before the composted organic matter is mixed with sand and peat moss and become what is called garden soil.

On top of the pallet frames containing the projector, computer and speakers, lays a 20 cm layer of the soil made in the video. The audience is invited to touch the soil, to take a handful and smell. The smell of soil comes from geosmin, a chemical made by the microbes in the soil, and as most of the visitors point out, this soil doesn't smell much at all. The absence of smell hints towards the absence of life in the soil. For me, this difference became very clear as I was working in the exhibition space, where I worked with healthy, rich, soil from one of the peri-urban fields of Trondheim. The smell of the soil transformed the rooms, and could be felt immediately as you entered the gallery space.

This investigation of where the soil came from was important, both to understand how to revive the soil we already got, and how to make a better composition for the next project, but it also complicated my conception of nature. The process of making soil made it clear for me how urban gardens are just as much cultural spaces as they are natural, which is increasingly true also for the rest of the planet. What is nature? And what is specific about the nature in urban gardens? Trying to answer this question explores how nature and culture are intertwined, what our role in nature is - and possibly what it could be.



Stills from the video

The nature of urban gardens

Materials have been mined and collected and transported and crushed and turned and transported and mixed and advertised and sold and transported again. It has been dumped on the asphalt of an empty parking lot in the middle of a city, shoveled into wheelbarrows and filled into boxes. It has been worked on by human fingers and metal tools, it has been enriched by manure from goats and sheep, horses and cows, chicken and humans. Different composting technologies have allowed nutrients from food waste and plants to flow back into the soil. The seeds have been produced and sold, have been gathered in the fall and replanted in windowsills in the early spring. Wild plants (what we often call weeds) also inhabit the soil, and share the space with the earthworms, microbes, birds and insects, snails and people which all seem to thrive in the ecology of the garden and contribute to the soil in their own way.

According to Michael Classens the research on urban gardening often simplifies the nature of urban gardens. Researchers have «*neglected to incorporate a nuanced understanding of the complex dynamic between nature and society.*»(Classens, 2015, p. 230) According to Classens the scholarship on urban gardening has had a tendency towards:

“(a) framing ‘nature’ and ‘society’ as distinct realms, and

(b) conflating ‘nature’ with ‘good’, and attributing supposed benefits to urban gardens based on this misconception” (Classens, 2015, p. 230)

This can be seen in statements such as “reconnecting with nature”, “back to nature”, “back to the land”, which often implies a re-establishment, to reclaim a connection lost in the past. Gardening is also often framed as kind of therapy, implying that there is something about the city, or society that we need to escape from, break from, something that is wearing us out and breaking us down, and that nature (i.e., urban gardens) can be a healing force for urban citizens. Digging in the soil, sowing seeds, caring for plants, composting, keeping bees or hens, are seen as practices for achieving this kind of connection. Nature is seen as pristine, untouched and wild, and contact with this nature is seen as something good, a refuge from the dirty and unnatural city.



Is the truck nature? Is the soil culture?

Classens discusses McClintock's split in the scholarship on urban gardening. (McClintock, 2014) McClintock argues that the research on urban gardening could be divided into a celebratory camp tending to over-emphasize the benefits of urban gardening and a critical camp highlighting how urban gardening can also lead to a «*reproduction of contemporary neoliberal policies and subjects - the very conditions urban gardens are meant to address.*» (Classens, 2015, p. 231) (See (Allen & Guthman, 2006) (Guthman, 2008) (Holt-Giménez & Wang, 2011) (Pudup, 2008))

This project clearly belongs to the celebratory camp. My aim with this project is not to be an “objective” observer of urban gardening and weigh the pros against the cons in a balanced analysis of how urban gardening works. My aim is not to describe how urban gardening works, but to contribute to changing it. I follow McClintock (McClintock, 2014) in the claim that urban gardening is contradictory, that it might be both subversive, neoliberal and reformist at the same time, but I choose to bring forward its subversive potentials. I think it matters how we think about what we do as urban gardeners, (Haraway, 2016) and by highlighting the ways gardening might be subversive I hope to change both how I and others think about these practices, which will in turn also change how we do it. However, this doesn't mean to be blind to the neoliberal attempts at using urban gardening, something I will come back to in the chapter on the potential of peri-urban fields.

However, according to Classens both the critical and the celebratory camps of scholars fail to «*adequately scrutinize the specific material and discursive role of nature in urban gardens.*» (Classens, 2015, p. 231) They argue that both these categories of misconceptions misguide the analysis of urban gardening. Within both camps nature is seen as the “*stuff*” of gardens while society is the humans and the city surrounding the garden. To associate urban gardens with nature is also a way of externalizing it. Classens use urban political ecology to argue that nature and society are co-constituted and «*nature and society are inseparable, each is essential to the other.*”. (Classens, 2015, p. 231) This has implications for how we perceive the world around us, also urban gardens.

One example of this is one of the most «natural» ingredients of the urban gardens, the soil, which we have seen, is a hybrid product. Another natural ingredient, the seeds, might have an origin in «pristine nature» but has been cultivated and crossed and bred and shaped to satisfy the needs and wishes of our culture, and we have changed along with our plants. The cultivation of grain was one factor that allowed humans to settle down and build cities, the perceived counterpoint to nature. But if we take off the dualist glasses and start to look at the city, we will soon reveal the obvious: The city is also nature, the buildings with the rectangular windows, the skyscraper hotels with rooftop bars, the asphalt ground in the garden are also just reorganized nature. What else could they be? The concrete, the glass, the gypsum and plastic are not unnatural. It is just a new way for nature to manifest itself.



Urban environments are as natural as colonies of prairie dogs or beds of oysters
-Jane Jacobs

A framework for the political ecology of urban gardening

Classens argue that «*getting the nature in urban gardens right (...) might enable urban garden practice to achieve its full potential in the effort to transform the multiple and interlocking injustices of the contemporary food system and those of late capitalism*» (Classens, 2015, p. 237). He sketches out a framework for a political ecology of urban gardening that I will now work with, develop and fill with examples from my research. Building on this framework, I have used the insights of (urban) political ecology and its constant questioning of nature and the natural, along with my interpretation of the ecosophy of Felix Guattari. I have used this to better understand the nature of urban gardens, or what I call the *ecologies of urban gardening*, to include the mental, social and physical dimensions and to better encompass the fact that urban gardens are as natural as they are social.

The general framework consists of three pillars which can be summarized like this:

1. Urban gardens are hybrids. Take this seriously and untangle the ways the gardens are social, the ways they are natural and how this might enable or limit social change. (Classens, 2015, p. 236)
2. Urban gardens are urban. Urban gardens should not be perceived as a piece of nature inside the city, and therefore a curiosity. Food production is a «natural» part of the urban landscape and should not be restricted by what we today perceive as enclosed urban gardens. This is important for urban gardening to posit itself as «*a viable, scalable option to counter the capitalist food system*» (Classens, 2015, p. 236) This means to reject urban gardens as nature (and good) and city as culture (and bad). We also need to understand the urbanity of urban gardens and how producing food in the urban landscape differs from rural production systems.
3. Urban gardens can be both radical, reformist and neoliberal. (McClintock, 2014) The contradictions of urban gardening should neither lead to unequivocal celebration or refusal of the transformative potential of urban gardens, but rather to a better analysis of how the garden can challenge conventional configurations and how it is reinforcing them.

As Jane Jacobs remind us «*urban environments are as natural as colonies of prairie dogs or beds of oysters*» (Jacobs, 1992, p. 443) Like humans are a hybrid of human and more-than-human cells, (Gill et al., 2006) (Turnbaugh et al., 2007) built by what we have been eating throughout life, «*unique, moist packages of animated soil*» (Hole, 1988), shaped by our technology and all the events we have been through, urban gardens are socio-natural hybrids, all the way from the human gardeners to the materiality of the soil. Gardens are a pedagogical example of how impossible it is to put a strict division between the two. Each urban garden is the result of its unique history, of people finding the place, negotiating with owners or deciding to occupy, conversations with the municipality, agreements, contracts, disagreements and conflicts. Each garden emerges out of human visions and ideas, people able to see the potential and proceeding to transform the nature of the space. This transformation may involve applications for funding or fundraising, redirection of resources, money to pay the guys driving the trucks bringing the soil, hours spent looking for free materials, the digital infrastructure of the internet spreading the word to the people showing up with wheelbarrows and shovels in their hands and start building and filling the raised beds.



Reorganizing nature in the urban garden

The garden becomes out of the thousands of years of collaboration between plants and people which have made the seeds, billions of years of stardust, glaciers, breakdown of plants and animals and humans, nurturing the soil that is now being brought to life in a new place. It consists of all the microbes living in the soil, the earthworms and birds and insects and people and plants that live together and constantly remake the environment of the garden.

Urban political ecology highlights how cities are a re-articulation of natural materials into built urban form. (Classens, 2015, p. 232) The urbanization process is therefore not the countryside becoming city, nature turned into society, it is rather a «*materially and discursively*» (Classens, 2015, p. 232) reconfiguration of environment done in a certain way. Agricultural soils are reconfigured into noise embankments on highways, rocks are reconfigured into cement and gypsum and glass to become nature in a new costume. There is nothing unnatural about this, nature has always been reconfigured, but urban political ecology highlights that how this reconfiguration happens, for whom and by whom are highly political questions. How a society chooses to reshape nature says something about what kind of values it runs by, what Classens calls «*the social character of the production of cities - the political, economic, social and cultural attachments that play out*». (Classens, 2015, p. 232) Importantly, how cities are made also have an impact on the values it produces, our surroundings are not politically neutral.

Capitalism's insatiable need for growth creates a certain kind of environment. We make environment when the city sprawls, in the never-ending urbanization spreading into new areas. We make environments as we buy a box of beans at the supermarket, when we turn the key in our cars and fire up the subterranean forests (Sieferle, 2001) to let fumes flow into the atmosphere. All these everyday life activities are actively making and reconfiguring nature. As Jason Moore argues, the capitalist society «*has enmeshed individual life activity into a web of life whose interconnections are much denser, more geographically expansive, and more intimate than ever before*» (Moore, 2015, p. 22) making our «*breakfasts, our cars, and our working days into world historical activity*» (Moore, 2015, p. 22)

We have to acknowledge that «*[a]ll human activity is environment-making.*» (Moore, 2015). We are constantly reorganizing nature, because we are inseparable from it. This also means that our organization as humans, our institutions are natural, which lets Moore come to the conclusion that capitalism is not just an economic system or a social system, it is a way of organizing nature. (Moore, 2015, p. 87) The capitalist way of organizing nature rests upon continuously externalizing and cheapening nature, so that it can be exploited. The destruction of soil, atmosphere, oceans are natural consequences of the operating systems of our society. The metabolic rift, turning resources into waste is a feature, not a flaw of the capitalist ecology.



Urban gardens are hybrids

However, if there is a capitalist way of organizing nature and creating environments there must also be *degrowth ways of creating environments and organizing nature*, starting with the realization that nature is not something external to humans or society, it is not an outside to be exploited, it starts with the revelation that «[h]umans relate to nature from within». (Moore, 2015, p. 91) Humans do not organize nature, or produce nature, we are co-producers in nature and in this process, we are co-producing and reorganizing ourselves.

Through looking at the diverse environment that is produced in urban gardens it is also possible to understand how the gardens have different organizing principles than capitalist production of space, food, nature and culture. The capitalist way of feeding ourselves depends on human domination over an externalized nature.

When plants and soil and the rest of the ecology of urban gardens become our conditions for life, as they do to a small extent for an urban gardener, «nature» goes from being external, to something we need to care for. Urban gardening offers other ways of interacting in nature. In urban gardens it is essential to establish a kind of cooperation with the soil, with the plants, insects, all the other beings that we co-produce the space with. Practices based around care, reparation and regeneration rather than exhaustion and domination. This pedagogical process of understanding interdependence and co-creation is specific for urban gardens. We become involved in the production of space, of food, and ourselves. Everything we do creates a certain environment, but there are different ways of making environment, and what environments we make, how we make them and who we include in the process matters - not just for the environments, but also for us, since we are reproducing ourselves in the process. The urban garden is a cultural landscape, but it is a very different cultural landscape than the monocultural fields surrounding the city. One is an attempt to control and dominate nature, whereas the other tries to learn how to cooperate with the life in the soil and the plants.

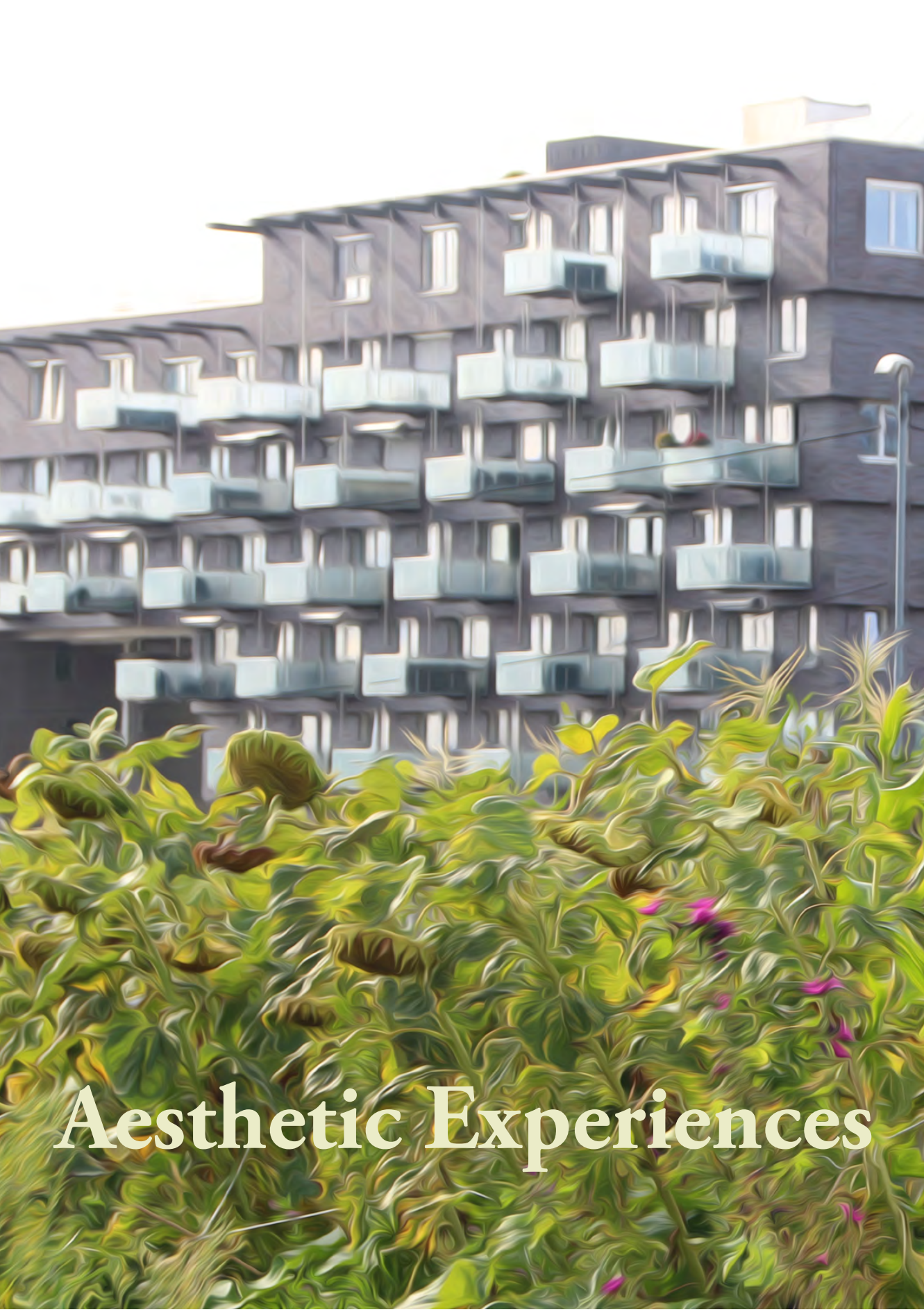
The co-production of environment in urban gardens is special because it gives people the chance to change their environment and at the same time allow the environment to change them back. The dirty hands and the soil under the nails represent a transformation of both people and place, a place where the strict boundary between nature and society might start to break down. Reconnecting to nature in urban gardens is not a return to a pristine nature, but instead offer ways of living in this messy, chaotic humanly impacted and designed environment around us, and learning to live in this environment without destroying ourselves and the world around us.

The following is an exploration of some of the characteristics of urban gardens as places seen through the mental, social and physical ecologies of Félix Guattari's ecosophy and the potential of urban gardening to work on all three ecologies at the same time.



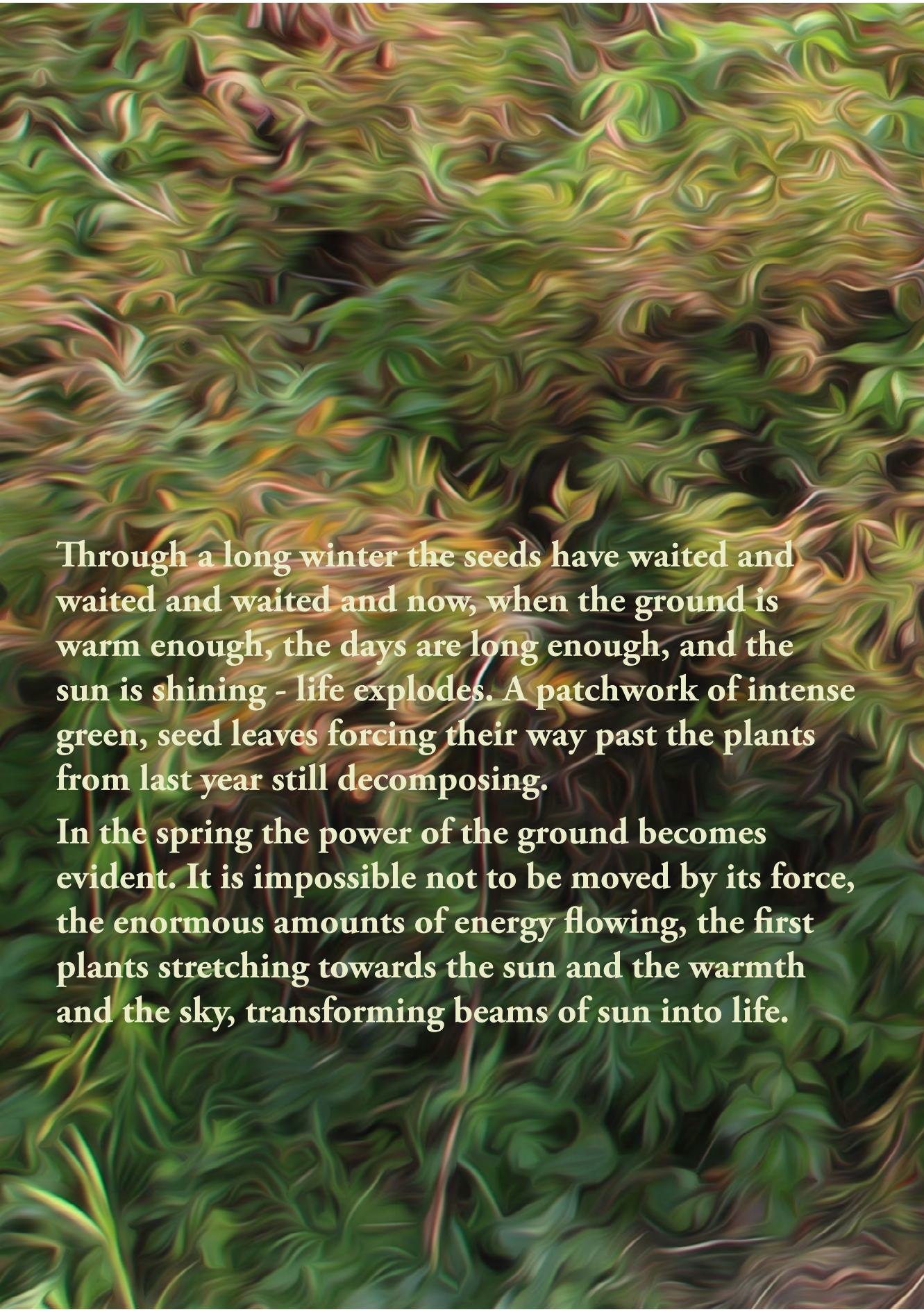
What are degrowth ways of organizing nature?

Ecologies of urban gardening



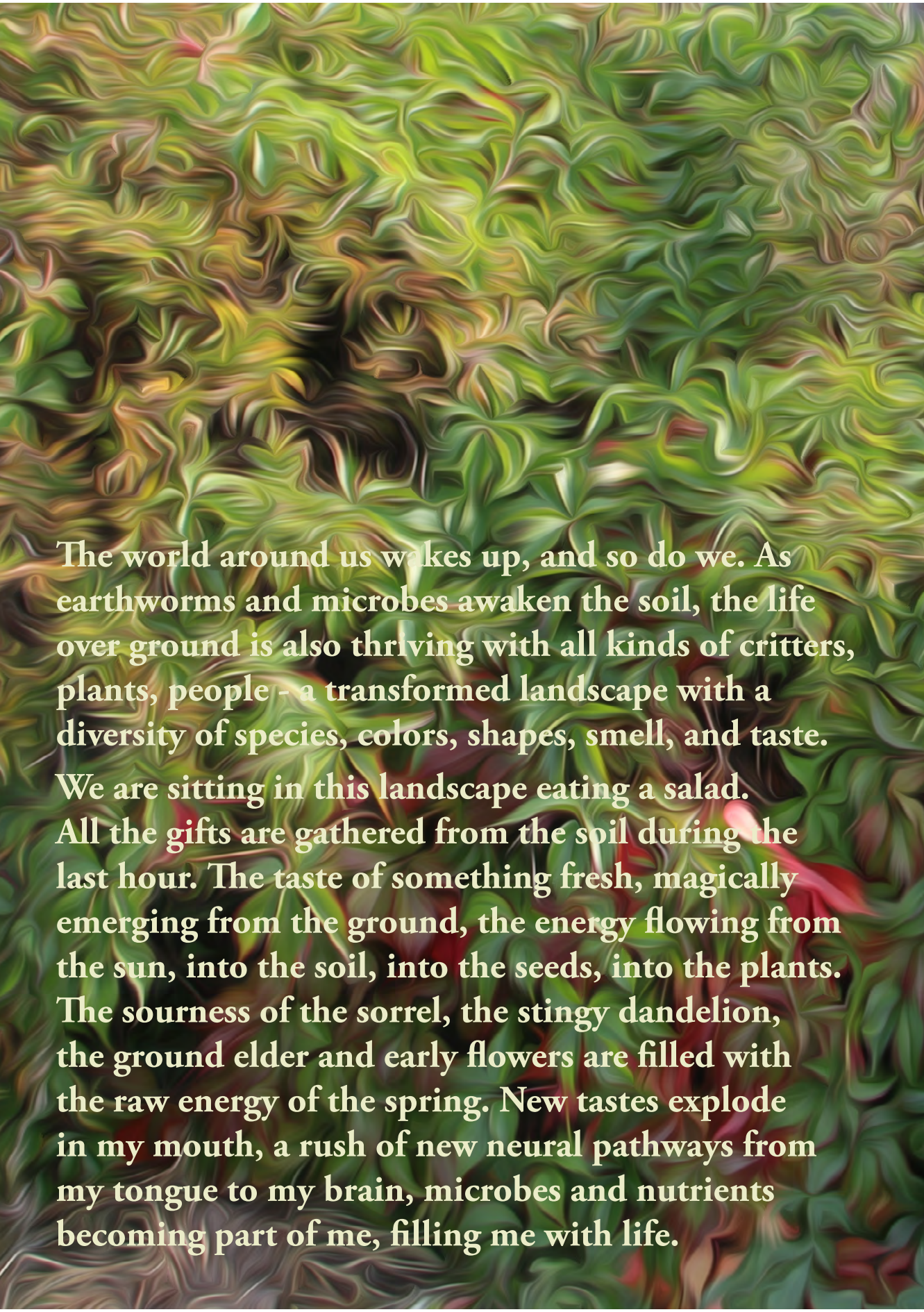
Aesthetic Experiences





Through a long winter the seeds have waited and waited and waited and now, when the ground is warm enough, the days are long enough, and the sun is shining - life explodes. A patchwork of intense green, seed leaves forcing their way past the plants from last year still decomposing.

In the spring the power of the ground becomes evident. It is impossible not to be moved by its force, the enormous amounts of energy flowing, the first plants stretching towards the sun and the warmth and the sky, transforming beams of sun into life.



The world around us wakes up, and so do we. As earthworms and microbes awaken the soil, the life over ground is also thriving with all kinds of critters, plants, people - a transformed landscape with a diversity of species, colors, shapes, smell, and taste. We are sitting in this landscape eating a salad. All the gifts are gathered from the soil during the last hour. The taste of something fresh, magically emerging from the ground, the energy flowing from the sun, into the soil, into the seeds, into the plants. The sourness of the sorrel, the stingy dandelion, the ground elder and early flowers are filled with the raw energy of the spring. New tastes explode in my mouth, a rush of new neural pathways from my tongue to my brain, microbes and nutrients becoming part of me, filling me with life.

Gardening is an aesthetic activity. It touches us, as we taste a fresh, self-grown tomato or potato, when the damp heat of the compost hits us in the face on a cold November morning, when we gather around the table with our fellow gardeners for a feast over this year's yield, or the frustration of seeing the moths eating your cabbage one after one, and you have no idea what to do about it.

To be able to produce food in a garden it is crucial to take care of soil, of insects and plants. The direct relationship to the life in the garden offers *aesthetic experiences* that work on our senses. A seed must be sown, the plants must be watered, weeded, nurtured, and its fruits must be harvested, the food prepared or conserved, and seeds must be saved and stored before the cycle starts all over again. It is a repetitive work, which increases the frequency of the aesthetic experiences. Gardeners take on another role in the ecosystem, as we directly depend on our relations to the rest of the ecology in the garden. In contrast to the industrial farmer, whose primary relationship to the plants and the soil happens through handles and touchscreens in the air-conditioned coupe of the tractor, urban gardeners touch each seed we sow, feed the soil with our own compost, see the earthworms crawling when we harvest the potatoes in the fall and lay awake in the night worrying about snails eating our sugar snap peas in the summer. These experiences and knowledges situate gardeners to better understand and learn to relate to the ecologies we depend on.

There is a lot for us, alienated urban citizens, to learn in urban gardens. For me it's been humbling to understand how little I understand about the surroundings I am a part of. The complexity of the living ecology of soil, the force of a seed, how plants rely on each other, on good soil, on all kinds of care from its surroundings - and how I depend on these very basic mechanisms, this immense labor, just to be able to breathe. But maybe more important than the learning is the unlearning that may happen in the garden. The experience of failure, the feeling that we are not in control, that we are fragile and dependent, that we cannot know and master everything. The unlearning and unraveling, the piercing of small holes in the artificially constructed wall between nature and culture.



The smell of tomatoes, inside the greenhouse at Losæter

Capitalist subjectivity

According to Félix Guattari's ecosophy, the ecological crises (climate, extinction, pollution) are physical expressions of a social and mental crisis. The ecological crisis is not an isolated physical or technological issue. It is an interwoven complex in how we feel, act and think, in how we relate and cooperate with human and non-human nature, including our tools, technology and institutions. The health of the planet depends on the relations between the ecologies, and to be able to deal with this interrelated crisis of environment, society and subjectivity, the three perspectives need to be approached together.

The driving force behind this expanded ecological crisis is not humanity, but what Guattari coins Integrated World Capitalism. (*Guattari, 2000*) A global capitalism that stretches horizontally all over the planet, dig deep into the ground and fill the atmosphere with its debris. However, it also drills deep into our mind and change how we think, act and relate. It is *integrated*, shaping our subjectivities all the way into our unconsciousness. It restricts our thinking, our dreams and fantasies, it limits our lifestyles and choices, our opportunities and potentials, in "*an invisible penetration of [our] attitudes, sensibility and minds*". (*Pindar & Sutton, 2001*) It affects how we relate to other people and to the rest of nature, in how we think about the past and the future and how we live our lives. The capitalist system makes up the world around us, it affects what we surround ourselves with, how we spend our time, what we smell and taste and feel. These experiences have an impact on who we are as creatures as we struggle to adapt to our surroundings.

Capitalism's insatiable need for growth makes it expand further into our outer and inner landscapes, colonizing new corners and intensify its exhaustion of mental, social and physical fields. The inclusion of the social and mental ecologies is crucial here. The expansion of an ecocidal system like capitalism is not possible unless it is constantly reproduced by the social and the mental ecologies. One example is what happens when a pop songs pops into our heads from a commercial and starts spinning around, as a refrain, with "*autonomous, affective qualities, but, instead of inviting us into rich universes of personal reference, reactivated in the present for the future, they find themselves hijacked and affixed to automobile tires or boxes of breakfast cereal.*" (*Genosko, 2009, p. 109,*) As the jingle spins around in our heads, our subjectivity is reoriented towards "*diversions of consumption (...) thus restricting the potential for enhancing and enriching itself through the exploration of its own universes of value*". (*Genosko, 2009, p. 109*) A commercial is an obvious example of how capitalism plays on our inner strings, urging us to buy something that promises to make our lives better, make us happier, fulfill us.

*“The object of desire becomes an illusory mirror of the desirer’s
own manipulated intentions”*

*- David Graeber, Toward an anthropological theory of value:
The false coin of our own dreams, 2001*



Capitalism is integrated, built into our surroundings,
Solsletta row housing

Our everyday lives are full of experiences that reproduce and strengthen capitalist subjectivities. Capitalism is integrated in everyone and everything around us, in the material and immaterial infrastructures that make up our life. The boost from the commercials is a way of speeding up and reinforcing the production of capitalist subjectivity, making sure that our desires don't turn to other, more productive or subversive directions. Even if vectors of our subjectivities should manage to escape the capitalist prison, they are easily recovered, recuperated and turned towards capitalist means. The pathogenic models are reproduced over and over in a way that «*stifle all freedom of expression and innovation*». (Guattari, 2000, p. 49)

Our thinking and culture is entrenched in a capitalist logic that is hard to escape from. This makes the transition to non-capitalist alternatives challenging. However, the capitalist subjectivity constantly needs to be reproduced, and this provides an opportunity. Even though it is convenient to think that it's easier to imagine an end of the world than an end to capitalism, this is nothing more than a self-fulfilling prophecy. The material and immaterial production could be done differently - and if the transformation happens across all three ecologies (mental, social, physical) it creates a stronger bulwark against the forces of capitalism that will always struggle to break down and strangle all alternatives or co-opt them for its own sake.



One of the many new developments on agricultural land,
Miljøbyen, Strinda

Gardens and the production of subjectivity

“Rather than remaining subject, in perpetuity, to the seductive efficiency of economic competition, we must reappropriate universes of value, so that processes of singularization can rediscover their consistency. We need new social and aesthetic practices, new practices of the self in relation to the other, to the foreign, the strange – a whole programme that seems far removed from current concerns. And yet, ultimately, we will only escape from the major crises of our era through the articulation of: a nascent subjectivity; a constantly mutating socius; and an environment in the process of being reinvented.” (Guattari, 2000, p. 68)

One of the most important contributions of Guattari’s ecosophy is the emphasis on the mental dimensions of ecology and how aesthetic experiences could affect and transform subjectivities into an expanded understanding of ecology, a planetary ecology, with implications for how we understand the present and envision the future. Aesthetic experiences have a potential to create and develop *«unprecedented formations of subjectivity that have never been seen and never felt»* and is therefore able to *«create new systems of valorisation, a new taste for life, a new gentleness between the sexes, generations, ethnic groups, races»* (Guattari, 1995, p. 91)

This shift in subjectivity happens through what Guattari calls singularizations. Singularizations are destabilizations of established habits of thought that unlock new potentials for personal transformation. A disruption of the normal order from which new things can start to grow. Singularizations are break-ups, new directions, new starts or new perspectives, developments across the mental, social and physical ecologies, which can release thoughts, values and attitudes and open up for new lifestyles. Guattari saw potentials for these kinds of singularizations everywhere. They could be triggered by events, situations in everyday life, by art with its aesthetic experiences.

This can happen in a myriad of ways. Brunner, Nigro and Raunig details how the Occupy Movement and the practices at Zuccotti Park were transversal acts, affecting all three ecologies simultaneously. The events were a *“reinvention of new ways of being with the world and new forms of sociability (...) able to reorient the objectives of production, the forms of organization, the ways of being together”*. (Brunner et al., 2013, p. 16) Similarly Elliott describes *“spontaneous acts of mini-transformation that expressed the desire of both the individual and the group as a way of providing a more authentic counter-argument to capitalist culture”* (Elliott, 2012, p. intro) and mentions creative reactions to events such as Michael Jacksons death, 9/11 and the political graffiti art of Banksy.



The aesthetic experiences of gardening might produce other subjectivities,
Losøter

These examples help us understand how the three ecologies are transformed and reworked and how happenings and events could be important vectors of singularization, with repercussions long after the actual event. However, urban gardens and other long-term projects such as community kitchens, repair cafes, and more radical and politically directed projects like the Zapatista struggle, La Via Campesina and Landless movement (MST) offer a more sustained approach, a slow building of alternatives that are also needed in order to reimagine and recreate the world. These practices (what Guattari calls eco-praxes) might also allow changes in subjectivity to find directions, ways to express themselves:

«Eco-praxes are on the watch for dissident vectors, ruptures and mutations of subjectification [singularization] in all walks of life and thus in all the ecologies and in any existential territory. But these have to be delicately turned toward productive and active ends and provided with scaffoldings and guy-ropes so they do not just twist in the wind.» (Genosko, 2009, p. 108)

If urban gardening is an activity that could transform subjectivities, if the aesthetic experiences in the garden have a potential to change the way we think and relate, if gardening offer experiences which breaks with the capitalist logic of things. If this is true, the practices of urban gardening could both trigger singularizations and be its modes of expression, the *«scaffoldings and guy ropes»* providing direction and meaning. A way for the changes in subjectivities to find proper practices to express themselves, entering a process of continuous re-singularization - a transformation across the three ecologies.

Urban gardening might be one of the practices that contain spores of what Guattari called an ethico-aesthetic paradigm, working transversally, across the three ecologies. It is not just a radical way to produce food, a production that differs from the industrial, extractivist modes of production, monocultures and plantation agriculture. It produces use value instead of exchange value and creates commons instead of private property. Along with the radical change in material production, an equally radical change in the immaterial production might follow - a production of a diversity of subjectivities, relations and cultures. One of the aims of Guattari's ecosophy is to reframe and recompose *«the goals of emancipatory struggles»* and make it an *«immediate major objective to target the modes of production of subjectivity, that is, knowledge, culture, sensibility and sociability»* (Guattari, 2000, p. 49) A garden is a place where this kind of subjectivity might be produced.

This provides not just a way to tackle the problems by its roots - it also works to create a more even, equal, just, diverse, playful, and fun world. This is one of the strengths of Guattari's ecosophy. It builds from our deep desires of connection, of relation, of security, thriving and longing for a good life - not just an urgency to solve problems for future generations. We need to face the pressing issues of today by building a world that we want to live in, *«a world in which many worlds fit»**. This is where Guattari's ecosophy provides a glimpse of hope. The singularizations, the runaway parts of our subjectivity find niches of creativity, of resistance, territories from which it can grow, take roots, and send out its spores and seeds through the air or build new rhizomatic networks underground, making the metaphoric soil of creative resistance more fertile.



Urban gardening might change both the material production of food and spaces and immaterial production, of subjectivities, relations and cultures.
Potato harvest at Havnehagen

Ethics

Urban gardening is a place-making technology. Gardeners become directly involved in the creation and recreation of a space. Parking lots, roof tops, lawns and parks are transformed to make local, sustainable, healthy food for urban citizens. This labor- and thought-intensive way of producing food demands care from the gardeners. To succeed it is important that the gardening practice becomes part of the everyday life. A garden is a space that creates and demands habits. These habits are not just important for succeeding in the garden and for gardens to function as social spaces, but can also contribute to develop new ethics, since «*affection and a sense of responsibility comes through changing our habits*» (Antonsen, 2017, p. 187) The practice of growing food establishes a «*pattern of conduct that are conducive to the formation of certain habits. These habits become natural to people who engage in them repeatedly and become the stuff of personal moral character.*» (Thompson, 2010, p. 39) One of my fellow gardeners in the garden in Ila describes the habit of gardening more like an addiction, «*it is the first thing I think about in the morning, I have to get straight to the garden, and when I don't have the time, like yesterday, it feels wrong.*». (Interview 3, 2019) Others check in on their plants before they go to work or make it part of the route of the evening walk. All these individual habits that the garden makes also allows for random meetings with other gardeners.

Places are manifestations of a culture, of a way of thinking and doing. The philosopher Trine Antonsen is concerned with how our environments and practices shape our moral development. She points out how our environments «*affect our relations with each other and with our communities*» (Antonsen, 2017, p. 43) and recalls the *Churchill Principle* reminding us that «*We shape our environment (...) and then it shapes us*». How we shape our world has «*both political and moral significance*». (Antonsen, 2017, p. 44)

The gardens are not the product, the physical expression of this transformation. The physical ecology of the garden is co-produced along with the changes in culture, the changes in social relations, the changes in the way we think - in a simultaneous transformation of all three ecologies. The aesthetic experiences of gardening could lead to a transformation of our ethics, where a wider range of temporalities and species are taken into consideration. It might expand «*one's world so as to take responsibility for matters that were once conveniently outside one's purview*». (Genosko, 2009, pp. 113-114) This points towards an ethics more in touch with Gregory Bateson's evolutionary insight that the unit of survival is not the organism, but the organism *and* its environment. (Bateson, 1972, p. 483)

The experience of gardening has a potential to grow cultures that take care, that take responsibility, not only for their own survival, but for the ecologies, the webs of life we all depend on. Cultures that desire to rely less on the exploitation of others elsewhere. Cultures that learn how to take care of their own food security, even if just to a small extent. Cultures built upon co-operation rather than competition. Cultures that know how to share a space, to share food, experiences, knowledge and ideas.



Potatoes taste different if they go straight from the field to the barbeque

Use of nature

The ecological crisis is the result of a failure to establish a good relationship with nature, or maybe more correct, this relationship is kept unhealthy because the continuation and expansion of the capitalist societal system depends on it. Antonsen argues that in order to develop a more appropriate relationship to the rest of nature we need to acknowledge our dependence on it. (*Antonsen, 2017*) This points to an important part of the mental ecology of the ecological crisis.

In her Ph.D. thesis Antonsen discusses the deep ecology of philosophers like Arne Næss and Arne Johan Vetlesen, which argue that we can develop our relationship with nature by being in nature. Vetlesen argues that to make a difference in the world, *«the social as well as the natural one, a shift must be made from theorizing nature to experiencing nature»*. (*Vetlesen, 2015, p. 2*) Our contact and relation to nature is often disturbed by modern technology, both through alienation and abstraction, but also because our highly advanced technological systems have made it possible to impact nature to such a degree that we meet ourselves in the door when we experience it.

Antonsen argues that it might not be through experiences like mountain climbing, bird watching or foraging that we understand our dependence on nature most explicitly. It is rather through our use of nature that we learn more directly about our dependency and role in nature. Cultivated places, gardening and farming can teach us something about this relationship, and how we might learn to cooperate better with the rest of nature. *«Since we cannot stop using nature – we are after all dependent on it – we must instead seek to experience nature in the places we use it.»* (*Antonsen, 2017, p. 18*)

The active component is crucial. A hike through the woods can give strong aesthetic experiences, but most of the time we are spectators, observers of an ecology that we might think we are apart from. Agrarian practices, like urban gardening, depends on active, conscious interaction with the web of life. It doesn't happen by itself. We need to plant the seeds, to water, to observe and care for the plants. We need to spend time with the soil and the plants and slowly we understand their "world" better. This pedagogical experience, learning from the garden, does something to us. It can teach us a kind of sensitivity towards other species that are different from us, a kind of *«capacity for empathy»* (*Beer, 2000, p. 254*) that is important to develop a better relation to the rest of nature. More specifically, engaging in agrarian practices might change our attitude towards nature from a hubristic attitude, a sense of mastery and control towards an attitude of accepting our dependence. (*Antonsen, 2017, p. 12*) Importantly this shift is not just important for our survival, it is also crucial for a good life, according to Antonsen.

This feeling of dependence on the rest of nature is especially felt in a practice like urban gardening, because it concerns the growing of food, which is of *«ultimate concern»* for our lives. Our dependence on food, and therefore the entire ecology that provides us with food, is a *«limiting aspect of human life.»* (*Antonsen, 2017, p. 13*) We cannot live without food, and urban gardening is a pedagogical practice when it comes to recognizing and learning where our dependencies and limits come from. We learn how our survival ultimately depends on good soil, a stable climate and plants, but also human knowledge, care and labor.



Places are manifestations of a culture
First gardening day of the spring

In a farm or a garden our dependence upon nature is revealed in direct ways. The agricultural philosopher Paul B. Thompson argues that the activity of farming «both releases and replenishes the provisions for humans' sustenance. Farming is the activity that locates the human species most surely in the planetary ecosystem of the earth. It is on farming that we depend for food, and in farming that what we take from the earth is returned to it.» (Thompson, 1995) Farming, in a labor-, thought- and care-intensive way makes clear how much we rely upon the health of the ecosystems around us, it shows how fragile we are and breaks with hubristic attitudes of controlling the nature around us. This is in stark contrast to the filled aisles in the supermarkets - a system that makes it easy to ignore our dependence on nature.

Urban gardening as a focal practice

Urban gardening is one way of «escaping the supermarket logic» (Antonsen, 2017, p. 191) an opportunity to participate in agrarian practices for urban citizens. Antonsen argue that agrarian practices, like urban gardening are focal practices and therefore a practice we should make room for in our lives. Not, just because it's good for the environment, for the neighborhood or the city, but because it's good for us, for our wellbeing and quality of life. *Focal practice* is a term developed by Albert Borgmann, distinguishing technology as either devices or focal things.

«Devices which make things easier, faster, more efficient tend to also make these things less physically demanding or involving. They can also be socially isolating, or perhaps it is better to say that they generate a substantively diminished social experience.» (Sacacas, 2020)

A focal thing is something radically different than a device. A focal thing demands something from us, it has a *commanding presence*. A radio and a musical instrument both play music, but only one of these technologies demand something from us. While the radio turns us into passive listeners, consuming music, the violin or piano turns us into producers, creative beings, maybe even artists. The instrument is a focal thing that engage us and draws us into its world - a «web of practices and relations» (Sacacas, 2020) - a world where we learn to listen in new ways, to experience the world differently, and to express ourselves and develop skills and mastery.

«[T]he ideal device renders us altogether passive while the ideal focal thing renders us wholly engaged to the point of making us inattentive to the wider world around us while we are thus engaged.» (Sacacas, 2020)

Antonsen's exploration of agrarian practices as focal is important, because she details how urban gardening is both a solution to one of the underlying problems of the ecological crisis (our separation from nature) and because the practice «can orient our life and make it meaningful» (Antonsen, 2017, p. 41). Dealing with the roots of the problem and simultaneously building a better world. If a practice is going to contribute to our moral development and our relation to nature, it needs to happen regularly and be connected to our basic needs. (Antonsen, 2017, p. 189) Albert Borgmann describes a practice as different from an event or occasional activity «without a practice an engaging action or event can momentarily light up our life, but it cannot order and orient it focally». (Borgmann, 1984, p. 207) Some practices are more capable of changing our lives in multiple areas than others, and these are what Borgmann refer to as focal practices.

«You can make a pesto, which makes a story, which turns into something else»

- Gardener, Losæter, Interview 2, 2021



It is through our use of nature that we might best learn to care
Taking care of the compost at Losæter

A focal practice «*directs our attention at something fundamental about being human*». (Antonsen, 2017, p. 68) By engaging ourselves in focal practices we are better suited to understand and care for these crucial things. In urban gardens seeds, soil, plants, compost, food, become things of our concern. By growing our own food, we become involved in the ecology of the garden, and this makes us more likely to care for and protect this ecology.

One gardener explains in an interview how his gardening experience started with putting a clove of Chinese garlic in a jar with «*old soil*» and explains how the consciousness around food grew out of that experience, and how it inspired him to make «*micro circuits*» (minikretslop) around him. (Interview 5, 2021b) Focal practices might make us care for and protect these things of ultimate concern also outside of the garden, because we understand their significance for our survival and for a good life. As one of my fellow gardeners put it: «*when you become engaged in gardening it is like a snowball that starts to roll*» (Interview 6, 2020) and explains how this is also strengthened by the social ecology of the garden, by the other people that you meet that care about the same things. As gardeners we become more interested in food, we might demand other qualities, other varieties, more taste, fresher and more ethical food, we might buy directly from farmers we get to know, we might explore practices like dumpster diving or engage in community kitchens, or learn how to forage, prepare and conserve wild foods. We might begin to reflect upon how the food in the supermarket is produced, how the avocados can be ripe all year round, or how the other things we depend upon are produced and end up here. Or we might react to negative developments around us with protest or work to create alternatives. It might turn food from being a history we struggle to forget, to being a story we are eager to tell. This is important since the reproduction of capitalism hinges on an ignorance of these things of ultimate concern.



Gardening is a focal practice - it draws us into its world and creates habits.

Sensibility

To succeed as a gardener a direct cooperation with the rest of the web of life is necessary. This demands a sharpening of our senses, as Borgmann explains:

«Physical engagement is not simply physical contact but the experience of the world through the manifold sensibility of the body. That sensibility is sharpened and strengthened in skill (...) Skill, in turn, is bound up with social engagement.» (Borgmann, 1987 (1984), p. 42)

This knowledge, of plants and soil and the ecology of the garden grows as we use time and get more experience and becomes intimately tied to our senses. We learn how to smell and feel if a compost is doing well, the difference between healthy soils and depleted ones, to see if the plants are thriving, to taste the difference between the carrots we grow ourselves and the ones we buy in the supermarket. We hear the insects that whizz around the garden, and learn to know their function in the ecosystem, and as we learn to recognize different plants, the weeds suddenly turn into herbs and new tastes. To be part of the ecology in the garden also might open up a sensibility towards other temporalities, other ways of looking at the past and other ways of looking at the future. Urban gardeners become food producers, but also inevitably part of the ecosystems that we need to be conscious of and relate to. This knowledge is experiential, it is best learnt by doing, by repetition, by being part of this web of life and by forging new relations between the ecologies in the garden.



A garden is a place where we stage our relationship with plants
-Natasha Myers

Plant blindness

For the purpose of training our sensibility the small scale that we usually find in the urban gardens is a feature, not a flaw. This scale allows for a lot of time spent on few square meters of soil, which opens up for more contact with and care for each plant. Each plant is followed through the whole process from seed to fruit to seed. This might be a step towards curing our *plant blindness*. (Wandersee & Schussler, 1999) This term describes how we become blind to the overwhelming diversity around us. The green environment, the plants and trees that keeps us alive are reduced to background. We can't seem to see trees for just forest. The term describes the phenomena that humans are more attentive to animals than plants. It is hard for us to see the importance of plants, the crucial work they do for the biosphere and for humans.

Wandersee and Schussler argue that this is partly because our brain can't seem to distinguish the plants from each other, they are too alike to us. This is because we are using what Kahneman (Kahneman, 2011) calls *System 1 thinking*, the mechanisms in our brain that makes decisions fast - and by using this system we just see plants as "something green" and don't recognize the different species or the diversity of life. The plants are not as easy to get acquainted to as the human made environment, humans, and animals. The practices of gardening can be an entrance into using *System 2* more - the slower, conscious thinking that might make it easier for us to see the world around us in a new way. One of my fellow gardeners express how gardening has changed her like this:

"I think differently, I think about the "becoming" of the plants. I can imagine how they grow and evolve and will look like (...) It has also created a consciousness around plants and growing and I have a feeling that my relationship to other plants has also changed by having my own food plants. I am much more interested in other plants in nature now, eager to find out what is edible and what kind of vitamins and minerals they contain and stuff like that" (Interview 3, 2019)

«It is good for our mental health. To know where in your local environment you can find stuff. It is in our gatherer-head, to wander out and taste food and harvest, it is a kind of freedom and it does something to you.»

Gardener, on knowing what grows in the city (Interview 1, 2021)

In indigenous cultures, as Robin Wall Kimmerer explains, the plants are relatives, whereas in western cultures we often don't know the names of these relatives, we hardly even see them. Kimmerer describes this feeling of blindness as *“scary and disorienting - like being lost in a foreign city where you can't read the street signs”*. (Kimmerer, 2013, pp. 254-255) This *“state of isolation and disconnection”* is referred to as a kind of species loneliness *“a deep unnamed sadness stemming from estrangement from the rest of Creation, from the loss of relationship. As our human dominance of the world has grown, we have become more isolated, more lonely when we can no longer call out to our neighbors.”* (Kimmerer, 2013, pp. 254-255)

Natasha Myers proposes that a garden is a place where people stage their relationship with plants. But importantly it is not just the plants that are *«cultivated»* - it goes both ways, *«the plants also remake the people who tend, harvest and enjoy them”*. (Myers, 2019, p. 126) Myers focuses on the people-plant relationship, but a gardener's success depends on a myriad of relationships. The social ecology in the gardens expands beyond the relations between humans. Gardens are co-produced through new relations to soil, plants, insects, microbes and animals, the more-than-human life that humans depend on. Urban gardens invite their gardeners to rework these relationships, involves us into other forms of conviviality and more conscious ways of being together with the more-than-humans that we share the earth with. Gardens are spaces that produces experiences of sociability, of interconnectedness, dependency, embeddedness - aesthetic experiences with the force to affect us deeply.



Plant blindness, plants are seen as green, background, scenery
Urban gardens might open up to see the diversity, to get to know the plants and cure the blindness.
Losæter

The garden sculpture

Guattari was especially hopeful for the field of art (in the widest possible definition) to counter the homogenizing forces of capitalism. He believed that in art there could be found zones of resistance to the «*flattening of capitalist subjectivity*» (Zahm, 2011, p. 41) For Guattari art has a potential to produce aesthetic experiences, and these experiences might as well come out of everyday acts by everyday people. Art could open up new «*existential vistas*» - it could touch our feelings, and for Guattari - to feel is to rebel. (Elliott, 2012, p. 73) Aesthetic experiences touch upon our feelings and engage us in more creative ways of responding to the ecological crisis. I suggest that urban gardening is one such art, able to produce aesthetic experiences that can reach us deeply and thereby work to change our subjectivities.

«Only through art, Guattari asserted, could we even hope to face the challenges that would be thrown at us in the twenty-first century. Only the affective power of the aesthetic experience could offer us a way out of the overt scientism that has both caused and prolonged the social and environmental damage of the past 100 years. Contrary to public opinion, Guattari believed in the power of art to reach us deeply. For him it could jolt us out of our acquiescence, it could open up new existential vistas, offering a line of flight from the humdrum of the everyday.» (Elliott, 2012, p. 126)

Gardening is an aesthetic activity - it works on our feelings. It is impossible to ignore the power of the soil waking up in the spring, or the force immanent in a seed, or the beauty of a single plant evolving in collaboration with soil, sun, rain, air, microbes, insects and earthworms and humans from a seed to a flower that creates hundreds of new seeds that are spread all over. The smell of herbs and flowers, the taste of the first sugar snap peas or the sensation of starting to recognize plants and know how they function in the ecosystems or in the body. Gardening is a way to get close to these life-creative processes.

Urban gardens are sculptures, built by the trucks that delivered the soil, shaped and reshaped by human and non-human gardeners, the seeds that have been cultivated for thousands of years, sculpted by the microbes and earthworms in the soil, brought to life by the food waste from the human gardeners, by the plants that have grown, thrived, blossomed, fed the soil, spread their seeds and decayed, becoming part of the humus - the creative foundation of the sculpture. What is the cooperation of all the human and more-than-human forces in the garden if not an immensely complex, ongoing and expanding relational, performative, socially engaged, functional artwork?



The focal practice of urban gardening threaten to make us into artists

The sculpture is formed by all the people that care about it. The people that got the idea, that did the initial work, all the people that have been here and continue to come every week to work, to harvest, to sow, to compost, to make dinner, to meet and eat together. Piece by piece the sculpture evolves, as the gardeners come up with new ideas, initiatives, new propositions and practices. Urban gardeners are artists, creative beings that create and are recreated by the sculpture. The sculpture has become part of them, part of their identity. Just like the food they have grown and eaten has become part of their bodies, the practices have become part of their brains, their ways of thinking and knowing. Their practices are creative expressions. It matters how they do the weeding, what they plant and when, it matters what plants grow together, how the bushes are cut and trees are pruned, which colors, smells and tastes they pick for the lunch salad, how they turn the compost and nourish the soil and how they think about all these practices. All the creative decisions by humans and more-than-humans have an impact on the garden sculpture.

The sculpture is alive. This is different from a sculpture carved out from stone or casted bronze in a mold. It consists of a myriad of creative forces. The plants make creative decisions on how to grow, the soil reacts to the impulses from the compost, some plants thrive under a blackcurrant bush, while others wither in the shade. The sculpture is made by the interactions between the plants, the planted bushes and the planned beds, the wild bushes and young trees, the fumes and constant roar of the highway, the seeds carried by the wind and the birds visiting to have a snack at the sunflowers on a late autumn afternoon. The sculpture stretches out and attracts other species, providing habitats for birds, niches for insects and refugia for humans to experiment with new ways of co-producing space.

The more time we use to work on the sculpture, the more the sculpture works back on us. It lives inside of us, creating new neural pathways as we learn new tastes, acquire new skills, experience more. The sculpture expands into the inner life of its gardeners, makes its way onto our dinner tables, floats into conversations, forms new habits and ways of looking at the world. The minds of the people that care for the sculpture are constantly remade, the experiences of making the sculpture change how we think and what we do and how we do it. It changes our daily routines, what we talk about and why. It affects the taste of the food we eat, how we look at our surroundings, if we recognize wild plants on a walk through the city, weeds suddenly turning into salads and pestos or beautiful habitats for pollinating insects. It cures our plant blindness and change the way we think about soil. It changes our ways of knowing, being and relating. We become walking parts of the sculpture, stretching the sculpture further out into the world.

*«Who will complain if I plant a walnut tree somewhere?
The crow also does it. I plant trees here and there, and
then we will see what happens.»*

*Gardener, Losater on his effort to stretch the garden out.
(Interview 1, 2021)*



The sculpture impacts how we see our neighborhoods and environments. Spaces in the city are no longer static or given, but potentials. Parking lots are lost opportunities, possibilities for other ways of making space. How we see space is intimately connected with our experiences and skills, how we imagine cooperating with a space and make it into a place or start working on a new sculpture. It also changes how we look at agency. Is it just me, independent human that controls life on this planet, or is my existence tightly interwoven with the soil, plants, water, sun, other people and critters?

The shaping of the sculpture starts to play different refrains in our heads, self-reinforcing feedback loops that pops into our mind as we pass a lawn, an empty space, a tree or a supermarket. Unlike the jingle from the commercials encouraging us to consume more, it directs us towards other, more productive means of using our hands and brain, activities that enrich both ourselves and our environment. Through engaging with the sculpture, constantly adding to it, enhancing it, working on it, we are creating diversity instead of monocultures, a revolutionary counterforce to the reductionist, boring way of organizing nature under capitalism.

The sculpture affects not just how we see the past, as years and seasons become inscribed in the soil, in trees, bushes and plants growing in the garden. It also impacts how we envision the future. We have an impact in this place, in the world, and it can actually be good. We enjoy being parts of a functioning ecology, a healthy ecosystem. We can, together with other humans and more-than-humans turn a parking lot, a rubble of stones, a rooftop, a left-over space into a garden. With our bare hands and minds and together with other critters we can create diversity. We are able to repair and transform, both space and ourselves in a myriad of ways that were not available to us before. This feeling of power, of agency, is based in co-dependency. It is power to - not power over. It is impossible to make a thriving garden without a conscious cooperation with all the other humans and more-than-humans that contribute to the space. And not just that - the more-than-humans play a bigger role than us - we are merely gardeners - trying our best to care for this place, but the plants and the soil and the sun and the microbes and the earthworms and the birds and the insects are the ones doing the magical work - waking the garden up every spring with a generous invitation to interact, care and play.



As we work the sculpture, the sculpture works on us

The garden sculpture in the final exhibition

This text became part of an installation entitled *the garden sculpture* in the final exhibition. The text was exhibited on a tower of pallet frames that projected a video from the gardens of Losæter, Ilens Hage and Nyhavna. The video was a split screen showing the life in the garden on the left side and the life in the surroundings of the garden on the right. Two speakers played the soundscape of the gardens, bees intermingling with the distant roar of the highway, birds singing while trucks are unloading their goods in the port, and ants make their paths over the microphone while German camper van tourists are walking around the garden looking for ripe berries.

In the same room I printed 16 pictures from Havnehagen and 16 pictures from the garden in Ila. Through the pictures the visitors could follow the development of diversity from lawn and asphalt field into gardens. The aim was to show how gardeners can co-produce a diverse environment by co-operating with other humans, the soil, the seeds and plants and make a rich, productive landscape, a theme that will be further explored in the next chapter on heterogenesis.

The initial idea of the video was to show the contrast between the timescapes and scale of the garden and the surroundings. This idea came out of Ilens Hage, located on the top of a tunnel. Part of the experience of being in the garden is the constant noise of the cars passing beneath, emphasized by the neighboring motorcycle club, roaring engines on the way into the tunnel. Driving underneath the garden through the tunnel with a car takes 2 seconds at the speed limit of 60 km/h. Thinking about the time of the plant and the soil, the temporalities that are made in the garden, these completely different timescapes are running just a few meters beneath our feet. In the cultural landscape of the tunnel there are few details, few things to engage with, the infrastructure has only one function, to bring cars from this side to the other, disturbing the residential neighborhood on top as little as possible. This is a stark contrast to the diversity of life above, all the microbes and insects and people and plants, with uncountable uses and tasks in the local ecosystem.

One...two... seconds is all it takes to pass the tunnel, and this revealed to me something about the time and scale of the place. It emphasized how much can be done in a small scale, on this small plot of 500 m², and it shows how humans can relate to time in different ways. These two seconds are experienced differently by the people above the tunnel and the people in the tunnel. Not a groundbreaking revelation, for sure, but this was the idea that I wanted to explore in the video. I started at Losæter, in late June 2022, and filmed the life in the garden, how the bees feast in the herbs, a gardener building a bean sculpture, weeding, watering, birds snacking on earthworms in the rich soil. Later, I filmed the cars passing on one of the main highways beneath the garden, a similar situation to the garden in Ila. These are two different ways of making environment as humans.



In the final exhibition, garden sculpture text and movie
Photo: Harald Wanvik

Equipped with a camera the garden changed. I have joined the working days on Losæter on several occasions, I have turned the compost and weeded and harvested and also contributed to the garden with a compost installation, but I have not followed the garden regularly. However, with two days to spend and a camera in hand, I started to explore the garden in another way than I did before. The first thing I noticed was how I was dragged to the details, I wanted to zoom in on the bees and the flowers and the birds and the earthworms and critters in the compost. I walked around and sat down and focused and as I was looking through the lens of the camera, it was also easier to get into all the different processes that were happening around me. I could basically sit down anywhere and zoom in and find something interesting. And if it wasn't interesting at first sight, I just had to wait. Suddenly a bird came by for a snack, the wind made the Svedjerug wave in the wind, or one of the gardeners entered the frame and started to interact with the landscape. It was quite exciting to explore the garden with this new gaze, and on both days of filming I kept going until all three batteries were empty.

Looking at the footage afterwards it also became clear that filming was not my profession. Most of the clips were thrown straight into the trashbin. Out of focus, trembling, strange compositions. Still, I managed to get enough decent shots for the 15-20 minutes film that I was imagining.

Coming home to Trondheim I was eager to film throughout the summer and I expected to spend a lot of time in the gardens in Ila and Nyhavna, doing garden work and filming the life in the gardens. July came and so did the worst summer I can remember. 10,8 degrees and constant rain are not perfect conditions for filming or working in the garden, and at the same time, everything in the gardens was growing really slow, so the images I was hoping for, moving images of a burgeoning, thriving garden (which anyways is at its most beautiful in august) had to wait. In the end, all the clips were filmed in three-four days, and in small, rare pockets of sun as close to the exhibition opening as I dared to wait.

From the experience in Oslo, I thought that close-ups worked better than distant images, but still I was afraid to film only 'flowers and birds'. I thought it was important to highlight that this was a garden, a space managed by human gardeners, and to show some of the work that goes into the production of the space. How the compost had to be turned and how it was used to cover the potatoes as well as feeding the soil. How a gardener needs to know the difference between the buckwheat and the 'weeds' we don't want, and the essential work of giving the plants something to climb, if we want the cucumbers and sugar snap peas to thrive.



From the final exhibition
Photo: Harald Wanvik

I also found myself exploring more aspects of the surroundings. The idea was to focus on the cars passing beneath the garden, but I quickly became bored of these shots in the editing process and started to film more of the surrounding landscape. For example, the silos which store the grain from all the grain fields surrounding the city before it's mixed with soy to become animal fodder, the difference in the scale and approach of these two kinds of agriculture, the one that feeds us and the one we do for fun. I was dragged towards the plants that found their ways in unlikely places, the pioneering fireweed making its own soil in the wet spots along a concrete wall, providing a lively habitat for wild bees and the convivial community based around motorcycles.

First, I was interested in the contrasts, but gradually I became more interested in the potentials. How birds seemed to thrive eating the grain that was spilled on the asphalt or found some interesting plants along fringes of the RV parking. As I was filming, I was speculating in how this place might be transformed, as I saw the tourists with their suitcases of shit, the coffee roastery and the brewery with all the materials that could be composted. How soil could be built square meter by square meter, by re-directing the flows in the city, how the asphalt could be ripped up, and replaced, one parking lot at a time, until this had become a lively, productive park situated in the middle of the new development area of Nyhavna.

After finishing the movie, as I was mounting the exhibition I was wondering if these ideas behind the film was only clear to me, or if the people visiting would also understand what I was trying to communicate. The video was playing in a room with pictures from the garden in Ila and Nyhavna, showing how we had worked with the place, turning asphalt and lawn into productive gardens. I felt that I needed some text to accompany the pictures. It was challenging, at this point, too exhausted after a long process to write something new, and I started skimming through the thesis. The text about the garden sculpture seemed to sum up the project quite well, bringing in many of the themes, and also had an artistic quality in itself. I decided to include the text, made some edits, changed the phrasing to a more readable, poetic format, translated it to Norwegian and printed it. It was first when I hung the posters and the title that I realized that this room, with the pictures of the gardens, the library, the video and the texts explaining the project, was going to be titled *The Garden Sculpture*.



Stills from the video.

The roots of the sculpture

The Garden Sculpture, as an idea, was introduced to me through spending time in and being part of the Losæter project in Oslo in 2020-2022, after moving the exhibition project *Communities of Compost* here. The garden was started as an art project by Amy Franseschini and Futurefarmers in 2011. They set out to create a new public space in this part of Oslo and initiated the artwork Losæter in Bjørvika. The goal was to turn this area into an urban farm and all the inhabitants in Oslo were invited to participate. The area reached the headlines when 3790 people applied for one hundred small parcels of soil in the center of Oslo. This was a sign that something was happening in the urban gardening movement in Norway.

In an interview (*Interview 2, 2021*) with one of the carers, janitors and artists of the place the idea of the garden as a sculpture was introduced and discussed. According to the interviewee good art has the potential to move you emotionally. Experiencing the garden through the year, with all its aesthetic experiences, the complexity beneath and above the ground has some qualities which many art projects lack. The garden is a functional sculpture, where arts and crafts are merged and where the use is combined with lots of creativity and loaded with meaning. In this sculpture all the gardeners are artists, and the work that is done is not just you and the seed, but a much larger project, that in its own way criticize culture and make new future visions of what a space can be and do. The garden sculpture text is a further exploration of this inspiring concept.

However, this is not a new idea. Urban gardening as an art practice has a tradition going (at least) back to the 70's where gardening was mixed with art and activism in the emerging environmental awareness.



SF Victory Gardens 2007+, Futurefarmers
Photo: Futurefarmers

One key person and project in this movement is Adam Purple, with his 'earthwork' The Garden of Eden. From 1975-1980 he converted a rubble of bricks and garbage into a circular community garden, using "*hand made top soil made from horse manure from Central Park*" (Wang & Brost, 2011). The garden expanded like rings in the water, metaphorically knocking down the surrounding buildings as it expanded - until it was destroyed to make a residential development, becoming the first of many community gardens to give way for such a development (Librizzi, 2015, p. 88) under Guiliani's administration of New York. (Schmelzkopf, 2002, pp. 328-330).

In the same environment, seventies New York with derelict buildings and fenced off lots, another pioneer, Liz Christy, started the Green Guerrillas movement. This group formed around military language of seed bombs and seed grenades, tossed into fenced-off vacant plots to sprout a "*grassroots revolution*" (von Hassel, 2002) – a movement which has also inspired the guerrilla gardeners of today. (Reynolds, 2014)

Christy and Purple are pioneers of the community gardening movement as we know it today, who with their counter-cultural, environmental and community based approach tries to do something about the hopelessness by turning their immediate surroundings into an ideal, into a world that they would want to live in, a world they would like to seed and spread. The understanding of community gardens, guerrilla gardening and gardening as activism departs from these influential projects in the 70's.

Urban gardening, however, is an idea and a practice with much longer roots, going back through dealing with crisis and national food security through Victory Gardens in the second world war and War Gardens in the first world war, through the more rural Diggers appropriation of land to grow their own food and all the way back to the first cities where the separation between the countryside and the land that supported it was blurred, where food grew in and around the city and where categories like urban, rural, consumer and producer made much less sense. Urban gardening as a practice is at least as old as the concept of urban.

Amy Franceschini talks in an interview about how she was inspired by this history of urban gardening. The project Victory Gardens (2007) revives the story of the 20 million gardens that were planted across the USA from 1941 to 1943, an effort that was able to produce 41% of the food. (Lawson, 2005) These staggering numbers gave Franceschini "*fuel to imagine a new program with a focus on contemporary food issues*", an effort to simultaneously criticize and make alternatives to the destructive food system. (Franceschini, 2008) This massive transformation as a decentralized response to a crisis is indeed hopeful, and the Victory Gardens project aimed to create a similar spread and growth of gardening inside of the city. According to von Hassel community gardens have acted as a "*canary indicating economic and political fluctuations*" (von Hassel, 2002, p. 36) and the Victory Garden project is one example of one of the many community and urban gardening projects that have emerged in recent years as a response to a revived focus on the ecological crisis and a flawed and fragile food system.



Adam Purple in the Garden of Eden,
Photo: Tony Yarus

Another pioneering New York based art project on urban gardening is Agnes Denes *Wheatfield – A Confrontation* from 1982. On the landfill created by the construction of the Twin Towers, Denes cleared the land from trash and brought in two hundred truckloads of soil. With this soil Denes revived the plot, and together with volunteers she planted a two-acre wheatfield by hand, turning wasteland into wheatfield. The field was maintained and tended for four months before thousand pounds of grain was harvested, highlighting the productivity of the land on which we depend. Some of this yield traveled the world in an exhibition called *The International Art Show for the End of World Hunger* and the grain seeds were spread to different parts of the world. With this work Denes wanted to confront the “*mismanagement, waste, world hunger and ecological concerns*”. (Denes, 1982) This confrontation is striking in the documentation of the project, contrasting the ripe grain with New York’s financial district in the background, confronting the urban with the rural, ecological concerns with economic forces, property values against food security. The installation’s force comes from this juxtaposition. Grain fields and skyscrapers are not usually seen together. Yet, what keeps the financial district going is the wheatfield, not the other way around.

The interest in growing food as a political, ecological and transformative force in urban areas was revived in the 2000s, in light of the ecological crisis. One important reference for me in this regard is the works by the studio for self-managed architecture (atelier d’architecture autogérée), founded by the architects Constantin Petcou and Doina Petrescu. Their works is an exploration of how spaces like urban gardens can invite urban inhabitants to participate in the production of space. The name of the group resembles the concept autogestion, brought forward by thinkers like Henri Lefebvre and Cornelius Castoriadis. The concept of self-management was historically used for the process of workers in a factory who takes control of the means of production and start to manage the running of the factory themselves, in “*a radical attack on the capitalist social relations*” where the capitalist class controls the means of production. (Purcell, 2014, p. 147) Lefebvre extends this concept to envision a society where self-management happens in all areas of life, a kind of awakening and empowerment where people realize that they are capable of managing and taking control of their own conditions of existence. As this empowerment spreads, the managing institutions, like the state and corporations, make less and less sense and start to wither away. (Lefebvre, 2009, p. 147) The process of realizing that people are able to self-manage is key for claiming the right to the city. According to Lefebvre “*any revolutionary project*” must make “*the reappropriation of space into a non-negotiable part of its agenda*”(Lefebvre, 1991 (1974), pp. 166-167) A revolutionary transformation of society will not happen at the level of the state, it rests upon “*a collective ownership and management of space founded on the permanent participation of the ‘interested parties’ with their multiple varied and even contradictory interests*” (Lefebvre, 1991 (1974), p. 422) (via (Purcell, 2014))



Wheatfield - A Confrontation, Agnes Denes
Photo: John McGrall, Agnes Denes

Atelier d'architecture autogérée explores this kind of self-management through facilitating participative projects that transform urban space. Through initiatives such as ECObox, Le 56 /Eco-interstice and R-urban a radical, ecological and democratic management of space is explored and developed. Through their projects they show how the transformation of space, done collectively and democratically, often centered around the production of food, is one way of changing the society from the ground up.

By writing about and reflecting upon these experiments aaa contributes to the discourse and brings the revolutionary terms down to earth in an approach where *“an exploratory practice and a theoretical analysis (...) constantly inform each other”* (Petcou & Petrescu, 2012, p. 65) In their blending of the role as political ecological academics-architects-activists-gardeners they provide an example of how this kind of participatory projects can function as research, and lead the way forward towards a role for architecture where the focus moves away from *“forms, programmes and buildings”* and more towards *“design processes and cycles”*, (Petcou & Petrescu, 2012, p. 65) highlighting how social and political processes could transform the already existing spaces in the city, and by doing this also transforming the culture that produces these spaces. Aaa aims to transform society through micro-social and micro-political changes that happens in all three ecologies, an *“accumulation of numerous small changes”* that could progressively evolve into *“economic, cultural and ecological initiatives that will gradually replace the current productive and reproductive relations”* (Petcou & Petrescu, 2012, p. 69) It is a political project that attacks the capitalist system, and aims to do so by multiple micropolitical experiments, challenging and replacing the current structures by making them superfluous.

These are only some projects and references in a rich and growing history of how urban gardening is used as a tool for radical change, a discourse I hope to be able to add to by doing this project.

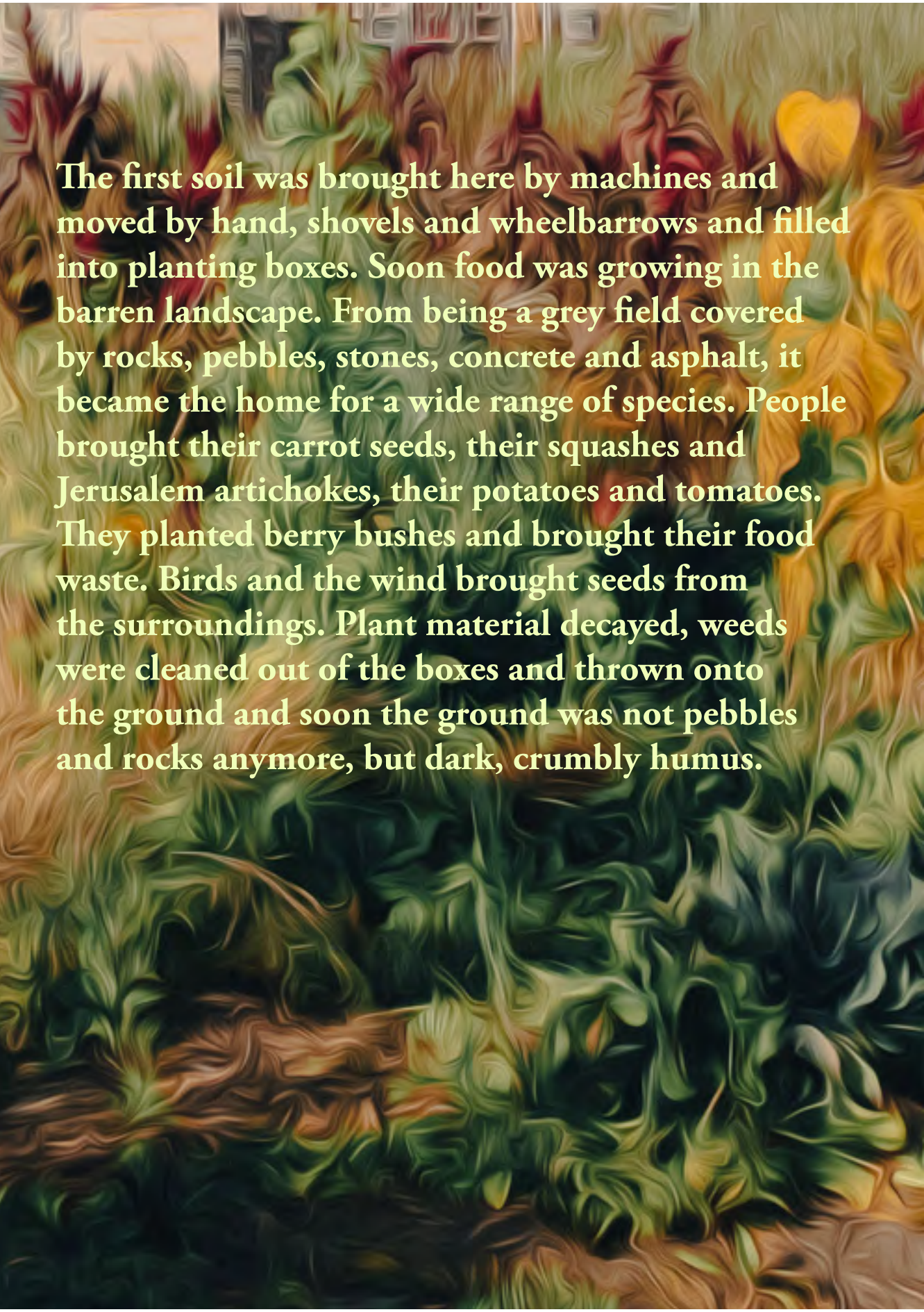


R-urban project, aaa
Photo: aaa

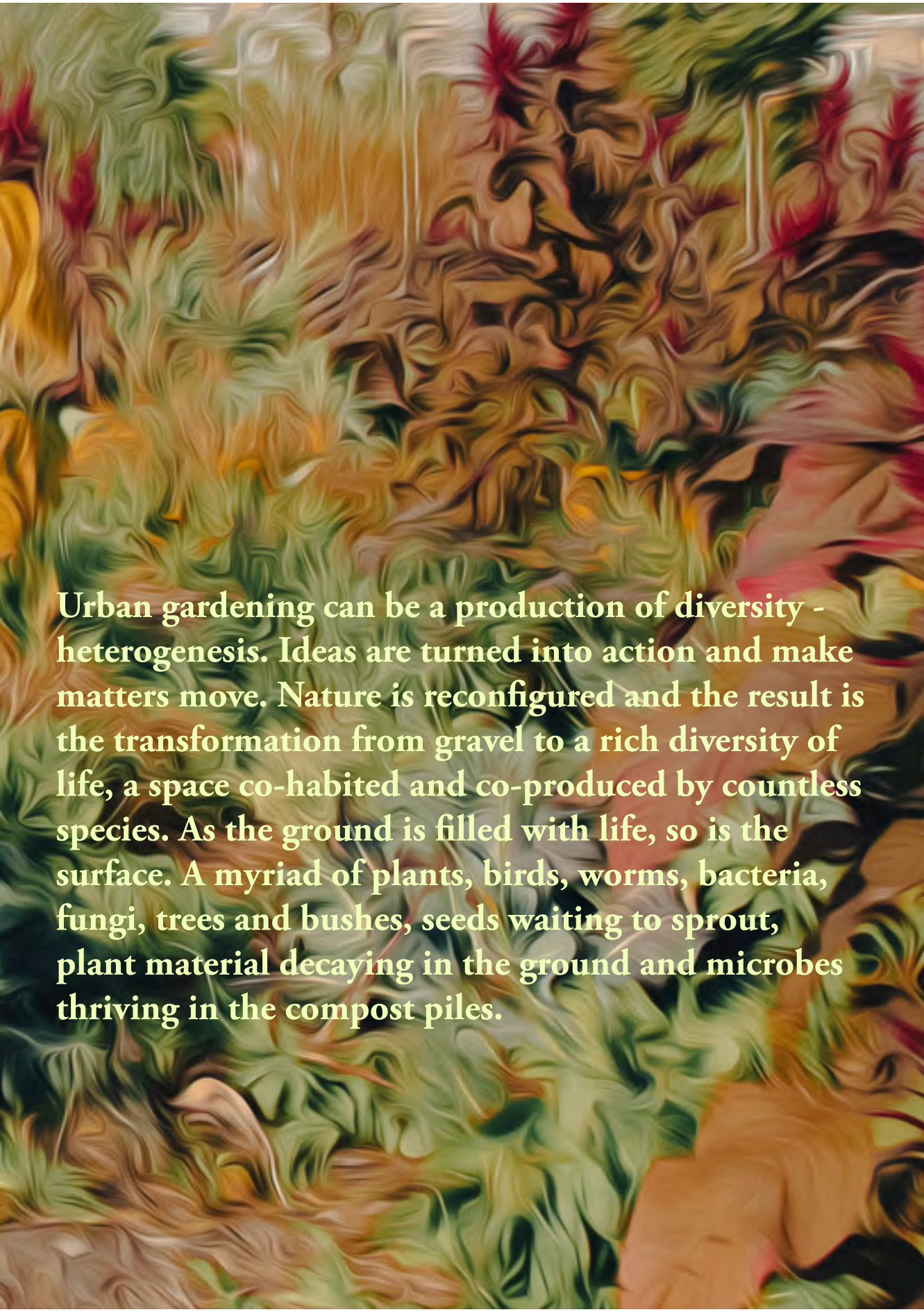


From rocks to garden





The first soil was brought here by machines and moved by hand, shovels and wheelbarrows and filled into planting boxes. Soon food was growing in the barren landscape. From being a grey field covered by rocks, pebbles, stones, concrete and asphalt, it became the home for a wide range of species. People brought their carrot seeds, their squashes and Jerusalem artichokes, their potatoes and tomatoes. They planted berry bushes and brought their food waste. Birds and the wind brought seeds from the surroundings. Plant material decayed, weeds were cleaned out of the boxes and thrown onto the ground and soon the ground was not pebbles and rocks anymore, but dark, crumbly humus.



Urban gardening can be a production of diversity - heterogenesis. Ideas are turned into action and make matters move. Nature is reconfigured and the result is the transformation from gravel to a rich diversity of life, a space co-habited and co-produced by countless species. As the ground is filled with life, so is the surface. A myriad of plants, birds, worms, bacteria, fungi, trees and bushes, seeds waiting to sprout, plant material decaying in the ground and microbes thriving in the compost piles.

The production of sameness

One of my initial ideas for the project at Nyhavna was to find and transport peri-urban soil into the city. I started biking around the outskirts of the city, using construction cranes as lighthouses leading me towards land being «developed». Sadly, there is no lack of such projects surrounding Trondheim. By moving some of this soil into the city I wanted to highlight the madness of building down fertile peri-urban land, and at the same time show how productive just one square meter of this soil could be, and thereby contributing, in my way to the discussion around the future of peri-urban land.

On one of these trips in the outskirts I park my bike and walk into a field being developed. I lay down on the ground. The hard remains of straw from last year pierce my neck, back and thighs. Soon the straws cooperate with my body, and I find a comfortable position. The ground is warmer than I thought it would be on this cold spring day. Last harvest was the last harvest on this field. Grain will never grow here again. I hear big machines working on the ground, digging their way through the topsoil and the grey layer of clay deeper down. A large hole has replaced the grain field which is being reshaped into an underground parking garage.

Capitalism organizes nature by making it work harder. (*Moore, 2015*) One of the organizing principles is a reduction of diversity, a making of monocultures. In this case the agricultural land is turned into a peri-urban enclave of high-density generic housing. The loss of diversity becomes clear when the history of the place is considered. The living soil is the result of millions of years of geological and biological coincidences, the hard work of glaciers, sun, microbes', plants and animals. Nature's striving towards diversity, *succession*, made a forest out of the old sea bottom rising after the last ice age, and made these into areas where people could thrive. At one point the forest was cut down and burnt and people settled down. It is not coincidental that the most fertile land in Norway is located around the big cities.

Industrial agriculture continued to drain the diversity out of the soil, and now it seems like the soil is not worth enough as a growth medium for plants. It needs to be further intensified, in capitalism's own absurd form of succession. One might argue that the construction of a city also makes a kind of diversity, but in this case the buildings erected facilitates for a very narrow range of lifestyles and groups of people.

The reduction of diversity becomes even clearer when the external consequences are considered. The spaces that are occupied to replace the local production of grain, the forests that are cleared and turned into plantations, the space needed for making glass and concrete and plastic, and all the human and more-than-human labor exploited in the process. Space after space the world is monocultured. This is just one out of millions of projects that keeps the growth economy running, while at the same time ruining the planet. These developments are movements towards less diversity, which also means a reduction of possibilities in the future.

“Today, to develop is to transform land that was shared by many forms of life into land that is used by only one form of life. The process of turning land shared by many species into land dominated solely by ours, exclusively for the enhancement of ours, is progress.”

- Samuel Miller McDonald, Breaking Development, Current Affairs, 2020



The last harvest at Strinda

The overall result of this is maybe most clearly reflected in the reports of the IPBES detailing how biodiversity is lost on earth:

“The health of the ecosystems on which we and other species depend is deteriorating more rapidly than ever. We are eroding the very foundations of economies, livelihoods, food security, health and quality of life worldwide” (IPBES, 2019)

Capitalism sacrifices diversity, variation and flexibility for scale, simplification, concentration and standardization. A forest is clear cut, a swamp is drained to become monocultural agriculture and agricultural soil is developed into another shopping mall. The insatiable thirst for economic growth organizes nature, it shapes the environment and our spaces in a certain kind of way - by reducing the amount of diversity in the system as it expands. Monoculture has a diversity of expressions. It is monoculture when large parts of the city are owned by one person or one company, when Starbucks replace the local cafe, when all the waterfronts of European cities look the same, or when an area is developed from a variety of uses, for a variety of species into an area used for the narrow interests of accumulation. Monoculture is especially visible in agriculture. Capitalist agriculture has excelled at forcing nature into monocultures. Large fields of grain, huge concentration of power in agribusinesses, rainforests turned into plantations, a monopolization of the supermarket logic that outcompete other distribution and valuation systems.



Strinda hageby (Garden City) being constructed

There are striking parallels between the loss of biological diversity and loss of cultural diversity: as rainforests are burned down and cleared it is not just the physical ecology of the forest that burns - the cosmologies, practices and worldviews, the ways of knowing, relating and thinking of the indigenous people living there also goes up in the smoke. Capitaliogenic hostile weather melts the ice under their feet, dries up their soils, drowns their islands or floods their fields. Capitalism's continuous struggle to make nature work harder drives indigenous people and peasants out of their habitats like red-listed species - grinding and flattening the cultural and biological diversity on the planet.

The loss of diversity is also a loss of «*semiotic freedom*» (Hylland Eriksen, 2021) - a reversal of millions of years of evolution. Hylland Eriksen draws from Jesper Hoffmeyer and the field of biosemiotics which focuses on the communication between species using signs. For every species and lifestyle that goes extinct - the conversation loses some of its richness. Through evolution there has been a tendency towards more complexity, more richness, more freedom, whereas today this richness is disappearing before our eyes, a psychological stress for those who care (solastalgia, climate anxiety), but also a loss of «*variation and flexibility*». (Hylland Eriksen, 2021) The plants that could give us crucial medicines disappear, and so does the epistemologies, practices and knowledges that could point to other ways of living together on the planet.

Every day we get lonelier, both because of the loss of richness around us, a physical consequence of capitalism, but also because our capacities to relate to the human and more-than-human life are threatened by extinction. The inner simplification makes it easy to ignore the catastrophes happening around us - to react with a shrug as the world is burning.

«The use of industrial tools stamps in an identical way the landscape of cities each having its own history and culture. Highways, hospital wards, classrooms, office buildings, apartments, and stores look everywhere the same. Identical tools also promote the development of the same character types.»

Ivan Illich, Tools for Conviviality, 1973



Strinda hageby

Guattari calls the production of sameness *homogenesis*. Capitalism depends upon a «*transcendent, universalizing and reductionist homogenization.*» (Guattari, 2000, pp. footnote 49, p90) and this reduction of diversity is not just physical, it is also a monoculture in how we think, act and feel. As we adapt to the capitalist system we are cultivated into limited ways of thinking, relating and being with each other, offering only a narrow scope of growths and possibilities. This is a homogenization of both the ecological landscapes we depend on for our survival and our inner landscapes - our capacities to think and feel differently. It is not just the environment that is threatened, it is also «*human modes of life, both individual and collective*» (Guattari, 2005, p. 27) Rainforests, human subjectivity and culture are organized through a capitalist paradigm that flattens and exploits our physical world, our society and our inner mental life, creating a monoculture in social relations, in ways of thinking, being and living on the planet. The capitalist value system is characterized by «*a general equivalence, which flattens out all other forms of value, alienating them in its hegemony*» (Guattari, 2000, p. 65) The depleted soils of the industrial agriculture finds an equivalence in the mental and social soils in the capitalist society. We seem to be trapped in the same linear thoughts about the future, namely, to project the present situation indefinitely, there is no alternative, our utopian consciousness is drained – replaced by a narrow scope of growths and possibilities.

It is obvious that the capitalist way of organizing nature is not working out very well for the planet. We need *degrowth ways of organizing nature* and I argue that some of the spores of such organizing principles might be developed in urban gardens. One of these principles is what Guattari calls *heterogenesis* - the production of diversity.



Capitalism is a way of organizing nature, reducing diversity as the system expands,
New development on agricultural land, Solsletta



Solsletta row houses






Losæter 2012
Photo: Trygve Indrelid, Aftenposten



Losæter 2021





«I promise you, in this garden there are more than 300 varieties, weeds, grasses. On this small piece of land there is an extreme wealth of things that you can eat and taste. Through all seasons. Thats quite interesting, you can come here and taste and experience and test, and that's what fun, it's not like a lawn that's dead during the winter. You see the ruccula coming over there - do you see it - the yellow flower over there - have you tasted it before? Just taste it, it can be a part of your research. Taste the ruccula flower!»

-Gardener, Loseter (Interview 1, 2021)



Heterogenesis - the production of diversity

We remake our environment and ourselves all the time. When humans interact in nature through the industrial food system it is often by transforming rich, diverse ecosystems into something simpler, turning diversity into monoculture. It happens to a greater degree as the production intensifies. Factory farm chicken, CAFOs, salmon farming and industrial vegetable production guzzles energy, demands minerals, causes pollution, exhausts ecosystems and expands the industrial way of production into new areas.

Guattari develops the term heterogenesis - a production of diversity as a way of resisting the capitalist homogenization of the inner and outer world. A wide range of alternatives needs to be developed to be able to respond to the ecological crisis, a polyphony of people, practices and propositions emerging out of a myriad of diverse spaces. Since capitalism depends on homogenization to grow, the production of diversity becomes an insurrectionary counterforce.

There is a plethora of ideas on how to organize places, communities, societies or a planet without growth. The degrowth movement have contributed to lifting these alternatives forward, richly documented in volumes like *Degrowth in Movement(s)* (Treu et al., 2020), *Pluriverse: A Post-development Dictionary* (Kothari et al., 2019) or *Food for Degrowth* (Nelson & Edwards, 2020) These are real examples of how there are living, viable alternatives to capitalism, and represents a diversity of approaches to counter the monoculture of growth.

Homogenization is one way of organizing nature that has to do with dominance, anthropocentrism, control and externalization. This is the way nature is usually organized under capitalism. Urban gardening is a set of practices happening inside of capitalist cities, making pockets of radically different ways of organizing nature. Urban gardening is a way of co-producing spaces that are different from many other urban spaces, and other ways of organizing nature than in the industrial way of feeding ourselves. When I replace some of these calories with calories grown myself in the garden, I drain some energy out of this system, but it is more transformative than that. What urban gardeners do is not just weakening the force of destruction and expansion of supermarkets, monocultures and plantations. It is also the production of alternatives. As we plant our seeds, as we let plants grow, as we build soil, compost, care for and cooperate with the ecology of the garden, we invite diversity to happen. This becomes especially visible in urban gardens, since it often involves transforming monofunctional spaces like parking lots and lawns into more complex ecosystems.



Garden people

Urban gardens are often highly diverse production systems, where many plants are grown together by many different people. This diversity is a striking contrast to the endless monocultures of industrial food production. The process of growing a diversity of plants and building diversity in the soil is crucial to become a successful gardener, it demands skills, experience and conscious choices. Other kinds of relations with the soil, with the plants, with all the other beings that we co-produce the space with needs to be established. The practice shows that it is possible to make other kinds of environments, that it is possible to produce diversity. Humans can, together with the place and its soil, plants, insects and other humans make a diverse and self-enriching nature - and this will affect us mentally, socially and physically.

In the political ecology classic, *Lawn People*, Paul Robbins documents how people are shaped by their lawns, and how the mental, social (political) and physical ecologies of the lawn demand practices like constant mowing, fertilizing and pesticing. The rhythms of the turf becomes the rhythms of neighborhoods. (*Robbins, 2012, p. 43*) The lawn produces its lawn people and dictates them to make and maintain a monoculture. In the same way it is possible to think that a garden makes its own people, but instead of making monocultures with lawn mowers and chemicals, the garden people make diversity with their practices. And, this difference is not only physical, as seen in the contrast between a lawn and a garden, it is also mental and social. It does something about the way we think and relate, and all these ecological changes might allow the garden culture to spread, just like the lawn culture spread rhizomatically in the western part of the world.



One of the lawns in my Neighborhood in Ila

A diversity above ground depends on a diversity of life below, and vice versa. Instead of feeding the soil artificial fertilizers, it is fed with compost, food waste, broken down plants, animal manure and urine from humans. Gardening practices requires and creates a new web of relations to the world around us. By relating to plants, to soil, to the ecology in the garden we are both changing ourselves and the spaces. Being in the urban garden is not about being in nature, it is about producing another kind of environment, a socio-natural environment that is more inclusive to other species - a production system without world-breaking consequences, an opportunity to make worlds that break with the capitalist production of monoculture.

The production of diversity in the urban gardens can be seen through the lenses of the three ecologies: physical (plants, soil, biological diversity) social (cultural diversity, ways of relating to humans and more-than-humans) and mental diversity (creativity, play, imagination) and these three perspectives are tightly woven together. This production of diversity, in the psychological, social and physical realm is needed to counter the notion that There Is No Alternative. Guattari's ecosophy posits that through heterogenesis, in ways of thinking, relating, dreaming and hoping, capitalist homogeneity is challenged. This means the ability to see the realities of capitalism, the tolls it has on people and surroundings, today and in the future. And not just the capacity to feel, to get angry and sad and furious and mad, but also the abilities to respond, to resist, to do something, to be able to react from our own situations. To identify which practices are spores of alternatives, practices of resistance - islands of rainforest in large monocultural fields.

These visions of the future doesn't offer «*One Weird Trick*» (sparrow, 2021) but present a variety of approaches, practices and possibilities. Urban gardening is by no means enough, but could be part of a diversity of approaches, what Guattari called a *molecular revolution* where millions of small movements, coming out of different places, people, and passions could change the world. Urban gardening is one of these revolutionary forces that are available to urban citizens. Urban gardens are opportunities for humans to be part of another way of making space, of making diversity; not just by providing habitats for a variety of species, but also by opening up for other ways of thinking, living together, relating, being and producing space. It changes both the material and immaterial production, and through practicing and developing alternatives the imaginaries of the future are expanded. I will now turn to some ways to maintain and develop diversity in urban gardens.



Gardening people making the lawn into a garden,
or garden making lawn people into garden people?

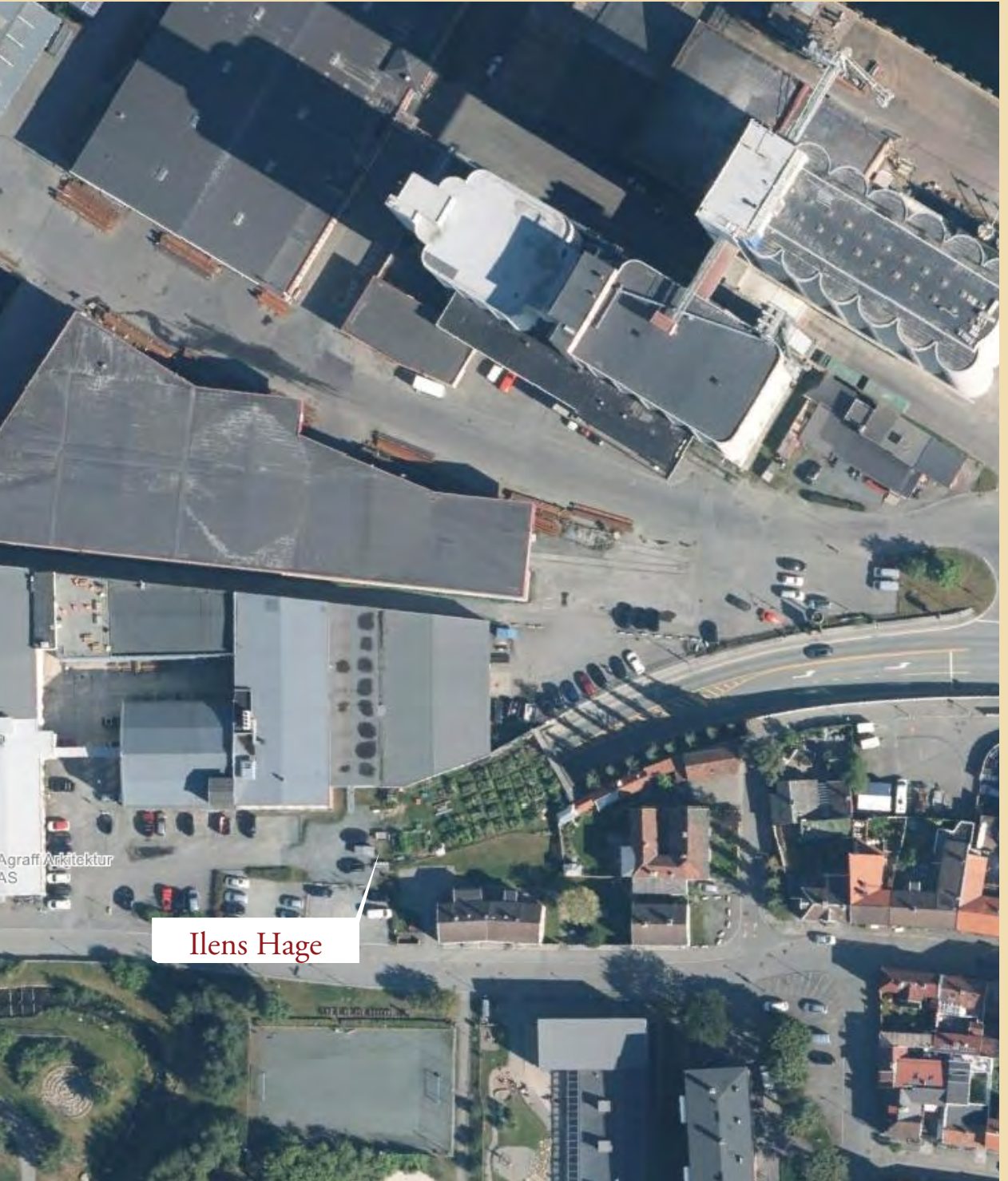
Heterogenesis in Ilens Hage

In the spring of 2018, I got into contact with Andrea Rakela who was organizing a street art festival in my neighborhood in Ila. Andrea had gotten the permission to paint a wall for the festival but were also considering making a garden out of the lawn. Together we went to look at the place. This is a lawn I pass every day on my way to the supermarket, yet I had never been there and barely seen it or seen anyone use the space. The lawn is centrally located in the neighborhood of Ila, has lots of sun during the day, and is also located on top of an entrance to a tunnel, making it unlikely that someone would get the permission to build anything here.

After getting necessary permissions and funding, we started spreading the word in the neighborhood. We hung a poster in apartment buildings, restaurants, bars and supermarkets and shared the news on the neighborhood Facebook pages. It was exciting to see the emails flowing in, and after only a couple of days we needed to expand from 20 to 33 parcels.







Ilens Hage

Agraffi Arkitektur
AS

An interesting aspect of this project is how many different people are drawn to the project. In the garden now we have 15 different nationalities, ranging from the next-door kindergarten to retirees, across many social boundaries. Since gardening is a very basic human activity, it is also able to attract a wide variety of people. Since gardening needs to be done regularly and since it often involves some common responsibilities or projects these people, who wouldn't necessarily meet elsewhere are brought together by the garden and its practices.

This point was also emphasized by the responses from the people interested. In the posters we asked the people interested to briefly state why they were interested, and it was quite interesting to see all the difference in the answers. Some wanted to join to "contribute to" or "develop" the neighborhood, for social reasons, to meet neighbors, to contribute to something positive together with others, or to get to know other people from the neighborhood. Others were motivated to "get closer to earth" "get their fingers dirty" "dig in the soil" "develop their green fingers" or missed weeding, which is "the most relaxing thing I know". Others were eager to learn how to grow some of their own food, to work with plants, some thought that their children might eat more vegetables if they grew it themselves, others wanted to extend their growing space from the balcony and wanted to grow "together with others", some were retired, had moved from a house with a large garden and missed the garden, others were interested in collective cooking. Some joined for economic reasons, others because the taste of self-grown is "infinitely better".

During one intense weekend the garden was established, the planting boxes from the steel company neighbor was filled and suddenly there was a new neighborhood garden in Ila. The first weekend of the of the project was really exciting, and one of the strongest experiences for me. So many different, people gathered in one place. So much activity, moving of soil, people joining just to help, people bringing their plants from home. To see the transformation of the space was moving, and maybe especially for me, since I was so involved in the preparations.

The project in Ila has been working quite well since the beginning, and I think one of the reasons is because it is located in an already established neighborhood. People can reach the garden in minutes, they might pass it on their way to school, work, kindergarten, supermarket. It is easy to stop by to water or harvest the salad or the squash or herbs on the way. This is also why it's very rare that I have been in the garden without meeting someone there.



composting garden waste



homemade compost



bokashi from the neighborhood



office coffee grounds



leaves from public parks



municipal garden waste



compost

New soil mix

After the visit to Vassfjellet, where the soil for the project in Havnehagen was made, I tried to work with them to develop a new product that might work better for gardeners. The «garden soil» we bought for the Havnehagen project didn't have enough organic material, too much sand, and not enough nutrients for garden plants. Unfortunately, to make a new product was too expensive so we had to make our own mix, consisting of one layer of garden soil, one layer of garden soil mixed with compost and composted manure and one layer of garden compost mixed with garden soil. It was exciting to see how this new mix would work out. This diagram also shows how the health of the soil depends on constantly creating new flows of organic matter, of feeding the soil with bokashi, with compost and how the garden creates these new urban metabolisms.



The new recipe





Unloading composted manure for the new mix



Soil ready to become garden
Composted garden waste to the left, garden soil to the right



One of the things that surprised me was how much we can do in a small scale.



In these 500 m² there is room for 33 individual plots.



We also have a common field (here with nine varieties of potatoes) and some common planters where we try to grow tomatoes.



The official opening day of the garden



Being in the garden in late summer is an example of how humans, soil, plants and insects can produce diversity together.



«When you walk around here, you see so much life. Mice, and earthworms and insects, and its really fun to see that when you create a diverse environment, life comes.»

- Interview gardener, Losater (Interview 1, 2021)





Gardening can also be a way of reducing diversity, for example when the beds are weeded and made ready for planting in the spring.

Plant diversity

The capitalist food system is based on mass production of a handful of varieties. 50 per cent of our calories comes from three species: rice, wheat and maize. Potatoes, barley, soy, sugar and palm oil stand for the next 25 per cent. (*Lakhani et al., 2022*) This is an enormous reduction in diversity from the 6000 species and the countless varieties humans are believed to have cultivated through history. (*Lakhani et al., 2022*) This is not just a problem in the supermarket, where we choose between a couple of apple varieties or a very limited selection of potatoes - putting all the eggs in a handful of baskets also makes the agriculture really fragile.

Diversity is especially important considering climate change. A wide range of alternatives makes natural systems (including human systems) better suited to deal with new conditions, such as droughts and floods, higher temperatures and more extreme weather. The capitalist agriculture has, during the last century directly and indirectly killed off a lot of the crucial biodiversity, not just by growing a small range of easily grown, industrially adapted, package and transport-friendly varieties, but also by expanding its monoculture into new areas, and by increasingly making this the only choice. When diversity disappears, a threat, like a warmer climate, will be much more dangerous than if we cultivated a wide range of varieties. However, variety is not necessarily the most profitable solution in the short term and the capitalist food system will therefore tend not to deal with threats by increasing diversity, but rather by striving to make the fragile monocultural system resilient. This strategy might work in the short term, but the consequences of failure will be much larger.

According to Michael Classens seed sovereignty is one of the characteristics of the nature of urban gardens. Seeds are under pressure from patents, making the «*growing of an heirloom seed in an urban garden*» (*Classens, 2015, p. 236*) into a revolutionary act. In contrast to the monocultural landscapes of the capitalist agriculture urban gardens are edible, diverse landscapes, filled with so many tastes, so many plants and berries and fruits and roots and shoots, things that have never been seen in a supermarket. As urban inhabitants our diets are often restricted to whatever the supermarket offers us, but in the urban garden the diet is shaped out of the local skills and climate, not what's most profitable. This doesn't just produce a diversity on our plates, it also takes some steam out of the system that constantly expands into new areas and make forests into soy plantations. The gardeners can (try to) grow what they want, and over time also develop skills that allow them to recognize wild plants in the garden, to know what is edible and not, how to recognize, pick, conserve and eat, a skill that opens up not just the diversity of the garden, but also the diversity that exist everywhere. We are what we eat, does that mean that by eating a variety of foods we also become more diverse as humans?



Growing 13 varieties of potatoes in Havnehagen

Svedjerug

One way of taking care of the genetic diversity of plants lays buried in the permafrost in Svalbard. The Global Seed Vault was built by the Norwegian state in 2008 and stores 1,1 million seeds and over 6000 varieties of different food plants are stored underground in three halls. The vault acts as a fail-safe for the regional, national and international seed banks and is the largest collection of seeds on earth - an important back up of global biodiversity.

One of the seeds that are stored in the vault is a grain called Svedjerug. I first learned about Svedjerug as I was moving the Communities of Compost project to the urban garden in Losæter, in the summer of 2021. In the shed where I kept my backpack, I found a small note on a piece of paper

«We don't need a museum for conserving varieties, what we want is to grow them»

The words come from Johan Swärd, a biodynamic farmer in a movie made by the artist group FutureFarmers. * Swärd tells the story of Svedjerug. This rye was seen as a weed but proved to be more productive and resistant than wheat in the Northern climate and around this plant the Svedje-Finn culture grew. The rye was brought to Norway by the Finnish immigrants, *Skogfinner* around 1640. As they were assimilated into the Norwegian culture, the Svedjeculture went extinct and the plants along with it, and Svedjerug was long believed to be lost. However, Per Martin Tvengsborg, a historian, biologist and ethnologist searched for the seeds and in the 1970s, under some boards in a drying house he found 9 seeds. These 9 seeds are the ancestors of all the Svedjerug that exists today. Swärd explains that *«From one seed, a hundred straw can grow, with a hundred seeds in one axe, which means that one seed can produce 10,000 new seeds»* (Futurefarmers, 2015)

The story is a reminder of how plants and people evolve together. Swärd argues that of course we can keep seeds locked in a seed vault, as this will protect the physical seeds. But what's missing about this approach is that the seeds grow in an environment, adapt to a situation and also grow the knowledge needed to use the seed. This is why we want the diversity of plants not just locked up in a vault for future crises but growing in local ecologies together with humans developing their knowledge.

FutureFarmers acknowledges this active approach of maintaining diversity and established a Svedjerug field in Losæter. The small field produces millions of seeds, and rye to bake bread. This starts its own loops of knowledge generation and spreading. How to care for the field, how to harvest, how to prepare the rye, how to bake bread from it, and how to preserve the best seeds. This demands more from the gardeners than growing the same kinds of potato every year, but this manual and intellectual work is also necessary to keep the mental, social and physical ecologies of Svedjerug alive. It is not just humans that modify and breed plants. It also goes the other way around as the growing of a certain crop also demand particular practices, knowledge and experience. Considering that the world now gets its calories mainly through three varieties, it becomes even more important to keep a diversity of knowledge growing, along with the plants.

«[We have] eaten ourselves into a tight genetic corner.»

*Our food system isn't ready for the climate crisis, The Guardian, 2022,
Lakhani, et.al.*



The Svedjerug field in Losæter,
The rye bread from the field is prepared in the artwork of an oven in the bakehouse, in the background.
The oven is made to be able to bake flatbread from different cultures of the world.
The design, concept and the history of the oven keeps the cultural diversity alive.

* [Svedjerug: A video Essay](#)

Kvann

After I involved myself into urban gardening, I learned about *Kvann - Norwegian Seed Savers*, an organization that care for the diversity of plant species. This made the spring much more interesting. I sent emails and gave people my address, and suddenly I started getting several strange envelopes each week, handwritten, wrapped in coffee filters, packed in all sorts of ways, appearing in my mailbox. It didn't resemble anything I had seen in the store. These were parts of the plants, the seeds had feathers and were still in their pods or suddenly a big envelope could contain a packet of roots in plastic bags or rhubarb crowns wrapped in moist paper. I could receive 20 different species of potatoes, or seven species of rhubarb. I didn't know that these existed and had no idea what Onkel Niels, Buddhisten fra Snåsa or Caucasian spinach were.

Kvann operates through use, through sharing and caring for a variety of species, growing in gardens and fields everywhere in Norway. Through the Kvann network the knowledge of how to take care of the plants are spread. It is a live, growing, de-centralized version of the seed vault in Svalbard. In this way, it is not only the seeds and the diversity that is maintained, but also the knowledge of how these rare species should be cared for, what climate they like and what kind of soils they thrive in. Kvann is one way of organizing the protection of diversity, a «*biological open source movement*» (Kloppenborg, 2010) a seed commons resisting the monopolization of genetic richness. As Kloppenburg argues, we need a creative resistance to «*corporate/neoliberal depredations (...) offensive, affirmative, positive, proactive undertakings designed to repossess and maintain (relatively) autonomous spaces*». (Kloppenborg, 2010, p. 385) Urban gardens can be part of building seed sovereignty, which is a crucial task for the larger food sovereignty movement. (Kloppenborg, 2010, p. 369)



Receiving seeds from the seed savers in the Kvann network

Væres Venner Fellesbage

Væres Venner is one of the suppliers of biodiversity and seed sovereignty in the Kvann network. Established on a peri-urban field outside Trondheim this garden is constantly expanding, both in size and biodiversity. To visit this garden with one of the key carers of the place, Stephen Barstow, opens a new world of plant diversity. What at first sight seems to be a bit messy and small comes to life as Stephen tells the stories of the plants, the name, the family, the history, and botany and how they ended up here. But as many others interested in permaculture, he also has a bigger perspective on what he is doing. He knows that this is not just gardening, it is changing a small part of the world and providing conditions for all kinds of life to thrive in the garden, both human and more-than-human. The gardeners register all the different species that visit or live in the garden, the production of diversity is documented as the garden evolves. Stephen talks about the importance of a cultural shift in how we think about food and food production, how we eat and grow, but also that this shift will not come easily. The best way to bring about such a shift is to experiment with alternatives, to show that other realities are possible. «*It doesn't help to write it down; it needs to be shown*». Together with the other gardeners he makes a physical statement that other ways of caring for these fields are possible.

Stephen seems to be at home in the garden. I ask him about the possibility to grow chestnuts in the region and I get a thorough answer and he shows and tells and suddenly we have moved on from the nut tree saplings and on to a black salsify, a root that is very tasty in woks, but can also be left in the ground and grow for at least 60 years, and provide delicious, sweet and crunchy leaves for salads in the spring. As I listen to Stephen, I am reminded that a garden like this is a perfect place to pass on knowledge, which is best learnt through tasting, feeling, smelling and taking part in the stories of a diversity of plants. But Stephen also passes his knowledge on widely. To the botanical museum at Ringve where he is a guest researcher and in books such as *Around the World in 80 plants* and on his blog *Edimentals*.

At the neighboring field a farmer in his tractor is spreading fertilizer. As we stand in the garden talking, we hear the rhythmic sound of the equipment in the background. I am fascinated by how the engagement with the land can be so different. In the garden humans introduce new thinking, new practices, new communities and plants and make an oasis of diversity, surrounded by monocultures and speculation by developers.

These contrasts in relations makes me think about what this place might become. The place opens up for long-term thinking, a potential few urban gardens have. This does something about the future visions. As trees are planted it becomes possible to imagine the field evolving into an agroforest producing loads of nutritious and diverse food, a garden with many layers, with perennials, annuals, fruit and nut trees growing in symbiosis. An eldorado for insects and animals - a refugia for biological, mental and social diversity, a place that secures the survival of species, of animals, of plants and humans, a space that passes on and develops worldviews and knowledges. Or it could become a generic housing area. It's all up to the future humans. Stephen talks about the picture hanging on the wall of the small shed that they are remaking right now, a vision of what the place might be, what it might become, something to strive for, a horizon to walk towards, something to keep in mind as I am covering the nut tree saplings to keep them from drying out, or for the two retirees repairing the tired shed.



Væres Venner Fellestage, heterogenesis among monocultural fields



Wonder what these trees will look in fifty years

RV vs Garden

It is one of those rare days in Trondheim when it's too warm. One of the days that we usually get three or four of every summer, but now it's been like this for two weeks in a row. In the news there are reports from concerned farmers begging for rain to come, filled with anxiety that their entire yield will dry out in the extreme heat. But these are only sidenotes, and most of the news I'm scrolling through depict people having fun, bathing, sunbathing, advice on how to avoid the masses of people on the beach, or how to stay hydrated. Even the occasional mentions of climate change as an actor in this special weather is illustrated with tan legs dipping in the ocean with the sun setting in the background. It is the warmest summer in my life so far, and the coldest for the rest of it. The sun is setting on the pedestrian path along the fjord as I am biking to the garden. It is packed with people and the red sky invites people to jump into the fjord. I will join them later, but first I need to look after the plants.

I have been here every other night in the last week. The garden is built on the top of asphalt, which makes it almost impossible to keep moist in times like these. I cannot keep up with the heat from the sun during the daytime, and the water evaporates as fast as I manage to water. Therefore, I wait until the sun sets, giving the plants the chance to drink during the night and be hydrated enough to survive another day. To water the entire garden takes about 45-60 minutes now, and often this is not enough. As I put my finger in the soil it is moist only for the top 2 centimeters, then it's completely dry and grey. But hopefully some of the plants will survive. The perennial plants with their deep roots seem to thrive, and the potatoes are doing ok, despite the heat. As I walk around the garden after watering, I can see swarms of insects hovering around each box. I sit down on the warm asphalt and lean against one of the planters to observe them for a minute. A diversity of insects, mosquitos, small flies, ladybugs and bees, and many other insects that I don't know yet are clearly interested in the plants or the soil or the moisture already evaporating. Either they are celebrating, or they got confused and annoyed by the watering, pouring down on them, ruining their afternoon.

As I sit and observe the plants and the insects, I can see the RV camp in the background. We use 500 m² and the RV camp and storage occupy the rest of the 15 000 m² plot. When we initiated this project, we asked for all of it. I look at the biologically dead area of camper vans and decide to go for a walk. It is almost full, probably hundred RVs parked on lines drawn on the asphalt. Not a single plant, not a single insect, just some seagulls working to mend the metabolic rift by snatching the left behind, burnt-out sausages from a cold grill. Apart from that, no more-than-human life. I walk back to the garden thinking that no matter what happens to the garden or to the plants we managed to create some diversity, some life in our small corner of the plot. As I gather my stuff and get on to my bike, I get a mental glimpse of how this place could look life if the garden was allowed spread out onto the entire field, if the asphalt was ripped up and the ground was allowed to breathe. If we filled this place with a thick layer of soil and let a central, wild, productive park like this transform the city and its people, cooling both minds, bodies and the planet.



There is a difference in the aesthetic experience of the RV park and the garden



Soil diversity

«The soil you depend on depends on those who depend on you»

Maria Puig de La Bellacasa, Matters of care, 2017, p199

The experience of the dead soil in the garden moved soil from being a matter, a growth medium for the plants - to what philosopher Maria Puig de la Bellacasa calls a *matter of care*. (*de La Bellacasa, 2017*) She develops Joan Tronto's definition of care as an *«activity that includes everything that we do to maintain, continue and repair “our world” so that we can live in it as well as possible. That world includes our bodies, our selves, and our environment, all of which we seek to interweave in a complex, life-sustaining web.»* (Tronto, 1993)

The dead soil expands my world to include soil life. It is one of several experiences in my research journey where it becomes clear that my well-being also depends on the well-being of the critters in the soil. These dependencies and the related way of caring makes the mental division between nature and culture meaningless. Realizing this is a first step away from practices of exploitation towards a care based on co-existence. The practice of gardening requires an intimate connection to the soil, it demands touching the soil with our hands. This contact changes the soil, but the soil can also affect us back. Caring for soil might reveal our dependencies and teach us better ways of relating to the land.

Urban gardening is an invitation to care — to relate to soil, to plants, to other humans and our physical surroundings. This way of caring is local and situated. I care about my local environment because this is what I know and where I can act as an entire, human being. Gardening is not a one-time happening — it becomes part of everyday life. Being present in the garden; planting, weeding, composting, watering and caring for the plants, soil and animals is necessary to succeed. This continual commitment to take care of another form of life also offers a chance of direct, intimate contact with the life-sustaining systems from which we are normally alienated. Through the practices of urban gardening, it is possible not only to *“maintain, continue and repair”* these systems, but also our way of thinking and the social relations with human and non-human life.



Soil being revived

Succession

Bare soil is a point zero in nature. Bare soil is found in a forest only if a tree has been uprooted, in the case of landslide or human interference. In these cases, «nature» will start working towards covering the ground. Soil striving towards diversity is called succession. Seeds will fall from trees, get carried with the wind and be brought by animals. The first plants to populate a bare soil are called pioneers. These plants produce thousands of seeds each, and quickly populate the ground with their friends and relatives. The first fruits of these plants, however, come underground, as they turn sunlight and CO₂ into simple sugars and start to build a community in the soil. (*Liu et al., 2020*) The plant roots attract microbes in the rhizosphere who start to live close to the roots and work in symbiosis with the plant. As the plants die off in the fall, the microbial communities in the soil and on the ground will feast off the dead plants and the root system.

One of the essential processes of making diversity in the soil is bioturbation. Bioturbation is the lifegiving process where the fauna in the soil cooperates to turn withered plants into soil life. A wheelbarrow of grass clippings becomes a feast for the fauna in the diverse soil, as it gets eaten, digested, burrowed and mixed into the soil. In dead soil, however, the grass rots and molds on the surface, but remain as static and dead as the soil, and doesn't become part of the soil ecology. These small, transformative acts that happen everywhere, all the time, are crucial for biodiversity and continuation of life on earth. The animals in the soil are always at work to reproduce and rebuild the world.

The soil cooperates with the sun, the air, the plants and the rest of the local ecology to build an environment for other, more advanced plants, which will eventually outcompete the pioneers. A diversity of plants will also generate diversity in the soil, (*Eisenbauer et al., 2017*) and vice versa. In a system early in the succession the soil will be dominated by bacteria, but as the system becomes more diverse, fungi will start to take more and more space and provide conditions for trees and several layers of plants, animals, trees and shrubs, a diverse ecosystem, both above ground and below the surface. If we leave the dead soil in the garden alone it will strive to become a forest.



Soil is health

The diversity in the soil is also important for our nutrition. The nutrients in our food needs to come from somewhere, and in an unhealthy soil ecology the nutrients from the soil minerals are not mined by the mycorrhizal fungi (Jongmans et al., 1997) (Averill et al., 2019) or taken up by the plant roots. David Thomas show that there has been a «considerable depletion of minerals and trace elements in foodstuffs during the period 1940-2002». (Thomas, 2007, p. 22) see also (Davis et al., 2004) Thomas links soil health to food quality (nutrition) and further on to physical and mental health, and argue that depleted soils gives less minerals and trace elements in the food which also gives higher risk of physical and mental illnesses. (Van de Weyer & Longfield, 2006) (Pennisi, 2020) Monoculture is driving us mad.

This highlights Wendell Berry's understanding of health as wholeness (Berry, 1995) or sir Albert Howard's insight that «the whole problem of health in soil, plant, animal and man [is] one great subject» (Howard, 1945 (2006)) or Gregory Bateson's perception of the natural world as part of our ecmental system. (Bateson, 1972). We cannot be healthy if the world around us is sick. In a healthy soil the plants form symbiotic relationships with the microbes, which appears to increase the transfer of nutrients to the plants, (Thomas, 2007, p. 32) which in turn provide us with more nutrients - good food gives good health. This means that malnutrition is a problem also for those who have enough to eat. According to the UN Standing Committee on Nutrition: «The overweight are just as malnourished as the starving» (Bertini, 2006) and healthy diets are out of reach for around 3 billion of the people on earth (FAO et al., 2021)

Our stomach is a home for a diversity of species, an ecosystem of mostly more-than-human. The fauna living inside our bodies is essential for our survival. Throughout evolution we have been living in close contact to soil, and soil has been an important part of this ecosystem. Today many urban citizens are alienated from soil. Our vegetables are cleansed off it and in our daily lives we have no need to touch it. Urban citizens have less diversity in their guts than people living in close contact with soil, (Mills et al., 2019) and a diverse gut microbiome is linked to good health. Like elsewhere in nature, diversity is essential. More diversity is good for the health of the system, one of the reasons why monocultivation of the world is such a bad idea.



A diverse flower salad, served at the weekly working day in Losæter

Human interaction with soil

It is the life in the soil that makes life above ground possible. Soil is one of the richest habitats in terrestrial ecosystems (Decaëns et al., 2006) and contains a «large proportion of Earth's biodiversity». (Wilkinson et al., 2009) Soils are characterized as the «poor man's tropical rainforest». (Usher, 1979) It is said that we know less about the world beneath the surface than the life in our galaxy. The biodiversity is immense and still only a proportion of the life has been described. (Giller, 1996, p. 136) A healthy soil community will be able to absorb carbon into the soil through photosynthesis, a depleted soil will emit CO₂ into the atmosphere, going from breathing in carbon to breathing out greenhouse gases, from sink to source. The health of the thin skin of soil is crucial for all life on earth.

The soil foodweb is a concept that explains the importance of diversity in the soil ecology, showing the linkages and dependencies between the critters in the soil. However, as Maria Puig de la Bellacasa asks, where are the humans in this equation? (de La Bellacasa, 2017, p. 193) The absence of humans in the soil foodweb is a sign of the human separation from nature. Soil is perceived as a closed system, without human interaction, and this model neither acknowledges our destructiveness or our capacity to care, repair, maintain or contribute. Including humans in the soil foodweb reveals our role in this ecosystem, and importantly, this role doesn't have to be destructive.

Today our impact on soil is enormous, as our agricultural practices expand and transform diverse areas into monocultures. Our activities also generally lead to reduced biodiversity in the soil communities. (Giller, 1996) One of the problems with industrial agriculture is that soil is perceived as a growth medium, and the management of this soil has been reduced to its physical and chemical aspects, neglecting the biotic dimension, the life in the soil. (Wilkinson et al., 2009, p. 269)

«Modern agricultural practices affect the biotic mediation of soil formation and nutrient cycling, which are replaced by artificial tillage and fertilisation that have varying but mostly negative long term effects. Upon agricultural conversion, species and soil functional diversity generally decrease and imbalance the ecosystem» (Wilkinson et al., 2009, p. 269)

Industrial growing methods exhaust the soil, and «many of the great gains in production made by the green revolution (...) cannot be maintained indefinitely» (Swift, 2001, p. xx) Soil fertility declines with «loss of organic matter, diminishment or disappearance of groups of the soil biota, and the accompanying decline in soil physical and chemical properties.» (Swift, 2001, p. xx) The regular tilling, heavy machinery packing the soil, monocultural production methods, and regular application of diversity-killing chemicals like herbicides, fungicides and pesticides exhausts the soil. (GSBI, 2020) The farmers in industrial agriculture are trapped in a social and economic system that requires them not to care for the long-term health of the soil. Industrial agriculture also depletes the amount of soil organic carbon (SOC) and nutrients (Franzluebbers, 2002). It is estimated that the cultivation of soil leads to a 60-75 % of loss of SOC. (Lal, 2004) When SOC disappears from the soil, it is the life in the soil that is depleted. If this life is considered and cared for, agricultural practices need to change.

«And especially now in the spring, in Losater, in the middle of the city, this soil is so alive! It has taken an immense amount of work to achieve just that.»

- Gardener Losater, Interview 2, 2021



All agriculture has an impact on soil health

Urban gardening is shown to be able to produce food without degrading soil. (Edmondson et al., 2014). The practices of urban gardening involve less packing and tilling, and the soil life is built as plants grow continuously. Urban gardeners build and maintain soil by applying urban organic matter (formerly known as waste). In this way, agroecological practices, like urban gardening can be ways of taking care of the diversity in soil and above ground, while growing food. The agroecological growing system become «capable of sponsoring their own soil fertility, crop protection and yield constancy» (Altieri & Rosset, 1996, p. 165)

Importantly, this is not something new. These growing methods have been known for a long time and have been practiced by indigenous cultures sustaining themselves without destroying their conditions of existence. Building soil (terra preta), plants growing together in symbiosis (three sisters), nitrogen fixation through growing pulses, agroforestry and minimal tilling of the soil are some examples. Studies show that some of the most biodiverse areas in the world are areas that are cared for by humans, (Schuster et al., 2019) and these are also the areas that most efficiently stores carbon. (World Resources Institute & Climate Focus, 2022) Of course, it is a stretch to compare the growing of food in urban gardens to the agricultural practices of indigenous communities with entirely different epistemologies, worldviews and lifestyles. Still, as Max Ajl points out, the Indigenous knowledge of caring for the land is not some «primordial and timeless capacity (...) to live in nature in peace and harmony. It is because Indigenous people are often engaged in primary production in the general sense. They have cosmologies based on a humane relationship to the land.» (Ajl, 2021)

In the urban garden caring for the soil means planting a diversity of plants, feeding the soil with organic matter, composting, mulching and leaving the soil as untouched as possible. In this way, gardening works with nature, instead of fighting it, following agroecological principles. This cooperation, care and understanding of diversity as a key to succeed is different from the productionist approach of industrial agriculture. Urban gardening is productive, it is about growing food, but as an urban gardener you might be more likely to understand that growing healthy food is a matter of cooperation between the microbes in the soil, the compost and mulch, the plants, the place and its humans. More likely to understand how «It takes a village to make healthy soil.» (Wallenstein, 2017) To produce diversity, to improve our relation to the more-than-human world around us and to produce food without destroying the world, is an immense challenge, but it is not impossible. On the contrary, it might be much more realistic than continuing as before.



Learning to cooperate with the soil, course with Ryan Wanamaker

Urban gardens as refugia

One of the biggest threats of our age is the destruction of shelters to reconstitute after major environmental strains and crises. Anna Tsing argues that there is a lack of such refugia, since there is nowhere to hide from the multiple planetary crises we find ourselves in. (Tsing, 2015) The environmental philosopher Kathleen Dean Moore describes how refugia are places of safety where life endures. She uses the example of the volcano eruption on the Mount Saint Helens, where the mountain was thought to become a dead zone for centuries, as all life was buried beneath the ashes. But today the landscape is thriving with flowers and moss and animal life. Even though the landscape looked dead, there was still some life hiding “*in the lee of rocks and trees. Here a bed of moss and deer fern under a rotting log. There, under a boulder a patch of pearly everlasting and the tunnel to a vole’s musty nest. Between stones in a buried stream, a slick of algae and clustered dragonfly larvae.*” (Moore, 2016, p. *An oath for the wild things*) From these refugia life emerged again, “*from a thousand, ten thousand, maybe countless small places*” life returned and got rebuilt from the ashes.

Urban gardens can be such refugia. “*small pockets of flourishing (...) overhanging rock ledges to protect life, so that the full measure of possibility can spread and reseed the world*” (Moore, 2016, p. *An oath for the wild things*) Urban gardens provide micro-refuges in the urban landscape, small niches for pollinators to find nectar and pollen, for birds to find seeds or habitats for insects, but importantly urban gardens could also be refugia for humans to experiment with new ways of co-producing environments, to learn basic survival skills, to build new social relations to humans and more-than-humans, places to build resistance and places to deal with the ecological crisis in a productive, positive and joyful way.

“Here is how life will start anew. Not from the edges over centuries of invasion; rather, from small pockets of good work, shaped by an understanding that all life is interdependent, and driven by the one gift humans have that belongs to no other: practical imagination—the ability to imagine that things can be different from what they are now.” (Moore, 2016, p. *An oath for the wild things*)

Dean Moore encourage us to “*create refugia of the imagination (...) places where ideas are sheltered and encouraged to grow.*» (Moore, 2016, p. *An oath for the wild things*) These are matters of the mental and social ecologies of urban gardening and concerns how this co-production of nature shapes the way we think. The production of diversity, heterogenesis, in urban gardens is a way of preserving, protecting and developing ways of thinking that are crucial for the ongoing survival on the planet. This involves practical skills, situated, partial knowledge of how a local ecology works, it involves worldviews and perspectives, ways of looking at and understanding the world around us - in ways that are usually not so available to us as urban consumers.

«The thought that soil is alive, that its a cycle, and that if the soil is better the vegetables also become better. It is really incredible actually, that you grow something, and then you eat something, and then you break it up in the compost and then it becomes soil again.»

Gardener Ilens Hage, Interview 4, 2021



Urban gardens offer micro-refugia for pollinating insects

One of the most important legacies of David Graeber's rich scholarship is the rejection of our society as the only historical and future possibility. To challenge the dominant capitalist paradigm, he identified two kinds of imagination. The first is what he called *interpretive labor*, a form of knowledge, especially within relations of domination, where those who dominate, in general, do not care much about how the people they dominate feel. (Graeber, 2015, p. 71) The capacity to put oneself in another's shoes is much stronger in the people who are dominated. The ability to imagine other points of view is «*the foundation of all caring and supportive social relations*» which is «*necessary for a functioning democratic system: without it, there would be no compromise, no working together towards common goals.*» (Vansintjan, 2021a)

As I think about the imaginative identification, the ability to put yourself in someone else's shoes I am reminded by the recent scandal on pig farming in Norway. Activists with hidden cameras documented how our sausages are made and the pictures shocked the politicians and the general population. With the current way of producing food, it is easy to ignore the consequences as they are out of sight, out of mind. We are so alienated from the product, from the production process, from the animals. In this case the lack of compassion is not just across classes, it is also across the artificial division between humans and nature. To even start to imagine how the world looks like from the perspective of an industrially raised pig involves a painful labor of imagination.

Graeber identifies a similar «*compassion fatigue*» in how we become overwhelmed by the miserable lives of the poor, and therefore choose to «*blot out their existence entirely*» (Graeber, 2015, p. 72). We would rather not think about it. In the same way, we don't want to know how our bacon is produced, because this would involve us in an interpretive labor, and a moral choice every time we go to the supermarket. The industrial food system is perfect for not having to deal with these daily dilemmas, since we can choose to alienate ourselves from what we eat. It is not given that starting to grow vegetables in an urban garden will improve your ability to put yourself in the pig's skin, but it could be an entrance into becoming more conscious of what you eat, how it is produced or how it tastes, and be a pedagogical tool for developing a sensibility towards the world around us and the ecology we depend upon.

«Destiny is not inscribed in an infrastructure. Capitalist societies secrete a society, a subjectivity which is in no way natural, in no way necessary. One could very well do something else. What I refuse is the idea of an inevitable and necessary program.»

Felix Guattari, Soft Subversions, 1996



Urban gardening might train our ability to imagine and bring about new ways of being

However, we are not just alienated from what sustains us, from the fruits of our labor and the means of production, we are also alienated from the essential human ability to «*imagine things and bring them into being*» (Graeber, 2009, p. 526) This is what Graeber calls *immanent imagination*, and is essential to imagine that things could be different and to be able to create these worlds. This immanent imagination is a «*practical common sense imagination of ordinary cooks, nurses, mechanics and gardeners*» (Graeber, 2015, p. 91) and is «*entirely caught up in projects of action that aim to have real effects on the material world, and as such always changing and adapting*». (Graeber, 2015, pp. 92-93)

Both these kinds of imaginations can be trained in the garden. Gardening is not just a de-alienation from the food we eat, it is also de-alienation of the means of producing space, subjectivity and futures. It is not just gardening practices, of working with the ecology, of cooperating with soil, it is also about growing a diversity of social and mental aspects. The social practices, the managing of something in common, making decisions, experimenting with democracy, claiming the right to the city, the right to grow food, the right to the urban metabolism, the right to (some kind of) autonomy. It is about the ideas that are planted in the minds of the gardeners, the new skills, how agency is understood, how time can be considered, and how all these practices together (and together with other practices) might change how we shape our future. Creativity, play and desire are essential tools for imagining other futures, a reminder of what David Graeber tried to convince the world:

“The ultimate, hidden truth of the world is that it is something that we make, and could just as easily make differently.”

David Graeber, The Utopia of Rules, 2015, p89



Lawn people vs garden people



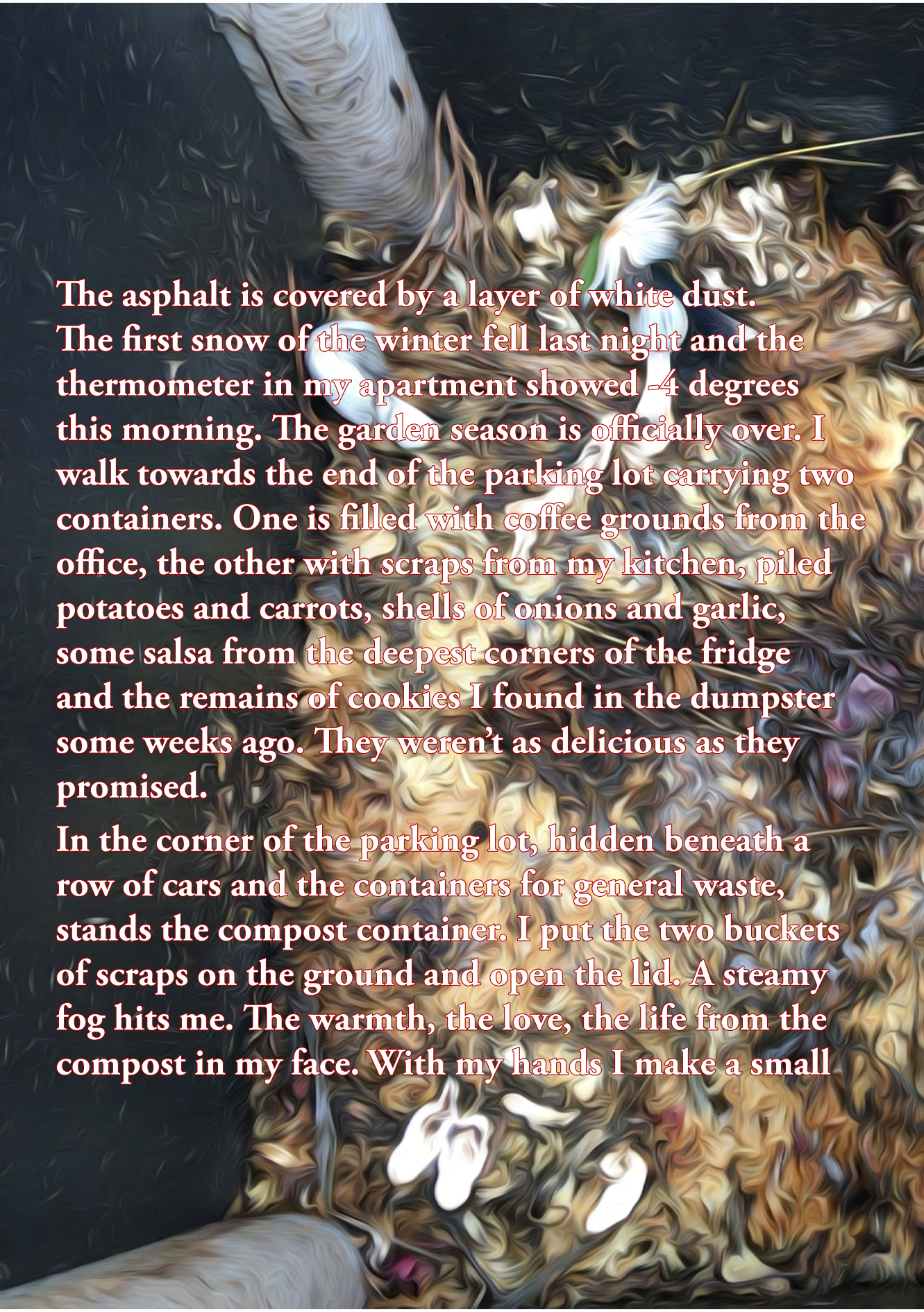






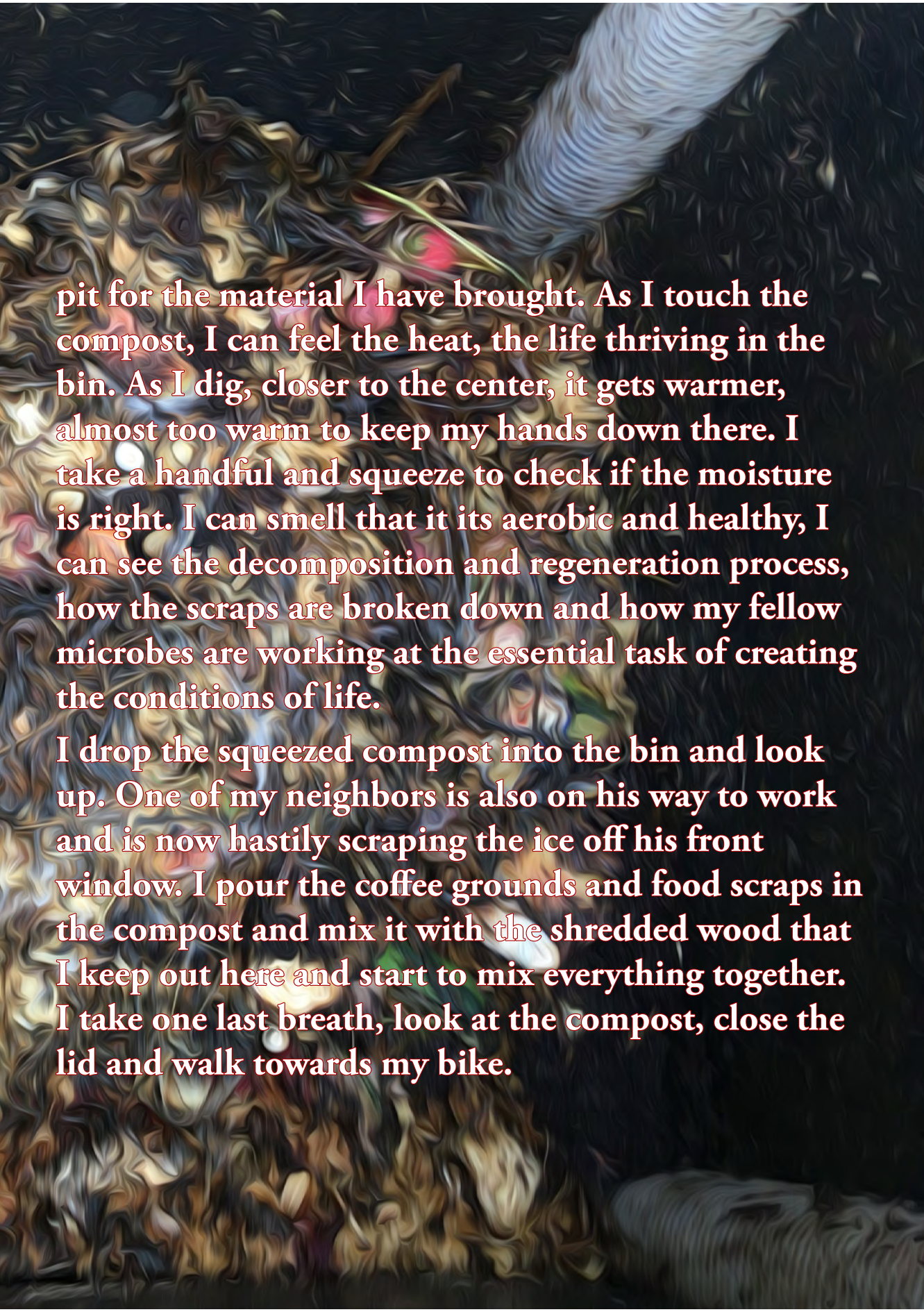


Rescaling the metabolism



The asphalt is covered by a layer of white dust. The first snow of the winter fell last night and the thermometer in my apartment showed -4 degrees this morning. The garden season is officially over. I walk towards the end of the parking lot carrying two containers. One is filled with coffee grounds from the office, the other with scraps from my kitchen, piled potatoes and carrots, shells of onions and garlic, some salsa from the deepest corners of the fridge and the remains of cookies I found in the dumpster some weeks ago. They weren't as delicious as they promised.

In the corner of the parking lot, hidden beneath a row of cars and the containers for general waste, stands the compost container. I put the two buckets of scraps on the ground and open the lid. A steamy fog hits me. The warmth, the love, the life from the compost in my face. With my hands I make a small



pit for the material I have brought. As I touch the compost, I can feel the heat, the life thriving in the bin. As I dig, closer to the center, it gets warmer, almost too warm to keep my hands down there. I take a handful and squeeze to check if the moisture is right. I can smell that it is aerobic and healthy, I can see the decomposition and regeneration process, how the scraps are broken down and how my fellow microbes are working at the essential task of creating the conditions of life.

I drop the squeezed compost into the bin and look up. One of my neighbors is also on his way to work and is now hastily scraping the ice off his front window. I pour the coffee grounds and food scraps in the compost and mix it with the shredded wood that I keep out here and start to mix everything together. I take one last breath, look at the compost, close the lid and walk towards my bike.

The soil in Havnehaugen was dead. There was not much life in the soil to cooperate with, no microbes, no roots to feed it, no humans with the knowledge or experience. If we leave the soil alone it will strive to become a forest, but it will take a long time, and what we want is a garden. Turning dead soil into a garden demands careful gardeners. The experience triggered a reaction, it created an interest in soil, a quest to find and use peri-urban soil, to find out where the soil came from, but also to try to revive the soil that was already there. This was done through many different processes.

In this chapter I will introduce the concept of the metabolic rift and explore how urban gardeners might mend the rift between city and country, humans and nature, production and consumption. Getting the nature of urban gardens right involves exploring how gardens are situated in urban metabolisms and their potentials to redirect these flows.

Centralized composting

One day in the fall of 2021 a small, green, bucket was left outside the door in my apartment building. My neighborhood was selected to be part of a pilot project for recycling food waste. This is long overdue; in Trondheim all the organic waste goes with the general waste and is burned to create electricity at a facility at Heggstadmyra, in the outskirts of town.

A new system was about to be tested, and we were asked to separate the organic matter into biodegradable plastic bags and put it in a separate container in the neighborhood. The waste will then be collected and transported to Steinkjer (100km) to the EcoPro facility, producing biogas and fertilizer. This process happens in an anaerobic digester, where the decomposition happens without air. The benefit of such a closed system is that the biogas (Methane and CO₂) is captured, and the heat generated can be used to produce energy. The gas can power the facility, be sold back to the electricity grid or replace fossil fuels in vehicles. The organic waste left after this process is called *biorest*, or digestate. This sludge can partly replace fertilizer in the agricultural landscapes around the biogas plant. The food waste in Trondheim will now produce energy while returning some of the nutrients back to the field.

All of this is good. Anaerobic digesting might be an efficient way of handling organic matter, even if it involves centralized, high-tech solutions and transport over large distances, since it captures both the heat and the gas generated by the process. The linear flow of nutrients into the city is (partly) replaced by a circular flow, closing the gap between town and country and replacing (some of the) energy-intensive production of fertilizer.



Two neighbors sharing bokashi compost in Ddropsfabrikken

The metabolic rift

Our metabolic system is connected to the outer world through food and waste. We depend on food for survival, for energy, for materials to maintain and repair our body. What's left over after the metabolic process are waste products released through our skin, intestines, kidney and lungs, leaving the body in form of sweat, urine and manure.

Karl Marx used metabolism as a concept to describe how society transforms nature through labor. He conceived society like a metabolic system and identified what he called *The Metabolic Rift*, at the core of our ecological crises. Nutrients flow from the soil, through the plants, from the countryside and into the cities and into human guts and are excreted as waste. Marx was concerned about how this linear flow was exhausting soils at the site of production, and how cities were polluted at the site of consumption, creating problems like soil infertility, sewage disposal, pollution and eutrophication of water bodies. He argued that this rift happened because of a “*rupture in nutrient cycling between town and country and a rupture in the metabolic relation between humans and nature under capitalism.*” (Schneider & McMichael, 2010, p. 462) Capitalism is the driver of urbanization and cleaves a rift between humans and the land we depend upon. Marx described the biophysical and spatial rift, how urbanization separated city and country, and how the externalized countryside/nature was exploited by the cities/culture/society.

This happens in more ways than in Marx's original concept of the metabolic rift. The rift gets wider and deeper as production is industrialized and scaled up. As nutrients flow from the countryside and into the city the soil needs to be replenished. Today this rift is closed mainly by artificial fertilizer. The NPK for the fertilizer is mined and refined and shipped and spread and everything is fine, except that the process of extracting and producing the necessary nutrients happen somewhere, and have material, ecological and social consequences both locally and globally. As these rifts increase in scale, they become increasingly hard to close. The metabolic rift also has a temporal aspect, ranging from the regeneration time of soil to the geological time embedded in the extraction of fossil fuels and emissions of CO₂ creating bleak prospects for future generations. The rift concerns the linearity of the flow from rural to urban, where cities turn natural resources into natural waste and in this extended sense it also includes all of the embodied energy and externalities that is caused by the global supply chains of an urbanized planet.



Taking care of your own food waste offers opportunities for healing all aspects of the metabolic rift.

Marxist theory of the metabolic rift has later been developed by many scholars. (Foster, 1999; Moore, 2000) Schneider and McMichael argue that the understanding of the metabolic rift must be deepened and extended beyond its original dimensions. They claim that Marx's "*simplistic understanding of soil (...) hindered his larger argument*", (Schneider & McMichael, 2010, p. 467) because it is built solely on soil chemistry, without recognizing the biological and physical aspects of soil. Today we know that soil is not a container for nutrients, but a living complex ecosystem with more factors than just the flow of nutrients and that there are other ways of returning nutrients to the soil than transporting the human waste back to the fields, for example through regenerative agricultural practices. Schneider and McMichael criticize Marx's original concept of the Metabolic rift to be "*disembodied from practice*" - as it fails to recognize the actual agricultural practices and "*the local contexts within which those practices are embedded*". (Schneider & McMichael, 2010, p. 470) It is crucial for farming practices to figure more centrally in an analysis of the metabolism: "*both because they implicate a broader set of ecological and social relations and because they provide a way to specify how humans interact with non-human nature and to what effects.*" (Schneider & McMichael, 2010, p. 462)

Schneider and McMichael go on to claim that the metabolic rift is not just a spatial rift between town and country - it should also be extended to include a *knowledge rift* and a related *epistemic rift*: "*a separation of the experience and knowledge of human/nature relations (...) from the conditions of social life under capitalism*". (Schneider & McMichael, 2010, pp. 479-480) The urbanization of the planet did not just move the nutrients in a linear fashion from country to city, it also brought the farmers with it and made them into workers and consumers. This is not only a change of occupation, it is a loss of specific cultural, historical and geographical knowledges, (Schneider & McMichael, 2010, p. 477) that die out as the farmers lives are organized by the factory and city life, instead of soil, animals and food plants. However, urbanization is not something that only happens in and around cities. (Brenner, 2018; Kaika & Swyngedouw, 2014; Lefebvre, 2014) The entire planet is urbanized and the demand for mechanization, centralization and rationalization of agriculture also impacted the countryside and agricultural laborers. A similar process of alienation spread, as peasants and farmers had to transform their practices to follow a capitalist logic. The specific knowledge of climate, local soil and plants and the embedded practices, are lost as the earth gets urbanized.



Symptosis in the hot compost. The temperature rising is a sign of more love, more activity, regeneration of life.

Mending the metabolic rift

This knowledge rift continues today. As urban citizens, we are physically separated and alienated from the land that sustains us and the spatial separation produces an epistemic “*rift in the production and reproduction of knowledges.*” (Schneider & McMichael, 2010, p. 477) The separation between natural and social spheres, with the emphasis on the social has led to an externalization of the environment in the capitalist economy.

To resolve the ecological crises it is necessary to reunite the “*social and ecological, in practice and in thought.*” (Schneider & McMichael, 2010, p. 482) This reunion could start in agriculture, given its centrality to both ecological problems and solutions. Attempts to use the metabolic rift for such a unification has been made by several scholars, (Clausen, 2007; Dehaene et al., 2016; Wittman, 2009) Nathan McClintock (McClintock, 2010) has theorized how urban gardening could help overcome the metabolic rift by attending to its ecological, social and individual dimensions. He proposes a “*rescaling of production, reclaiming vacant land and ‘de-alienating’ urban dwellers from their food*” (McClintock, 2010, p. 191) and argues that urban farming could contribute to closing all aspects of the rift by rescaling the metabolism.

The centralized solution of composting that Trondheim municipality is testing, might be able to close the biophysical dimensions of the metabolic rift, (or the equivalent physical ecology of Guattari’s three ecologies) but does not contribute much to the mending of the social and mental rift, the knowledge or epistemic rift. This is typical for the ecomodernist way of handling ecological problems, to deal with the physical aspects with new technologies, which conveniently for us, outsources the problem, but also frees us from the thinking and experiences and possibilities we could have had by solving the problem locally.

The new metabolism established by local composting might be better suited to mend the individual rift, «*in our cognitive and experiential understanding of ourselves as functional organisms existing as a part of a larger ecosystem.*» (McClintock, 2010, p. 201) Through the practice of composting I am not external to the ecology, I am part of it, and the critters in the compost are essential companions in the reproduction of life. Of course, I am not external to the ecology of centralized composting either, just because I can’t see it. However, the local, hands-on way of dealing with the organic waste problem offer aesthetic experiences and create spaces, situations and practices that might change my understanding of my role in the ecology.

This touches upon one of the social aspects of rescaling the metabolism - the relations to other species. The thought- and labor-intensive way of handling organic matter by composting it yourself depends upon a direct co-operation with other critters. Composting is an interesting practice to start to look at the relationship between humans and nature. The compost container is not a nutrient machine or a fertilizer factory. It is a living ecosystem of thousands of species of microbes, living and dying, thriving and striving, working on their specific task in the ecosystem, each necessary for the reproduction of life for all beings on earth. These creatures and the ecology created in the compost is essential for the health of the soil in my garden. Composting is about de-composition and re-composition, a place for degeneration and regeneration, of breaking down and building up. However, it is not just the moldy bread and the carrot scraps that are transformed, it might also start to break down the division between humans and nature, categories that don’t make much sense in the compost pile.



The physical presence of compost in the kitchen, to the right, using the tagine as storage for food scraps

Composting is a practice that allows me, an alienated urban citizen to get close to one of the essential life-making processes in an ecosystem I depend on. I don't have to understand all the complex processes happening in the compost or in the soil, but the labor might teach me some principles of how this life works - and also what role me and my fellow humans could play in its reproduction. In this process I do not play the main role. I create the environment for the life in the compost, by acquiring the special container, by learning new habits and practices to keep it alive and trying to spread the practice by recruiting more composters, but it is the microbes that are responsible for all the incredible life-making, it is the microbes who turn the organic waste into new life, a process I could never do by myself.

We are always participating in the process of decomposition and recomposition in one way or another, but composting offers ways to practice this differently, more directly and consciously. To compost is not just to recycle materials and nutrients, it is also about composing, co-creating and connecting with our ecology, and by doing so we are changing both the surroundings and ourselves. Donna Haraway calls this co-creation process *sympoiesis*, (Haraway, 2016) the making with, becoming with and worlding with others, acknowledging the fact that nothing makes by itself. These relations across species are crucial for acknowledging that our conditions of life depend on the well-being of other species. Composting offers not just an opportunity to make and feel these relations, but also a way of collaborating with the more-than-human life that we depend on. The practice can teach me something about my vulnerability and at the same time give me the tools to reduce this vulnerability, as the process involves making a more resilient way of feeding myself and my community. The waste turns into a resource, turns into a living ecosystem in the compost turns into a healthy soil I can cooperate with. By taking care of this ecology, it also takes care of me.

McClintock identifies the individual rift to consist of two interrelated forms of alienation, from nature and from labor. (McClintock, 2010, p. 201) The practice of composting is a process of de-alienation from both, as it “*depends on our active metabolism of nature through labor*”. (McClintock, 2010, p. 202) The physical and mental labor I do as I feed and turn and water the compost, the labor of the microbes, the labor that the plants and the soil perform, all of this work *is* nature, and by initiating new flows I involve myself differently in this labor, the reproduction of life that happens all around me. This physical, aesthetic involvement with composting does not only bring me into direct contact with my environment, it also allows me «*to experience and metabolize the surrounding landscape, transforming it into a product that [I] can consume.*» (McClintock, 2010, p. 202) By being part of this human and more-than-human labor I make fun of the artificial division between humans and nature.

«You are creating your own circular economy, it's fun, (...) we often think that nothing is free, but this is getting quite close.»

*- Gardener, on creating new flows of materials by composting
(Interview 5, 2021)*



The materials formerly known as waste find new flows into the urban metabolism
- from the kitchen, to the compost, to the garden and back again.

Difference between local and central

There is a difference between centralized and decentralized ways of mending the metabolic rift. The two ways involve different methods, different kinds of labor, different practices and worldviews. The decentralized, local way requires that we spend time, thought and energy, it requires our labor, knowledge and experience in every step of the process. It involves a richer use of our senses. It demands skills and practices that needs to be experienced and learned by doing. It is hard to explain how a compost is supposed to smell, or how dry or moist it should be. The short cycle from the organic waste in my kitchen to the compost bin to the garden is stacked with opportunities for reflections and other kinds of thought, possibilities for new relations between humans and more-than-humans. Plenty of pedagogical possibilities for understanding the flow of materials, from the table and to the soil and back to the kitchen. And not just understanding it in a way where I am outside of it, but where I am part of it, and have the agency to interact.

By composting I redirect the flows of matter in the city, and by doing this I am changing not just the urban metabolism, but also myself and my surroundings. The soil in the garden both looks and feels differently when fed with compost that I have been cooperating with, trying to keep alive through the winter. It makes a difference if I buy a bag of chicken manure pellets or if I feed the soil with my own compost. Not necessarily a difference that can be measured or proven, but the effects across the mental, social and physical ecologies might still be valuable. The distinction between central and decentralized composting shows how mending the metabolic rift is more than just returning nutrients to the soil. It is a practice with the potential of dealing with all dimensions of the metabolic rift, and the mental, social and physical ecologies simultaneously.



Emptying the hot compost and carrying the finished compost to the garden.

Propositions for mending the metabolic rift

The dead soil in the garden demanded action. It demanded care, new growing practices, explorations of where the soil came from and how it could be revived. This can be done through redirecting urban material flows to feed the soil, which also has a potential to mend all aspects of the metabolic rift. Urban gardens offer many ways of rescaling the metabolism, gardening practices can turn linear flows into smaller circular flows. Most gardeners are not inspired by Marx as they do this, they do it because it's the most logical thing to do. The food scraps and coffee grounds become resources needed in the garden.

Urban gardens also offer glimpses of how the social aspect of the metabolic rift could be mended. This happens through the common appropriation of space where the use value is more important than the exchange value it usually has in the capitalist city. It happens through a de-commodification of the food chain, where food production is (partly) disconnected from the capitalist supply chains, independent of fossil fuels, pesticides and fertilizer. A production system that rather renews itself through redirection of material flows, through agroecological practices, composting, seed saving and food sharing. Admittedly, this de-commodification is merely seen as glimpses and only happens in small scale and to a small extent today. However, there is a huge potential in scaling-out by using space in the city differently, in scaling-up in peri-urban fields and in re-localizing regional food systems and diets.



Reviving the soil in Havnehagen, a close cooperation between the tractor, the humans, horses, cows and microbes.

Compost run

One of the first efforts at reviving the soil in Nyhavna was to transport composted animal manure into the city, from the farm at Voll Gård. As I was driving the tractor with the compost through the city center, I felt that I was in a way healing the rift between city and country. That the fruits of the labor of horses and chicken and cows were now going to become part of the garden and enrich our soil. Looking back at this act, it's also quite counter-intuitive to buy compost from a peri-urban farm and drive it into the city. Maybe it widens the metabolic rift rather than healing it? Wouldn't it be better to stop relying on importing compost and rather learning how to be self-sufficient, by reorganizing flows of grass clippings, coffee grounds, food waste and other organic matters from our surroundings?



Repairing the infrastructure for healing the metabolic rift.
Bringing compost from Voll Gård to Ilens Hage



Reviving the soil with imported compost.



The dead soil gets multispecies help.

Trondheim Produksjonskjøkken

After talking to people about the dead soil in Havnehagen I got a tip that Trondheim Produksjonskjøkken, a kitchen that produces food for a lot of the municipal institutions in Trondheim, had bought a composting machine, but had no idea what to do about the compost. I called them and soon I was on my way to collect a sample of the compost to use in Nyhavna. We applied the compost to two test beds to find out how it worked, but half a year later the compost was not working out the way we hoped and the boxes with composted manure did much better. This stopped the new flow of materials. Luckily the municipality had better luck (and more experience) and now the compost is flowing into public parks and flower beds, replacing (some of) the artificial fertilizer that was used before.



From kitchen to garden - and back again

Office Coffee Grounds

Ten PhD students share a kitchen in the eight floor in one of the towers at Gløshaugen. In the kitchen I set up a new infrastructure for healing the metabolic rift. Coffee grounds that went into the general waste are now collected in this bucket, and every week a full bucket is brought back to the hot compost outside of my apartment. Coffee grounds improves soil structure, are rich in nutrients, especially nitrogen, which is important for the hotness of the composting process and for plant growth. By setting up this infrastructure the coffee grounds are sent into new trajectories and get a new life in the garden. This is only a small gestur of course, still it points towards the potential of partial propositions like this. Healing the metabolic rift can start from anywhere, everywhere, all the time by anyone.

The rescaling of the metabolism has its physical expressions. The new metabolism is visible on the countertop, in the kitchen, in the neighborhood, in the office, in the garden. The visible infrastructure automatically starts conversations, which allow practices and ideas to spread. This also has a social component. Conversations, on soil health, compost and waste, would not necessarily happen without the small bucket under the counter in our office, or the compost bin in the parking lot. Even if this is a small disruption of the linear stream of waste, it provides opportunities for new thoughts and habits to be made. «Where do you bring it? Why? How do you do it? What is the metabolic rift? » The fact that it is visible, physical, talked about allows for a transformation across the three ecologies.

One of my fellow gardeners compares it to the r-number, that we became familiar with during corona. He explains how he tries to spread the practice of composting, and how he has already managed to get the r-number up to 2 in his apartment building and speculates about how the practice could grow exponentially if everyone managed to infect two others with the practice of composting. (*Interview 4, 2021*)

Coffee grounds get a new life in the garden instead of being burnt to produce energy. Still, the nutrients are not returned to where they came from. The coffee beans are probably grown in a plantation in Brazil or Colombia, picked by underpaid workers, shipped across oceans, roasted and packed and transported and brewed in the office. It has its own ecology of exploitation, fertilizers, pesticides, water usage and social and ecological costs, which are indifferent to the new trajectory that I make. This is one of the problems of the imperial food system. It becomes increasingly hard to repair the rift - and this points towards the need for a transformation into more local food systems and diets, and at least doing what we can to produce what we can locally.

“Labour is, first of all, a process between man and nature, a process by which man, through his own actions, mediates, regulates and controls the metabolism between himself and nature.”

Karl Marx, Capital Vol 1, 1976, p283 (Marx, 1976, p. 283)



A new trajectory for the coffee grounds

Bokashi

A popular way of returning nutrients to the soil is Bokashi. (Olle, 2021) It is a practice of anaerobic fermentation of food waste where microbial life is added to start the decomposition process. The waste is kept in a closed container, which is also often equipped with a tap where bokashi juice can be drained. This juice is a powerful fertilizer. When the bucket is full the content is mixed with soil and after 2-4 weeks it is broken down and enriches the soil, stores carbon, and stimulate microbial activity in the soil.

Composting can be a focal practice that involves people into the world of gardening. One of my fellow gardeners explains how he was introduced to gardening through composting, as one of his friends had a hot compost and needed more organic material to feed it. The practice of composting quickly became a new habit and after a couple of weeks it was unthinkable for him to do something else with the organic waste than returning it to the soil. It became “*uncomfortable*” to put food scraps with the general waste. What was normal some weeks earlier had now become “*wrong*”. Waste had become a resource, had become part of another cycle, and didn’t belong with the rest of the general waste. My fellow gardener claims that the practice “*does something to you, psychologically, it does something about the way you think*”. (Interview 4, 2021) Another gardener explains that he feels a satisfaction by taking care of his own waste and that he manages to produce everything the plants need to grow and thrive, without having to buy anything. (Interview 5, 2021a)

It is not just the practice/labor of composting that demands space. The finished compost requests soil where it can continue to live and thrive, it asks for cohabitation with plants, sun, water and soil - it is not worth anything in a container or in a bag. The compost might offer its people a new lens to look at their surroundings, to find out if it’s possible to turn the lawn around their house into a better use, or to feed some of the berry bushes or trees, to start growing in the backyard or look for a spot that could be used as a community garden. Having a bag of compost or a full Bokashi bucket might initiate a google search for already established gardens in the neighborhood, or make you notice the garden project you have passed on the way to work a hundred times and suddenly you get the idea that this might be a good place for the compost to continue its life.



Bokashi compost demands space,
One of the suppliers of compost to Ilens hage.

Havnebogen Humanure

As the first soil arrived in Nyhavna the rest of the enormous open space was converted into a parking lot for camping vans. Talking to these tourists is part of the garden routine. What are you doing? What do you grow? Why are you doing this? Some share experiences, tips and tricks, help us out with the weeding, or snatch some ripe strawberries. They ask for the Norwegian names of plants and tell us the German names, talk about their gardens in northern Norway or are curious on which varieties of potatoes we grow.

However, these conversations are not the only form of communication. We can also smell them. In the entrance to the parking a «service point» is located, where the campers fill up their water tanks and get rid of their waste. Tourists taking the tour with their porta-potties in their hands is a regular sight, carrying their shit like a suitcase over to the service point where it is dropped. If the wind comes from southwest the smell is mixed with the coffee smell from Kjeldsberg roastery, giving the garden a distinct odor, which is not always pleasant.

The sight and smell of the tourists reminds me of the metabolic rift. Maybe it is something about the tangibility and the scale. Maybe it is the effort that is needed, an effort we usually don't think about, as water toilets and sewage systems become extended parts of our metabolism. The effort of carrying their own shit makes this rift become visible. As I am standing in the garden, turning the compost, the smell enters my body through my nostrils, and I start to speculate if it could have been different. What if? What if the tourists could return their excrements to the soil? What if they proudly could donate their poo to the place? What if a new productive park in Nyhavna could be produced through reorganizing shit from German camper van tourists? What if we took seriously that the metabolic rift is a serious ecological problem? What if we tried to make real some of the talk of the so-called circular economy? What if the tourists could become healers of agricultural land, establishing relations to rural lands by bringing back with them the finished compost? As modern nomads nourishing the soil and repairing the rift between town and country.



Autosan 2000 vs humanure compost toilet

There are a lot of reasons why this is probably a stupid idea. Modern sanitation systems have done a lot for public health, and in Norway at least some of this waste goes back to enrich agricultural fields. The last composting toilet in Trondheim was located in Svartlamon, only a couple of hundred meters from here, but I'm not sure if I'm ready to revive this practice at the RV camping. Still, it points to the individual aspect of the metabolic rift, that deals with the aspect that we are alienated from the rest of nature and from the fruits of our labor. It might be a stretch to say that our shit is the fruit of our metabolic labor, and if that's the case we also have to acknowledge all the microbial co-workers in our guts. Still, the roots to the alienation lies in the «*division of intellectual and manual labor*, (Sohn-Rethel, 1978) what we produce with our head is seen as more valuable than what we produce with our hands (or our stomach). We are not just alienated from the product, but also from the production process.

This is mostly a play with words, having some fun with these concepts, but it might also be some meaning there, in how waste is culturally made, already at the very intimate level, and how it scales up to become a larger problem. Our body is, in the same way as our cities and society, a system that demands resources, digests them and spits them out in the other end as waste, matter out of place. In a healthy, natural system there is no waste. Everything is useful for something else; a healthy nature works in loops rather than lines. But in a sick, capitalist nature, both the resources and the waste are externalized, already at the bodily level. What happens when it goes down the drain in a regular toilet is that it's mixed with all the other stuff that goes into the sewage system. The soap, the toothpaste, the detergent, the microplastics, the chemicals - a lot of stuff that we want to keep out of the soil. This creates a problem where the human waste becomes polluted and makes it harder to return it to the land. By dealing with the shit directly, it doesn't get polluted, and the pathogens are broken down in an hour in a hot compost, if you know what you are doing. This is entirely possible (Jenkins, 2005) and a skill of traditional ecological knowledge (TEK) (Whyte, 2013) that we might learn to master. As McClintock argues the individual metabolic rift, the way we act and think, might be the hardest to overcome, and in this case, I think it's evident. We don't want to deal with our own shit, we don't even want to think about it.



What if the camper van tourists could gradually turn the parking lot into a wild, urban park?

Leaves

The sound of the fall is also the sound of leaf blowers. The two-stroke engines of these «*devils hairdryers*» (Dudley, 2016) make the same amount of emissions in half an hour as a Ford F-150 Pickup-truck driving for 6115 (!) km (Fallows, 2016) Eight of these machines are being fired up as I walk through the university park on my way to work. A group of municipal workers get out of their trucks armed with this completely useless technology. They roar their engines and head into the park to do their mission: remove every small piece of loose organic matter from the lawns, blow it into piles, load it onto trucks and drive it to one of the waste handling facilities on the edge of town. This practice robs the ecology of the opportunity to take care of itself and at the same time releases completely unnecessary carbon dioxide into the atmosphere. These leaves are the same leaves that are used to make the soil that I bought as I initiated the project in Ila and Nyhavna. What a strange journey, being transported and composted and mixed into sand and peat moss to get a new life in an urban garden.

There must be better ways of doing this. I imagine how this work could be done a lot more carefully, how the leaves could be left in parts of the park and returned to the soil, starting a rewilding process of the surroundings. Or how it could be done with rakes, wheelbarrows and shovels instead of leaf blowers and how this would be a radically different way of spending the day for the workers and another way of caring for people, park and planet. And I think about how the leaves could be composted and used within the city, becoming a resource more directly, becoming fertile soil and meaningful work.

Since I need leaves for a compost experiment, I send a message to the municipality explaining that I am researching urban gardening and that I need the leaves for «exploring how the flows of organic matter can be improved by the practice of urban gardening». The next day I receive an answer. Every year the municipality delivers 100 tons of leaves to the waste management. But unfortunately, they cannot help me redirect some of these to the garden. I start to call private companies that also clean leaves from parks, and this turns out to be much easier. I can have as much leaves as I want, delivered to the garden in Nyhavna, the start of a new life for the leaves, becoming mulch and being transformed in the compost.



The sound of autumn

Leaves being delivered to the garden in Nyhavna.



Dumpster diving

A third of all the food that is produced globally is never eaten, and in Norway over 400.000 tons of food is wasted every year. (*Stensgård et al., 2021*) Dumpster diving is one way urban food practices can mend the metabolic rift. After getting more interested in food and food production this has also become a regular habit for me, diving into containers behind supermarkets and finding treasures among the trash. For me it created an awareness of what kind of number 400.000 tons is. Dumpster diving is an aesthetic experience of the wastefulness of the industrial food system. This is however not an optimal way to do it, as you never know how the food has been stored, how long it has been there or why it was thrown away in the first place.

This is why we need practices and institutions such as the Ila Free Fridge and Folkekjøkkenet (The people's kitchen, cooking common dinners out of food waste), in every neighborhood, and central solutions like Matsentralen distributing some of the wasted food to the people that need it. Still, these are just band aids on a broken system, and I think we should be allowed to dream of a food system that isn't this wasteful and stupid in the first place.



New flows in the final exhibition

In the video *New soil*, as earlier described in the chapter on dead soil, I document how the soil for the garden projects is made. I show how the garden waste flow through the city, how it's gathered and composted at Heggstadmoen and Vassfjellet. The soil that is produced is also exhibited on top of the pallet frame construction that holds the projector.

In one of the corners in the same room I have exhibited the hot compost container from my apartment building. This container composts the food waste from some of my neighbors and the coffee grounds from my office and feeds the soil both in the roof garden and our plot in Ilens Hage. I wanted to bring the hot compost into the exhibition to talk about how dead soil can be revived, how urban gardens make new flows in the city possible, about the aesthetic experience of composting and how compost is not just a way to handle waste locally, but also a technology for more conscious cooperation between humans and microbes.

As part of the exhibition, I also set up a new flow, connecting the canteen in the building to the gardens through the compost container, by taking care of their coffee grounds. This kept the compost going through the two weeks of the exhibition, but the main aim was to show how easily such new flows can be set up, if you have the infrastructure like a garden, a compost container and humans who enjoys composting.

The hot compost turned out to be a great way to talk about composting and how to make new flows in the urban metabolism. The guys in the canteen started to talk about how they could produce their own compost and start to grow some of their herbs in the glass-covered backyard that makes up the canteen. Some of the visitors of the exhibition were more interested in the practical stuff, like what the container costs, how to get it and how the actual composting was done, how it should smell or hot it should be, while others wanted to discuss the difference between the ways of making compost in the large scale (as shown in the video in the same room), or fantasize about what would happen if everyone started composting their own food waste and how this would transform the spaces in the neighborhoods. Several of my co-gardeners were interested in the hot compost (since we don't have one in the garden yet) and expressed a renewed interest in how to make better use of their organic waste. One of my co-gardeners was also spurred to set up a new flow of materials, redirecting coffee grounds from a local café to the compost bin in the garden.

In the planning of the exhibition, I worried that bringing the compost into the space would fill the space with insects or that it would smell too much. At one point I decided to drop it to avoid these problems, but in the days before the opening I changed my mind and included the hot compost. I decided that it was worth it to try to make an aesthetic experience where multiple senses were activated. Each room should have its own smell, sound or feel, and the compost was an important part of this experience. Since soil is a thread running through the project, I wanted to expose the dead soil, show some ways to revive it and create awareness around the peri-urban soil which we depend on for everything that we cannot grow in the urban gardens and hopefully make some new links between these soils.



The hot compost container set up in the exhibition space.



In the end I didn't have any problems with the hot compost container. The compost juice leaking on to the floor, the dead insects in the windowsills, the snails making their way across the floor from the Jerusalem artichokes, the earthworms crawling in the black box and the ants wandering from installation to installation became part of the ecology of the exhibition.

Futurum

Exhibition project, 2019

Built for Futurum, The Big Challenge, NTNU Science Festival

Krigsseilertomta, center of Trondheim

Futurum was a 2019 exhibition done in the context of the Science Festival at NTNU. The tagline of the festival was *The Big Challenge*, and the concept of the exhibition was to make a museum of the future, to envision how the future could look like and work.

During the last 150 years, we have lost half of the slowly built topsoil on the planet. The rest is destroyed at an accelerating pace, as the economy demand ever more space and resources. However, it is not just the economy's insatiable demand for space that is threatening soils, it is also the way we feed ourselves. (GSBI, 2020) The practices of industrial farming strangle and exhausts the soil life. Soil is reduced to a growth medium for our monocultures, a depleted, dead matter in which we put seeds to grow. Modelling suggests that 133 bn tons of soil carbon has been lost since the dawn of agriculture. (Sanderman et al., 2017) This is referred to as «soil carbon debt» as carbon erodes or evaporates into the atmosphere. A healthy, functioning soil captures carbon through photosynthesis, but exhausted soils is a source of carbon, not a sink. Healthy, functioning land becomes even more important considering the climate crisis.

For the exhibition I focused on soil and how regenerating soil can be a way of handling the climate crisis, the biodiversity crisis and the soil crisis at the same time, through repairing soil that becomes able to capture carbon and provide for biodiversity. Composting is a way for humans to collaborate with soil, and through building a Johnson-Su Bioreactor, (which I will get back to in the next chapter) I wanted to highlight this collaboration as an important part of the future.



The bioreactor at the Futurum exhibition

Composting as a technology

The contribution to the exhibition was varied, but since we are in a technical university, a lot of the focus was on technological solutions. This triggered a reflection upon how the bioreactor and more generally composting can be seen as a technology. Technology is often perceived as something «*bright and shiny*» (Jackson, 2014, p. 227) an artifact, a gadget that let humans control and command our environment. I wanted to exhibit a technology that focused on the cooperation between species, to emphasize how technology also could improve and build new relations between humans and microbes, and create new ecologies, new places and fertile soils.

All technologies are cooperation projects between species. The leaf blower, the car and the coal plant are technologies that relate to other species in their own way, but these are often hierarchical relations where humans play the dominating role. I wanted to explore how infrastructures for interaction between human and more-than-human could become a conscious cooperation where humans don't necessarily dominate and control and where the goal of the technology is not capitalist accumulation, but multispecies flourishing.

Composting is a technology that is democratic and *outscalable*, it can be shared freely, it can be modified, built with cheap tools, and what you have at your disposal. It is easily understood, everyone can start a composting process and continue to develop the technology further. It doesn't create a dependency or generate any other desires that itself cannot stimulate, and as such is a *tool for conviviality**, (Illich, 1973) and not just in Ivan Illich's rich meaning of the term, but also as a tool for living together and cooperating with all the other species that we cohabit the earth with. With the exhibition I wanted to communicate the simple message that caring better for more-than-humans is crucial for a livable future.

The life-creating technology of composting and soil regeneration might also be a source of meaning and well-being. To find joy not in consumption, but in repairing, fixing, maintaining. It is a way to do something tangible and visible, a way of being productive and creative, making something with our own hands. Composting provides an insight into how all life around us is reproduced all the time. This could be a source of security, or confidence, or humbleness in the uncertain and chaotic world we live in, and points towards other ways of organizing production and reproduction - smaller decentralized, human powered technologies where the ecological feedback loops are integrated into the practice, in contrast to the industrial food system, where the consequences are abstract and distant.

*In *Tools for conviviality*, Illich argued that beyond a certain threshold tools start to become counterproductive, destructive, dangerous. He proposed a multidimensional balance as a framework evaluating our relation to our tools. When a technology crosses a certain point it becomes manipulative and start controlling us more than we control the tool. On the other side of the scale there are convivial tools that develop human skills and knowledge, and Illich argued that it would be good for humans, society and the planet if we use more of these tools. Composting is one such tool, urban gardening is certainly one, and bikes, a theme that I explored in the text "Hva skal vi med gateplagerne?" which uses Illich's framework to explain the difference between e-scooters and bikes.



Reorganizing roasted coffee shells from the coffee roastery



Illich claims that our tools have managed to alienate human beings and bring us the brink of destruction, while shutting down our ability to work towards or even imagine a better world. The tools we use matters for how we envision the future, who is included in the visions and how these visions are created, and the idea was to communicate some of this through the bioreactor at the exhibition.

The process of building the bioreactor opened my eyes to the waste flows through the city. From the garden in Nyhavna I started to investigate the local flows of organic matter and ended up by experimenting with used coffee shells from the Kjeldsberg coffee roastery and spent grains from a local brewery, along with wood chips in the compost mix. Looking at just these two materials from the neighborhood of the garden opens up for perceiving how much matter that become out of place in cities. It also shows the potential of how this might be redirected from canteens, cafes, restaurants, schools, kindergartens and industries, and plugged into centralized and decentralized composting operations that could regenerate peri-urban and urban agricultural land.



At our neighbor, the brewery, I found mesk, the grain left-overs after brewing.





These two tanks also came from the brewery.
The steel cage is reused for the framework for the compost.
One of the water tanks will serve as water collector and roof, keeping the compost at the right moisture.



Biking around in the city looking for pipes with 120mm diameter.



Constructing the reactor at the exhibition spot.



Filling the reactor, with woodchips, coffee shells and spent grain.
Pipes are left in the compost for 48 hours and make air channels that allows for aerobic composting.



After the pipes are removed, the vertical channels are kept open by the fungi population in the compost.



After the exhibition the compost was moved to Havnehagen, where it should compost for one year. Unfortunately, the experiment failed. The wood chips that I used was too fine grained (more like sawdust) and didn't let the air through, so the compost was not aerated by itself. The most important outcome of this exhibition was how the compost worked as a conversation starter with the audience of the exhibition, to start to talk about soil, soil health, microbes, compost and radical solutions to ecological problems.





At its new home in Havnehagen

Communities of Compost

Exhibition project, 2019 - 2419

Built for the Oslo Architecture Triennale, 2019

In the garden of the National Museum for Architecture, Oslo

In cooperation with Alexander Rullan

Enough: The architecture of degrowth

It was a pleasant surprise when it was announced that the most important architectural exhibition in Norway would be based around the critique of (and alternatives to) capitalism. It was a sign that degrowth was moving into the public debate and signaled a movement in what I consider the right direction, away from reforms and prolongation of the status quo, away from the myth of green growth, away from technofixes and techno-optimism, from tweaks and adjustments, «apolitical» solutions like *the circular economy* and *smart cities*, towards a radical break with the systems that are causing the major problems in our society.

The exhibition encouraged contributors to think about degrowth and architecture together. In linking degrowth and architecture there is an opportunity to revive the utopian traditions of architecture and planning, a tradition that seems to have faded. The blueprint utopias of early modernity might not be of much use today, but looking at utopias through degrowth lenses change what kind of worlds we are able to imagine. Part of the utopian project today is to bring forward and develop the radical alternatives that already exist and use these now-topias (*Carlsson, 2008*) to imagine how the future might become.

Our physical surroundings affect what we can or cannot do. Degrowth is not just academic discussions, theories and propositions, it is also an equal part activism, struggles to create worlds we want to live in. These struggles often happen in physical spaces. It could be initiatives like transition towns, experimental neighborhoods, self-building, squatting, fights over land or common resources, resistance to the destruction of ecologies and communities, or agricultural movements such as Zapatistas, La Via Campesina, MST or indigenous movements fighting for their possibility to practice other ways of living and seeing the world. These struggles are not necessarily united under or confess to degrowth but are anyways working on alternatives to the current growth-obsession. Countless projects, initiatives, and struggles, are seeking other opportunities, other ways of organizing society, away from the growth paradigm, a pluriverse of alternatives pointing towards how the world might become. (*Escobar, 2018*) (*Kothari et al., 2019*)



During the last 150 years we have lost half of the slowly built topsoil on earth.

Other ways of thinking about, relating to and treating land is happening in a lot of ways today, in agroecological farming, in permaculture, in indigenous ways of growing, and, in small scale, in urban gardening. We (Alexander Rullan, my collaborator on this project and myself) wanted to highlight other ways of caring for land, with different worldviews, relations and practices, and show how these are interconnected. One of our key aims was to emphasize that what we refer to as «the land» is not just a matter, not just something out there, an external nature, it is an ecosystem of microorganisms that we depend on for our survival. We wanted to show that these are also our companion species, and experiment with one way of caring for these more-than-humans. How we treat the land says something about who we are as a culture, (*Leopold, 1989*) and we wanted to emphasize that degrowth cultures would involve radically different ways of living and relating to land. A move from extractive practices towards regenerative practices, from monoculture to diversity, from exploitation to caring, from destruction and consumption towards repairing, maintenance and reproduction. In the fall of 2018, we sent our proposal *Communities of Compost* to the curators. We proposed to explore the topic of soil health and how humans can help repairing exhausted soils. Our aim was to contribute to revive the perception of soil from being a dead matter, a growth medium for plants, to a thin skin of diverse, complex life that is constantly at work to keep us alive.

We wanted to point to the importance and urgency of protecting soil. And not just the area of agricultural land that is under constant pressure from capitalist development projects, but also the microbial life in the soil, an aspect often overlooked when destruction of soil is discussed. By looking at soil as a container for plant growth and looking at nature as something where parts can be moved and replaced, an instrumental approach to nature, soil is just a matter that can be removed and exhausted without consequences. However, by looking at soil as a living, complex, fantastic ecology, the destruction of soil looks different. How we perceive soil impacts how we treat it, and how we treat soil impacts how we perceive it. By realizing that we depend upon the critters in the soil, destroying it becomes harder. Soil becomes an ecology that we want to protect, an ecology that we know that we need to cooperate with - and this offers other ways of imagining the future of a space. There are other ways of perceiving soil, other practices that are possible, and through these practices other futures can start to grow in our minds.



Early conceptual sketch

Johnson-Su Composting

Through the exhibition we wanted to explore a composting technique developed by Dr. David Johnson and Hui-Chun Su. The first attempt at using this technology was earlier in 2019 in the Futurum project which I have mentioned, and through the Triennale we wanted to continue to explore this experimental way of composting. Johnson-Su Composting is claimed to be beneficial for a diversity of microbial life to thrive, especially fungal life. Fungal life is essential for a healthy soil, for the communication between soil and plants, it improves the photosynthesis, and promotes both the growth of plants and capturing of CO₂ in the soil. (*Wilson et al., 2009*) (*Averill et al., 2019*; *Simard, 2018*)

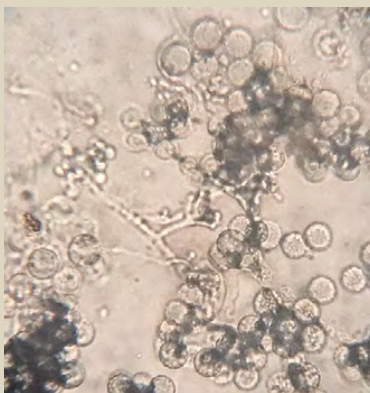
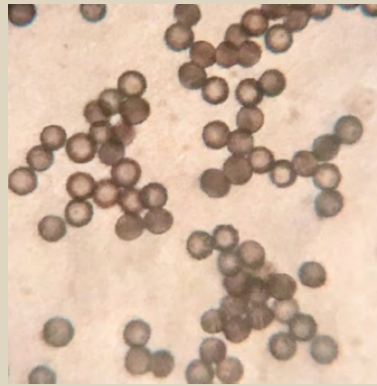
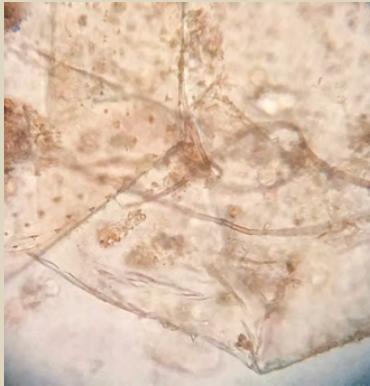
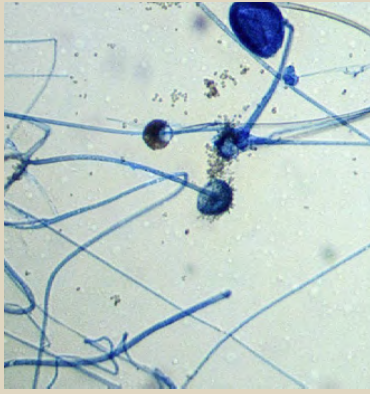
David Johnson describes industrial farming practices as a war on soil microbial communities, arguing that «if you wanted to start a war, what would be the first two things you'd take out? Communication and logistics; it would be crippling, and that's what we've done in agriculture.» (*Johnson, 2020*) In a healthy soil the fungi community is crucial both for communication and logistics, but the industrial farming practices decimates both the population and variety of microbial populations in the soil.

Johnson argues that the solution for this kind of problem is not more or better chemicals, but to rebuild the diverse microbiology in the soil. Johnson-Su Composting is a practice that tries to cooperate with the soil life instead of trying to control and dominate it, the opposite approach of industrial agriculture. The problem is dealt with, radically - at the roots, or more precisely in the microbial communities that thrive in the rhizosphere around the roots. We found this technology interesting because it provided a way to revive exhausted soils, but also because it involves humans in a different approach and role in nature, as active participants, as producers of diversity, instead of consumers of monocultures.

Bioreactor

The first step of Johnson-Su composting is building a *bioreactor*. The Johnson-Su bioreactor is a static, aerobic composting technology, which keeps the compost aerated through the entire composting process, removing the need for turning the compost. Turning the compost might be beneficial for speeding up a hot composting process, for mixing the material and for providing enough oxygen for the organisms living in the compost. However, once you turn a regular compost pile you disturb these communities, throw them out in the street and make them start from scratch. The Johnson-Su technique allows the communities to develop undisturbed - to build their infrastructure, to make microbial diversity, and fill the compost with life, especially fungal life.

A bioreactor might sound high-tech, but the construction is simple. In David Johnson's original version, a cylindrical container 2 meters tall and 1 meter in diameter is built out of re-bar net and a woven plastic cloth that lets the compost breathe. The special thing about this kind of composting are the vertical air channels that run from top to bottom through the compost. The channels are made by plastic tubes, kept in the compost while filling. After two days the pipes are removed, and the air channels are now kept open by the fungi population in the compost. After constructing and filling the bioreactor it must be kept moist - and left alone for at least a year.



Johnson-Su composting is about generating a diversity of microbial life. These are pictures shared by Geert Pienaar through the online community of compost, where pictures from the microscope is shared, identified and analysed.

Microbial diversity is the aim of this composting technology, and the diversity grows steadily throughout the process, before it turns into an exponential growth in the last months, an explosion of diversity. Time is crucial for a diversity of microbial life to develop in the compost. After about a year, when everything is broken down to its smallest part, the microbes sense that the whole system is running out of usable resources. The fungi forms spores and get ready to disperse and the bacteria encyst, going into a dormant stage.

The compost is then ready to use as an extract or to inoculate seeds. By spreading the rich microbial life to soils, soil life is regenerated. The microbial life is brought back, and the soil is able to capture carbon and boost biodiversity while at the same time increasing production, reducing the need for fertilizing. This is what Dr. David Johnson calls BEAM, Biologically Enhanced Agricultural Management (<https://www.csuchico.edu/regenerativeagriculture/bioreactor/>) which is a way of doing agriculture where the farmer cooperates with the life in the soil, instead of battling it.

Through building and exhibiting the reactor we wanted to frame soil regeneration and care as important and necessary practices for any livable future. Importantly, it is not just the physical regeneration of soil that is important. Finding ways to deal with waste is crucial, and a regeneration of the microbiology in soil is urgent, but following the ecosophy of Felix Guattari, solving these physical challenges is not enough. The practice of composting also holds a potential for regenerating the social and mental ecologies, a necessary part of the transition to a degrowth future. Capitalism exhausts soils of their capacity to function properly, but it also depletes the mental and social soils, the way we think, act, interact and relate, and all these levels needs to be regenerated at the same time, through practices that gives meaning and direction to the people involved.

«We are all compost» claims Donna Haraway, and this says something about who we are, where we come from and where we are going. It reminds us that humans are part of nature and that we depend on everything around us, particularly soil. Composting brings the human and the more-than-human together and opens a possibility to understand how we depend on the life-creating processes around us. A reminder that if we destroy nature, we also destroy ourselves, which in turn means that caring for more-than-human nature is to care for ourselves. By doing this project we wanted to learn this ourselves and try to generate interest or curiosity towards the life in the soil for the audience of the Triennale.



Around the world a diversity of bioreactors are built and designed. Knowledge and experience is shared through the online Johnson-Su Community on facebook.

Communities of compost

Communities of Compost is the title of the exhibition, a phrase borrowed from *Camille Stories* by Donna Haraway. *Camille Stories* is a speculative fiction into an alternative future, seen through five generations of Camille - a story of the next 400 years. It is not a story of utopia, it's not about starting from scratch without problems, it is a tale about people finding meaning through living in and repairing damaged spaces and ecologies — or what Haraway calls *Staying with the Trouble*. (Haraway, 2016) Haraway's speculations open up possibilities for the future and attack the widespread belief that there is no alternative. There is nothing certain about what is going to come, nothing is pre-determined, there is no need to follow a certain track towards destruction, ecocide, the sixth mass extinction and climate catastrophe. Even though the destruction of the living world will not stop anytime soon we need to make moments, spaces and practices that disrupts and resists the *fatalistic passivity* (Guattari, 2000) that is keeping us from acting. It is crucial to envision and create alternatives that enable other kinds of futures. We must find meaning in shaping the future in radically different ways. As Haraway argues “*It matters what practices we use to destabilize other practices*” (Haraway, 2016, p. 12) - how we choose to disrupt and resist the capitalist paradigm.

In *Camille Stories* we follow one of many communities that decide to migrate to ruined places to «*work with human and nonhuman partners to heal these places, building networks, pathways, nodes, and webs of and for a newly habitable world*» (Haraway, 2016, p. 137) These radical acts came out of a widespread concern among people everywhere «*profoundly tired of waiting for external, never materializing solutions to local and systemic problems*». Their impatience and frustration find an expression, not in despair and pessimism, but in action:

«These eruptions of healing energy and activism were ignited by love of earth and its human and nonhuman beings and by rage at the rate and scope of extinctions, exterminations, genocides, and immiserations in enforced patterns of multispecies living and dying that threatened ongoingness for everybody. Love and rage contained the germs of partial healing even in the face of onrushing destruction.» (Haraway, 2016, p. 137)

This combination of love and rage led people to act - in a myriad of ways. The story begins as we meet Camille 1 - a butterfly-human hybrid. Humans are modified and become «*symbionts with critters of actively threatened species*». (Haraway, 2016, p. 139) This makes sense since Camille is part of a community that works to heal one of the corridors of migration for the Monarch butterflies. Through modifications such as «*chin implants of butterfly antennae*», (Haraway, 2016, p. 152) Camille is better equipped to sense and respond to how the ecology can be healed.



Reclaimed wooden materials

In our proposal we are not suggesting implants to change the sensibilities of humans. What we suggest is that transformative practices, such as composting, might provide us with new sensibilities, new knowledge and new sociabilities. A practice not only able to repair damaged spaces, but also the humans involved, giving them better tools to respond to and take care of their local ecologies.

For Haraway it is particularly important in times of crisis *«to write stories and live lives for flourishing and for abundance»*. (Haraway, 2016, p. 136) The *«arts of living on a damaged planet»* (Tsing et al., 2017) is not just a reparation of the physical ecologies, it is also a cultivation of *«the capacity to reimagine wealth, learn practical healing rather than wholeness, and stitch[ing] together improbable collaborations without worrying overmuch about conventional ontological kinds»*. (Haraway, 2016, p. 136) The construction of the compost reactor, the filling of materials, the care for other species, the facilitation for them to thrive - and the next step, the regeneration of exhausted soil is seen through the lenses of repairing damaged spaces. There are so many damaged spaces left over after capitalism, but we are also many people (of all species) that could potentially work to repair and heal these spaces, and at the same time also repair our own social and mental ecologies. The aim of Haraway's speculative fabulation is to strengthen *«ways to propose near futures, possible futures, and implausible but real nows»*. (Haraway, 2016, p. 136) Camille Stories is a *«pilot project, a model, a work and play object for composing collective projects, not just in the imagination but also in actual story writing. And on and under the ground»* (Haraway, 2016, p. 136) By telling this story, she constructs a framework for speculation and invites us to think differently, to be attentive to other species timelines and to view our own human times through new lenses.

«The story I tell here cries out for collaborative and divergent story-making practices, in narrative, audio, and visual performances and texts in materialities from digital to sculptural to everything practicable. My stories are suggestive string figures at best; they long for a fuller weave that still keeps the patterns open, with ramifying attachment sites for storytellers yet to come. I hope readers change parts of the story and take them elsewhere, enlarge, object, flesh out, and reimagine the lifeways of the Camilles.» (Haraway, 2016, pp. 143-144,)

We accepted Haraway's invitation and decided to use it as a title and framework for our exhibition/exploration project.



Drilling holes for the pipes

Building the reactor

In the design process we discussed the aesthetics of the reactor. We wanted it to look like it could be both from the future and the past, an artifact made by another culture. Like an arrowhead telling stories about a degrowth society, giving hints about the cosmology, the everyday life, the worldview. Was it a technology from a dystopian future where composting is necessary for survival? An altar to commemorate and mourn extinct soil microbes? Or did it come from utopian worlds where composting was a part of everyday life, a spiritual object or a part of every backyard and every park? Inspired by the online communities of compost, we imagined a culture where there was not one correct answer, but many. No standard design, but a richness where people improvised with their materials and their local setting, with what they could get their hands on, but always with a certain playfulness and creativity. The bioreactor could be a way of expressing ourselves creatively, degrowth society's version of conspicuous consumption, (*Veblen, 1922 (1899)*) compost piles taking the psychological, social and physical space of luxury cars or watches, people bragging about the diversity of their piles rather than their collection of estates.

We wanted to contribute to the aesthetic richness, to imagine how a degrowth culture could work, and what their physical surroundings might look like. To envision for ourselves and the audience the architecture of degrowth and through that provide a glimpse of the community that produced the object. An abundance of time, of ideas, of creativity. We were also imagining the bioreactor as a kind of multispecies architecture, what we built was a home for the microbes, a space where they would thrive, essential for human survival, but primarily built for the microbial critters.

The reactor is built upon a wooden platform. In the platform we drilled 4 holes with a diameter of 12 centimeters, so that the plastic pipes would fit perfectly. We got the plastic pipes and the wooden materials from a company called ReCirkel that aims to develop an infrastructure for reusing building materials for the building industry. We had to acquire two rings of bent rebar - and between these two rings we tied used climbing ropes. In between the rings we stretched the plastic fabric. We got some failed-mixed paint from a paint store and the bricks for the foundation from a construction site nearby, and luckily this color matched the rest of the colors of the pipes and the rope. After filling the reactor and removing the pipes we cut the pipes in half in the vertical direction and had just enough pipe to make a roof. The roof is important, the compost must be moist, but not wet, then it will go anaerobic.

As soon as the reactor was built it was time to fill it. To let the materials react with each other and start the process of decomposition and composition. In this part of the process, it is crucial that the materials do not pack too tightly, to allow air to penetrate the pile. The sunflowers had to be shredded into small pieces to provide a larger area for the microbes to work on. It is also important that all the materials are wetted down before they are added to the pile. Everything needs to be filled in one-go, but as soon as this process is finished, it is time to sit back and let nature do what it does best - create diversity.



Testing the structure

Using the compost

The making of the compost is only the first step of the process. We imagined the installation to be the start of a longer process, the spores of a larger project, so that our efforts could have an impact, and at least allow us to test if this technology worked in our conditions and find out what it might do.

This is where the Camille Stories were handy. We imagined that the construction of the compost was the start of the first generation of Camille. After about a year the communities in the compost would have grown exponentially, both in numbers and species, the fungi permeating the reactor with its spores and hyphae. The abundance of microbial life quivers with excitement, ready to give life to exhausted soils. The community in the compost now demands space. The small bioreactor we built could provide enough microbial life to repair an area of 200 000 square meters of soil in parks, gardens, lawns or fields. The microbial communities are then spread out at selected, damaged places where the microbes find new homes and continue to live and breed. These are spaces with potential, spaces with exhausted soil, monocultural fields that has not been cared properly for. The spreading of the microbial life is not a new beginning, it does not shy away from the complex problems of today, but still, it represents a radical, slow move towards other ways of caring for soil communities. Spreading the compost immediately creates an attachment to the space, opens up for new ways of perceiving soil, new practices and ways of continuing the cooperation with the microbes.

We imagined that by spreading the compost out into urban gardens and parks, agricultural fields and rooftops the microbes could initiate a project spanning at least five generations. How would the relationship between microbes and humans develop in this time? How would the life in the soil develop? How would the humans develop with it? How would the world look like through these next, crucial 400 years?

Of course, there would be failures, experiments that didn't work, people that stopped caring, agricultural fields that gave way to other kinds of development, draughts and floods that damaged the life in the soil. But the thought that there was a small chance that one of the places was enriched, a chance for people to learn to care a little bit better for the soil that sustains them was crucial. We worked from an assumption that an abundance of life in the soil also creates an abundance of life above ground. The humans that care for a diverse place are faced with new responsibilities and *responsibilities*. (Haraway, 2016) In the process of reviving soil humans might find a more proper role in nature, learn how to cooperate with other species, how to repair the land, take care of the life in the soil, plant plants that feed the microorganisms, learn how to create diversity and fight monoculture. To regenerate damaged ecologies, in cities, communities, minds and soils.



In the degrowth spirit we tried to reuse as much material as possible. The wood, the paint, the ropes and the plastic pipes was retrieved, but the plastic sheet holding the compost and the steel rings had to be acquired from the growth economy.

We imagined how the compost could revitalize the monocultural peri-urban fields of Trondheim and turn them into experimental agro-ecological areas. How the new relations generated rage against plans for development and how the love for the rich microbiology of the soil turned the fields into wild, productive parks. How these spaces went from marketing houses to market gardens, from monoculture into a place for a myriad of people and species - an inspiration for how peri-urban fields could be developed.

We imagined how urban parks could be transformed from lawn to agroforests. Where the process of rewilding the park led to a similar rewilding of the people - and how people demanded more of the green spaces in their city than a regularly cut lawn. Where all sorts of life thrived together, where berry bushes and nut trees, wild grasses and wild humans could gradually spread and take over the park, setting new standards for urban greenspaces in a future that acknowledges that we can thrive only when other species thrive.

We imagined how spreading the microbial life into an urban garden could revitalize not just the soil, but also the urban gardeners' perception of soil. That the practice and event of giving the microbial communities of compost a new home would inspire the gardeners to care better, to learn more about soil life, to start using the microscope and get to know their companion critters in the soil, and how this new knowledge could inspire not just better caring for the garden space, but also extended beyond the boundaries of the garden.

We imagined how the cooperation between humans and microbes could turn soil from carbon source to carbon sink. How it could help the soil breathe again, by bringing the essential microbiology back to the soil, and to be able to feel how the ground sucked up carbon «*with gusto*» (Myers, 2018, p. 3) in the critical years of the 2030s.

These are all speculative fictions. Stories of what might happen in the future. Wishes and desires and not outcomes. As Donna Haraway argues «*storytelling [is] the seed bag for flourishing*» (Haraway, 2016, p. 150) Of course the physical project, the regeneration of the soil matters. But how we think about soil also matters for how we care for it. These fictions would not have been possible for us without doing the project. The visions of the future are opened up by the practice, even though the practice failed. Ecology is also in the mind, it is in ideas, in the way we think and relate, and this affects how we act or if we act at all.



The story of the communities of compost was told through a small catalogue inside the library of the museum. Can be found in the attachments.



One of the more than human symbionts participating in the project.
Horse manure from the police horse stable hundred meters from the museum





Shredded sunflowers from the last exhibition at the museum also joined the compost pile.





Along with municipal garden waste





Removing the plastic pipes after two days, now the channels are kept open by the microbial communities in the compost.





After filling the reactor we cut the pipes in two to make a roof.



The filled reactor,
Photo: Istvan Virag, OAT

What happened?

The compost was filled, the exhibition opened and time passed. We continued to care for the compost and went regularly to the museum to keep the compost moist. After some months I had to move back to Trondheim and the museum agreed to take care of the compost. In the winter of 2020, the coronavirus hit the world. This turned the everyday life upside down, and the routine of watering the compost was understandably also forgotten. When we went to visit the compost early in the spring it was dried out. Since it's very hard to get the compost moist again, we had to start all over. After a while we found a new home for the bioreactor, the urban garden Losæter in Oslo.



Emptying the bioreactor after the failed experiment.



The bioreactor on its way to a new home



Gathering new materials for the compost. This time, the local kindergarten.

“The unfinished Chthulucene must collect up the trash of the Anthropocene, the exterminism of the Capitalocene, and chipping and shredding and layering like a mad gardener, make a much hotter compost pile for still possible pasts, presents, and futures.”

- Donna Haraway, Tentacular Thinking: Anthropocene, Capitalocene, Chthulucene, 2016



Chipping and shredding

We are chipping and shredding as mad gardeners, but instead of using the ecologically sound and silent practice of scateurs we are letting my sister's lawn mower do the work. The lawn mower has travelled with me on my journey from Trondheim to Oslo and is now as an extension of Alex's body as he is chipping away at the leaves with Barcode as the backdrop. The leaves come from the kindergarten of Alex's son, and we are shredding the leaves to make them break down faster. Next spring, we will fill our bioreactor again and hopefully, on our second attempt we will be able to try out the technology of Johnson-Su Composting. Here we are going to experiment with a new mix of materials and set up an automatic watering system that will hopefully keep the compost moist enough. It is the second year of the 400-year project of reviving exhausted soils.



Removing the pipes for the second time





Automatic watering system set up





Communities of Compost, second iteration. Hopefully we can contribute to the diversity at Losæter.

Some notes on religion and science

Johnson-Su composting is part of what is often referred to as regenerative agriculture. Common for these approaches to food production is the cooperation with natural systems rather than domination. A wide variety of practices and techniques could fit in this category: carbon farming, permaculture, agroecology, agroforestry, silvopasture, managed grazing, holistic grazing, BEAM, Korean natural farming, indigenous farming. The most successful of these practices show how it is possible for humans to be part of productive systems without damaging our ecologies. However, there are some risks that we should be aware of, as the ecological crisis escalates.

At the last COP meeting (2021) one of these traps was easily spotted. In their pledges for «net-zero», the oil-producing nations, fossil fuel companies and high-emitting nations might use nature-based solutions and their promise of negative emissions as excuses to extend their empire of petroleum. The promise of soil, trees, plants, agriculture - an externalized nature - to take care of emissions sometime in the future allows these companies to keep emitting. This is ethically wrong of course, and the climate models also prove that it is much better to reduce the emissions now than in 30 years, since emissions accumulate in the atmosphere and are already wreaking havoc on the climate. Also, continuing to emit will put increasingly high pressure on nature to absorb excess carbon, especially considering that a lot of these healthy systems will probably be in worse conditions by then. There is a tendency for some actors to co-opt and use the promises of the nature-based solutions and it is important to be aware of this, as the urgency becomes more urgent.

But similarly, there might be a tendency for some of these practices and technologies to over-estimate their own potential. Some of this knowledge is outside of the normal scientific discourse. It is promoted by farmers and practitioners, through channels like YouTube and Facebook, rather than peer-reviewed journals. Sometimes it is hard to know if this is because of a conservative science, subsidies following conventional ways of treating land, and that these practices are too radical - or if it is because the practitioners really like to believe in their practices and that their livelihoods depend on them continuing to believe that the practice works.

Johnson-Su Composting provides an example of these traps. According to Dr. David Johnson, the BEAM technology experiments show that treated soils are capable of capturing up to 10,27 tons of carbon per hectare per year in the best conditions. (*Johnson et al., 2015, p. 31*) This is 20-50 times higher than what is observed by other researchers in the field. In addition, Johnson claims that the production capacity in his experiments is doubled, and 25 times increase in soil fungal biomass. The results from the experiments provide hope in a world that urgently needs to move carbon from the atmosphere and into the soil. However, the promises of such a solution also provides enormous opportunity for the fossil industry to keep emitting. One problem here is that this might be true for one of the experimental fields in Johnsons trials, however it might not work in the same way everywhere. This could lead to an over-estimated belief in a solution that will probably not be achievable. Another problem is that there are huge uncertainties regarding how stable carbon storage in soil is. Another layer of these problems is when agribusinesses become involved in regenerative agriculture and use these (at best optimistic) expectations to greenwash their businesses.

But the last problem is that the claims might not be true. After the Triennale, as I started to write about the project I was struggling to find sources for the research of Dr. David Johnson and the only thing I can find is a Preprint from 2015. (Johnson et al., 2015) This had me questioning the entire technique. Is it just a way to get famous, to get paid for doing videos, research and presentations? My gut feeling says no, but still, I want some proof for what these claims promises. At the Facebook community and the citizen science homepage of Johnson-Su composting there are pictures from test beds, pictures from the microscope, pictures from before and after, analysis of microbial diversity, and testaments from farmers using the technique confirming that it works. This is convincing, but still, if it delivers even half of what it promises, shouldn't it be possible to prove it?

Are the regenerative solutions scientifically sound? Are the methods and results too hard to measure? Do the extraordinary claims hold up? In a blogpost the agronomist researcher Andrew McGuire gathers evidence on regenerative agriculture and tries to assess whether it holds up what it promises. McGuire argue that what he has found is «*YouTube videos, testimonials, articles and interviews*». (McGuire, 2018) The key message from McGuire is that the extraordinary claims demand scrutiny, and for the people researching regenerative agriculture to make sure what they find is grounded in sound, scientific principles. The blog post keeps a list of papers that are supposed to provide evidence of regenerative agriculture's potential. The comments section is full of both scientists and regenerative advocates that discuss the findings and the possible reasons for why the extraordinary claims are not found. The preliminary result of this discussion is echoed in the title of the blog post «*Regenerative Agriculture: Solid Principles, Extraordinary Claims*». Since the practices of regenerative agriculture is a mix of well-known practices, like minimize tilling, continuous coverage and biodiversity and new claims such as that the diversity of cover crops can stimulate the soil to such a degree that it can replace fertilizer. Another claim that is not backed up by rigorous experiments is what McGuire call «*an improbable increase in soil organic matter*». (McGuire, 2018) McGuire point to one of the regenerative advocates, Gabe Brown's claims that the Soil Organic Matter in his soils has gone from 1,7% to 11,1% SOM. McGuire find it hard to believe that «*science has missed an astounding, extraordinary process*» and asks the regenerative practitioners to come up with scientific evidence of such an immense increase, ending his post on the note: «*Don't let regenerative ag become the cold fusion of agriculture. Pursue rigorous science to demonstrate its value.*» (McGuire, 2018)

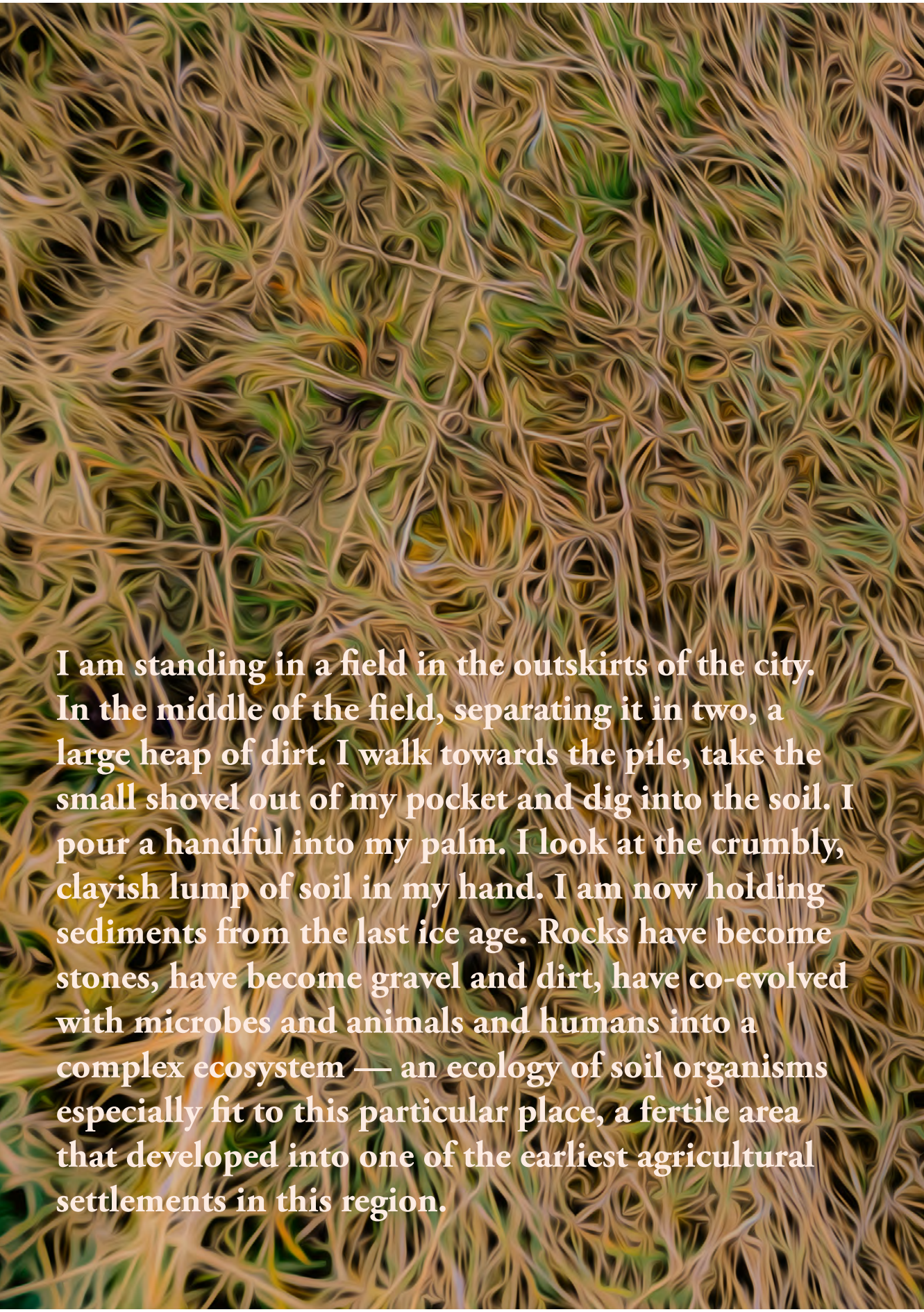
For me this was an important reminder to be more mindful to my sources. It is hard not to believe in the testimonies of regenerative practitioners and preachers, and it's easy to become enthusiastic, but it is important to remain skeptical and demand evidence for the claims, both for the future of the planet and for regenerative agriculture to be more than an empty promise. It also led to an uncertainty about my own research, since the wideness of the project leads me into fields where it's hard to keep track of what are good sources of information and what is not.

I must admit that it was quite disappointing to find out that the technology we have been exploring and promoting is not (at least yet) grounded in empirical, scientific evidence. Still, it was a very rich, interesting and fun process, where we learned a lot about soil, compost, microbiology and degrowth, and I hope that we managed to communicate some of this to the audience. Also, McGuire's (and others (Giller et al., 2021)) demand for evidence encouraged us to continue the Johnson-Su project, to fill the reactor again and try it out and see how it works, to find out if there is any truth to the extraordinary claims.

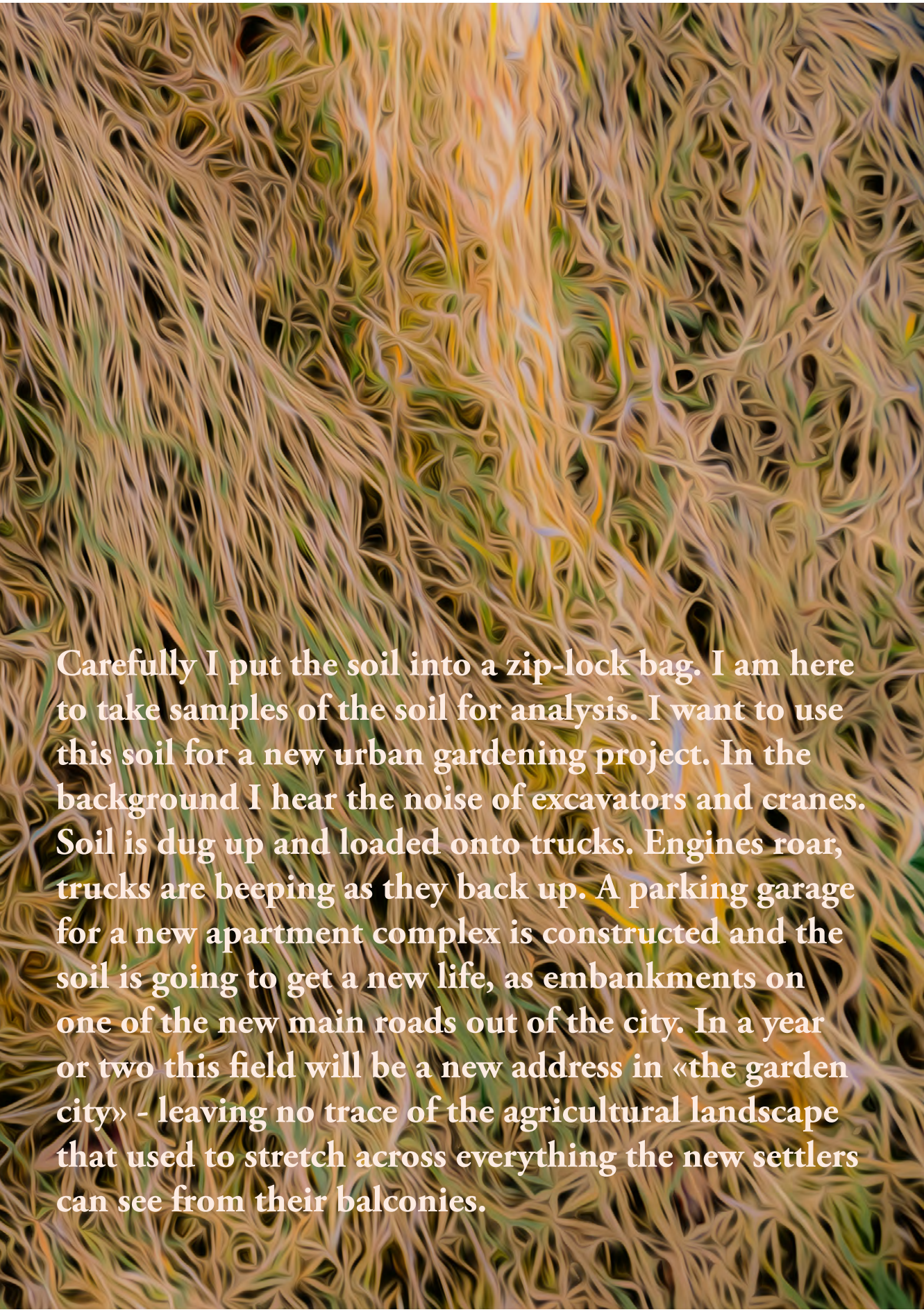


A photograph of a lush garden filled with green plants and numerous bright orange flowers, likely calendulas, growing in wooden planters. The scene is vibrant and detailed, with the text overlaid in the lower half.

Temporalities of urban gardens



I am standing in a field in the outskirts of the city. In the middle of the field, separating it in two, a large heap of dirt. I walk towards the pile, take the small shovel out of my pocket and dig into the soil. I pour a handful into my palm. I look at the crumbly, clayish lump of soil in my hand. I am now holding sediments from the last ice age. Rocks have become stones, have become gravel and dirt, have co-evolved with microbes and animals and humans into a complex ecosystem — an ecology of soil organisms especially fit to this particular place, a fertile area that developed into one of the earliest agricultural settlements in this region.



Carefully I put the soil into a zip-lock bag. I am here to take samples of the soil for analysis. I want to use this soil for a new urban gardening project. In the background I hear the noise of excavators and cranes. Soil is dug up and loaded onto trucks. Engines roar, trucks are beeping as they back up. A parking garage for a new apartment complex is constructed and the soil is going to get a new life, as embankments on one of the new main roads out of the city. In a year or two this field will be a new address in «the garden city» - leaving no trace of the agricultural landscape that used to stretch across everything the new settlers can see from their balconies.

Timescapes

As I climb the heap of soil, I find myself at the clash between two very different timescapes. The timescapes of the soil and its formation by natural processes for millions of years on the one hand, and the capitalist timescapes on the other; the construction of asphalt roads, concrete buildings, plastic playgrounds and glassy facades on the other. Timescapes are embodiments «of practiced approaches to time.» (Adam, 1998, p. 10) The practiced approaches to time embodied in the formation of the soil are radically different from the approach to soil when it is removed, destroyed or buried under asphalt or concrete.

In *Timescapes of Modernity* Barbara Adam identifies the habits of thought fundamental to the capitalist way of life. She argues that these ways of thinking, are «pivotal to the way we approach nature, technology and environmental hazards» (Adam, 1998, p. 58). The capitalist habits of thinking include:

«an approach to nature as culture's 'other' and the environment as external. I have associated with them emphases on space, on the visual and the material, on linear cause and effect chains, on abstraction and single parts in motion, on externalisation and objectivity, on natura naturata and the Merkwelt.» (Adam, 1998, p. 59)

At the same time the capitalist timescapes hinges on an exclusion of:

«time and multiple temporalities, context, all that is invisible and 'immaterial', connectivity and interdependence, natura naturans and the Wirkwelt.» (Adam, 1998, p. 59)

Natura naturata are nature's products, the things we can observe with our senses. Soil is one such product. I can see soil, touch soil, smell soil, feel soil. Grain can grow in soil, or it might be used as masses to build noise embankments on the highway. This is contrasted to *natura naturans* - the forces behind the perceived products of nature, «the invisible energy that is recognisable only through its products». (Adam, 1998, p. 30) These processes have been in motion for millions of years and are always ongoing, but we can only sense the result of these processes in real time - as a product. To perceive the *natura naturans*, the embodied energy and labor and history, we need to use our imaginative powers.



Gathering soil samples on Strinda Hageby. Development in the background.

The *Merkwelt* is a term from Uexküll and Kriszat (*Uexküll & Kriszat, 1934*) dividing the environment into a perception and impact-based dimension. The environment is composed of what we can see, hear, touch, smell and feel, (the *Merkwelt*) and the *Wirkwelt* refers to the impact of our actions. In an industrial society there is no clear link between what we do and the environment. Our shopping in the supermarket is disconnected from the emissions and ecological consequences of bringing the food to the aisles. The *Wirkwelt*, the impact of our actions, are temporally and spatially distributed to an extent that it is impossible to know how our actions works in the world and their impact in the future. Global warming is a prime example of how consequences are displaced in time and space. This should give rise to precautions in how we act, but as Adam points out, the structures of capitalist society and the accompanying habits of thought are actively working against such a precautionary principle. (*Adam, 1998, p. 34*)

In order to address the environmental hazards caused by the capitalist society it is crucial that the capitalist habits of mind are deconstructed and that more appropriate conceptual tools are developed. Capitalist thinking is not capable of «*understanding and responding to the kind of below-the-surface, beyond-the-present, time-distantiated hazards that have arisen from this approach to nature and its associated way of life.*» (*Adam, 1998, p. 58*) When *natura naturans*, the invisible forces of nature, are considered, such as in the slow processes necessary for the formation of soil - it also opens up for the temporalities of much more-than-human. Lichens breaking down rocks, long term shifts in climate, the work of glaciers, ecological succession, the life, work and death of microbes, animals, plants and humans. Seeing soil through the lens of time makes our dependencies in the web of life clearer. I am because billions of others are, and have been for a very long time. When crucial ecologies, like soil systems, are irreversibly destroyed it means that we lose opportunities for co-operation, survival and thriving on the planet.



To be able to sense the living soil with its embodied labor and history, we need to use our imagination.
Roll-out turf production at Rotvoll.

Timescapes of peri-urban soil

The heaps of soil waiting to be transported away is a manifestation of capitalist priorities, culture and temporalities. As I experience the heaps of soil, the destruction of our conditions of existence becomes visible, local and aesthetic, but because of the imperial, industrial food system the consequences are not felt by us immediately. The consequences are moved to somewhere else or have impacts in the unforeseen future. Because the destruction of this soil ecology has no direct consequences, and because we are not able to sense the immense amount of work (*natura naturans*) immanent in the soil it is undervalued. For the developers the soil has nothing to do with the conditions of existence, it is merely a matter, tons of dirt that must be displaced of somewhere. Importantly this way of looking at time is not human, it is capitalist, and is central to this specific development of society. Without a compressed, accelerated (*Rosa, 2013*), condensed and short-term understanding of time, the re-production of capitalism would collapse. The case of the peri-urban fields of Trondheim revealed for me how entangled this specific way of understanding time is to the capitalist project, and how it actively suppresses other timescapes, how it rejects both the future and the past.

When peri-urban soil is destroyed there are several dynamics at work. The first is the necessity of ignoring the ecological processes involved in the formation of soil. How we look at the heaps of soil, how we perceive the agricultural fields surrounding a city, a forest, a park or a swamp - has something to do with how we understand time. It is crucial for capitalist development that we do not appreciate or value the work of millions of years of world-building - and that we rather value how this world can be re-arranged into means for profit and accumulation. All the historic work done by tectonic plates, weather, ice ages, sea levels, and more-than-humans to make this special ecology needs to be undervalued. The geological, biological and cultural coincidences are ignored. The present is what counts. What we have here and now is a dispensable ecosystem, an area, a waiting land, potential for making money. A matter that is easy to dig through for excavators, perfect for making an underground parking garage. A flat, cheap land that few care about. A flat, cheap, land that is easily acquired. A flat, cheap land that can easily be turned towards more profit.



The heaps of soil is a manifestation of the priorities of the economy. Strinda Hageby

The heaps of soil represent not only an ignorance of the past, it also signals a whole range of possible consequences in the unforeseeable future. One of these are food security. The soil can be destroyed without us caring, since our supermarkets will still be full. Our food doesn't come from here, or at least the links between these fields and our plates are not direct and visible. Soil as a necessity for life is undervalued since in a globalized, capitalist market we do not depend on *this* soil. The loss of the soil is not easily felt. Food security is an issue that belongs to the future and is therefore out of bounds for capitalist timescapes. For the developers the timescape in these fields starts now and stretches to the minute the last apartments are sold. The local destruction immediately puts pressure on land somewhere and demand space and resources while relying on the imperial relations of the industrial food system. In one of the reports ordered by the developers from a consulting agency this is stated:

«If the production capacity of grain in Øvre Rotvoll is reduced this could lead to a new establishment of agricultural fields and forests may need to be cut down to replace the production capacity. This could happen in Trondheim, in Europe, or somewhere else.» (Yttersian et al., 2020)

The vagueness of where the soil will be replaced reveals the rejection of responsibility for the future. Clearly this is not a concern for the developers. There are no «vacant spaces» on earth, no forest in Europe or elsewhere waiting to be cleared. We need all the life-sustaining ecologies we have. The problem of the re-production of life is left for someone else to deal with in the future. This particular project might not be what's tipping the scale in the direction of hunger in the future. The problem is how the capitalist timescapes are integrated in politics and everyday life. There are millions of these projects. Developments like this are happening all the time everywhere, and the cumulative effects of all these decisions are diminishing the possibilities for a rich life in the future.



Strinda Hageby

Progress

Another characteristic of capitalist timescapes is the understanding of progress. Progress is the hegemonic way of understanding time; past, present and future. It is a one-way, linear conception where we must continue to innovate and excel in the mastering of our environment. To stop, to pause, to go back, or to wait is a restriction of progress. To progress along this line is the only way to move forward - and forward is inherently good. Importantly progress can never be reached - it is always ahead, an unreachable destination waiting around the next turn.

Seen through the lens of progress, history becomes a series of challenges posed to humanity, challenges we have responded to and mastered. We have survived and thrived, we have overcome the limits and hurdles with technological innovations. Progress is forward-looking, progress saves us. Progress is the story of development, always moving forward towards new frontiers. Progress is the narrative of exploration, of mastering and improving the conditions for human life. The past acts as a proof that we have overcome the challenges posed and creates an expectation that this will always be the case. Science plays an important role in this conception of time.

“Perhaps more than any other modern social practice, science is actively and performatively embedded in the progressive, promissory, productionist epochal timescape. In particular, modern science’s inherent progressivism reacts against any notion suspected of “turning back the clocks.” (...) Advances in science can be questioned but not a general ineluctable progression to the new or to a “breakthrough». In other words, in the epic narrative of scientific mobilization that Isabelle Stengers identified as core to modern science’s social identity (Stengers 1993), either we go forward or backward.” (de La Bellacasa, 2017, p. 180)



Progress. The agricultural land from the last picture has been developed. Strinda Hageby

Progress, in this context, is western, technology-focused, scientific, anthropocentric and capitalist. The future is «*associated with progress (...) while the past acts as a discriminatory signifier of development delay*» (de La Bellacasa, 2017, p. 174). In light of progress, new innovations are worth more than “old” ecological knowledge. The past is a stage left behind, conquered and mastered by technoscientific innovations. Looking at the past in this way only points forward. The future becomes «*a historical ratchet [that] prevents us from doing anything in the future that looks like things we did in the past.*» (Smaje, 2020, p. 2) To question progress is automatically dismissed with charges of nostalgia, luddism or backwardness. In the same manner indigenous ecological knowledges and worldviews are seen as irrelevant or left behind, at best curiosities or remnants passed in the rear-view mirror. But as indigenous people know all too well, these knowledges and worldviews have not been left behind because they were wrong. They have been actively suppressed, assimilated, erased and violently fought, precisely because they break with the monoculture of progress available to us under capitalism.

Progress is inevitable, progress is the direction and end goal, progress is the way forward. And to progress we need to develop stuff. Development is «*the practical implementation of the idea of progress*» (McDonald, 2020) The word development is associated with good things, to evolve, to move up the ladder, to advance. The problem is that the direction for development is set by the human, western, capitalist value system. Exchange value wins over the use value, long term consideration loses for short term profit and the narrow interests of (some) humans decides over the rest of the web of life.

«Development proceeds—advances!—with an untouchable, inevitable momentum. The word slips off the greasy tongue of a real estate developer or a single-minded investor or an impressionable business student with a lilt suggesting that even if you wanted to stop it, you couldn't stop it—but you don't want to stop it because look at this shiny new candy vape shop strip club mall concentrated liquified natural feedlot gas processing facility.»

Samuel Miller McDonald, Breaking development, Current Affairs, 2020

Building down soil as a prerequisite for the reproduction of capitalism

According to the developers the peri-urban fields need to be developed. This is part of the narrative of urbanization and is one of at least three dynamics necessary for capitalism to reproduce itself:

- The first is the perception of soil and nature as cheap, without value seen against the economic value that could be created if the soil is developed. This perception rests upon a worldview where humans are separate of, or above the rest of nature.

- The second is that food production needs to be abstracted from us. It must be something we are removed from and alienated from and don't understand. Food is something we get from «somewhere else», magically showing up in the supermarket. This is also part of what Brand and Wissen call the imperial mode of living. (*Brand & Wissen, 2017*)

- The third is the self-reinforcing logic of urbanization as an unstoppable force. The fields surrounding the city look backwards and nostalgic when seen in contrast to the developers glossy, urban visions of the future. Since urbanization is part of the progress narrative, to slow it down would be backwards, luddite, anti-modern - an attack on the evolution of humanity. Urbanization is one of the spatial manifestations of development. Urbanization is inevitable, every city needs to grow, no city is big enough, and the process cannot stop until the world is fully urbanized. The urban life is the only alternative, and the countryside will be left for a few large agribusinesses that produce the food, or farming is done automatically by self-driving tractors and drones. An agriculture that has nothing to do with humans. The producers, peasants and farmers living in the countryside are also seen as backwards, outdated, and are expected to move into the city to become consumers in the global growth economy.



Garden city being constructed. Strinda Hageby

Urban development

But even though urbanization is perceived to be inevitable it doesn't happen by itself. It needs to be fought for in every project. As political ecology details, when land change use, it is never neutral. (*Robbins, 2019*) In Trondheim almost all the agricultural fields surrounding the city are «reserved» through option agreements between developers and farmers. These contracts secure the developers right to build on the fields, if the project passes through the political hurdles. The farmers are offered good money to sign these contracts, and in the contracts lies also the hope to get really rich in the future. For farmers (being one of the lowest income professions in Norway) these opportunities are almost impossible to decline.

As soon as the contracts are signed the development of the city continues. These fields need to be regulated from Agricultural, Natural and Recreational Areas (LNF-område) into Housing and Industry - from country to city. This is a political game that the developers know how to play. Through my engagement with peri-urban fields I have gotten a glimpse of this game. Through hiring former politicians, through official and unofficial meetings, agreements and alliances, through ads in newspapers, videos on social media, PR Agencies, billboards, showrooms, webpages and newsletters, reports and consultants, the city is developed.

I have followed the political process of the development, observed how the developers use their power to shape opinions, how they argue for the necessity of the project, all the different ways of selling this as an environmental project, how it is crucial, not for the developers, but for the environment, for our common life on this planet that their projects are realized. I know what language they use and how they use it. I have seen the ads with the happy people in boots, with wheelbarrows, shovels and carrots in their hands, posing in front of the urban garden and in the vibrant community greenhouse. I have observed how the developers win through, despite protests from farmers organizations and environmental organizations and regional and national goals of not destroying more agricultural soil than we «need» to.

I have been frustrated and annoyed and furious and sad, but still I was not prepared for the physical experience of urbanization. As soil is loaded onto trucks and transported out of the construction site, other trucks are flowing in, bringing liquid concrete, poured into the formwork and solidified into a parking garage in the new development of the city. This is the sprawling of the city, urbanization spreading out into new areas. In this case, it is explicit, physical and visible. Maybe this is the reason it affects me so much to be here, to stand in this mess and observe what's happening, hearing the trucks roaring, workers shouting, machines digging, loading and unloading.



Finally, after 10 years of struggle the developers are allowed to develop this field. Øvre Rotvoll.

Times of the garden

«[T]ime is not an abstract category, or just an atmosphere, but a lived, embodied, historically and socially situated experience. Time is not a given; it is not that we have or not time but that we make it through practices.»

Maria Puig de La Bellacasa, Matter of Care, 2017, p175

Capitalism produces an anthropocentric, accelerated and compressed time, a time more and more out of tact with the ecology that sustains it. The pampas beef and passion fruit in Norwegian supermarkets year-round are brought to us by stretching out to every small corner of the earth, transforming spaces, drilling deep and filling the atmosphere and oceans with our debris. The externalities are distributed in time and space, impacting the possibilities for future inhabitants on earth to live good lives.

The practice of shopping in the supermarket makes a certain time. The unseasonality and untimeliness, food disconnected from both time and space, from history and future. The industrial food system serves us everything we want, all the time. It obliterates time and space and requires no bodily or sensuous contact with the production system. The environmental philosopher Arne Johan Vetlesen argues that this production of presence, everything-all-the-time, also *“creates its own kinds of absence”*. (Vetlesen, 2011, p. 30) The history of the food, where it comes from, who produces it, how the production changes the landscape, are all erased. The capitalist timescape orders the practices of the farmers in the food system, decides what they grow, how the fields are treated and how the producers relate to the land. Time ticks in the clock of productionism and the consequence of this monoculture of time and space is the ecological crisis. In this sense the capitalist way of ordering time swallows the future and each day with this system suppresses the opportunities for life in the time to come. The capitalist timescapes makes the future unthinkable.

Even though the capitalist way of ordering time is dominant in our times, there is always a plethora of temporalities existing. The urban garden offers opportunities to learn to know some of these more-than-human temporalities and care for them on their terms instead of subduing them completely to the capitalist way of ordering time. Being in the urban garden does not free us from the capitalist timescape. Capitalist clocks will constantly tick in our heads, command us to work more, or question how productively we spend our time, or it will rip us out of our habits in the urban garden to attend to more «urgent» tasks. But the practices of urban gardening start a whole myriad of other rhythms in our heads and bodies, other clocks that also start to make time, radically different from the unknown time and space of the supermarket. The temporalities of the urban garden resist the dominant *«progressive, productionist, anticipatory temporal regime»*. (de La Bellacasa, 2017, p. 175) Through involving ourselves in the practice of sowing, growing, harvesting and seed saving we make room for new temporalities in our lives. The garden is a place where we can *make time* for a variety of temporalities.

«I can sit here for a long time and just study a plant. Why does it behave like that? And (...) why are there more flowers and berries this year than last year? It is an eternal learning process. That's maybe what I find most fascinating.»

Gardener, Interview 5, 2021



What kinds of temporalities are produced in the garden?

Importantly, the temporalities in the garden are not passive. They demand care from us. The seasons, the soil, the plants, the compost, all beat in different rhythms that the capitalist temporality try to mute and suppress, but as a gardener you need to be careful to these timelines to succeed. Again, it is through our use of nature we can learn to relate better. (*Antonsen, 2017*) Urban gardening is not just about growing food, it is also a way of growing relations to and interacting with other temporalities. To learn how to care for the more-than-human temporalities in the garden is also a way of learning to live together with all the other species that we share our world with and depend on. This richness of time is rooted in the specific place, with its climate, its soil, its people and its history, a place continuously reproduced by all these different temporalities to make new futures. The seasons, the weather, learning to yearn for rain in the long, dry periods of July, the timing of planting, sowing, watering and harvesting, the perennials and bushes that grow bigger every year, or the chestnut trees that might bear fruits in 20 years. As Paul B Thompson argues «*raising food and eating it [is] an act of communion with some larger whole*» (*Thompson, 1995, pp. 18-19*) Urban gardening is not just about recognizing the existence of these different temporalities, but also relating and adapting our practices to them.

The temporalities of the garden can be ignored, but also strengthened and start to take up consistencies of their own, going into daily routines and start to shake things up, to make new habits, and open our sensibilities towards other timescapes that we depend upon. These temporalities are easier to discover if they are connected to practices. The spring is felt harder if it is involved with an urgency to sow seeds. The temporalities of the microbes in the compost are easier to sense if turning and nurturing the compost becomes a routine and the multiple timescapes of soil are more evident when the yield depends on the fertility of the soil and demand practices like cover crops and mulching. In this way the manifold practices of the garden make its own time, a time that does not care much about clocks. These temporalities will be coexisting with the capitalist timescape, which will try to dominate the times of the garden, but the temporalities of the garden will still be there, will be available for us to attend to, listen to, feel, touch, taste and learn from, and might also follow us out of the garden and start to disrupt the dominance of capitalist temporality elsewhere.



A successful gardener need to care for a variety of timelines.
Harvesting potatoes is one of my favourites.

Making care time

To be able to care about the multiple temporalities of the garden takes time, patience, curiosity and attention. It requires making what Maria Puig de La Bellacasa calls *Care Time*, that allows us «to get involved with a diversity of timelines» (de La Bellacasa, 2017, p. 171) As Puig de la Bellacasa reminds us, care is not limited to humans, it is also what earthworms and microbes do all the time, and this continuous care work is necessary for all life on earth to go on. Gardening is a direct contact with this kind of life. We touch it with our hands, we smell it, taste it, hear it. This is not just a way of growing food; it also reveals the temporalities we depend upon and teaches us more proper ways of caring. Seen through the care perspective it is not the production of food outside of the capitalist food system that is most important in urban gardening. Measuring production might even miss the point. Care is about reproduction, reparation and maintenance. The production of food merely offers an opportunity to make time to create relations, to get to know those who care for us, that constantly make and remake the world around us. Care time is about listening to and caring for these temporalities, learning what they need in order to thrive and practice how to contribute and cooperate. As we put the seed in the soil we «become “obliged” to care in actual practices and relational arrangements, in messy material constraints rather than through moral dispositions» (de La Bellacasa, 2017, p. 204) Soon enough it becomes evident that the seed needs our care in order to take care of us. But this kind of caring is not possible unless we are able to take or rather *make* the time. *

“I think I am here about three hours a day (laughter). I sit here and watch the plants, and I have really deep feelings for them, it’s ike, aj aj, wow, aj aj, you are so pretty, aj, there the peas are blooming, and things like that. I can really spend a long time just sitting there, watching and thinking, and suddenly I discover something I haven’t noticed before, a sprout I haven’t seen before, maybe it has sprung out while I was sitting there?” (Interview 3, 2019)

Care time offers a moment to be attentive, to be surprised and immersed in the present, to a point where you no longer know how long you have been doing what you do. My fellow gardener «spending» three hours in the garden every day, is in itself a break with the productionist temporality of capitalism. Care time is a temporality that *«cohabits but remains imperceptible from the perspective (...) of capitalistic time.»* (de La Bellacasa, 2017, p. 203) From an economic point of view the time spent in the garden can be seen as “unproductive” - it would be better to buy the sugar snap peas and be relieved from the toil. The fact that care time is rendered as unproductive shows how *«[a]ll spheres of practice is colonized by the productionist logic»* (Puig De La Bellacasa, 2015, p. 708) This way of viewing time as productive, as if time was money, a waste of time, is a product of the capitalist temporality.

«Care time, in practice and experience is neither a slowed mode of, nor outside, the timescales of technoscientific futurity. Focusing on making care time does, however, offer glimpses into a diversity of timelines that, despite being made invisible or marginalized in the dominant timescape, can challenge traditional notions of technoscientific innovation.»

Maria Puig De La Bellacasa, Making time for soil: Technoscientific futurity and the pace of care, 2015, @692

*It must also be noted that the privilege of making this kind of time is not available to everyone. Many people have more than enough just getting by, making the time to care for their children, to get food on the table and money to pay the next rent. However, in a rich country like Norway many people have some freedom in how they spend their freetime, but since we live in a dominant capitalist temporality, caring is made more difficult “under the pressures of managerial and output-oriented time constrains.” (de la Bellacasa, 2017) This also speaks to the bigger, institutional and societal changes that we need to go through in order to deal with the ecological crisis. We need a reduction in work hours, something like a living wage for everyone, we need norms, expectations and priorities to change, so that more people have the time and energy to care, maintain, repair and restore. But for this to be possible, we need to want this change, to envision it and to struggle for it politically, in our workplaces and elsewhere, and even the collective desire for this is generally missing today.

My fellow gardener *makes care time*. She momentarily steps out of the capitalistic timescapes and enters the garden, a time niche where she can live the temporality of the insects, the plants and the soil. She can immerse herself in this world and learn from her plant teachers, her older brothers (Kimmerer, 2013) in the small plot of land that she has access to. She can care for her plants, not just by sharing her time with them, observing, listening, touching, but also by feeding the soil, watering the plants, guarding them against enemies. This is of course for her benefit when the plants offer their gifts in the late summer, but these gifts are the surplus of the plants, a surplus they can create because of the way they have been cared for and are now able to give back. This is also what ensures their own survival and allows them to pass their seeds on. Some seeds land in the soil in the plot, some fly away with the wind or gets carried by a bird, and others are carefully picked and stored in a coffee filter in the gardener's apartment during the winter.

Garden work is not an event. It is a regular activity - the nature of the practices demands care over time - being in the garden, watering, weeding, feeding. This makes urban gardens into social arenas where people can meet, but the practice also involves us in a care relationship with the plants, a repetitive work, of doing things again and again and again - it becomes a habit. This is also why urban gardening can lead to a change of attitudes, because these practices both requires and makes habits that has to with ultimate concern, like growing our own food. (Antonsen, 2017) Puig de la Bellacasa suggests that the repetitivity improves the care work, as a «*knowing relation that thickens as it goes, as it involves*»(de La Bellacasa, 2017, p. 207) Care time involves the gardener in a thickening of the present. Each moment with the plants and the soil and the insects and the compost are filled with a diversity of temporalities to care for. These temporalities goes along regardless of whether I pay attention or not, but *if and how I think about it matters* (Haraway, 2016) - for the plants, for my attention, for how I care and for how these practices affect me.



The time niche of the garden

Times of the plants

Michael Classens argues that it is «*important to hold onto the aspects of nature that are unique*» to the urban garden and point specifically to the «*biophysical processes of plant biology*» as a «*solid counterpoint to the pervasive logic of neoliberal capitalism*». Plants and their «*unpredictability, growing time and regeneration time*» blatantly «*oppose the hyper-controlled, just-in-time production method and associated social relations*» (Classens, 2015, p. 236) of capitalist agriculture.

Capitalism hates speed limits, and plants resist by their physical limitations to grow fast. When plants are involved, you can never know if you will get a yield at all. These contingencies can to a certain degree be avoided in a factory, but not in the field. This doesn't mean that capitalist agriculture isn't trying. The entire project is about control, about productivity, to «*make two blades of grass grow where one grew before*». (Thompson, 1995, p. 50) According to Classens, the plants resist this striving towards faster and more. The biology of plants stymies capitalism. This happens with the superweeds (Moore, 2015) in the peri-urban grain field and with the sugar snap peas in my garden. The resistance to grow faster, to provide guaranteed yields slows down the regeneration time of capitalism, since it depends on an external nature working harder and harder.

In what follows I will look at three of the basic temporalities of the garden, the soil, the plants and the compost, to explore how the nature of these things relate to our dominant experience of time.



Tomato plants in my window sill

The first spring

«Gardens are sites where people explicitly stage and restage their relationships with nature» (Myers, 2019)

With a growing hopelessness over the ecological crisis and no experience with urban gardening I started working on this project in the spring of 2017. I decided to start with myself and my immediate surroundings in the apartment building where I lived.

Together with some of my neighbors we made an invitation to all the inhabitants in the building, inviting them to join a garden group. We attached seeds to the document and put it in all the 47 mailboxes.





Suddenly plants were growing also in my neighbors windowsill



One of my neighbors had an extra cupboard and we converted it into a seed and soil bank, library and sharing corner in one of the entrances.

The gardening experience often starts with a seed. Also, for me. To start a PhD on gardening I didn't have much experience. When should the seeds be sown? How would it grow? Would the fruit or vegetable be under or over the ground? Was it a root? A legume? How tall would it become? How much space would it need? How do I take care of it? When should I plant it outside? How will I know when it's finished?

It was exciting to see the seeds sprouting both in my own windowsill and the neighbor's windows. Suddenly I was immersed in a new timeline - the timelines of plants. The first days after planting a seed is filled with expectations. I walked past the window, looking for clues, for small cracks in the soil, for hints of green in the dark matter. And then, suddenly, a small green sprout, a squash or sugar snap pea, breaking through the surface with an almost brutal force, throwing the soil to the sides. The first seed leaves open up, sometimes with the shell of the seed stuck to its leaves. Do I remove it, or will it manage by itself? Looking at the small plants growing, seeing the light for the first time I was astonished by what just happened down in the soil, surprised of how much energy there was in the tiny seeds, and how, in a magical way had transformed and formed roots that could sustain it.



Soon the plants were too big to be in one pot and I needed to separate them, give them space, and keep the roots from growing into each other. I took the fragile plants out of the soil and onto the kitchen table and carefully untangled the roots before I put them in separate containers. It was nerve-wrecking. Trying to separate the tiny roots without destroying them and putting them back in the soil with my clumsy hands and then watch in excitement and restlessness while the plants rise or fall during the next couple of days. Had my intervention destroyed too much? Often, I was impressed by how much they could put up with.

But I was also surprised by how fragile they were when I was taking them out on the roof terrace to harden. The weather had to be warm, but without direct sunlight and no rough wind. Not an easy task in the Trondheim spring. Then the plants should spend more and more time outdoors for each day. It felt like I had gotten a pet, walking several rounds up to the roof terrace every day. I was constantly looking at the thermometer and through the window, worrying about whether it was too hot, too cold, too much rain or too much wind. Checking the weather forecast became a habit, so did lying awake worrying that the night would be too cold after the plants had moved outdoors.

Not all of the plants survived the transfer from the warm, still, south facing windowsill inside to the Trondheim weather on the rooftop with four seasons in one day. Often, I went up to the roof garden only to meet plants that were becoming more fragile, thinner, hanging, with brown or yellow leaves, maybe broken by the wind. The plants that looked so strong in my apartment got a tough meeting with their new reality of the rooftop.

The biology of the plant is tightly knit together with time. Each variety has its own temporality. It takes a certain amount of time before the seed sprouts, before it breaks through the surface of the soil and before it bears fruit. As a farmer or as an urban gardener, the everyday life becomes ordered by these biological timelines. It marks the time for sowing and harvesting, for nurturing the plants, seeing how they evolve from day to day, watering, weeding, feeding, looking out for pests and enjoying or worrying about how good or bad the plants are doing. In July and August, the seeds have grown so big that it is hard to keep track. So much is happening every day. It is a time to taste, to feel gratitude for the gifts of the garden, a time to learn how to use the new varieties that you have never eaten before, to know when and how to harvest, to share, to prepare to conserve, to eat together, and to learn how to harvest the seeds of the plants and get ready for next season. All these practices care for ecological temporalities that are ignored, condensed, or accelerated by capitalist timescapes. By attending to and learning from these temporalities we find ourselves in a richer present.



«[The plants] literally breathe us into being. All cultures turn around plants' metabolic rhythms. Plants are the substance, substrate, scaffolding, symbol, sign and sustenance of political economies the world over. We must learn how to work with and for the plants so that we can be nourished and clothed and sheltered and pleased and healed — without destroying the earth. Plants are the world-makers we need to heed if we hope to grow liveable worlds. And our worlds will only be liveable worlds when people learn how to conspire with the plants.»

Natasha Myers, How to grow livable worlds: ten not-so-easy steps, 2018,



Tomato plants hardening against the warm concrete wall



Simultaneously we started the first common project in the garden group. These beds on the sidewalk outside of the apartment building suddenly became our responsibility, in an innocent attempt at guerrilla gardening



Beginning to take care of these beds was a good way to get to know the neighbors and the neighborhood.

We tried growing potatoes there. It worked well, but after we found out how the neighborhood dogs cared for the beds in their way, we decided to grow perennials/ornamental/pollinating plants instead. It was a pity, because I think growing food in neglected, public places like this, that is passed by many, is one way of opening up what space could be used for and might inspire some of the passers-by to transform their lawn, backyard or sidewalk. Still, caring for these beds sends a signal, but maybe not as strongly as if we produced food here.







The gallery in the first floor also wanted to take care of one of these beds



And took the initiative to paint the walls



The next project was the roof terrace. Luckily, we had construction work on the facade and could borrow the elevator so that we didn't have to carry the soil through the entire building.



Planning while doing



Establishing the roof garden.



After bringing our plants out from our windowsills we suddenly had a reason to spend more time on the roof. The plants demanded new habits and cooperation, not just with the plants, but also in between us, to find ways of caring for the plants together.





Times of the soil

Soil can be separated into two main ingredients, mineral and organic. The mineral part of the soil has been eroded by weather tearing, glaciers rubbing and lichens mining - all the way from rock to small particles that provide us with the nutrients we need. The organic, living part is made up of dead plants, trees, animals, microbes and humans, broken down to make new life. Soil has both a macro timeline spanning millions of years and a shorter timeline spanning the decades it takes to break down for example a fallen tree, or the years it takes to break down a leaf. However, soil is not just a medium consisting of organic and mineral ingredients. It is a living ecosystem with a diversity that is simply incomprehensible. We can begin to grasp the complexity with phrases such as in teaspoon of soil there are one billion organisms and 10,000 different species. (*European Commission et al., 2014, p. 22*) As we begin to understand the complexity of soil as life, we might also sense the diversity of timelines we depend on for our survival. The earthworms, the protozoans and arthropods that live, reproduce and die to keep us alive.

However, the capitalist way of understanding soil has been as a growth medium. In this medium we can put our patented seeds, we can make a monoculture, we can plow and sow and fertilize and pesticide. Soil has been paced to capitalist timescapes, and the cheap food and cheap nature that the soil provide has become a prerequisite for the reproduction of capitalism. To achieve this productionism the diverse temporalities of the soil has been marginalized.

If soil is seen as replaceable, renewable and abundant it is easy to accept the choice of exhausting or destroying soil. But it also works the other way around, as Puig De La Bellacasa explains: «*Modes of soil care and soil ontologies are entangled: What soil is thought to be affects the ways in which we care for it, and vice versa*» (*Puig De La Bellacasa, 2015, p. 692*) If we look at soil as an essential part of our well-being, as a living ecosystem that we are part of and depend on, we will protect it, and start to treat it differently. And by treating soil differently we will repair the relations to the soil and also start to perceive it differently. We will change the soil, and the soil will change us.

Caring in urban gardens

Urban gardens can be spaces within our current paradigm where other modes of caring become possible. Through the practices of urban garden ing soils can be seen as something more than a growth medium for plants, and become matters of care rather than just pure matter. (*de La Bellacasa, 2017*) Urban gardens are spaces where humans might become integral parts of the soil foodweb, rather than predators on top of a food chain. An opportunity to build soil health rather than to exhaust or destroy it. Even though most urban gardening projects are temporary, many urban gardeners care for soil as if it should last forever. Why do urban gardeners, with their temporary outlook, and often without ownership or prospects for long term futures treat their soil better than farmers that rely upon the soil for their livelihoods, who own their farms?



What you think soil is matters for how you treat it



My hunch is that for many of the gardeners it seems strange to go out and buy herbicides, pesticides and fungicides and spray this on their vegetables or on their soil. To care for soil, to repair, maintain and feed soil in the urban garden is also to care for oneself. It seems “unnatural” and many of the gardeners I have been working with, talking with and observing are seeking knowledge on how to deal with this in other ways, by feeding the plants with their own compost, by growing plants that thrive together, by digging as little as possible and keeping the soil covered. These practices show an attention to care for the soil and the plants they are going to eat. Their relationship to soil, food and plants and the links between are different than in an industrial farm.

And this might also be in turn because industrial farmers are not in contact with their soil. This is not their fault. They are, as we all are, entrenched in the capitalist realism and in technoscientific visions of the future. For them other ways of caring for the soil belongs to the past, just like composting our own food waste looks anachronistic for the average urban citizen. They operate under conditions where soil care and soil health are not prioritized, not part of the job description, or not feasible under the policies that drive the industrial agriculture. They don't have time to make care time.

Of course, it is not possible for the industrial farmer to use the same amount of time or care in the same way as an urban gardener with her four m² garden patch. But this is a strength of urban gardening, not a limitation. Because it is the attentive care, the time spent per sqm that enables these new relations between humans and more-than-humans in the garden. The multispecies community is a lot easier to experience through the intimate relationship that is needed in the garden. Every day I watch the soil in my small patch, I can touch it with my hands, I can see the porous biological structures built by the microbes, the small castles of earthworm castings, all kinds of life that I can barely understand, but still plays an essential role in keeping the soil, the plants and me healthy and alive.

In the urban garden soil goes from being a resource to a living ecosystem with a diversity of timelines. The “deep time” of the inorganic parts of the soil, the sand and clay and pebbles and stone which takes thousands of years to form and the timelines of the earthworms, which live for a couple of years, the lifetimes of viruses and bacteria, all with their own characteristics and lifestyles, the interaction of the roots with the soil, the mycorrhizal fungi and the interaction of all of these systems with each other, with the air and the rain and the hose that bring them water, the plants that feed the soil, the sun that keeps them alive, the insects that pollinate, and me, the gardener, who's role might have gone from someone who thought he could control the garden to a guy that tries his best to collaborate with the system, to make the conditions for multi-species thriving (including myself) as good as possible. From a master to a co-carer, working together with all these other species necessary for my survival. Every second spent in the garden is a lesson learnt. Every day, every season with the millions of microbes in the soil, the seeds and plants and fellow gardeners, gives me more experience and more confidence, not in myself, but in the *relationship* between myself and the ecology that I depend on.



The "time-consuming", labour-intensive, and thoughtful way of producing food in urban gardens is one of its strengths



On moving soil

As I was starting the project on Nyhavna I wanted to use the peri-urban soil that was going to be developed and transported away. I took soil samples, got them analyzed and talked to experts on moving soil. I learned that this was challenging, since soil is a complex ecosystem and once you start digging in it, the layers in the soil with their particular tasks and life is disturbed. If soil is to be moved, these layers need to be kept intact and be carefully moved to its new place. This is a risky strategy, and should be done in the winter, when the soil is frozen or at least when the soil is dry - and there is no guarantee that it will work. After talking to the experts on soil moving in Norway, warning me that «it might become a mud-bath» I decided to go for plan B and ended up with the dead soil instead.

Later, we needed some more soil in the garden in Ila, and I decided to try moving a little bit of soil anyways, as an experiment. The soil was hard to work with, heavy and clay-y. It was almost impossible to use this soil as a topping. However, we tried using it in establishing new beds and used this as a foundation for the compost we produced, which worked out quite well for the tomatoes last year.

Still, the project of moving peri-urban soil into the city, or moving it at all is a strange solution, at best a last resort to save soil that is already doomed. Also, there is a danger that the act of moving soil, becomes an excuse for developers, giving them another card to play, stating that «we can just move the soil somewhere else».

The most fertile land in Norway is the land close to the cities. Often this was a reason why people settled down there in the first place. When we destroy these fields, we are taking away the physical conditions for making food in the future, and also a lot of potential for the urban population to participate in the production of food. The soil in peri-urban fields are the conditions for agriculture and should remain where they are.



Times of the compost

The leaves that fall to the ground every fall will, if left on a healthy ground disappear until next fall. Springtails, millipedes, snails and crickets will chew and digest, fungi and bacteria, will break them down, and earthworms will pull them into the soil and provide nutrients for themselves, plant and tree roots. All life depends on the everyday practice on the surface of the soil. In the compost bin this process is speeded up. Composting is one of the arts of urban gardening and a technology where humans try to mimic the activity that happens on the forest floor, but also find different ways of speeding up and enhancing the process. However, there is a difference between speeding up the process of a compost bin and speeding up the regeneration and growing time of a plant by using fertilizer. In addition to being essential for feeding soil and plants, composting can also teach us something about time.

Timelines of fertilizer

Industrial farming depends on fertilizing the fields. Big bags of fertilizer are piled up in the spring and spread onto the land. For the farmer this is a product, but the production of this essential nutrition is an interaction with a multitude of processes and temporalities. Fertilizer consists of three main ingredients, Nitrogen (N), Phosphorus (P) and Potassium (K).

Nitrogen is extracted out of thin air through the Haber-Bosch process, mixed with fossil gas at high temperatures and high pressures to produce ammonia. Phosphate is found in sediments from marine environments and gives new life to the fossilized remains of manatees, sharks and whales and their excreta. This assemblage of old, compressed ocean floors is then mixed with sulfuric acid to produce phosphoric acid. Potassium salts are mined far beneath the surface of the earth from deposits of old seabeds and ancient lakes, the work of rivers that ceased to exist a long time ago. The water in the lakes and seas have evaporated and the salt is compressed into rocks that are crushed to make potassium. Additionally all these processes require interactions with our «*subterranean forests*» (Sieferle, 2001) for powering the mining equipment, for extracting, crushing, grinding, refining, processing packing, transportation and shipping. These old, fossilized forests are burned and release gases into the atmosphere, changing the life conditions on earth, compresses the future and fills the present with anxiety. The small, blue or white balls of NPK are then disseminated across the fields and their water-soluble nutrients become readily available, easily digestible food for the plants in the soil.



Composting is a way of speeding up the "natural" processes

Timelines of compost

The composting practices that happen in a garden are also «productive» - the main reason for composting is to create new metabolisms that makes us self-sufficient with nutrients. To create these new flows also involve us in a variety of temporalities, but these are different from the industrial production of fertilizer.

I gather the weeds from my garden plot, put it in the wheelbarrow together with the grass clippings and roll it across the garden towards the compost. With my garden scissor I cut the plants into small parts to make more surface and to make the job easier for the microbes. I mix the fresh, green material with the brown, drier plant matter in the pile, throw in a bucket of coffee grounds and water. I add another layer to the garden compost. A week later I come back, and I feel how content the microbes are with my labor last week. The insects crawl, the steam rises as I lift the top layer, the smell of regeneration, the breaking down of something and the creation of something new.

In the forest the leaves fall from the trees and land on the ground, and the microbes start to do their magic. After some years the leaves are not visible anymore, they have become part of the dark soil. In this way the tree feeds itself, making its own future food every fall, the leaves join the ecology underground, providing the soil with the energy needed to give life. In the compost bin I am speeding up the “natural” times of decomposition and regeneration. It is my responsibility to make sure the conditions are as good as possible for the microbes. I need to make a habitat where they will thrive, an environment where the microbes can breathe. I need to turn the compost to provide air, make sure the pile is moist, not wet, not dry, and continuously feed the microorganisms to keep them happy. An experienced, active and enthusiastic composteur knows how to do this and can drastically speed up the regeneration time, as opposed to just leaving it on the ground in a park or a forest.

By composting I interact with the lives and temporalities of ants, beetles, centipedes, earthworms, flies, millipedes, slugs, snails, spiders, springtails, beetle mites, mold mites and nematodes, protozoa, fungi and bacteria, which could be found in billions of cells just in a gram of compost. (*Rynk et al., 1992*) I try to make sure as many as possible of these critters stay alive, but I also want to speed up the process to get all this life into my garden plot to help me care for the soil.

It is impossible for me to fully understand how this life works, how long does a protozoa live, what is the relationship between the nematodes and millipedes, the flies and the snails? What I do know is that by composting and adding this diverse, life that I don't understand back to the soil, I replace a process that would otherwise take millions of years. Instead of buying a bag of small, blue, balls of fertilizer, mined from around the world, I can give back the same nutrients (and more) to the soil in my garden. Instead of interacting with all kinds of fossilized material, deposited in the last million years I can cooperate with the critters which are already here, above the ground, and bring them back where they belong.



Helping the microbes to turn plants into compost

Spring again

It is spring again, but this time the force of the spring is not waking me up. I am already awake and the daylight that fills my bedroom, earlier every day, is stressing me out. I am trying to finish my PhD and every decision that I haven't made so far must be made. Things are cut, other things come in, the order of words, of chapters, of sentences. But still, the stress of finishing is not what keeps me awake. Last night I was on the roof terrace for the first time this spring. It is mid-May, chives and rhubarb are coming up and the berry bushes have gotten their first leaves. But apart from that there is no life. Not in the online garden group, not in the soil in the planters on the roof, or in my windowsill.

I don't have the time. I don't have the time to plant seeds, to feed the planters with the compost made this winter, to revive the garden group. After five years, with ups and downs, people getting engaged, people moving in and out, gaining and losing interest, the garden group is on a new low. Probably this is not keeping the other members of the group awake, but for me the failure, hesitation, lack and loss of engagement is both personal and professional. It means that I have not been able to organize well enough, I have not been able to invite people in and create a sustainable enough engagement to keep the garden going. It means that the connection to seeds and plants have not lasted, and the soil has not moved from a matter to a matter of care. For me it's more a matter of concern, as I lay there in bed, wriggling and questioning everything that I have done.



Forget what I said about the garden making care time.

I get apathetic and powerless, and I can't see a way out of the mess. I watch the news and I see the heat waves in India and Pakistan, 45-50 degrees for a billion people, no end in sight. On twitter I read about the wet-bulb temperature in the body, (*Raymond et al., 2020*) when the combination of heat and humidity keeps the sweat from evaporating, and the body's mechanism of cooling itself collapses. I watch videos of wildfires, through the roaring flames the sound of animals, using their last smoke-choked breaths to scream. Rats, deer, mice, foxes and lemmings trying to breathe through the thick smoke, desperately trying to find a way out, only to discover that they are surrounded by the flames they were running from. The smoke is carried far away and covers glaciers, speeding up their death. The air traffic and consumption and emissions are surging «back to normal» after a pandemic pause. New highways and runways are opened, and billionaires practice their escape in atmospheric lifeboats, while making other planets the only option of survival for the rest of us. I hear promises of green growth, green shifts, green economies, green technologies and green new deals. Someone has invented a machine that can suck carbon out of thin air and store it under ground, others promise that we can block out sunlight by spraying something into the atmosphere. Headlines that are supposed to calm me down, but only makes me more afraid. Report is piled upon report, IPBES and IPCC trying to express with clearer prose every time that we need to act, to prevent the earth from being completely wrecked. Still, the Norwegian government promise that we will «develop» the fossil fuel industry instead of replacing it. One hand declaring climate emergencies while the other is busy giving out new drilling licenses, destroying swamps and soils, forests and rivers and fjords.

I watch the debate in the paper, some new peri-urban fields in Trondheim are proposed for development, and I wonder, is it worth the effort to protest? What is the point? Why should I care when it doesn't matter anyway? This is the fatalistic passivity that Guattari was describing, sneaking in, one of the most dangerous manifestations of the mental ecological crisis in the years to come. A widespread feeling of giving up, because whatever we might do, it will not matter.

The sad planters on the roof top are more than private and professional concern, it is also planetary. In the former pages I have tried to argue that urban gardening might be a practice that can handle the ecological crisis in all its dimensions. That it might heal the metabolic rift, break down the division between nature and culture, develop food systems, subjectivities and spaces outside of the capitalist realism, providing alternatives and resistance against the ecocidal, growth society. And when it fails, my hope in meaningful action to counteract the ecological crisis wither along with the plants.



A failing relationship between the plants and myself, as usual I cannot blame the plant.

Failure

Through this project I have explored, created and looked for some of the potentials of urban gardening, by looking at it when it's working. However, the process has also brought many experiences that do not give much reason for hope. It is quite hopeless for example, when you come to the garden in the end of July, and someone has ripped up almost everything we planted, just to throw it out on the asphalt. Every seed planted individually, watered and cared for; all the effort destroyed in a simple movement with the hand. It is so easy to destroy a garden if you really want to. It doesn't provide me with a lot of hope that this gives people joy. Gardening might not be for everyone, I guess. Still, I wonder, if these people would do this if they even had a single experience of gardening?

The challenges are also often manifested in the physical ecology of the gardens. The gardens I have initiated are by no means perfect. Weeds overgrowing all of the radishes that I didn't harvest while they were still good. A potato patch that is still not started in the beginning of June. Compost piles that show a dwindling cooperation between microbes and humans. Being alone in the garden on the weekly working day. A pile of planks in the garden in Nyhavna signals a lack of engagement. Plans that were made, but never realized, all the good ideas that need someone to take the initiative. A bag of artificial fertilizer found by one of the plots shows how agroecological practices doesn't necessarily spread rhizomatically through the gardens. For many gardeners, it is easier to go to one of the garden centers to buy compost instead of taking the time of healing the metabolic rift with their waste. Urban gardening doesn't automatically change you into seeing soil as an extended part of your health. Even though the aesthetic experiences of urban gardening might be able to change us deeply, this doesn't happen for everyone, everywhere, all the time - and even if we are changed, there are many other forces that shapes us simultaneously.

The gardens failing offers other trajectories to speculate through and also reveals some of the deeper, underlying problems in our society. Alienation, lack of knowledge, lack of skills, lack of time, lack of interest in «things of ultimate concern». (*Borgmann, 1987*) As Guattari argues, the ecological crisis is also psychological and cultural, integrated in everything around us, constantly reproduced. Breaking out is hard. The struggle of creating alternatives and breaking down the mental, social and physical division between nature and culture is a long term, complex process and cannot be done by planting a seed. Still, planting a seed might be a place to start.



Gardens are physical manifestations of a culture, also when they fail.

Transduction

The practice of transduction, to see the hopefulness in practices and use that to imagine other futures also means closing one's eyes to a whole range of realities that threaten these practices. To see «*in the midst of the inferno what is not inferno*» (Calvino, 1978) also means to some extent to ignore the inferno, and the futures that the inferno prefigures.

The method of transducing the potential of urban gardening, also has me worrying that I am falling in the trap of the regenerative advocates, that I am telling a fantastic story of how things work, because I would like them to, but that these things are not necessarily true. That I'm making promises that I can't keep. In some way, it makes sense. What I am pointing towards is more the potential of urban gardening, of which we can only see glimpses of today. However, I think there is a difference. For the soil it doesn't matter if you claim that it can store hundred tons of carbon per hectare. These are biological systems that surely can be repaired and regenerated, but only to a certain extent. There are limits. But for societal transformation these limits do not exist. The futures we envision are psychologically and culturally restricted and can just as easily be made otherwise. This is a complex and difficult task of course, but still, it must be done, if we are going to make livable futures. Do I think it is possible to turn the peri-urban fields of Trondheim into an urban agroecological experiment? Yes! Is it likely that it will happen? No. Would it work in the utopian way that I imagine? Certainly not. Still, the only way to make it happen is to believe in it. In the same way, the aesthetic experiences of urban gardening, the experiences that changed how I look at soil, from pure matter to a living ecosystem is a mental change that cannot be undone. It is a journey of imagination, from which it is not possible to «go back» to looking at soil as a growth medium. These are lenses that changes how I see the world and they cannot be taken off. It makes the sight of destruction of soil unbearable, especially since its potential for other futures are in sight.

I have, admittedly been more interested in the potential of gardening than its limits, it's been more important to inspire and to generate, than to be objective. I recognize myself in what Albert Borgmann calls a «deictic discourse», centered around a thing of ultimate concern, drawing «*its strength from something that is present visibly, forcefully, and in its own right, and it can address others by inviting them to see for themselves.*» (Borgmann, 1987 (1984), p. 178) According to Borgmann a deictic discourse can be either testimonial and poetical or appellative and political. I hope that the thesis might contain some of all. By pointing to and bringing forward urban gardening and the ways it can be perceived I hope to change the way I and others understand these practices and spaces. This means to point to all the ways urban gardening might start to improve our relations to the rest of nature, it means to explore how urban gardens are different from many other spaces and it means to speculate about the future potential of the practice through these experiences. It means to take the ecological crisis, in all its complexity and overwhelmingness, and see what could be done, right here, right now, to at least start to do something about its roots. And also, to acknowledge that whatever we do, it will not be perfect, not be complete, it will not work out as we planned, it will not «save the world». Still, growing food in your neighborhood, is one way of actually contributing, and maybe in more ways than we think. In this regard the urban food production becomes an opening into seeing clearer the root problems *and* provides a way to do something about them.



The compost pile taking care of it self, growing loads of stinging nettles.

Future of urban gardens

Capitalist timescapes - capitalist solutions

We are at a point in history where we are overflowed with messages that «time is running out». We learn that there is an urgent need for action, we need to act today (or yesterday) to even have the possibility to have a future. This is overwhelming. The message gets stronger every day, but still it's not acted upon, as we can see by the graphs of rising emissions despite countless efforts to «do something». One of the most telling examples might be the graph that plots the COP meetings since 1992 along with the rising CO₂ emissions.

The procrastination of dealing with the crisis might be catastrophic for capitalism in the long run (*Moore, 2015*) but it also opens up possibilities in the short term. The urgency of the ecological crisis beats in the clocks of capitalism and might legitimate further intensification of land and nature, in ways that were earlier seen as unethical or destructive. New areas for expansion suddenly become available, windmills destroy Sami reindeer herding areas in the name of green energy, forests are fertilized to grow faster, and risky technologies of geoengineering are being discussed. This is the ecomodernist clocks of the ecological crisis ticking. Urgency opens up for desperate measures. We are already in a situation where the proposed solutions involve hazardous compromises - as the ecomodernists claim: «*Want to save the planet? Say bye-bye to nature*» (*Shellenberger & Nordhaus, 2015*) The longer we wait, the more desperate the propositions will become.

Michelle Bastian argues that our perception of time is entangled with our perception of agency. (*Bastian, 2009*) In our linear conception of time nature becomes a passive background, the backdrop or scenery for our actions - an object that we can act upon, tame, control, destroy, repair or dominate. The ecological crisis becomes a challenge, making it sound like some heroic mission where humanity can “solve” the problem. If we continue to look at the ecological crisis in this way, through capitalist, ecomodernist temporalities, the solutions will also be shaped by this worldview, with nature as passive and external and humans as the active force. Action will inevitably involve the current way of organizing time, by continuing to subdue the multiple temporalities to capitalist speeded-up monoculture of time. Capitalist agency and timescapes become the only possible way of thinking about solutions. Short-term, technological quick fixes that deal with the symptoms rather than the sickness loom large over the capitalist way of adjusting nature to the urgency of the crisis.

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Advertisement for one of the new developments on peri-urban agricultural land. Urban gardening seems to be part of the new "green" lifestyle envisioned in this place.

For ecomodernists the future is reached through innovations, something new, something «*bright and shiny*», (Jackson, 2014) like an object, an app, a machine. Aaron Vansintjan calls this the aesthetics of modernity and points to how “*new technologies are celebrated for their transformative potential while others, which are scientifically shown to be more efficient, ecological and highly productive are often considered backwards*”. (Vansintjan, 2020) Solutions for carbon capture with acronyms like DAC and BECCS become more promising than trees, plants and soil. Speculative technologies are hailed not because of their efficiency, but because they are new (and because they allow fossil capital to extend the oil age). Technological fixes, like laboratory produced meat are preferred because «*it can happen without the complicated stuff of land reform, changing social relations, local knowledge, etc.*». (Vansintjan, 2020) This is typical for neoliberalism’s «*governed citizens*» looking for solutions in products rather than political processes. (Brown, 2006) The prospect of lab-grown meat doesn’t demand anything from us, it allows us to remain consumers, it is independent of complex political struggles and activism, it doesn’t require a shift in thinking or relations to the land or to nature - it is politically and psychologically frictionless. We don’t even have to reduce our consumption of meat, because lab-grown meat is «*carbon-neutral*». At the same time agribusiness and billionaires buy up the start-ups, scale them up, market them and continue to concentrate and control the food system. What characterizes the aesthetics of modernity, according to Vansintjan, is the idea of production without care: “*we can create the things we need without having to take care of our relationships or mend them*”. (Vansintjan, 2020) In a production system like this we don’t know where the food comes from, and neither do we want to find out.

Future of urban gardens

For ecomodernists, the practices of urban gardening is a stage that humanity has passed. Through the progressive way of looking at the world these practices seem irrelevant or outdated, as nostalgia or a romantic longing for the past. Small-scale, labor-intensive, thought-intensive, low-tech and careful production of food in cities was until recently seen as something left behind, or backwards. However, because of its new situation as a reaction to the ecological crises and in a new setting in cities in over-developed countries, where people don’t need to go through the «*toil*», but still do and like it, the practice of urban gardening has become trendy. Its aesthetics finds itself in a strange place, in between the forward-looking innovative visions of the future and the backwards, nostalgic, simple, back-to-nature past. In prospects and advertisements for new development projects urban gardening is projected as a likely part of an urban future. The images of wheelbarrows, shovels, and people with dirt on their hands can be marketed and sold. The aesthetics of urban gardening breaks with the one-way-ratchet of history and progress, an example that technology or practices can be reclaimed. In this sense urban gardening and similar practices can be perceived as «*deeply untimely because they invoke innovative ways of knowing that will seem inevitably backwards or pre-technoscientific to the progressive spirit*» (de La Bellacasa, 2017, p. 212). The old, simple practices, become new, because they are re-learned, re-examined, and get new meanings in the current context of ecological crisis.



Looking behind the thin veil of green.
100,000 square meters of the best agricultural soil destroyed.

The times of the urban garden, as I have argued, leaves us with a thicker present consisting in a variety of temporalities, in addition to the dominant, capitalist timescape. However, learning to care for these temporalities is not just about a richer present, it is also crucial in order to be able to envision different and livable futures.

Guattari rejects the perception of the ecological crisis as a «challenge» or a purely technical issue. The problem runs deeper, it has to do with our relation to nature - and the way capitalism has structured the growth society around this false division. To be able to deal with the ecological crisis (and to create a just and better world) we need to address these deeper issues. Ecomodernists argue that we can handle the ecological crisis by continuing to order the world by decoupling, accelerating or changing ecological timescapes, whereas ecologists (in lack of a better word) claim that we should try to realign and re/produce a society that is more in touch with the more-than-human temporalities that sustain it. The first option will likely fail, the other is unthinkable, but that does not mean undoable. We just have to learn to think it first.

«As long as we situate ourselves, and our technoscientific interventions, solely in an anthropogenic temporality, it will remain impossible to develop ethical and epistemically robust responses to environmental problems» (Metcalf & van Dooren, 2012, p. vii on Schrader)

By co-producing with other temporalities in the urban garden we are to a degree deciding who will be part of our desired future. Learning to live the «material, produced, constructed, lived, multiple and a more-than human» (Metcalf & van Dooren, 2012, p. v) temporalities in the garden also allows visions of futures that are «livable for humans and non-humans alike» (Metcalf & van Dooren, 2012, p. v) The temporal diversity of the practice in the present also changes the way we look at the future. It affects who inhabits our visions of the future and how the relations between us could work. As Carol Greenhouse argue «time articulates people's understandings of agency: literally, what makes things happen and what makes acts relevant in relation to social experience, however conceived» (Greenhouse, 1996, p. 1)

To be able to deal with the ecological crisis it is crucial to learn how to align human time with more-than-human time. To care for the other temporalities in the urban garden offers an opportunity to peek into how these lifestyles could work. It will be a lot of work, it will not come easy, but neither does the everyday life of people and critters on earth today. In addition, the current way of doing things swallows the future. Urban gardening is a practice that actively delays the ecological crisis. Gardening demands attention for other timelines, practicing care, maintenance and repair. By working on alternatives to the industrial food system, the future opens up a little bit. My plants or my plot or our garden might not make a difference in the big picture, but millions of gardens and millions of gardeners could. The threatening future is not only pushed back, but also actively being cancelled, and is replaced by millions of other futures.



Co-producing the future with all the other critters in the garden.





The potential of peri-urban fields

«For several years the word «småbruk» (small farm) has been the most popular search word on finn.no. A simpler life on the countryside, living closer to nature and being able to grow your own vegetables is a dream that thrives among stressed-out urban people in Norway. But for most of us, it remains a dream, and we remain in the city.

However, that doesn't mean we stop dreaming of simpler living and back to basics. More and more people are also beginning to act on their dreams. Since the early 2000s urban farming has been flourishing all over the planet. Urban farming is more than an international trend. It is the future way of living in cities. In cities such as New York, Tokyo and London, «roof top farming» is well established and is made available for everyone. In the trendy Ebisu area in Tokyo green roof tops have taken over the social role of bars and cafes. Hipsters and businesspeople rent their own parcels of soil that they take care of after work and bring fresh veggies home for dinner.

The world's largest roof garden is not surprisingly in New York. Brooklyn Grange Rooftop Farms produces organic honey, vegetables and herbs which is sold to local restaurants and shops. Like the rest of the urban farming movement, they are conscious about sustainability and spread the trend of healthy and local food.

The «real» food trend has also spread to Norway where grow-it-yourself has become enormously popular in the last 10 years. In Trondheim, restaurants and cafes grow their own vegetables and the Michelin-awarded restaurant Credo has really embraced the local food concept with fennel, timian, squash, carrots, leek, apples and a myriad of plants sprouting and growing right outside their kitchen.

But even if many see the business potential in urban farming, this is first and foremost a social movement. In small balconies and huge roof gardens, in windowsills and zinc buckets, in planters and small green houses in backyards. Here, around the plants, men and women, young and old, with soil under their nails and carrots on their minds gather to discuss runner beans and radishes. Maybe the dream of moving to the countryside isn't that important anymore? Why move to the countryside when the countryside can move to the city? »

New roots for Rotvoll

The former page could have been an introduction to my research on urban gardening. It is not. These are extracts from a publication called Nye Røtter for Rotvoll (New Roots for Rotvoll) (*Rotvoll Gård, 2020e*) - a magazine that promotes a planned development of the city on agricultural land in the outskirts of Trondheim.

Nye røtter

PÅ ROTVOLL GÅRD



WWW.ROTVOLLGARD.NO

From the magazine, Nye Røtter for Rotvoll, Rotvoll Gård

Through the magazine we are told the story about the farm at Rotvoll. The farm has long traditions and has been in operation since the 1500s. We meet a farmer who has been fighting for a lifetime to protect his farmland, but now sadly, he has given up. The expansion of the city has destroyed the possibility for farming. The farmer describes a development where his neighbors, one after the other have sold their land to developers. The cultural landscape of fields and farms was transformed into a cityscape while he and his ancestors fought an increasingly tough battle to continue to farm their land. The farmer compares the process with cutting the corners of a tablecloth «*It is easy to think that we can just cut a corner, thinking no one will notice. But if you cut and cut and cut all the time, there will soon be nothing left of your dear tablecloth*». He paints a picture of how the development of the city has crept into his farm and fields. Highways, a prison, an IKEA, and car dealers have eaten so much into the agricultural landscape that it is no longer viable to farm these fields. The tablecloth is so pieced up that it has lost its value. We follow the farmer through this emotional journey. In one of the pictures, he is sitting on his tractor with a thoughtful, worried look in his eyes. He leans his elbow on the wheel and supports his head while looking at what might be the last harvest on his fields.

“Still, he gets on the tractor every day. But Ivar Oust has known for a long time. The time for farming at Rotvoll is coming to an end. At least in the way his family has done for generations.”

“Fortsatt setter han seg på traktoren hver dag, men Ivar Oust har visst det lenge. At det snart er slutt på å drive gård på Øvre Rotvoll. I alle fall på den måten familien hans har gjort i generasjoner.”

TEKST AV ANNA LIAN // FOTO: OLE EKKER

– Vi har visst det i 50 år at det måtte bli slik en dag. Vi har sett byen komme gradvis nærmere, og nå har den dratt forbi Rotvoll for lenge siden. Dette er en del av byen nå, sier bonde Ivar Oust, mens han setter seg ned på kontoret i ei arbeidsbrakke på gården.

6

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BYEN OG GÅRDEN



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7

This is part of the city now, argues the farmer, Ivar Oust
From the magazine, Nye Røtter for Rotvoll, Rotvoll Gård

Urban gardening

New Roots for Rotvoll introduces another way of farming the land. A third of the pages of the publication are filled with pictures of potatoes, carrots, kale, roof top gardens, boots, wheelbarrows and dirty hands, green visions and lofty plans. Urban farming seems to be the foundation for the new project at Rotvoll. Rotvoll is envisioned to become a health-promoting and green neighborhood, a beacon and pilot project for urban farming in Norway. The aim of the project is to facilitate for biological diversity, edible plants and growing your own food.

Some highlights from the magazine

The magazine opens with the phrase:

“The farm has a history of a thousand years. Now new generations will take root at Rotvoll Gård.”

According to the text a new neighborhood will grow out of the «*unique cultural landscape*» with homes for everyone, parks, meeting places and community gardens.

“Green lungs, green spaces and green parks are fine, but imagine if we could develop a neighborhood with lots of edible plants. Neighborhood gardens, urban gardens and maybe even a neighborhood farm?”

We meet one of the pioneers of urban farming in Norway, who has been interviewed for the magazine. She provides insights into how Rotvoll can succeed in building «*a green community*» and argue that «*It will be exciting to follow the development of Rotvoll. This will be a reference project for the entire country*».

The architects behind the project explains how «anchoring» has been important in the process of transforming a historical, cultural landscape with long traditions:

«In this project we have ventured beyond anything we’ve ever done before. We are putting aside areas where people can grow their food, some of the plants are going to be edible, and parts of the landscape will be of such a character that birds, insects and hedgehogs can be here, says Rimer, who hopes that neighbors can get to know each other by discussing salad types and carrot yields in the common gardens»



Hvordan lykkes med et grønt nabofelleskap?

ET INTERVJU MED HELENE GALLIS, NABOLAGSHAGER

Legg til rette for forskjellige behov, gi ungdommen i nabolaget sommerjobb i hagen og få proff hjelp om det trengs. Det er rådene fra nabolagshageeksperten.

På Rotvoll planlegges et innovativt og bærekraftig bopliks der folk bor tett på hverandre og naturen i kombinasjon med en urban livsstil. Men for å lykkes med å skape et grønt nabofelleskap kreves det en innsats. Det vet prosjektleder Helene Gallis fra Nabolagshager i Oslo alt om.

ULIK MOTIVASJON

– I folks travle hverdag er det usannsynlig å håpe på at grøntområdet kan driftes kun på dugnad. Det er viktig å anerkjenne at folk har forskjellig motivasjon. Noen vil være med i en grønnsakshage fordi de har lyst på en hyggelig familieaktivitet, mens andre ønsker å dyrke egen mat. Andre igjen kan ha en motivasjon om å leve mest mulig miljøvennlig eller å skape noe for fellesskapet, sier hun. Disse forskjellige ønskene kan være vanskelige å samkjøre, derfor er det viktig å legge til rette for varierte typer aktiviteter.

– De som er mest opptatt av fellesskapet kan fokusere på å ivareta et område nær en sittegruppe eller

lekeplass. Mens de som er mest opptatt av å dyrke mest mulig volum til seg selv, kan få utfolde seg på litt mer avsidesliggende områder, foreslår Gallis.

ENGASJER DE UNGE

Et annet viktig punkt er å få med seg de unge. Erfaringen fra Nabolagshager er at engasjementet er kjempestort blant ungene. Etter et helt liv på skolebenken og i universitetets læsesaler oppleves det ofte som befriende konkret å utforske fra, planter og egendyrket grøde, mener Gallis.

– Vi har også gode erfaringer med å engasjere yngre ungdommer i form av sommerjobber. Om du lurer på hvordan du skal få vannet plantene om sommeren er den beste løsningen å gi en ungdom i nabolaget en liten sommerjobb. Det er vel investerte hundrelapper – og en fin måte å få ungdommer til å utforske «grønen» arbeidsplasser og yrkesvalg på, sier hun.

“Det skal bli spennende å følge Rotvoll-utbyggingen framover, og jeg tror dette vil markere seg som et referanseprosjekt for hele landet.”

HELENE GALLIS, NABOLAGSHAGER.

How to create a green community?
From the magazine, Nye Røtter for Rotvoll, Rotvoll Gård

We also learn about the three objectives for a «*green development of Rotvoll Gård*».

- *Maintain and develop the cultural landscape*
- *Strengthen the biological diversity*
- *Facilitate for urban food production.*



GRØNN BYUTVIKLING

HVORDAN BLIR EN BYDEL GRØNN?

Alle snakker om grønne bydeler, men ofte blir det ikke så grønt som man kunne ønske seg likevel. Grønne lunger, grøntdrag og parkanlegg er fint, men tenk om vi kunne utvikle en bydel med et stort innslag av spiseflige vekster? Med nabolagshager, urbant landbruk og karsk-je tll og med en egen bydelsgård?

Dette var et viktig utgangspunkt da vi startet planprosessen for mer enn ti år siden. Rotvoll skal bli en grønn, helsefremmende bydel. Forankringen i jorda og rettene til gården skal ivaretas og utvikles videre inn i den nye bydelen.

Tre hovedmålsettinger er formulert for sgrønn byutvikling på Rotvoll Gård:

- ivareta og videreutvikle kulturlandskapet
- styrke biomangfoldet
- satse på urban matproduksjon

Her får du noen smakebiter fra disposisjonsplanen for byrom og grøntområder – en liten pekepinn hvor grønn en bydel i byen kan bli:

How to make a neighborhood become green?
From the magazine, Nye Røtter for Rotvoll, Rotvoll Gård

The urban farmer

In the last pages of the magazine, we also get to know «Bybonden» (The Urban Farmer). This character was already known to me through the videos on social media where he introduces himself: «*Hei, det er æ som er Bybonden!*» (Hi, I am The Urban Farmer!) and provides tips and tricks on how to do urban farming. We learn how to grow radishes, how to plant potatoes, why it's important to plant kale early in the winter, why we need good soil, water and fertilizer, he brings us to harvest potatoes, tells us that there are different kinds of rhubarb, and show us that it's possible to eat flowers.

There is a clear shift in strategy from the farm in the summer of 2020. This turn corresponds with a growing hesitance among the politicians in Trondheim to build down more of the agricultural soil around the city, after the ruling party decided to postpone the zoning process in December of 2019. The Urban Farmer was launched at the Stormfestival, where Rotvoll Gård was one of two main sponsors. The urban farmer puts on his farming clothes, gets on his tractor and drives into the city. At the festival he shows us how to «*grow the taco scraps*» by pushing an entire tomato, a bell pepper and an avocado stone into the soil. (Rotvoll Gård, 2020a) After this launch Rotvoll Gård goes from being a webpage promoting their climbing park and the roll out turf business on the farm, to a webpage and social media campaign that turns almost exclusively around urban farming. Along with the videos on social media and the webpage, the magazine New Roots is launched.

Through the New Roots magazine, we learn that the urban farmer is not just an «expert» on farming - he is also one of three heirs, part of the family business developing the agricultural fields on Rotvoll Gård. The case of Rotvoll is interesting because it is a striking example of how urban farming is used by developers as a marketing and lobbying strategy. In this case it becomes a tool to gain public and political acceptance and permission to destroy 300.000 m² of the most fertile soil in Norway.

The Housing Doctor

In between the tips and tricks on how to grow your own food The Urban Farmer also takes on other issues. In one of the videos he is standing on a pedestrian path close to the fields with his father. (Rotvoll Gård, 2020d) He tells the story of how dangerous it is to get from the farm to the field: «*I don't want to kill anyone, but it has been very close*». The video cuts to a clip where he maneuvers through a narrow underpass in what seems to be the rush hour for school kids. «*This is one of the reasons why we want to build on Rotvoll. Kids and machines don't go together. We choose the kids*». The only way to solve the traffic issues is to stop farming the fields.

In another video he has invited a character called *The Housing Doctor* (Bolidoktoren). The Housing Doctor is not presented by name or title, but is invited to talk from «*a scientific perspective*» about why Rotvoll needs to be developed. (Rotvoll Gård, 2020b) Later I found out that The Housing Doctor is The Urban Farmer's brother. He has a PhD in economy on housing prices and together with his brothers he is on the board of seven real estate companies connected to Rotvoll.

MØT BYBONDEN

HANS OUST

Hans Oust er 4. generasjons bonde på Øvre Rotvoll. Her har han vokst opp og her skal han fortsette bo når den nye bydelen vokser frem. Etter fire generasjoner er det tid for å se realiteten i øynene. Byen rykker nærmere, gården er omgitt av by, veier, handel og boligområder. Og bonden er blitt bybonde.

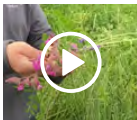
Tanken på å utvikle en egen bydelsgård er fristende, for den muligheten finnes på Rotvoll. Mens vi venter på bydelsgården, deler bybonden sine beste tips og triks om spiselige vekster, urbant landbruk, om grønnsaker, rabarbra og Norges lengste jordbærbeid.



RABARBRA - HAR ER DEN GOD?



HVORDAN SETTER MAN POTET?



BLOMSTER I SALATEN?



NORDENS KORRIANDER

Se alle filmene på rotvollgard.no



Meet the urban farmer
From the magazine, Nye Røtter for Rotvoll, Rotvoll Gård

The housing doctor is invited to talk about why it is important to *«have people with a slim wallet in mind when building new housing areas»*. The urban farmer asks his brother why their property at Rotvoll *«is one of the areas in Trondheim with the best preconditions for succeeding in making «a third housing sector»»*. He proposes that rent-to-own and building micro houses will help people getting into the housing market. *«Why is it easier to achieve this in Rotvoll (than in other places)?»* asks the urban farmer. *«One of the benefits at Rotvoll is that it's possible to build cheaply and with low operational costs. These two factors are crucial for making «a third housing sector»»* explains the housing doctor. How micro houses will help to lower the housing prices is unclear, and how the development at Rotvoll is going to help the development of a third housing sector remains unsaid. It is probably true that it is cheaper to dig into the soil than blasting away mountains and less complex than building in small plots in the center. Large areas with only one owner might also make the development cheaper. But these are also important factors if you want to make a lot of money on a development project. Often, if it's cheaper to build, it is not the *«people with slim wallets»* that win, but the developer's wallets that grow even fatter. In a similar project at Overvik the developers are expecting a profit of 9 billion NOK.

Sustainable development

Later, The Housing Doctor is invited back to talk about sustainable development. (Rotvoll Gård, 2020c) *«Hi! I am The Urban Farmer, and this is the Housing Doctor. And today we are going to talk about where it is most climate friendly to build housing.»* The Housing Doctor explains *«If we are looking at Trondheim, I will argue that Rotvoll would be one of the best, if not the best area to develop, if we care about the climate.»* There is no explanation, but The Urban Farmer has a report in his hand claiming that a development in Rotvoll will give 40% lower emissions than other developments in Trondheim. *«To develop Rotvoll is good for the climate. This is one of the reasons we are building a new neighborhood at Rotvoll»*.

The urban farmer points to the report *Development at Øvre Rotvoll*, (Yttersian et al., 2020) ordered by Rotvoll Gård from the consulting firm Asplan Viak. The report compares Rotvoll with an imagined *«reference area»* in the outskirts of the east side of Trondheim, further away from the center. The report assumes a higher percentage of apartments at Rotvoll, while the reference area has a considerable amount of row houses and single, detached homes. This results in higher density and lower area used per person, which gives Rotvoll 20% lower emissions than the reference area. The report also presupposes that Rotvoll will be built according to higher environmental standards (nZEB and Passive House) while the reference is built with the lower TEK 17 and passive house standard. In addition, solar panels are assumed to be implemented as an energy source at Rotvoll with a *maximum utilization* of roofs and facades, while in the reference area there are no solar panels at all. By making these assumptions the consultants manage to cut the emissions from energy usage by 69 % compared to the reference, which for some reason cannot be built as a compact neighborhood with solar energy.



The Urban Farmer and The Housing Doctor talks about sustainable city development
From one of the Urban Farmers videos on social media

Another central part of the report is the transport analysis. This part builds on a report that Øvre Rotvoll has ordered from COWI AS. (Cowi, 2017) Also in this case a distant, less dense, reference area is used. This reduces the emissions from Rotvoll by an additional 38%. The destruction of the agricultural soil is also discussed in the report from Asplan Viak, based on another report by C-alcea AS, (Leikvam, 2017) also ordered by Øvre Rotvoll. An interesting aspect here is the assumption that the grain fields destroyed in Trondheim will be replaced by clearing forests in Germany. The most fertile soil in Norway is built down, to rely on production and import from somewhere else, like there was no conflict of land use and as if other countries will always have a surplus of food to sell us. The report also leaves out of the calculations the land that is currently used for production of roll-out turf, so that both the productive capacity and import needs are decreased.

The underlying assumption in the campaign from the developers is that Trondheim is growing, and that more homes are needed, both to get new citizens and to get the prices of apartments down, so that «families and poor people can have a place to stay». Developing Rotvoll is also important for reaching the SDGs for 2030. (Rotvoll Gård, 2020f) It is argued that it is better for both soil protection and the climate to build «a compact city» from the inside and out. «To build a compact city is to spare the soil», (Rotvoll Gård, 2020e) as the developer Ivar Oust argues. One of the architects behind the project has also written an opinion piece in the local newspaper titled «Why housing at Øvre Rotvoll is good for the environment». (Paus, 2020) Paus uses the report from Asplan Viak and replays the «40% lower emissions» number. He argues that Rotvoll must be built, for the climate, for agriculture and ends with a central claim that Trondheim will need 34.000 apartments before 2050. «Let Rotvoll contribute to this task, it will be good for the environment!»

What New Roots, the architects or the developers doesn't mention is that, according to the municipality's calculations, (Trondheim Kommune, 2020) there is already enough space being developed or planned in central parts of Trondheim to take care of population growth in the short, medium and long term, without building on Rotvoll, or other agricultural land. According to the chief planner of Trondheim there will be a surplus of apartments in Trondheim even without building on agricultural soil in the outskirts of the city. (Rasmussen et al., 2020) The planners in the municipality argue that the development on peri-urban should be put on hold, and central projects should be prioritized. The only reason left to build at Rotvoll is to satisfy the developers desire for profit.



Grain, grass and green roofs are only some of the businesses on the farm today

The right to the city

By looking behind the glossy pages of New Roots and The Urban Farmers videos, parts of the lobbying machinery are revealed. This is nothing new in Trondheim. The soil surrounding the city has been massively destroyed in recent years, despite national, regional and municipal targets to protect agricultural land. The process leading to the construction at Overvik, Være and Kystad has gotten a lot of attention in recent years, as examples of how the powerful developers get their visions through the political process. (See *Ellingsen & By Rise, 2018*)

The former chief planner in Trondheim, Hilde Bøkestad describes a situation where «*the politicians have more faith in the developers than the professionals in their own administration*». (*Wallum et al., 2020a*) She tells a story about politicians making decisions which, «*seen from a professional point of view, is unfathomable*», and developers having «*multiple ways into [the decision-making processes] in the municipality*». The developers are «*manipulative*», and the politicians are not «*prepared for the power structures*» churning to convince them.

Øvre Rotvoll also knows how to play this game and during the last 10 years, money is spent to employ a former politician as CEO, by ordering reports that choose the right reference areas and the appropriate parameters, by punching the right numbers into sheets and making graphs that give the right conclusion. It is spent by hiring architects to make sellable visions and fight for them in the local newspaper. By paying PR firms, designers, journalists, experts, NGOs and researchers to make strategies, by sponsoring festivals, making webpages and magazines and videos. A long, steady process of building public acceptance and convincing politicians to make decisions in their favor, but also building a hype that might increase the prices of the apartments they want to sell.

It is an example of what the right to the city looks like today where a «*small political and economic elite who are in a position to shape the city more and more after their own particular needs and hearts' desire*» (*Harvey, 2012, p. 24*) win through with their visions. The development in the city is left in the hands of the developers, who decide where the city will be spread, how it will look like, who it is built for, and even more crucial - who decides what happens with irreplaceable, non-renewable ecosystems such as soil.



On this field the developers dreams will come true

The contradictions of urban gardening

Urban gardening can be seen as a practice in opposition to many of the hegemonic systems in society. It is an antidote to the industrial mode of producing food, it is often done by making public commons rather than private property, it's done for its use value, or for joy, instead of exchange value. It is a de-commodification of food and a way of interacting in nature in contrast to the instrumental, extractive ways in which capitalism organizes nature. In short, it might produce food, spaces and subjectivities that are not completely ruled by capitalist logic and realism. (Purcell & Tyman, 2015; Tornaghi & Dehaene, 2020)

However, some scholars argue that even if this is a potential often claimed by advocates of urban gardening, this is not always the case. It might also be that urban gardening is a «fine-tuning of the neoliberal project rather than a substantive change of direction.» (Holt Giménez & Shattuck, 2011, p. 123). Urban gardening might serve as a «flanking mechanism» that enables the neoliberal state to hand some of its responsibilities (like food provision or maintenance of public space) to individuals. (Holt-Giménez & Wang, 2011) Some argue that urban gardening might serve capitalist interests by producing neoliberal subjectivities - gardening as an act of individual responsibility. (Guthman, 2008; Pudup, 2008) Urban gardens might also play a role in the process of gentrification, (Vansintjan, 2021b) by raising the popularity, public perception and real estate prices, before being replaced by activities or buildings with higher exchange value.

Nathan McClintock (McClintock, 2014) has nuanced this discussion by arguing that urban gardening is a contradictory practice. It can be subversive, neoliberal and reformist at the same time. According to McClintock «urban agriculture has to be both; indeed, contradictory processes of capitalism both create opportunities for urban agriculture and impose obstacles to its expansion.» (McClintock, 2014) Since urban gardens exist under a globalized and internalized capitalist system it will be neoliberal, it will be used and coopted by neoliberal forces. At the same time, the practice of urban gardening offers a chance of countering some of these effects, and provide possibilities to produce subjectivities, spaces, habits or food that are not completely controlled by capitalist forces.



VISSTE DU AT?

01.

... du ikke trenger uteplass for å dyrke egne grønnsaker?
Med riktig vekststys og plantenering kan du dyrke nesten hva du vil inne i din egen stue.



02.

... det finnes rundt 10 millioner urbane bander i verden? Dette er mennesker som er delvis eller helt avhengig av maten de dyrker i urbane områder, enten det er for salg eller eget forbruk ifølge FN.



03.

... over 37 % av jordens landareal brukes til matproduksjon? Fortsetter vi å produsere mat på den måten vi gjør i dag vil vi snart gå tom for landareal å bruke til matproduksjon.



04.

... Trondheim har en egen studentergår? Den ligger rett ved Lerkendal Stadion og har en egen Facebook-side om du er interessert i å sjekke den ut.

ROTVOLLGARD.NO 17

Urban gardening can be radical, reformist and neoliberal
From the magazine Nye Røtter for Rotvoll, Rotvoll Gård

Recuperation

If we accept McClintock's claim that urban gardening is contradictory and contains both neoliberal forces trying to maintain the capitalist hegemony *and* spores of other, radical ways of organizing society, it becomes important to understand and recognize these contradictions. This is crucial for strengthening the subversive parts that aim for a necessary change in how we relate to nature and each other, how we organize food production and how we produce and use space - and to better resist the forces that neutralize the radical potential of urban gardening.

One such threat is the neoliberal attempt to co-opt the practice. There is a constant effort to use the countless hours of work by activists, volunteers and gardeners trying to change the world and turn this work into ways of strengthening and reproducing the neoliberal system that many of them are fighting. When Rotvoll use urban farming as a tool to get their visions through this could be seen as what the Situationists called *recuperation*. To recuperate is to recover, the effort to obtain possession over the forces that threatens to subvert it. (*Situationist International, 1969*) In this case urban gardening is used as part of a strategy to get the permission to build on agricultural land. Recuperation is a turning of the *potentially* radical and subversive practice of gardening, through a process of trivialization and commodification, and then use it as a tool for capitalist accumulation. Gardening is used to gain acceptance from the general public and the politicians, as well as to increase the price of the apartments.

In the lobbying campaign for development at Øvre Rotvoll, through efforts such as *New Roots* and *The Urban Farmer*, the radical or subversive potential of urban gardening is neatly removed. The struggle for accumulation of capital is mixed into growing of herbs and harvesting of kale seeds and potatoes. Urban gardening is sold as a lifestyle, not as a way of producing food, not as a way of occupying space, not as an alternative to industrial agriculture. It plays on the strings of the benefits of urban gardening, while avoiding the issue of soil destruction or the potential of urban gardening to scale up and make use of peri-urban fields. Gardening needs to be sold as «*an alternative to a garden in the single, detached homes and row houses*» (*Rotvoll Gård, 2020e*) - not as an alternative to the alleged non-viability of farming these fields conventionally. It needs to be perceived as a way of building community, as a way of taking care of biodiversity, but the productive capacity needs to be downplayed, since urban farming is a thing that happens in the balconies, backyards and roof tops in this new area, not something that could potentially happen in the «unfarmable» agricultural land that the development will replace. The practice cannot be marketed as something that would make the non-profitable land profitable. The problematic of building down 300.000 of the best quality soil and replacing it with planters and roof gardens must not be revealed.

Of course, it is positive if new areas are built and planned around urban gardening, it is better to have a roof garden than just a roof, better to have habitats for hedgehogs than asphalt and better to have neighborhood gardens than a neighborhood go-kart track. The problem is that such campaigns use the trend of urban gardening, to get through to potential buyers, to get the permission from politicians and the public to go forward with their projects, and in this case the developers are undermining the conditions for what a lot of gardeners want - food grown locally, in and around the city, and a more sustainable world.

DER INGEN SKULLE TRO AT NOE KUNNE GRO

Fra Michelle Obamas kjøkkenhage i Det hvite hus til salatdyrking i et bomberom i Molde. Urbant landbruk er mer enn en internasjonal trend. Det er framtidens måte å bo i by på.

I flere år har «småbruk» vært det ordet vi nordmenn søker mest etter på FINN.no. Drammen om et enklere liv på landet med mulighet for å leve tettere på naturen og å dyrke sine egne grønnsaker er populær blant tidsklemte, småstreaa byfolk rundt om i Norge. Men det blir stort sett med tanken.

For det er ingen massiv strøm av idealistiske bondespiser på vei ut fra borettslag og blokker her i landet. Når det kommer til stykket er vi for glade i jobbene våre, vennene, muligheten til å velge mellom tre typer espresso på den nærmeste kaffejappa eller om vi skal gå på jazzkonsert eller barneteater på en helt vanlig onsdag.

TRENDY TAKHAGER

Men selv om vi blir boende i byen så fortsetter vi å drømme og lengte. Og stadig flere har begynt å gjøre noe med det. Siden starten av 2000-tallet har urbant landbruk blomstret over hele verden. I USA ble det en massebevegelse etter at Michelle Obama fikk plantet en kjøkkenhage utenfor Det hvite hus. En hage som både ble brukt som en skolehage for skoler i nabolaget og som matfat for kokkene i presidentboligen.

I metropoler som New York, Tokyo og London er såkalt «rooftop farming» godt etablert og gjøres tilgjengelig for alle. I det trendy Ebisu-området i Tokyo har grønne takhager nærmest overalt for barer og kafeer som sosiale arenaer. Der leier både hipstere og forretingsfolk sin lille grønne flekk som de steller etter jobb – før de tar med seg ferske grønnsaker hjem til middag.



VERDENS STØRSTE TAKHAGE, BROOKLYN GRANGE ROOFTOP FARMS

Her produserer de organisk honning, grønnsaker og urter som de selger til lokale restauranter og butikker.

In this case, urban gardening is used to justify the destruction of 300.000 square meters of soil
From the magazine Nye Røtter for Rotvoll, Rotvoll Gård

Three Lenses

How we observe a landscape depends on our prior knowledge, our power of deduction and imagination. (*Adam, 1998, p. 54*) This also means that how we look at the heaps of soil in the construction space or the yellow, ripe grain flowing in the wind depends on what we know about the soil's formation. It depends on what timescapes we think in, how long we go back and forward, what species we involve in the consideration and how we think we depend on the soil. One of the outcomes of my engagement with peri-urban fields is that my conception of the landscape is expanded to a broader and longer timeline, breaking with the capitalist timescape that is so ingrained in my thinking. The case of the peri-urban fields revealed for me three lenses through which we can be looking at this land.



Waiting lands

From the developer's perspective the field is no longer an agricultural area. It is a development potential, a waiting land, a blank canvas being filled with their visions of progress. Soil as property, opportunity, potential. The number of hectares, yield or soil health is no longer relevant, instead of kilos of grain they see m², number of floors, price per square meter sold and cost of building. Soil is a product, or a matter, but it also poses a problem for their dreams of «developing the soil», since there are forces working to protect it.

In Rotvoll the waiting lands perspective is physically manifested by the choice to start the production of roll-out turf on large parts of the fields. The growing of roll-out turf is a visual message to the surroundings that the farmer has given up, that farming is a left-behind stage and that these lands are waiting for the next chapter. The topsoil is sliced off at an extreme pace compared to the geologic timelines in which it was made and is sold to citizens who needs an instant satisfaction of their desire for lawn. This land is awaiting development, waiting for inevitable urbanization, unstoppable progress. When agricultural land is regulated into city it is not just a loss of soil that we (should) depend on. It is also a radically new direction in the development of the place.

As Jason Moore points out, accumulation of power and profit happens through a reorganization of space, a re-organization of nature, finding ways of making nature work harder for capitalism. (*Moore, 2015, p. 23*) As soon as nature is perceived as something outside of humans - food and air as separate from plants and soil - it becomes possible to exploit and appropriate nature and force this external object to work harder.

The peri-urban fields have already gone through several rounds of reorganization for the sake of accumulation. These fields were already working hard for capitalist agriculture. In this case the industrial, monocultural production of grain was not enough. Apartments and offices allow capital to continue to accumulate space, power and profit faster than grain. Capitalism seeks to «*annihilate space by time*» (*Marx, 1973, p. 424*) and to constantly speed up the turnover time. This acceleration has a spatial expression, since, «*every effort to accelerate turnover time implies a simultaneous restructuring of space*» and therefore «*the accumulation of capital is the production of space.*» (*Moore, 2015, p. 21*) By developing these fields the accumulation processes are speeded up.

For the developers the peri-urban fields are what Jason Moore calls Cheap Nature, a crucial component in the accumulation of capital. The developers need to undervalue the unpaid work that glaciers, microbes, plants, and humans have done for thousands of years. It needs to be cheapened so that it can be dug up, loaded onto trailers and disposed of. Importantly, this implies that the need for food in the future is also undervalued or ignored. The developers depend upon most politicians (and other people) thinking that this effort to accelerate turn-over time is actually good. The production of space that happens at Overvik, Strinda, Rotvoll and so many other places is only possible by looking at nature as cheap, as something outside us, as something we do not depend on. The growth economy is like a bike that must keep going not to fall over. The way capitalism keeps the bike running is by constantly feeding it new cheap natures to exploit. This worldview and the physical reproduction of space is crucial to keep the wheels of the growth economy spinning.



On Rotvoll, the waiting land perspective is clearly signaled by the choice to grow roll-out turf on 80.000 square meters of the fields.

Food on the table

The second perspective is a counterargument often put forward by farmers' associations and environmental NGOs. In the Rotvoll case this perspective can be represented by a contribution to the debate by eight of the nearby farmers associations. (Løset et al., 2020) This perspective brings to the table a reminder that these fields are important for food security and tries to establish a link between the food on our plate and the fields. This is where our daily bread comes from. We depend on these fields if we want more local food production, food sovereignty or food security.

This perspective acknowledges the value of the soil, and how rare such good soil on such a good location is. An argument often repeated is that only 3 % of the land in Norway is arable, and only a third of this is suitable for growing grains. Rotvoll is one of these 1% lucky coincidences that needs to be protected for the future. Also often used is the argument that fertile, agricultural soil is a non-renewable resource (in human timescales) and that we have a responsibility for future generations to take care of this resource.

In the Rotvoll case the farmers' association also react upon the claim by the farmer-turned-developer that the fields are too small to farm. The average field in the region is 11,800 m² (Stokstad & Krøgli, 2012), while the two fields at Rotvoll are about 165.000 m² and 175.000 m². That makes these fields 14-15 times bigger than the average agricultural land in the region. In addition, this is a flat field with the best quality soil in the country, right by the farm and close to the fjord which provides good climatic conditions. These fields would be a dream for farmers used to small, hilly patches of land in the fjords, valleys and mountains in the countryside of Norway. For them to hear the developer's claim that these fields are not viable for farming is «*completely incomprehensible*». (Løset et al., 2020) and argue that if this land is not profitable, we might as well cancel all the agriculture in Norway.

The food on the table perspective reminds us of the fact that we need soil to produce food, or as the farmers state «*because we all know that we can't eat money*». (Løset et al., 2020) In terms of timescales this perspective acknowledges the deep time, the thousands of years it takes to make top soil, and it urges us to think about how to take care of this land for the future.



The fields at Rotvoll are one of the 1% lucky coincidences where it is possible to grow grain.

On scale and viability



Ilens Hage, 500 m²



The fields on Rotvoll, approximately 165.000 and 175.000



The average field in Trøndelag, 11.800 m²



00 m²

Food for the future

These are often the two perspectives that engage in a verbal, written and political fight in cases regarding development on agricultural land, and so far, the developers seem to win through almost every time. The *food on the table* perspective is important. It highlights the necessity of soil for food in the future. If the battle between the two perspectives was being decided rationally the food on the table argument would win through most of the times, at least in Trondheim, where there is no lack of space in central parts.

The problem with this perspective, however, is that the connection between the field and the food on the table is so abstract. All the grains from these fields goes into a process to make concentrate feed for animals, but how and where - who knows? The link is there, but it is not felt by anyone. Consumers are left without a clue of where the food came from, who produced it and how. It just magically emerges in the aisles of the supermarkets. Even the farmers are removed from this link, no longer directly relying on what they grow, like other consumers they also buy all the food they eat from the same supermarket. In addition, the industrial production of food takes four calories of fossil fuels to produce one calorie of food, (*Markussen & Østergård, 2013*) which is at best short-sighted. The soil is often exhausted by the growing practices, (*GSBI, 2020*) and the food system is responsible for 32 % of global emissions. (*Tubiello et al., 2021*) It must be pointed out that the agriculture in Norway is not as industrialized as in many other countries. There are still farms in every, small unlikely place. But for every field destroyed and every farmer giving up we are heading towards an industrialization of agriculture.

What lacks in this discussion though is not what the fields are, but what they might become, and here urban gardening opens a new perspective. Even if these fields look «out of place» in the city - and as outdated and too small for the industrial agriculture today - another future might be possible for these fields. In the Rotvoll case these new aspects (at least for Trondheim) were brought into the discussion. In an op-ed written together with the Competence Center for Urban Agriculture in Trondheim, the regional farmers' association and the local farmers association at Strinda we proposed an alternative for peri-urban fields like this. (*Barlaup et al., 2020*)

In the text we introduce the case of a similar field at Overvik, where agricultural land was threatened by development. Overvik is a large housing development, a very controversial case, where the developers won through. (*Ellingsen & By Rise, 2018*) In the struggle to maximize profit, the developers proposed to build a school (which they were required to) outside the already regulated area and wanted to place it on the adjacent land, at Presthus Gård. In this case farmers and urban farmers got together to propose an educational center for food, a visitors' farm, a place for experimentation with small scale growing, an initiative that could provide a lot more benefits for the neighborhood and the city than the alternative. This proposal made clear, not just that there would be resistance, but also that there was an alternative. This helped to pressure the politicians to make the developers fit the school on the already regulated property. The alternative use of the peri-urban land countered the developers claims that these fields were too small and not commercially viable, and the alternative also generated interest and engagement in the local community.

In the text «Rotvoll - Food for the future?» (*Barlaup et al., 2020*) we took the developers interest in urban farming (as shown in *New Roots* and *The Urban Farmer*) seriously. If we believe the farmer-turned-developers claim that it is impossible to farm these fields viably with industrial growing practices, this opens a great potential for other innovative and alternative ways of developing the fields, through urban gardening. In the text we describe how Rotvoll could be perfect for experimenting with upscaling urban food production through market gardens and community supported agriculture. We argued that this could be a way to develop the emerging interest in local food and point towards other possibilities, other ways of doing things than intensifying industrial agriculture or building apartment buildings. By introducing an alternative, we urged the politicians to give the land a break, to acknowledge that taking care of soil is one of the most important tasks we have as a society and argued for giving these fields a chance to show how soil can be developed in other ways.

Protecting soil as a degrowth practice - there is an alternative

The protection of agricultural land is not just a fight for places to produce food in the future. It also throws a «stick in the wheel» of the growth machinery. It halts progress and forces the developers to find other ways of accumulating capital that are (hopefully) less damaging or less profitable. In the case of peri-urban land in Trondheim it also stops developments that are bad for the city and the environment.

If we understand the protection of peri-urban soil as a degrowth practice, it becomes clear that halting the engine is not enough. Criticizing and protesting is important, but there is also a need for an alternative. I think this is an important part of the discussion around the purpose of urban gardening, and whether it is radical or reformist. In the case of the peri-urban soils of Trondheim the developers' key argument is that «there is no alternative». The fields are too small to farm, the city is too small and needs to grow, there are no other places to build, apartments are too expensive, this is the best way to build sustainably, to care about soil is to destroy it and so on.

Seeing urban gardening as an alternative for peri-urban land is a more radical approach. It seeks not only to halt the expansion of, but to dismantle the dominant structures of oppression. (*Holt Giménez & Shattuck, 2011*) In this case urban gardening goes from being a marketing tool to a viable way of producing food in the city. By showing that «there is an alternative» and that this way is economically viable, ecologically sound and could provide lots of healthy local food, the developers reasoning collapse. Importantly this alternative might also be popular among citizens and have a chance to get the public support and political pressure needed. If the alternative provided suddenly looks better than the developer's visions, it might be possible to protect the soil *and* develop it in new ways.

Urban gardening as a practice might be both neoliberal and subversive, (*McClintock, 2014*) however as a tool it might also be used consciously for both. It can be used by developers to market their projects and to gain acceptance for destroying agricultural soil, or it might propose an alternative that could stop the never-ending sprawl of the city on agricultural land by providing a convivial alternative.



What could happen in these fields?
Alternatives are necessary, also in the struggle to protect the land.

Waiting lands – final exhibition

“Around 10 000 years ago there was a radical change in the landscape around Trondheim. During the end of the last ice age the loose masses that make up the landscape today was ripped out of the nutritious bedrock. These sediments ended up on the bottom of the fjord and as the land rose the seabed evolved into fertile soil.

The rich soil surrounding the city is the work of glaciers and rocks, plants and sunlight, microbes and earthworms, humans and animals. Millions of years of geological and biological coincidences made these areas into a fertile agricultural landscape, one of the reasons people settled down in this area. Rocks have become stones, have become silt and clay, gravel and dirt and have evolved into a complex ecosystem on which we all depend.

Now there is another dramatic change happening in this landscape. Wheat fields have become waiting fields, waiting for development, to be turned into supermarkets and apartments, roads and playgrounds, areas reserved for the never-ending expansion of the city.”

- Text on the exhibition wall, introducing the waiting lands for visitors

The spine of the exhibition is a long corridor. The concrete columns make three niches that are filled with seven pictures each. The first niche focuses on the grain fields, the really productive soil that surrounds the city.

The second niche shows some of the infrastructure involved in the transformation, specifically the marketing and showrooms that aims at selling the apartments before they are built, in order to finance the construction. These pictures revolve around the topic of sustainability, green values, urban gardening in between the houses, selling dreams of garden cities and happy family life in the (still) imaginary project. These visions, often made by architects and PR agencies together with the developers are crucial for getting the projects through.

The third niche documents the production of roll-out turf. This practice is a visual signal that the farmers have turned developers, that they are no longer interested in farming, but have decided that this land will become city in the near future. An interesting aspect about this practice for me is how these are two different temporalities clashing. The long-term development of the soil through millions of years, and the short-term development, where all of this labor is scraped off, rolled up, transported and rolled out in the gardens of Trondheim. One aspect of this is also of course the obsession with lawns, all the area that could be turned into gardens, but also the laziness and hurry, the roll-out turf people who don't have time to grow the lawn themselves, outsourcing even the simplest production of monoculture to the developers. The roll-out turf production is also an example of how capitalism creates needs among consumers. As soon a product like this is available, people will buy it. You don't want to wait a year for your lawn to grow, when your neighbor instantly rolls out their turf.



The corridor in the exhibition space, roll out turf and pictures of the waiting lands.
Photo: Harald Wanvik

Do Earthworms Dream of Android Lawn Mowers? – Final Exhibition

In the fall of 2021, I bought 36 square meters of this turf myself. I rolled it out into the niches, and it became part of an exhibition for the Artistic Research Forum. The central piece of this exhibition is the video installation *Do Earthworms Dream of Android Lawn Mowers?*

For the exhibition I covered the floor of the black box with rolled-out turf, turned upside down. The grass and soil, which was scraped off the waiting land the same week is rich with life, the black box is so damp and filled with smell that it is almost uncomfortable to be in there. A sign at the door welcomes the visitors to take off their shoes and go into to the black box bare foot, for the “full 4D experience”.

The video is an exploration of the different temporalities that play out in these waiting lands. The slow building off the soil vs the abrupt destruction, which is also strengthened by the smell and feel of the soil floor. The timeline of the video starts 10.000 years ago, during the last glacial age, when Trondheim was located beneath a thick layer of ice. The ice melts, and these areas turn into a fertile land, and becomes part of the reason why people settle down here. Now, when the city is no longer dependent on its surroundings, but rely on an imperial food system, these areas are seen as dispensable and are destroyed at an astonishing pace. The video tries to grasp the irreversibility of this destruction and all the labor and opportunities that are lost, but also points towards other possibilities for the development of the waiting lands.



The black box, floor covered in turf turned upside down, video showed on wall.
Video file can be found in attachments
Photo: Harald Wanvik

Détournement

As I saw how urban gardening was recuperated by The Urban Farmer and New Roots, I also learned about the opposite of recuperation, what the Situationists called *détournement*. While recuperation is a way of using a subversive and radical concept and turn it around as a tool for capitalist accumulation, *détournement* is similar, but opposite and it involves a rerouting, the hijacking of a capitalist message (for example an advertisement) and turning it against itself to subvert the original meaning. In *A Users Guide to détournement* Guy Debord and Gil Wolman explain that there are two main categories of *détourned* elements:

“Minor détournement is the détournement of an element which has no importance in itself and which thus draws all its meaning from the new context in which it has been placed. (...) Deceptive détournement, (...) is in contrast the détournement of an intrinsically significant element, which derives a different scope from the new context. Extensive détourned works will thus usually be composed of one or more series of deceptive and minor détournements.”

Wolman and Debord describes how *détournement* can be applied through art, by approaching existing artworks, and how interventions like changing a title, the soundtracks of movies, giving other meaning to gestures, words or extending *détournement* to «*urbanistic realizations*» as an effective strategy to affect many people. To fight the attempt at recuperating urban gardening to get permission to build on peri-urban soil, I decided to *détourn* the New Roots Magazine, and use this to imagine a new development of the farm that doesn't require sacrificing even a square meter of agricultural soil. What follows is an English, abridged version of the document *Nye Rotter, an alternative for Rotvoll*, which can be found attached.

Nye røtter

ALTERNATIV FOR ROTVOLL GÅRD



The détourned version:
New Roots: An alternative for Rotvoll Gård

The farmer

«The farm has a history of a thousand years. Now new generations will take root at Rotvoll Gård.»

In the first chapter we meet a farmer who has fought for his land like his father and grandfather did, protecting it against the sprawling city that has changed the landscape around him. But instead of giving up farming and developing the land into apartments and offices like his neighbors he has decided to try another strategy - to dedicate his fields to the development of urban gardening.

«We follow in my father's footsteps - we will never build anything on this soil. In fact it is more important than ever to care about the soil we have left.»

In this version the farmer's burning engagement for protecting soil is not a stage left behind in the past, it is a living responsibility for the future, for his kids and grandkids and all generations to follow. For him the soil is not property, it is a living ecosystem he has gotten the opportunity to take care of. *«We can't eat money.»* argues the farmer in the détourned version, before he goes on to speculate about how much food that might be produced on the fields if they are cared for and developed using agroecological methods.

«This land is perfectly located to establish new connections between city and countryside. There is an international trend for growing in pallet frames and on balconies - but if we really want urban gardening to be part of the food system we need to scale up and out. Peri-urban fields, like Rotvoll is perfect for that.»

The farmer admits that he has met some resistance, and many have told him that this is a crazy idea, and that he should rather develop the area into housing, like the plan was some years ago.

«I usually reply that what's crazy is to destroy soil the way we have been doing in Trondheim in recent years. We really can't afford to lose areas like this.»

Urban gardening

The next chapter is a description of the trend of urban gardening. It rewrites the story of the original magazine and explains how urban food production has been a natural part of the city all the way up to the industrial revolution, when new technologies made it possible for cities to get their food from anywhere, allowing cities to grow indefinitely. This brought us to the situation we are in today, alienated from the food we eat, with no idea of where it came from or how it got there, or the ecological and moral consequences of the food production. Urban gardening is introduced as an antidote to this way of feeding ourselves.

«But it is not just food that grows in urban gardens. Communities, knowledge, experiences and a new consciousness around food and food production. New relations emerge, to the fellow gardeners, to the plants and the soil. These are the spores of a new food culture, a new way to consume and produce food and new links between urban and rural.»

In this part I highlight how urban gardening is an efficient way to grow food, but in order to do this we need many hands, an ecosystem service that urban citizens could provide. I go on to describe the relations that emerge between the gardeners and the rest of the local ecology, the gardens and fields that they care for. This could lead to a new awareness around our place in the ecosystem:

«Urban gardeners are better equipped to understand the ecosystem around them and might start to care better for the nature they are a part of. Urban gardeners see the value in small patches of land, of rooftops and parking lots, since they know how much potatoes that could potentially grow from a small patch or know where to plant berry bushes and fruit trees instead of lawns and ornamental trees. Urban gardeners care about soil. They know how important this ecosystem is and how we depend upon it, and they know what gets lost for every square meter that is destroyed.»

I propose that Rotvoll can be an alternative way of taking care of soil. Instead of developing apartments and growing bank accounts like their neighbors have done, the radical farmers at Rotvoll have decided to develop the soil through an experiment in urban agroecology, (*Tornaghi & Dehaene, 2021*) working with nature rather than against.

The scientist

The third chapter is an imagined interview with an expert, a researcher on urban gardening. She claims that Rotvoll is an:

«unique opportunity to develop the way we produce food in cities. Trondheim can become a beacon in the urban food production (...) It is not often that such a flat, large, fertile field is available so close to the city. Often money talks, but at Rotvoll the people are forward-thinking and conscious developers that understand what the world needs. (...) I am impressed by their visions and by cooperating with the leading experts and the local community these visions might actually become real.»

The researcher argues that the experiment at Rotvoll overcomes some of the barriers of gardening, like uncertainty, short term contracts and access to fertile soil. *«This is how we need to think, she argues. For too many years we have been thinking in four- or ten-year terms. So many opportunities have been lost to such short-termism. Now it's time to think in hundred-year perspectives. It's time to reconnect the city to its surroundings. This might develop places that are far more varied and exciting than what we are able to imagine now. »*

«There is a lot of talk about sustainability, green values and urban gardening, but often it stops with words and symbolic projects. In this project Trondheim and Rotvoll shows that they are serious about the green transition, so this will be a project worth following.»

Food politics

The fourth chapter is an imagined interview with The Minister of Food and Agriculture. In my speculative scenario the local and national government acknowledge the benefits of urban gardening (which they have already done in (*Landbruks- og matdepartementet et al., 2021*)) and have decided to allocate resources for and fund projects like the experiment at Rotvoll (an effort I have not seen yet).

«We must produce food wherever it's possible. Rotvoll moves forward with an innovative example, that other cities should learn from and follow», says minister Bollestad. She admits that there has been a lot of mistakes done in agricultural policies. We have developed an agriculture that is not adapted to the landscape or updated to deal with the ecological crisis. It is not sustainable for us, for the countries we import from, or for the earth. *«Now we will prioritize local food grown on local resources. We will develop a new, Norwegian food culture».* She argues that the local turn not only tastes better, but it also makes us better protected against future challenges such as extreme weather.

It creates opportunities for local businesses for production and processing - *«while at the same time making great food for everyone - without ruining the planet».* For the minister Rotvoll has become a reason for hope for the future. There is an enormous transition that needs to happen in the years to come, a transition not just of minds, but also of systems. She believes that the social movement around urban gardening is one of the forces that could make the immense challenges possible to overcome.

«We have to believe in the future! »

The urban farmer

The last chapter is a story about The Urban Farmer. In this version he is more than a PR strategy. We meet an enthusiastic gardener, proudly presenting his vegetable beds to his parents. His mother is as enthusiastic as her son about soil and plants, but his father admits that he has had doubts about the urban farming project. At first, he was a bit skeptical to his son's ideas, but now the enthusiasm has also infected him:

«For a long time, we wanted to develop housing on these fields, but my son came up with the alternative that turned out to be the right solution for us.»

Now, the farmer, who has spent most of his working days in the seat of the tractor, will also get some dirt on his hands, and learn about agroecology and urban gardening. However, the urban farmer is the protagonist in this story. He is now employed as one of three urban farmers that will work to develop and organize the project. In the last page he talks about his plans and visions. He walks us into one of the fields and puts his shovel into the soil.

«Do you see how heavily packed it is? This is not how fertile soil looks like, he says, and looks jokingly at his father. When the microbial life comes back the structure of the soil will be completely different. Come here, and I will show you, he says and takes us to his test beds. He takes a handful of the dark, crumbly layer of humus. Look at this! Three, four, five earthworms just in my palm. This is how all our fields will look like in some years! This is what I call densification!»

«The first priority is to bring back the life to the soil - to revive the soil». In order to do this The Urban Farmer has initiated a research project with TRV, the renovation company in Trondheim. The aim is to produce a rich compost out of urban organic waste and experiment with establishing new circular economies around this urban metabolism. Along with the compost project the urban farmer has also made an open invitation to the city to come up with experimental agroecological ideas for the land at Rotvoll.

«It's incredibly exciting! We have already gotten so many proposals. It's really inspiring that so many want to engage in the development of the farm. We would never have believed this some years ago. However, it's crucial that the citizens are in on this. We can't do it without a massive interest from the urban farmers of Trondheim. The more the merrier, says The Urban Farmer. We will find a place for everyone! I'm really looking forward to watching these fields transform into something unique - a wild, productive, lush landscape, both below and above ground!»



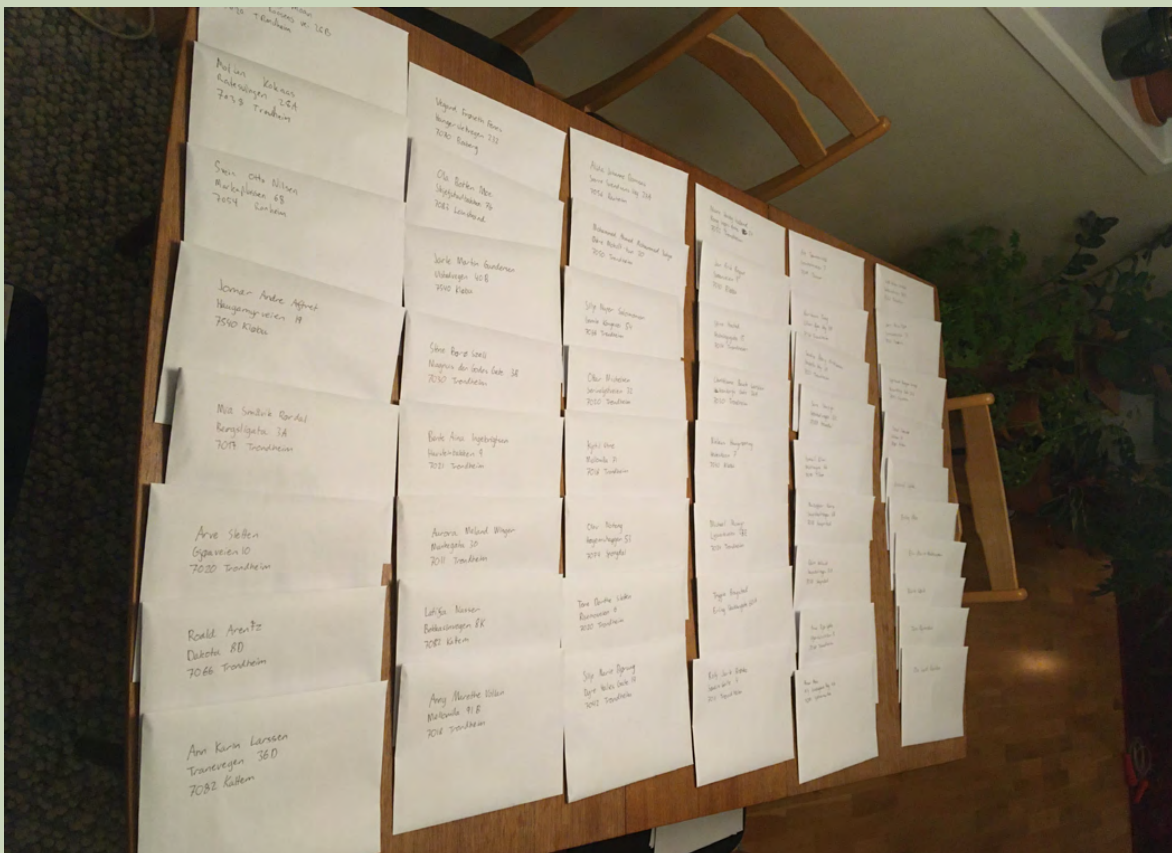
Lobbying

These are some of the highlights from the subverted *New Roots* magazine. It was an interesting exercise to use the language of the original, the style and the construction of the sentences, and put the magazine into a new context, détournant its meaning. I tried to hijack Rotvoll's co-optation of urban gardening and use it to submit an alternative into the debate, that could possibly (however, not likely) change the minds of politician or the public.

In the last weeks before the final decision on the future of the fields I printed my version as a booklet and put it in envelopes. I found the names and addresses of the politicians in the city council and sent the booklet to all of them. On the first page of the booklet, I wrote:

«This booklet shows an alternative for Rotvoll. It points towards other ways of developing a field than building»

Some weeks later the decision was clear. The politicians could not withstand the pressure from the lobbyists and Rotvoll got to develop at least one of the fields. The next field is still up for discussion, and the exhibition «*Do Earthworms Dream of Android Lawn Mowers?*» was another attempt to engage in the discussion about the future of this piece of land.



Ready to be sent to politicians

In the exhibition space I had some space left over and I decided to exhibit the *détournement* of New Roots. Partly because it was a product of my process so far, but mainly to show that urban gardening was an alternative for these fields, to point towards what these other types of growths and speculations that I hint towards in the video could be. One of the visitors of exhibition was very moved by the video and afterwards she spent a lot of time reading through the entire New Roots magazine, and like many others she didn't really know what she was looking at. Was this real? Who were these people who wanted to do this great project? How could we support them? We had a long conversation and I explained what she had read, and how it related to the original New Roots magazine. Her immediate reaction was that we needed to get into a dialogue with the farmer-turned-developers, convinced that we could manage to talk some sense into them and make them understand how what they were planning was wrong and show them that there was an alternative. I was not so sure that dialogue would help, hoping more to convince the politicians to stop these processes legally, but in hindsight – my entire project is based in the belief and hope that people (also developers) are able to change. Unfortunately, we did not go through with our plans for dialogue, but the initiative from the visitor at the exhibition triggered (after some reflection and further discussions with her) a belief that dialogue (invitation, meeting, workshop) might be as valuable as criticism, and that this could be a way of approaching similar situations in future works. Also, the effort and exploration of dialogue would be an experience that would probably produce new knowledge, findings and artistic results, making new departure points for the project, regardless of its success.



New Roots, exhibited in the exhibition space of Do Earthworms Dream?

Growing food is a legitimate use of urban space

One of the problems of getting the nature of urban gardens wrong is that urban gardens are associated with nature and therefore good, as opposed to the city (bad). This makes urban gardens into a sort of «*urban curiosity (...) a leisurely escape from the urban world*». (Classens, 2015, p. 236) By reproducing the false division between nature and city, urban food production seems like an «unnatural» use of urban space, while parking lots, shopping malls and roads become natural uses. A park is seen as a green lung, as a necessary part of the urban, but is also considered a part of nature inside the city, a retreat from the busy, dirty, city life.

One of the limiting aspects for the future of urban gardens is the long-term access to space. Urban gardens are often very temporary spaces, projects allowed to pop up and stay for some years in spaces that are not used. In Havnehaugen, for the last five years we have always heard that we have one or two years left, before someone is going to build the biggest conference hotel in Trondheim. A capitalist city can let urban gardens grow until it needs the space for further accumulation. This is an efficient way of killing long-term, time-consuming projects. This limits the engagement, but also what you can or cannot do, as trees cannot be planted, asphalt cannot be removed, green houses cannot be built, and creating a constant uncertainty among the gardeners. The hotel threatening the garden on Nyhavna is an example of how the political and economic system shapes the city. It says something about power structures as well. In the garden at Nyhavna we can choose to oppose and protest, but since we are on the land of the developers we are easily thrown out, especially since they don't want us there in the first place. The other tactic is to co-operate, to smile, be kind and polite and pretend that building another conference hotel is a good idea and hope that this cooperation might make it possible for us to remain where we are.

One of the first urban gardens in Trondheim was Kneiken Felleshaage. It was started in 2015 and is a garden where everything is grown in common. This garden is also temporary, since the municipality only gives out ten-year contracts, but it is located on quick clay, and that makes it unlikely that anything will be built there. This gives a different outlook on the future, since trees and perennials might be planted, infrastructure might be built, along with long-term relations to the place. Kneiken is one of the exceptions, and for urban gardening to reach its potentials I think it is crucial to establish more long-term projects, not just pallet frames that are left in an asphalt field for some years, until someone with more power to shape the city claims the place.



Her kommer Trondheims største hotell

Scandic skal bygge det som vil bli det største konferansehotellet i Norge utenfor Oslo-området.

på Brattøra og det planlagte nye storhotellet, ønsker Clarion-direktøren den nye naboen velkommen.

– Det er alltid spennende med konkurrenter, og vi ønsker enhver ny aktivitet i Trondheim velkommen, hvis det kan skape ny trafikk til byen, sier Hilde Alice Kvernrod, direktør på Clarion hotell & congress.

Vil ta konferansene fra Oslo

Steen-Mevold avviser at det har vært et poeng i seg selv å bygge et større hotell enn konkurrenten.

– Vi har allerede 396 rom på vårt hotell på Lerkendal. Det nye hotellet på Nvhavna har så

stort potensial som konferanse-destinasjon, blant annet fordi byen ligger midt i landet og har gode flyforbindelser.

Kan huse konserter

Selv om storsalen hovedsakelig bygges med tanke på konferansemarkedet, poengterer Steen-Mevold at det også kan brukes til andre formål.

– Hovedsalen blir dimensjonert for at vi også kan huse store kulturarrangement, som for eksempel konserter med rundt to tusen gjester, forklarer Steen-Mevold.

Tidligst ferdig i 2022

Administrerende direktør i Bane NOR Fiendom Petter

Urban gardens are often temporary places, space can be used until its needed.

Kneiken Felleshage was one of the first urban gardens in Trondheim, and since the ground cannot be built on there are chances that it might survive.



If we continue to look at urban gardens, and urban food production as a kind of curiosity, it will «*never be positioned as a viable, scalable option to counter the capitalist food system*». (Classens, 2015, p. 236) In the strict division between nature and culture, urban and rural, food production happens in the countryside by professional producers. The rural becomes an external resource, something we don't have to relate to, but that will still feed us, no matter how reckless we treat the farmers and the land.

By getting the nature of cities right, an effort made especially by the field of urban political ecology, (Swyngedouw, 1996, Heynen et al., 2006) the city is no longer seen as the opposite of nature, but rather reconfigurations of nature, happening under a specific political ecology, where the city is shaped by one ideology, worldview and set of values, but could just as well be produced otherwise. When applying urban political ecology to the urban garden it becomes clear that appropriating space, and reorganizing nature to make productive gardens within the city is a legitimate use of space. This also involves a break with the capitalist urban planning that strictly separates production and consumption. The marketing of urban gardening in new development projects is interesting in this regard, because it envisions food production as part of the city, but only if it's profitable, and only when it's not taking up space that could be used for further accumulation.



Bean pyramid in Losøter

Urban consumers, natural producers?

Urban and rural, humans and nature are dichotomies that capitalism depends on, yet another dichotomy is the division between producer and consumer. As urban citizens, one of our main jobs is to consume. In cities we often become dependent on the capitalist mode of production for food, housing and energy. It is really hard to live in a city without contributing to the accumulation of growth for the rich in one way or another or to not rely upon the imperial mode of living (*Brand & Wissen, 2017*) that is built into the everyday life of cities. The engine behind lots of our activity is to make the economy grow. We are parts of this machinery when we go to work and in our spare time. We trade our time into money to be able to consume, to buy food, to buy stuff, to travel, to compete with others in having most. One of the main tasks of the economic system is to convince us that we will always need more, that it will never be enough. This economy depends on insatiable desires and a never-ending feeling of lack, the constant conception that something is missing. A satisfied consumer is not a good consumer.

The consequence of infinite consumption is the destruction of our conditions of existence. This is now becoming more and more evident, but still we are so trapped in the capitalist mental and social habits and our environments are so shaped by capitalist values that there seems to be no ways of escaping. Charles Derber calls this a sociopathic society.

«A sociopathic society, paradoxically, creates dominant social norms that are antisocial—that is, norms that assault the well-being and survival of much of the population and undermine the social bonds and sustainable environmental conditions essential to any form of social order.» (Derber, 2015)

Some might argue that destroying our environment is “in our nature” and claim that we have always destroyed, simplified and exploited. And this is indeed how many humans behave, when trapped in a system where this kind of behavior is rewarded and seen as the normal way of life. However, the way we organize society is not pre-determined, our behavior is not static, it is adaptable and dynamic. Our ethics are formed by the society we live in - and in a society that rewards destructive behavior, we will act according to the values that the system promotes. If humans are dominating the earth and destroying ourselves, this is not “human nature”. These are just manifestations of humans being adapted to their environment, finding their ecological niches in the world-ecology of capitalism. It shows how we obey the rules, how we shape ourselves to fit the system, how flexible we are. And therefore, it also points towards opportunities to be different.

*“We surrender some of our autonomy when ill or crippled:
but to surrender it every day on every occasion would be to
turn life into a chronic illness.”*

- Lewis Mumford, Authoritarian and Democratic Technics, 1964, p1



Urban gardens are productive spaces

To mistake our current role as consumers as «natural» would be to ignore large parts of our history (and present). There are plenty of examples of human culture living with nature without destroying their conditions of life. (*Graeber & Wengrow, 2021*) (*Kothari et al., 2019; Treu et al., 2020*) Peasant communities and indigenous people around the world, people much closer connected to what sustains them, show that there are other ways, breaking with the common misunderstandings of humans as destructive and our future as pre-determined. These cultures represent a diversity of lifestyles that have been and still are available on the planet and are illuminating examples of cultures that are not sawing off the branch they are sitting on. They represent alternatives, other ways of living, knowing, relating, other ways of perceiving agency, of understanding the past and envisioning of the future. This rich history (and present) proves that there is no inevitability of what we must become or how the future will turn out, no unavoidable results or preprogrammed tracks that we need to follow.

I am not arguing that we shall “become indigenous” - we cannot go back to hunting-gathering. We neither have the experience, skills or space for such a project. But the fact that there are other ways of being in nature reveals possibilities for other lifestyles also in western societies and urban environments. There is a plethora of nowtopias that exist, possibilities that are explored and movements that are already struggling to create other ways of acting and being. It is possible to move forward in completely new directions, breaking with the notion of one-directional progress, proving that there are thousands of alternatives. Radical cultural experimentation involves the kind of change that Felix Guattari was arguing for - a transformation of the mental ecology, how we think, including what kind of knowledge systems we use, new epistemologies and ontologies, a revolution in the social ecology, how we relate to each other, both human and more-than-humans, how we act together and form movements and coalitions, and transformations in the physical ecology - how we remake the world around us and how this world simultaneously remake us.

“Indigenous peoples, local communities, civil society and other actors of change need to continue dreaming, practicing, and promoting these alternatives, for one day there will be an overwhelming demand for them, and it will be tragic if we would have meanwhile abandoned them because we thought they were an impossibility.”

- Demaria et al in
Epistemologies of the South: Justice against epistemicide, 2015



Urban gardeners are producers

Growing food is reappearing as an urban practice in world facing a food crisis. In Norway a food crisis might seem distant, with supermarkets full of (relatively) healthy food at a low cost. Still, 60 % of this food is imported, and as the spring of 2022 has shown, our food supply is fragile, and can easily be threatened by social unrest and a more extreme climate. A rich country like Norway could probably pay our way forward in the line in a future food crisis, but the ethics of this approach is quite disgusting and puts our own destruction of fertile soil in a grim light.

Urban gardening fits into this narrative in at least two ways. The first is an aspect of the physical ecologies of urban gardening - the production of food. In Trondheim, we have a large belt of single, detached homes with lawns, we have lots of unused flat roof tops, we have urban parks, and parking lots and huge swaths of really fertile peri-urban fields. The question is not whether Trondheim could feed itself, but how much it could produce and how different such a city and culture would be from today.

Food security also has to do with knowledge and skills, the social and mental ecologies. Food growing is not something that everyone knows, still it's something that anyone could learn. It takes time and takes experience. All of this is knowledge is local and embodied, learnt through spending time with plants and the place. In an urban garden this is often a social endeavor, where we help and learn from each other. Seen from this perspective food security is not just a set of policies. It can also be a decentralized type of security, built through networks and ecologies of knowledge, where it is not only food but also crucial experience that grows.

By becoming urban gardeners, we are immediately turned into producers. We are no longer (just) passive consumers, completely reliant upon the industrial food system. Urban gardening is a productive activity - this is at least one of the goals of the practice. While many other spaces in the city are based around consumption, urban gardens are spaces of production. This is no small distinction. Every carrot, every potato and sugar snap pea, every herb leaf or tomato that grows in the garden replaces an industrial chain of production, an almost incomprehensibly inefficient, wasteful, polluting and destructive way of feeding ourselves. Urban gardens are jabs at the industrial food system, indeed small, but conceptually and in practice, every calorie produced in an urban garden takes some of the steam out of the industrial food system. A little less demand on the polluting food chain, a little less power to the supermarkets and agribusinesses. In brief moments the garden makes the supermarkets superfluous. Herb sovereignty is also a kind of food sovereignty.



Urban gardening can happen at many scales, from the sidewalks to peri-urban fields, like this one in Voll Gård.



Importantly, the interest in food that might grow in urban gardens can have consequences as it creates more conscious consumers who start looking for alternatives, more ethical or tasteful or local ways of obtaining the things they do not have space to grow in the garden. Examples of this are local farmers markets and RekoRings, subscribing to boxes of fresh, local produce or scaling up their own food production by joining CSAs. Smaller adjustments in what we consume is also regular, many of my fellow gardener's argue that they have become more aware of what they buy, and rather chooses local, seasonal, Norwegian or organic food when shopping than they did before. By making these choices the urban gardeners are not just producing local food in their neighborhood, they are also transforming the ecology of the food system of the city-region, (*Vaarst et al., 2018*) by enabling other practices on peri-urban and regional farms.

In urban gardens we are creative, we are producers. Producers of food, producers of space, producers of diversity. It is not the leave-no-trace mantra that we face as we are visiting a conservation area, it is leave-as-much-trace-as-possible but do it in a good way. And this perception of human activity leaves us with completely different visions of the future.

«It's this plant and this greenness and the darkness of the earth and it's growing, and those are the things that I am like swelling with emotion for. If you ever have the chance of working on an orchard and to be there in the spring time when they're blooming and all the bees are shaking the trees. That's when it usually happens for me. And that moment is like my peak moment of the season, you know, when the trees are waking up and the nectar and the nutrients and the water are coming from the earth and what they've stored for the winter from last year is turned into nectar. They're turning the little energy they have at that moment (...) and there's this BOOM! cranking it into these flowers and into this nectar for insects to spread the pollen and the trees are shaking and... These moments are really, really beautiful. And you certainly feel connected. You feel like a recipient, you know. You are basically a recipient of this gift, this crazy gift that we've been given, and then I feel grateful, very lucky to have that.»

- Interview with gardener Völl Gård, Interview 7, 2020

Authoritarian and democratic

One of the benefits of urban gardening is its ability to work at different scales. Urban gardening can happen as guerrilla gardening in the small patches along the sidewalk, like the patches of soil in Ila, or it can be an alternative way of producing in the fields surrounding the city. Urban gardening is what Lewis Mumford called a democratic technology, “*man centered, relatively weak, but resourceful and durable*”. These technologies are widely diffused and can be used by many without access to huge investments, rare minerals and high-tech machines. Mumford contrast this to what he calls authoritarian technologies, which are “*system-centered, immensely powerful, but inherently unstable*”. These technologies are much newer, and is a result of “*technical invention, scientific observation, centralized political control*”. (Mumford, 1964, pp. 2-3) Authoritarian technologies are specialized, centralized and concentrated and allow the masses to control the few. Our modern society is built around these powerful technologies, which abolishes all limits and make expansion and further accumulation possible. Industrial farming is authoritarian in the sense that it depends upon advanced, highly specialized technology, an industry of fossil fuel, fertilizer, patented seeds, supermarkets, an industry of agribusiness, which are not mainly there to sell what the farmer produces or what is best fit to the local soil and climate, but to design a society that depends on their products, and then convince the farmers, consumers and politicians that this model is the only one. That this business model is ecocidal and self-destructive is a fact that we are supposed to ignore.

Mumford was worried that authoritarian technologies were taking over, and feared that democratic technics «*will be completely suppressed or supplanted, so that every residual autonomy will be wiped out, or will be permitted only as a playful device of government, like national balloting for already chosen leaders in totalitarian countries*”. (Mumford, 1964, p. 2) Urban gardening can be used by many, it doesn't require advanced education, the knowledge is easily shared, it can be scaled and adapted, and if it is not already available, the struggle to make it possible is a democratic journey in itself. It might also be used directly to satisfy a whole range of the human needs, checking a wide range of Max-Neef's matrix on needs and satisfiers. (Max-Neef, 1991) This also means that the technologies offer a kind of autonomy, freedom and creativity.



Urban gardening is an efficient way to grow food, but in order to do this we need many hands, an ecosystem service that urban citizens could provide.

Outscaling

One of the great potentials of democratic technologies is that they are easily spread. Unlike authoritarian technologies that typically spreads by scaling up, by concentrating and centralizing, democratic technologies would spread by *scaling out*. (Nicol, 2020) This means a decentralization, a horizontal, rhizomatic growth of the technologies. Urban food production rarely spreads by one garden appropriating another. It would rather spread by the idea being planted in another individual or group of people which might find their appropriate space, fit to their needs and desires, skills and situation. This will scale up the production of food, but also distribute the means of production, the experience, skills, knowledge and space. Empowering would still be located at each garden autonomously. Outscaling is not based on hierarchy and competition. Another garden producing a lot of food is not bad for me, it just means that I can learn from them - what are they doing right? How do they make their compost? How do they organize the work? Why is it working? How did they fail? What are they growing? What techniques are they using? How do they cooperate with the more-than-humans in the garden?

In urban gardening there is an opportunity to combine leisure, education and therapeutic benefits with production, and these aspects could be connected to *«the spatiality of radical, informal, grassroots practices of contestation, land appropriation, food sovereignty, back-to-the-land movements and recreation of commons»*. (Tornaghi, 2014, p. 558) I also read this as a possibility that radical projects, worldviews and practices could exist within, or grow out from «innocent» gardening projects.

There are of course possibilities also to scale up. It is not possible to feed the world on pallet frames. But the practices and techniques could remain the same, as the principles behind urban gardening and agroecology are similar: Grow food by cooperating with the natural processes instead of fighting them. An urban gardener would be useless in an industrial farm, because there is no direct relation to plants or soil but could probably quite easily learn to work on an agroecological farm. A decentralized, labor-intensive agriculture like this would require a lot of people, but lack of people is not one of the biggest problems in the world right now. The high concentration of people in cities is also what makes the peri-urban fields especially fit for transformation to other ways of producing food. This kind of job-rich agriculture would be ecologically sound, less energy-intensive, require less fossil fuel, pesticide and fertilizer. It would build soil and store carbon in a decentralized manner - and would also connect people with each other and the land, generating new communities and subjectivities. If we agree that there is a rift between humans and nature, and agree that this rift needs to be mended, people will need to spend time and energy to break down this division. The metabolic rift will not be healed in the metaverse.



Peri-urban fields at Rotvoll now used for roll-out turf production

Is this a nostalgic, romantic vision of agriculture? Maybe, but there is also a chance that people would like it. That they would appreciate spending time in the fields, harvesting potatoes, herding sheep, composting, plant breeding, conserving or weeding. In many ways this is what people do on their free time, in urban gardens, or in CSA's and market gardens. People might appreciate a break from their offices, buttons and screens, to be out under the open sky doing physical, tangible work that makes sense. I'm not imagining this as a kind of mandatory work camp, sending people involuntarily out to rural and peri-urban areas to produce food. Farming is essential and should be well paid, but subsidies could be turned towards agro-ecological farming instead of industrializing farming, or the work could be compensated for by a redistribution through basic income for farmers/carers.

Is it unrealistic? Maybe in a world where nature, food and energy continue to be «cheap» and where growth is the main aim of society. Still, it's more unrealistic to think that we can continue as before, to feed ourselves with a food system that destroys the environment we depend on. We are really in big trouble if we can't even imagine a society where the ecological consequence of industrial food is not externalized in time and space, a food system we are not alienated from, where we know where our food comes from. For me it is not unthinkable to spend a month or two of the working year, doing practices connected to food growing, plant breeding, preservation, composting, maintaining or repairing damaged ecologies, and I think many others also might find meaning and joy in producing food or caring for the ecologies we are part of.

These ideas might seem far-fetched, but that's also why we need to work on them and strive to create spores of them in the present, that could grow if they get the right care and growing conditions. As Giorgos Kallis reminds us:

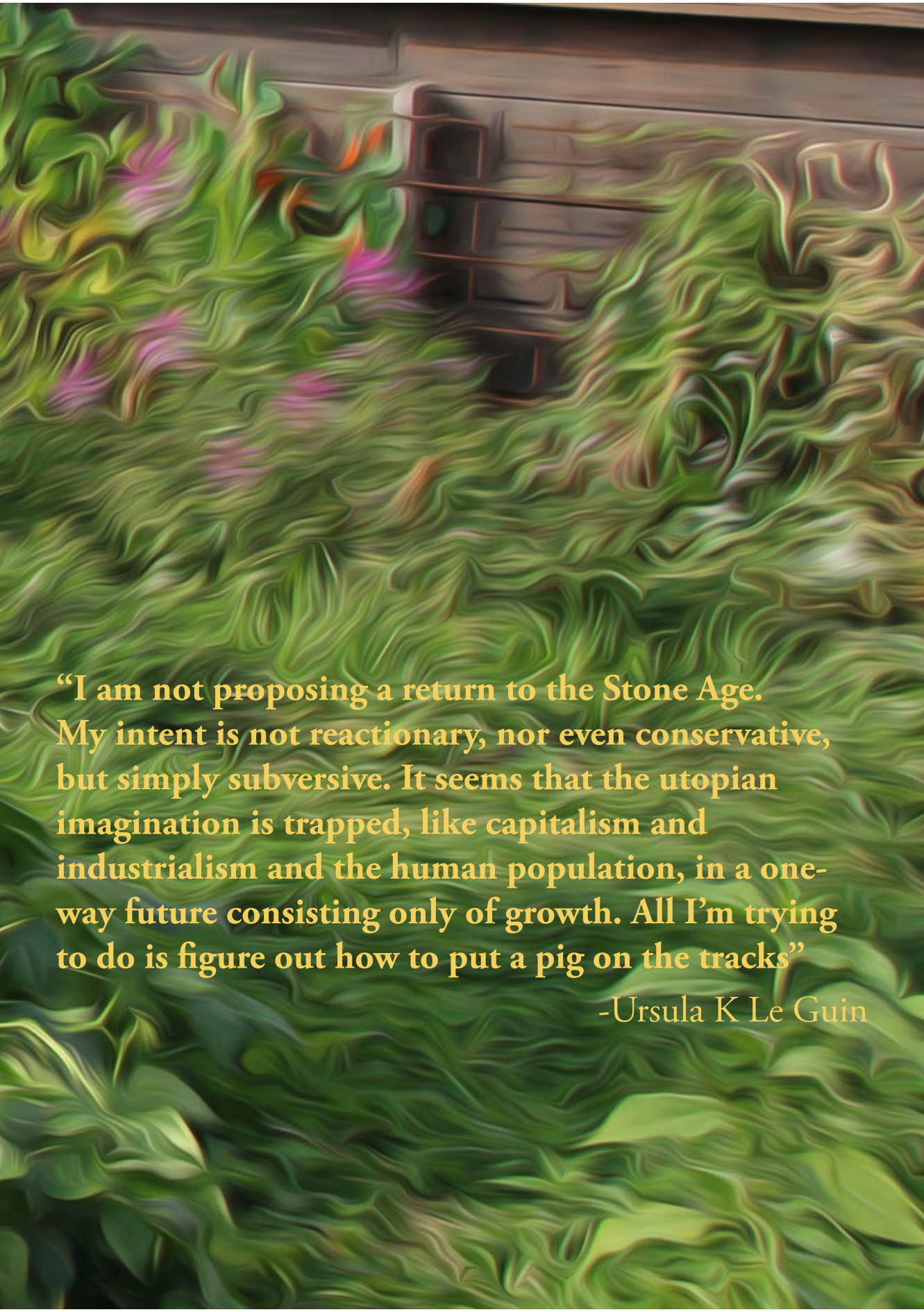
«[T]he truth or ethical value of an argument does not rest on whether it is politically correct or viable. Political changes are a matter of will and contingency. We will never know if a culture of limits and its institutions are possible if we begin with the premise that they are not.» (Kallis, 2019)



Which seeds should we sow here?



Reviving dead soil

The background of the image is a distorted, wavy representation of a train car interior. The colors are primarily green and purple, with some yellow and orange accents. The wavy pattern gives the impression of a liquid or melting surface. In the upper portion, the dark interior of a train car is visible, showing a window and some structural elements. The overall effect is surreal and abstract.

“I am not proposing a return to the Stone Age. My intent is not reactionary, nor even conservative, but simply subversive. It seems that the utopian imagination is trapped, like capitalism and industrialism and the human population, in a one-way future consisting only of growth. All I’m trying to do is figure out how to put a pig on the tracks”

-Ursula K Le Guin

The dead soils of the imagination

One of the greatest tricks of capitalism is how it shapes the social and mental ecologies and makes people believe in the myth that There Is No Alternative. This has been repeated over and over to a point where it has become true. Mark Fisher called this Capitalist Realism - a term describing the pervasive atmosphere that we breathe and live, the widespread self-fulfilling perception that it is easier to imagine the end of the world than the end of capitalism. (Fisher, 2009) The realism of capitalism depends on hiding its realities. To continue to grow it can never be known what sort of exploitation it rests upon or the external or future consequences it has. Capitalist Realism depends upon «a presupposition that resources are finite, that the earth itself is merely a husk which capital can at a certain point slough off like a used skin and that any problem can be solved by the market». (Fisher, 2009, p. 18)

According to Fisher: «capitalist realism can only be threatened if it is shown to be in some way inconsistent or untenable; if, that is to say, capitalism's ostensible 'realism' turns out to be nothing of the sort» (Fisher, 2009, p. 16). The environmental crisis is one such glitch or crack where the real consequence of the fantasy is revealed. By looking through these cracks it becomes apparent that the insatiable need for growth is destroying our conditions of existence, or as Fisher writes «capitalism is in fact primed to destroy the entire human environment. The relationship between capitalism and eco-disaster is neither coincidental nor accidental: capital's 'need of a constantly expanding market', its 'growth fetish', mean that capitalism is by its very nature opposed to any notion of sustainability.» (Fisher, 2009, p. 18)

In addition to hiding the realities it rests upon, it needs to control what society deems as realistic. As the realities of the climate crisis become increasingly impossible to ignore, getting rid of the main cause, capitalism, needs to be regarded as unrealistic. Instead, we should rely on individual consumer behavior, market-based mechanisms or magical new technologies to save us, because these solutions require no radical transformation of society and will allow capitalism to continue to grow into new «green» varieties.

Fisher reminds us that our perception of what is realistic is always changing. What we today accept as given was once impossible and mentions how the privatization of everything during the 1980s was unimaginable even in the seventies. In the same way, «what was once eminently possible is now deemed unrealistic» (Fisher, 2009, p. 17) Capitalism has constituted its ideology to a point where it has become naturalized, it has become *the* reality, and presents itself as fact or necessity. Capitalist realism permeates the solutions we imagine and limits our visions of the future to a narrow range of possibilities. We seem to be trapped inside this realism. It is a crisis of imagination, where alternatives are not just deemed as unrealistic, but become increasingly unthinkable. We are not even capable of imagining that things could be different. This becomes critical in a time that screams for alternatives. When it becomes apparent that we cannot continue as before, «demanding the impossible»* becomes both more realistic and important than ever.

* 1968 revolt slogan:
Be realistic: demand the impossible!



Solsletta - «if we let the children choose»
Developers selling their future visions in the demonstration apartment at Strinda

There is a danger that the urgency of the ecological crisis will compress the possibilities of the future. A growing sense that we need to deal with these issues, without questioning how it should be done. We don't have time to build a better world, we just need to solve this «challenge». This way of looking at the crisis is very beneficial for capitalism, because it means that there are technological quick fixes, solutions to be marketed and sold. As the crisis escalates the market for these solutions grow. Politicians, left with the impossible task of dealing with the situation *and* getting re-elected will tend to move towards solutions that doesn't affect our lives, such as ecomodernist visions of endless green energy, decoupling, carbon capture and geo-engineering. (*Lamb et al., 2020*) This is a problem, both because there is no guarantee that these solutions will work, and at the same time it takes away the opportunity to use the overhanging crisis to imagine and create a better future. The techno-fix approach blocks other kinds of options and thoughts and represents a lost opportunity for thinking differently about the future. In order to handle the ecological crisis, we need a fundamental transformation of society, of the way we live. Facing the catastrophe, thinking radically different about the future is not just an opportunity, but a necessity. It is possible to use the ecological crisis to do something about the roots of our ecological problems and come up with solutions that would make the world a lot better for us, here and now, but also for those coming after us, of all species.



Try before you buy

Reviving dead soil

Capitalist realism might also be seen as the dead soil of our imaginations. In this soil, no alternatives can grow. To be able to reject capitalism there needs to be alternatives. I believe that urban gardening can be a practice that challenges the capitalist realism, both by critiquing the capitalist food system, by revealing its glitches, and by producing an alternative. Urban gardening plants a diversity of seeds in the imaginary dead soil. It feeds the soil with compost and mulch as it mends the metabolic rift, and slowly the imaginary soil is enriched. Through the practice of urban gardening, it becomes possible to see other ways of organizing nature, other ways of producing space and food, other ways of cooperating with other humans and the rest of nature, and through these experiences new futures might grow out of urban gardens.

To regenerate the imaginary, dead soil is to stay with the trouble. (*Haraway, 2016*) There is no return to a pristine nature anywhere on the planet. A radical transformation needs to start with the people and places of today, in a world ravaged by capitalism. From these ruins the future must be built, and it will take a long time to regenerate the physical, social and mental ecologies, which are at best damaged. But as we start working on this regeneration, we also learn that the soil is not dead. There are already things living here. They are just suppressed by the capitalist realism. There are alternatives and opportunities - and the flourishing of one movement and one practice will not necessarily outcompete others, it might strengthen them, and be mutually beneficial.

Like the regeneration of the physical soil, each seed of alternative will start from its own situation and build its ecology, its community. It will seek new connections and relations, it might flourish, bloom and disseminate its seeds or it might die long before. Reviving dead soil is about facilitating for diversity to develop itself. As the soil is regenerated a diversity of possibilities start to grow, also the ones we have no idea what looks like today - a wild landscape of alternatives. Guattari called this a molecular revolution, a diverse, multi-faceted movement from a myriad of different places happening all the time. The regeneration can start today, any day, anywhere, everywhere. Start in your windowsill or in your waste bucket. Start in the local park or parking lot. What is needed is time, new practices, and new relations in the ecology. New thinking and reviving old ways of thinking. And as these communities emerge and develop, new futures come into sight. Utopia is just a horizon to walk which will change as we get closer. Gardening can be prefigurative, the desired future grows out of the practices in the place. (*Tornaghi & Dehaene, 2019*) To prefigure is to strive to create the world we want to live in, within the shell of the old. As extractive relations are replaced by caring relations, the future is envisioned through these relations and capitalist visions of the future lose some of its steam. Even imagining a future where humans care for the more-than-human breaks with the capitalist realism and its utopias. Gardening is by no means enough. However, it might be a place to start.



The garden stretching out

One of the benefits of urban gardening is that it allows for the transformation to start locally. It is about changing your neighborhood, your community, your city, your future. The socio-ecological transformation of Trondheim will look radically different from the socio-ecological transformation of Tokyo. How to interact and nourish the imaginary soil depends on the local situation, background, skills, interest, and community. Good visions of the future are not built on a transcendent moral where we do things because someone tells us to. These visions will grow out of different histories, people, passions, interests, and worldviews. Deciding «*for ourselves, locally and in diverse ways, where and how*» (Wakefield, 2018, p. 86) we respond to the ecological crisis. The main goal is then not to change or save the world, but to change your local community, trying to make this space, this part of your everyday life a little less alienating, a little less hierarchical, boring, and meaningless and a little more democratic, and enjoyable. To make fun of the cracks in the capitalist system, to laugh at its inconsistencies and to enjoy the work of providing an alternative to this life-depriving system, of breaking it «*in as many ways as we can*». (Holloway, p. 11)

Of course, there are threats and challenges. It will not be easy. And capitalism will not stop trying to enforce its monoculture in all the familiar ways, plowing the soil or planting its invasive plants or spreading poison and pesticides. It is naive to believe that capitalism would allow its resistance to grow. Big machines will pack the soil, strangle the porous pathways that bring oxygen to the roots. It will try to co-opt the practice, try to remove it and replace it with something less subversive or more profitable. This will always happen. The only hope lies in diversity. By growing a diversity of practices, worldviews, future visions and relations the system gets stronger and more resilient to these attacks. Diversity is the death of capitalism, since it depends on monopoly, monoculture, domination and control. It cannot handle the multiplicity of the attack, the stabs from all sides, all the time, or the virus that quietly sneaks into its body. (Dunlap, 2020, p. 1005) And suddenly, the ruins of the deadly system is just a pile of organic matter, already pierced and penetrated and decomposed, becoming transformed and revived into something else.



Dandelions building soil beneath the asphalt

Speculations

It is crucial in this moment in time to not get locked into a monoculture of thinking about the future. For capitalism it is necessary that we believe the old, worn-out phrase that it is easier to imagine the end of the world than to imagine an alternative to capitalism. One of the aims of the détournement of Rotvoll was to provide another perspective on peri-urban soil. To look at this neither as waiting lands for unstoppable urbanism, or as dispensable fields in an industrial agricultural system where no one will care if the fields disappear. I wanted to open up the thinking around speculation, to hi-jack the practice of speculation from the developers to show that there are other ways to speculate about the future than the developers dreams of accumulation, a speculation «*out of touch with finite pasts, presents and futures*». (de La Bellacasa, 2017, p. 111) As a way of concluding, I will now venture further into this speculation, and see what might happen on Rotvoll, to challenge the capitalist way of developing a field and to offer an alternative for peri-urban planning.

«I have done my best to take care of this soil my entire life. It feels like I'm being punished for that now. When we decided to work for a development of the soil into housing, it was because we were not able to see a possibility for farming here 30 years from now»

- Ivar Oust, the farmer at Rotvoll (Wallum et al., 2020b)



September 2023, Potato harvest, Rotvoll Gård

It was late September, early morning. The fog put a veil on the city surrounding them. They could no longer see the highways with the cars rushing past the city, the empty parking lot outside IKEA or the neighboring car dealers. They could only see the dark soil and an abundance of potatoes coming up from their small potato patch. It was the first potato harvest in many years, and a long time since they had touched the soil. For modern farmers there is no need. Everything can be done by handles, screens, wheels and joysticks. But as they touched the soil the soil touched them back.

In the soil they could feel the work of the glaciers, the deep time of the soil, smell the work of the plants, the dead bodies of whales, of microbes, earthworms, plant matter broken down to black humus.

But Snah could also sense another future and broke the silence. He didn't know quite how to put it, so he just said it.

- Dad, maybe we should put the project on hold?

- On hold, what do you mean?

- I mean, maybe we don't have to build here now. Maybe we can wait and see. Maybe we can try something else?

- Something else?

- Yeah, I mean, we already have enough. We don't need to develop these fields into apartments. Maybe we can do it in another way. Maybe we can try this urban farming thing on the entire field?

Ravi put the potatoes he was holding in the wooden box. He laid both his hands on the pitchfork and looked at his son.

- Is this what you want? After ten years of working for this? Do you really want to give up the project, now that we finally got the permission?

- I don't know. It just doesn't feel right. I mean, the city doesn't really need these apartments, we don't need money, and the soil - both you and your father and your grandfather fought so hard to protect it. I know it doesn't make sense for you to farm this land anymore, but maybe someone else can do it, in another way, in the future. If we destroy this soil now it's not coming back, you know. This is the most fertile soil left in the city. I mean, look at these potatoes - it's really good soil! Imagine how much we could produce on the entire field.

- You want to turn this into a potato field? Are you crazy?

- No, not like that. I mean, sure there can be some potatoes here too, but it can be farmed in thousands of ways by thousands of people. Urban farming is really popular in Trondheim! Do you know how much response I get on my videos? I'm sure a lot of urban farmers in Trondheim would love a patch of soil here. The municipality and the government are also really interested in urban farming and there is a lot of research going on. I think we can make a huge project here. It could really become a pilot project for these kinds of fields in the outskirts of cities. People need soil and the soil needs hands. And we could also make something out of it. A project like this needs organizers, someone to coordinate, to apply for money, to fix things, to maintain the infrastructure, to talk about the project in the media, at conferences, we could have a restaurant at the farm cooking local food, a cafe, an educational center, visiting farm, we could sell vegetables. Yeah, I know that this is a quite different direction than what we have planned, but wouldn't it be fun?



- You have always been a dreamer. Of course, it would be fun. But it would never work. Why should people use their free time for this?

- Because they like to! That's why there are so many urban gardens in the cities everywhere now. They like to get their hands dirty; they like to do things like this. Don't you? They like to follow the process through the season, to see how the potato plants grow big during the summer and to harvest them like we do now. They like to pick berries and fruit and prune bushes and trees. They like to see stuff growing, to look at the plants, to take care of them, to harvest the seeds in fall, to try new varieties, to plant tomatoes in their windowsills in February and take them out as soon as it's warm enough. They even like composting! And they like to meet other people, to do stuff together, to eat together, to build stuff, to cooperate, to do something that makes sense!

- You're right. That's true. But they will also get the possibility to do all of this when we build apartments here. It will be gardens on the roofs, in the backyards, bushes and berries and trees all over!

- It's not the same dad! I mean, think about it. It doesn't make much sense to build down this soil, just to have some planters on the roof tops. That's just decorations. Garnish. The potential is so much bigger. I'm talking about a wild, productive landscape here. I'm talking about fruit trees and nut trees, and market gardens, and community gardens, and green houses and social spaces. This will be a productive park, filled with people! It will not look anything like this.

- You must be dreaming still! We can discuss this later, when you are not high on the potatoes. Let's finish this now, I'm getting hungry.

Formational journey

That fall there was a lot of late-night discussions between father and son. It is hard to break out of one way of looking at the world. Change hurts. It hurts to say no to hundreds of millions of kroner. It hurts to establish new neural pathways, and to change your mind. It hurts to ask tough, ethical questions, to start thinking hundred years ahead instead of ten. Also, so much time, energy, money and thought were already invested in the project. It didn't help that their staff of advisors, developers and architects tried to convince them that they had lost their mind, that they had become hippies, that they were wasting a huge opportunity.

Despite all this Snah managed to convince his father that they should try to develop the land in another way. It just made more and more sense. They decided to pause the real estate development to learn more about urban farming, to find out if it was right for them. They visited their neighbor at Reppe Søndre and learned about their Community Supported Agriculture (CSA) and the social project Dype Røtter (Deep Roots) for integration of newcomers and saw how the land had radically changed from monocultural production to a myriad of growing methods done by many different people. They visited the working day at the CSA and saw how many different people farmed the land together. They talked to Trondheim Kommune to learn about how urban gardening was growing in Trondheim and found out that the municipality could support the initiation of the project with knowledge and money. They visited some of the many urban gardens in Trondheim. They went to Ranheim to visit Væres Venner, planted nut trees and talked to Stephen about how they were transforming a grain field into an experimental agro-forestry, permaculture garden and how this was part of Norwegian Seed Savers efforts to maintain diversity through growing a variety of plants. They visited their neighbors at the Competence Center for Urban Farming at Voll Gård and learned about how Voll Gård was developing into an educational hub for market gardeners in Trondheim. They were sent further south in the city, to Lerflaten Gård, where Nennsom grew vegetables for the best restaurants and Blad & Blom grew and harvested flowers to make tisane. They travelled further south to Oslo to visit Losæter and saw how many people were gathered on a Wednesday night to work in the garden, to cook and eat together and understood how social urban gardening can be. They talked to the people behind the project and learned how a garden can be initiated and developed as an art project.

Each space they visited changed them a little bit and every person they talked to taught them something new. In the urban gardening movement, they found an enthusiasm, an engagement, an alternative and a potential that overwhelmed them, which gave them new ideas and experiences to learn from, but more importantly it made them increasingly certain that what they were doing was right. It raised the bar and their ambitions, and they decided that Øvre Rotvoll Gård was going to continue to redefine what urban gardening could be. Through inviting the leading scientists in the field, they learned that one of the things needed was more predictability and long-term thinking. It takes time to regenerate soil, to grow trees and bushes and an edible urban landscape and to develop the relations that is needed to take care of the landscape. They learned about the research that was done and the research that was missing and together they decided to contribute to pushing the movement further.

An invitation

After their formational journey they decided to contact the local initiatives, the municipality, the research environment and the pioneers behind urban gardening in Norway. They put together a group of qualified and engaged people to ensure that the project would be as ground-breaking as possible. The first move was to gain public interest, which they had a lot of experience on from their real estate development project. They spread the word via their followers on social media, through local and national newspapers, and the municipality reached emerging urban gardeners through their channels. They also gathered thousands of seeds of kale which they included in a letter to all inhabitants of Strinda.

Do you want to contribute to the development of Rotvoll Gård? Are you interested in producing, gathering, conserving or eating food? Do you have any experience in plants, soil or seeds? Or are you just curious? Do you want to learn more about food growing, soil regeneration, agro-ecology, beekeeping, hen-keeping, plant breeding, seed saving or tree pruning? Do you want to teach others or learn yourself? Do you want to be a part of making a new edible, urban landscape and develop the largest and most diverse urban garden in Norway? Come meet us at Rotvoll Gård on the 21st of May 2024.



The gathering

The seeds were planted, both in the windowsills and in the mental soils of people in Trondheim and on the opening day a nervous father and son were standing in the same field where they picked the potatoes only half a year earlier. They had no idea what awaited them this Sunday morning. At 11.30 the first people arrived. With kale plants in their bags, shovels in their hands and excitement in their guts. What was this? Would there be others there? People streamed out, crossed highways, got off buses, and gathered around the improvised stage on a flipped haybale.

They estimated that it had to be over thousand people there, young and old from all kinds of backgrounds and cultures. But the day was well planned and prepared. Snah, as nervous and excited as he'd ever been, went up on the small stage and started talking to the people in the field this Sunday.

Dear everyone,

I am so overwhelmed with the response I am seeing today! This is beyond our wildest expectations! Let me see some green fingers in the air!

I want to warmly welcome you all to Rotvoll. This is the place I grew up, the place I belong, the place I love. This has been a farm since the 1500s. A farm with a rich history, but still this day will be a landmark. It will be a day where everything changed, a day when the future of Rotvoll was altered for all time to come.

We are standing here today on the old sea bottom of the Trondheim Fjord. Under our feet lies the work of glaciers rubbing and shredding the bedrock into small pieces of rock. Plants and animals and humans have nourished this soil for thousands of years - and all life around us depend on this soil. Their work is a gift to us. Today is a day to be thankful for this gift, to pay respect to the immense amount of work that went into the process and a day to do our best to take care of this soil.

As of today, Rotvoll will no longer be a private property. It will not belong to me or my dad or my kids. From today on - Rotvoll is ours, it is a commons, a place that we will develop together. This field, all the 140.000 square meters, is from now on and for all eternity protected by us, the urban farmers of Trondheim.

I feel really honored to share this soil with you, to invite you to become part of this place - together we will take care of it and develop it into something really special.

Thank you!

The speech went viral. In Norway it is quite rare that a property owner shares his land through a Community Land Trust, especially when they have opportunity to make a billion kroner by developing the land for housing. The scene where Snah talks to the crowd about why no one should own the soil, that how to develop should be democratic decisions, and that land is best taken care of together was quite radical in Norway at that time. Snah was all over the news, he was interviewed in the biggest newspapers in Norway and went to Friday night talk shows to talk about the project. The radical act and the ideas behind made big waves.

It was important to get the message out, to send the signal, it was crucial that it got the attention of others to be able to spread. But Snah was mostly eager to get the project going, to get his hands dirty and find out what the land could become.

The plan

The first step of the project was taken. The field was becoming an active place. Every Sunday and Wednesday were garden days, when people gathered, ate together, got to know each other and the place. In the beginning it was crucial to learn. Courses were held every week and the gardeners learned the basics of agroecological gardening. But they also learned from each other how to cooperate, how to resolve conflicts and make democratic decisions. They learned about each other's skills and found ways of organizing and communicating. The field served as thousands of educational test beds.

This phase was important in order to get the next phase right. A call for ideas was spread around to all the gardeners. What were their interests, what did they know, how could they contribute, what did they want to learn? It was a busy summer also for the commons advisory board who tried to keep up with the enthusiasm and activity in the field. Their task was to develop a plan that was long-term and flexible at the same time. But things also happened more organically and a lot more chaotic. Often the landscape grew by itself in unexpected ways.

A group of programmers got together to make an app (of course), some graphic designers wanted to make a «graphic profile», some liked writing and made newsletters, others liked cooking more than weeding and started organizing the common meals, others used their skills to write research applications, and apply for agricultural subsidies from the government. Some were interested in agroforestry and worked together on planting the first perennials.

People organized into dedicated working groups based on their interests and skills. Each group were given reference projects, reading material and resource persons that they could ask and learn from, but were also invited to experiment on their own. It was important that the knowledge was spread in the group, to make a resilient ecology of knowledge that wouldn't fall apart if someone left the group or joined another. Knowledge was also shared across groups, both formally at the weekly garden gatherings, and informally from day to day. In this way everyone knew a little bit about everything. Workshops were held, courses were being taught and knowledge grew and spread as fast as the Jerusalem artichokes and potatoes that were planted around the field in the first year, to break up the packed soil. Later they discovered that the Jerusalem artichokes left over in the ground from the first year were hard to get rid of and they emerged everywhere, to the despair of someone and the delight of others.

After many discussions in the groups and in the commoning meetings the sketchy plan for the area was presented. This plan was supposed to be open for changes, but still provide a framework, especially regarding the perennials, the trees and bushes and the building infrastructure. The plan dedicated a space for each of the working groups, it provided space for market gardens, for chicken coops, for composting stations and green houses. This rough sketch tried to integrate the perspectives, ideas, propositions and desires of the gardeners, an open matrix of how practices could intermingle, coexist and benefit from each other.

A group of carpenters, handy people, architects, artists and construction workers developed ideas for a community building and green houses, and soon the first stage of the community kitchen was built, using traditional building techniques on reused materials.

The second spring a food forest was planted, lining the perimeter of the triangle, a portal into the new urban garden. Nut trees, berry bushes, and edible perennials were planted. The forest was for everyone, an abundance of nuts, fruits, berries and herbs all through the year. Gathering seeds from Stephen Barstow's rich garden, and from the myriad of native and non-native species in Kvann's living library of species made this into a feast of biodiversity, new tastes and smells for both the humans and the more-than-human gardeners.

The diversity continued into the many experimental gardens in the heart of the project. The advisory board was overwhelmed by all the different initiatives and decided that the field was best developed as many small projects as possible, with 5-20 people in each group. In this way each project could start out in a small scale and experiment on how to get the most out of the little space they had. It would allow projects that failed to be replaced by new initiatives, and it would ensure the diversity and engagement the place was striving for. The heart of the project was a fifty-meter-long table, a common eating area and a focal point of the commons. Here people gathered to eat together, both in the everyday life of the garden, and in the many festivals and events and celebrations and parties that held the larger community together. This was a place for social gatherings, to cook with each other and for each other, for getting to know each other, to share experiences, stories and meals. It was inspiring to work in the field together and see all the people doing different things, and a great opportunity to learn from each other. In these days and nights knowledge, visions and practices were shared, everyone got to learn a bit of everything. How to take care of the hens, how to prune the apple trees, how to make the best apple pies, how to mulch, what to do with the food waste, how to make composts hot enough to disarm the weeds seeds of the old plant material, how to weed, what weeds were edible, and day by day people got to know each other and the landscape they were a part of. And as they cared for the landscape the landscape also cared for them, repairing their broken relationship to the land, to insects and earthworms, plants and each other.



Project spreading

When you know what a soil can do, you are less likely to destroy it. As the project developed the half-finished, generic, apartment project on the other side of the road looked like a more and more embarrassing use of space. As the garden got denser and denser, the gardeners understood the real value of space, and it became obvious how much they could have done with the 180.000 square meters on the other side of the highway. But instead of looking back in regret the gardeners looked forward and beyond and started to look for new green spaces to share and transform. Some left the garden and found fields, parks and parking lots to transform into neighborhood gardens. Others made projects on their own on rooftops and lawns, backyards and alleys. The researchers got their assumptions confirmed - the skillsets and perception of agency that the gardeners developed allowed them to see new potentials in the spaces in their neighborhoods. They discovered what a space can do, what a space can produce mentally, socially and physically if human and more-than-human nature enter into frugal cooperative projects.

The monocultural fields surrounding the city, that used to grow grain for animal feed were one by one developed into vibrant edible landscapes, spaces people had a relation to, cared for and wanted to protect. Of course, there were battles over space. Capitalist forces were still strong and the struggle to appropriate, transform and accumulate continued. But now a real counterforce was growing. The farmers organizations' member numbers suddenly surged as urban farmers realized that they were also farmers, from around 61.000 in 2021, to 2 million in 2029. This became a strong, political force that managed to turn agricultural policies around. The power structure was slowly steered away from the vertically integrated chains of the supermarket to new coalitions between producers and consumers, roles that made less sense in a society where almost everyone, both rural and urban played a role in food production. The new policies moved the subsidies away from the structural rationalization that had no anchoring in the geography and topography of the fjords and mountains in Norway and rescaled the food system to the landscape and local resources.

Some of the gardeners were eager to produce more, to spend more time growing food, with their feet and hands in the soil, surrounded by plants and other species. They wanted more space, more air, more time outside, and spread out into rural areas. They breathed life into the dying culture in the countryside as they restored buildings and started to care for the fields again. They kept cows and sheep, goats and pigs, quails, chicken and reindeer and tried as best as they could to feed the animals on local resources, adapting the number of animals to the production capacity of their pastures, their interest, terroir and landscape. They learnt from what was left of traditional and indigenous knowledge and experimented with an upscaling of the agroecological methods they had learned in the city. The why was as important as the how. It was *«[more than a production technique or system: it [was] a movement, a science, a political vision and a practice which alongside agricultural knowledge, endorse[d] specific values and ethics, such as social relations of mutuality and respect, a commitment to bring forward more equitable change and land stewardship»* (Tornaghi & Hoekstra, 2017) As the rural landscape awakened, a larger share of what people ate came from farmers they knew, who got a fair price for their work, landscapes they had seen, animals they could trust had lived decent lives. Less and less of the food



people ate had to be imported from «nowhere» with uncertain consequences for landscape, producers and more-than-humans. The increase in local production and consumption and the rescaling of the food chain, was not just a contribution to food security. More importantly it was a move away from the old imperial food system, the constant robbing of other people's landscapes, foodscapes and resources. Not just by choosing not to rob them today, but also by reducing the emissions and thereby allowing others to have livable futures.

The small farms that had been left by frustrated farmers some years ago became increasingly popular for inspired and aspiring farmers flowing from the cities into the countryside. For the first time in several hundred years the cities were not growing and sprawling anymore. And more importantly, this was not seen as a kind of societal sickness, but as a good thing, a rebalancing of the relationship between the urban and rural, cities and countryside.

Urban lifestyles and urbanisms and ever-increasing urbanization of the planet was not the only possible way of living on earth. A connection to the rest of nature involved some kind of contact, and people who only touched asphalt, gypsum, aluminum and plastic would have a hard time breaking down the artificial division between themselves and the rest of nature, their experience of nature would be so reduced that it didn't provide them with any clues of how to care for it. Politicians also listened to the science showing that the most biologically diverse and healthy places on the planet were places that were cared for properly by humans. (*Schuster et al., 2019, World Resources Institute & Climate Focus, 2022*) Slowly they understood that humans didn't need to be the cancer cells killing its own organism, but could actually partake in repairing and restoring the damaged ecologies and places left after capitalism's ravages.

This was a continuous fight. Capitalist forces always sought to reterritorialize and gain control over land and minds of the people. But as people saw the spores of all the alternative ways of organizing production, work and everyday life, more and more people realized that another kind of world made more sense. In light of the new world they were producing, the capitalist way of doing things didn't make sense at all. The new worlds were more fun, people had more time, they were freed of their bullshit jobs and got to engage in concerns that mattered. They saw the spores of a world that was not limited by the straitjacket and tunnel vision of economic growth. Slowly and suddenly, they recognized that the future was not a straight line, like train tracks heading onto a rickety bridge, but that it was possible to jump of the train and venture into an endless sphere of possibilities, and that these possibilities could coexist. The old, worn-out myth of homo economicus rational selfish gene man that could only compete, gave way to other ways of looking at humans and our place in the world. Helped by the knowledge of how humans actually reacted in times of need, (*Bregman, 2020*) historical accounts and living heritage of indigenous and alternative cultures (*Kimmerer, 2013; Graeber & Wengrow, 2021; Kothari et al., 2019*) (*Gibson-Graham, 2006; Treu et al., 2020*) was important to unlearn the capitalist self and relearn other ways of being and looking at the world. As people learned that by taking care of the rest of nature, they were also taking care of themselves it made even more sense to repair the damaged places and ecologies. New practices, skills and experiences touched them deeply and reoriented their values around the practices of healing.



Regenerative agriculture and science

The new agricultural policies and demands - that had been locked into and restricted by the capitalist realism for so long - were now opened up and was mobilized around an understanding of food as a right, not a commodity. Food should not be controlled by the agribusinesses and supermarkets. Food was a commons, and not just the right to eat, but also the right to produce. The farmers' associations understood that in order to adjust the agriculture to our age a piecemeal reform with precision agriculture and more efficient fertilizers was not good enough. Food needed to be produced in ways that healed the earth. The extractive agriculture that everyone was so used to that they called it conventional had to be replaced with a regenerative agriculture.

To get there it was necessary to get rid of the miraculous claims of the YouTube videos and regenerative gurus that travelled the globe in the 2010s and 2020s. Their intentions were often good, but their extraordinary claims was not always backed up by extraordinary evidence (*McGuire, 2018*) and the Rotvoll project was one of the projects that took this rigorous, but open approach seriously. And even though the experiments often showed that the claims from the early advocates of agroecology and regenerative agriculture were overstated and that there was no doubt that they were being too enthusiastic, their worldview and their understanding of the basics of the ecosystems set agricultural science out on a new path - a path that took as its starting point that agriculture could not be based on extraction, emissions and non-renewable resources.

It turned out to be true that a healthy soil could be a carbon sink. Carbon could be sucked out from the atmosphere and be stored in the soil, but no one had (yet) gotten close to the highest estimates of the early regenerative advocates. The experiment also confirmed that small-scale, labor and thought-intensive growing had higher yields and more biodiversity than «conventional» large scale farming. (*Ricciardi et al., 2021*) But it requires skills, and labor power. Skills took time, but labor power was not lacking in the world, and many were happy to use some of their working time in the fields when they could get a decent wage, and found a lot of joy and meaning in working in the fields. After years of back-breaking passivity in the office or in the factory it felt like a relief to spend some more time under the open sky. Many described it as getting out of jail, both physically and mentally.

The experiments also showed that ecological ways of producing food were more efficient, far more fun, and tasted a lot better if your hands had been dirty in the process. Contributing to food production became a natural part of everyday life. Everyone was a farmer. Not by being out in the field all day (even though some people liked to, and were) but by composting their food waste in the neighborhood, by participatory plant breeding, by taking care of hen, by growing herbs in their windowsills, by spending the summer herding sheep, or just by understanding the implications of the term «eating is an agricultural act» (*Berry, 1990*) and that it mattered for them, for the producers, for other species and the earth how the food they ate was produced.



A molecular revolution

Rotvoll Gård was a small part of the huge transformation of agriculture/work/life that happened after 2023. The project joined forces with struggles of food sovereignty, la Via Campesina, struggles for indigenous ways of living, of peasants and landless people, of the poor urban migrants and the small bubbles of resistance and nowtopian alternatives. The urban gardening movement that emerged and grew out of the desperation of the early 2000s was central to this global, emancipatory struggle. The project joined the pluralistic movements of other ways of producing food in a sudden rush to make a different future.

Rotvoll was not the first of its kind. It stood on the shoulders of other projects and learned from CSAs, market gardens, urban gardens and a variety of other agroecological initiatives that were already thriving around the city. But still Rotvoll was no insignificant part. It was an urban agroecological experiment, an attempt to do things differently in the peri-urban landscape. There was a force in the scale and design of the project. In the permanence, the decision to leave the land to the tillers. It was the first example (in Norway) of a peri-urban speculation area turned into a commons. It didn't just halt and dismantle the accumulation of power and profit through urbanization, by throwing a stick in the wheel of the urban growth machine, it also pointed towards and developed an alternative. This was not just another way of farming the land, of protecting the soil, of producing food, of developing the city - it was another way of thinking with and relating to nature and other people. As the landscape grew richer and wilder, so did the mental soils and landscapes of the gardeners - and it opened up new ways of imagining and thinking about the future. This was maybe the most important yield of the project.



Development and speculation in the final exhibition

Development

The different paths of development for the peri-urban waiting lands are further explored in the two rooms which I have called *Development* and *Speculation* in the final exhibition. The first room you enter, development, is a documentation of the path that is mostly followed.

Almost all the soil surrounding Trondheim is reserved for development through option contracts. This means that the developers offer huge sums of money to the farmers for the right to build on the land. When the agreement is signed the developers start the political game of changing the zoning plans from agricultural land to city development. With their influence, power and money they mostly succeed, and manage to convince the politicians that developing the city on agricultural land is a good idea. The result is a loss of huge amounts of fertile soil and a strange development of the city.

Through my research I have followed the development of three of these peri-urban fields, Granåslia, Strindalia and Rotvoll. These are fields that have been developed or have been proposed for development throughout my process. My first encounter with these fields was at the start of the project in Nyhavna, looking for soil to transport into the city. The piles of soil that I took probes of have now turned into lawns and playgrounds and apartments, the history of the agricultural lands is already erased, and easily forgotten. What replace the fertile fields are, in the case of Strindalia and Granåslia, generic apartments and row houses, buildings lacking the qualities which makes up a good city. These two projects show how a city developed by developers look like, when externalities are external and the only value that matter is how much profit it is possible to squeeze out of the land.



Development room, final exhibition
Photo: Harald Wanvik

In the center of the room is a sculpture, a square of fresh roll-out turf with the grass facing upwards. On top of the lawn, pieces of asphalt are placed, suggesting the probable future of peri-urban land. The freshly sliced soil gives the room an earthy scent.

The lawn comes from Rotvoll, which is also the focus of the last wall in the room. Rotvoll has become central to the project, because of their active use of urban gardening in their marketing through campaigns like *The Urban Farmer* and *New Roots*, and since it is a rare example where the farmers take matters into their own hands and decides to develop the area themselves. In this part of the exhibition, I have included a hearing document sent to the municipality in which I argue from three different perspectives why the planned development of these fields must be stopped.

- The first is that there is no need to build on agricultural soil in the foreseeable future, according to the municipality's prognosis. To build here is not something that the city needs or demands, the only force that wants such a development are the developers themselves. In the hearing document I emphasize that such important decisions must be taken backed by independent and correct knowledge, and not be built upon reports and facts that the developers produce themselves. If agricultural soil should be sacrificed it has to be the last possible option, and the decision needs to be fact-based and democratic.

- The second reason is that this triangle-shaped field is squeezed in between three highly trafficked roads. A development here will most likely become an enclave and is not so easily connected to the surrounding area. There are lots more centrally located areas in Trondheim with far better possibilities for city development.

- The third point problematizes the farmers arguments that these areas are not suitable for farming. These are areas that are 12-14 times bigger than the average field in the region, it is completely flat and has premium quality soil. If this is not viable for farming, we might as well cancel all of the agriculture in the country.

In my opinion, any of these three arguments should be enough to stop the planned development in these fields. I also remind the reader that soil is not a renewable resource on human timescales and that if we decide to destroy this soil today there is no way back. This is a decision that the politicians take on behalf of all generations to come. Instead of building down these fields, I suggest that a thick, green line should be drawn around these fields, a line that gives a solid protection against future attempts at destroying the soil, a protection that might also allow for other speculations on how these fields could develop.



Development vs speculation, final exhibition.
Photo: Harald Wanvik

Speculations

In the adjoining room, which I have entitled *Speculations*, there is another sculpture. Thirty buckets are filled with one Jerusalem Artichoke each. This gives another smell, reminding me of a greenhouse. In the window – a David Graeber quote reminding us that “[t]he ultimate, hidden truth of the world is that it is something that we make, and could just as easily make differently” (Graeber, 2015, p. 89) and in the windowsill beneath the quote, the subverted *New Roots* magazine (added in the second week of the exhibition). On the walls, pictures from Ilens Hage and Losøter, suggesting other possible futures for peri-urban fields. On the other side of the Rotvoll wall, photoshop speculations (as shown in this chapter) of how the triangle field could be developed in other ways.

This is pure speculation of course. But so are the dreams of the developers until they come true. It is just as utopian to think that you can get an agricultural field through the regulation process. Of course, the developers can dream about the future of a place, but so can we. What I have learned from engaging with the waiting lands, with the speculation of the developers, their tools and use of power and money, is that their visions are essential for getting the projects through. The existence of a vision makes it possible to spread to others, it makes it possible to make a magazine like *New Roots*, a character like *The Urban Farmer* and the angle and language used to defend or sell the project to politicians or in the media.

It isn't sufficient to say that soil will be necessary in the future, even though this argument should be strong enough in itself. We need counter-visions, counter-speculations and counterproposals that points towards different futures. To cite the Norwegian science-fiction writer Jon Bing: “*When someone manages to describe a sustainable society, we look forward to live in, things can happen, and then it could happen fast*”. Today these visions are necessary, not just to protect soil from development, but to lead the way forward towards other futures.



Speculation room, final exhibition
Photo: Harald Wanvik

The speculation at Rotvoll is an attempt at such a counter-vision. It is inspired by the concept of transduction by Henri Lefebvre. Lefebvre has written a lot on utopian thinking and what he calls the possible-impossible. Only through demanding the impossible can we change the limits for what is possible. Only by walking towards utopian horizons will we discover what's realistic. For Lefebvre utopia is not a set goal or a fixed plan, it is a process, or a horizon that we can walk towards, but never reach. According to Lefebvre transduction constructs a «*theoretical object*» using information «*related to reality*» and «*introduces rigour in invention and knowledge in utopia*». (Lefebvre et al., 1996, p. 151) Transduction is a way of observing and analyzing initiatives, projects and practices that are happening, that are real, and then speculate around what kind of futures these practices could lead to, if they were allowed to flourish and spread. (Purcell, 2013)

In the speculative vision of Rotvoll the fields are lands waiting for something else than housing development. The fields and the soil become places and materials to grow visions. These visions are not utopian or impossible. What I envision exist also in the Trondheim area, in walkable distances from Rotvoll. All these projects work and are possible and real and lead the way in practice but are also prerequisites for speculation. There is nothing unrealistic about the proposal. The only thing that needs to happen is a change in thinking and policies, but this often seems impossible enough. It is not strange that Rotvoll Gård is proposing their project - they are entrenched in the same capitalist realism as the rest of us, where there is no alternative for the field, as exemplified in the opening quote of this chapter, the farmer cannot «*see a possibility for farming here 30 years from now*». (Wallum et al., 2020b) But hopefully speculative visions and real projects could pierce small holes in this realism and point ways out.

What we are facing today is an immense ecological catastrophe. If we don't act, the conditions for life on the planet will be severely damaged. There is no shortage of doomsday visions, or dreams of a simpler or fantastic past. But positive visions for the future are lacking. When was the last time you saw a science-fiction movie depicting a future you want to live in? Of course, I also understand that my neo-peasant (Jones & Ulman, 2020) visions of the future might seem like a nightmare for many. That's why we need to follow the Zapatistas and many others and create «*a world where many worlds fit*», in contrast to the flattening and eradication of alternatives under neoliberalism.

In this light we need other visions. Possible visions, realistic visions, achievable, down to earth visions. Visions that point in other directions than ecomodernist dreams of the future. Visions that point to a future that is totally different, but one we still want to live in. A future that is equitable and ecological. A future built around better kinds of growth.



Speculation room, final exhibition
Photo: Harald Wanvik



Reflections



Inexperience as a tool

It is now almost six years since I arrived at the conference center at Jeløya Radio and was enrolled in the Norwegian Artistic Research Program. Through five seminars during the first two years, I got my initial training, along opera singers, illustrators, experts in classical music, performance artists, photographers and jazz musicians. Experienced artists, some of the best in their field, and me, an architect with an interest, but no experience, in urban gardening.

We all shared the experience of going into something unknown, but this was maybe stronger for me than many of the others. I didn't have a practice I was expert in, I was moving into new field, a field I didn't really know. What I had was a growing frustration, sadness, anxiety and fury with the ecological crisis worsening around me, a theory of how "something can be done" and a practice for doing it. In urban gardening I found a link between my rural background, my growing environmental awareness and what I found interesting intellectually – a connection between the private, professional, and planetary.

Instead of joining an existing project, to learn and understand more about how urban gardening works, I decided to start with myself and my immediate surroundings, without much prior experience. I will admit, in hindsight, that this is not the ideal conditions for initiating an urban garden. It might have been the architect in me that felt the need to create a physical change in the world, to transform a space into something else, or the new role as artistic researcher that prompted me to create something. This inexperience is not the best for creating a perfect garden (whatever that is), but this approach has been fruitful for learning. It is bound to lead to mistakes, but it is maybe from the mistakes, risk, and uncertainty of all the new roles I have taken on that I have learned the most. At least the process would have been different if I started out by joining an already well-functioning project and learned from people who already knew how to do gardening. This would open up other possibilities, but might also take away some of the challenges and possibilities for learning, and maybe also some of the responsibility I feel for the spaces and the processes going on there.

I have moved forward intuitively. I have jumped into the world of gardening, without knowing much about seeds, soil, or plants. This has been beneficial in some ways, as the learning curve has been steep and has sent me in many interesting directions. I have followed the advice of the architect Nabeel Hamdi, «*don't think too much before you do, don't do too much before you think*». I have tried to make use of the theoretical work, and let it inform my practice, while allowing the ideas to be shaped by practice. The practical work, the gardening, the experiences, the worrying, joy, the many new experiences, roles and people I have met, have formed and guided the project all along. It has shaped what I have read, what I have investigated and explored, what I have seen and missed.



Initiating the garden in Nyhavna, I knew so little about soil that I imagined it would be a good idea to use these plastic ropes as drainage in the bottom of the planters.

Starting with myself and my surroundings began in the building where I lived. Together with some of my neighbors we initiated a roof top garden in the spring of 2017. Through the transformation of one of the rooftop terraces into a garden I wanted to explore how the social ecology between the neighbors were changed, how it affected their feeling of ownership and responsibility for the common garden, and if it affected their environmental consciousness. A project like this could probably generate enough information as a case study. But instead of concentrating on one project I chose to initiate two other garden projects, along with four time-consuming exhibition projects, which has given a lot of experiences crucial to the project but has also led to a lack of time and energy to develop, learn from and focus on a particular garden.

Instead, I chose to initiate new processes, and the same spring, of 2017, I worked with Ingrid Engan Nøren to establish a new garden in Nyhavna. At the time, I wanted to be involved in two garden projects, one more private and one very public, to be able to compare the results and understand how these different projects worked.

However, since the 500 m² asphalt space at Nyhavna demanded lots of soil I became interested in the peri-urban soil being built down around the city. What if we could use some of this soil for the project? This led to an interest in soil and soil ecology, I talked to experts on soil and soil moving and took probes of the soil for analysis. After learning about the complexity of soil and the difficulties and challenges of moving soil I decided to not risk a “mud-bath” and the plans of moving soil was dropped.

Exploring the option of moving soil led to a consciousness around the peri-urban fields of Trondheim. I became interested in these areas and started to follow and document how they are developed. This became the starting point of engagements and results like opinion pieces in the newspaper, turned the attention to projects like New Roots and The Urban Farmer. The awareness of what was happening in the peri-urbanity also led to the exhibition *Do Earthworms Dream of Android Lawn Mowers?* in 2021 which was also the reason why I decided to make an exhibition as the final product of the process.

Instead of moving soil for the project in Nyhavna, I decided to buy “new soil” which, as I have described earlier, turned out to be quite dead. The experience of the dead soil sparked an exploration of where the soil came from, reflections on “the nature of urban gardens”, a learning process which resulted in a better mix of soil for the initiation of Ilens Hage, and in turn to the video *New soil* in the final exhibition.

The interest in soil, composting and the urban metabolism was further developed through the exhibitions *Futurum* (2019) and *Communities of Compost* (2019-). Working with these projects made new theoretical connections, like a renewed interest in degrowth, a better understanding of time, and how to “stay with the trouble” - working with imperfect multispecies flourishing in a damaged world.

These are examples of explorations/findings/parts that grew out of the project, out of my inexperience in gardening, out of the running processes in the gardens, out of positioning myself as an organizer and initiator, a role I never had before. These are experiences I would probably not have if I had joined an existing garden project, with experienced people in an established place with soil and plants and routines.



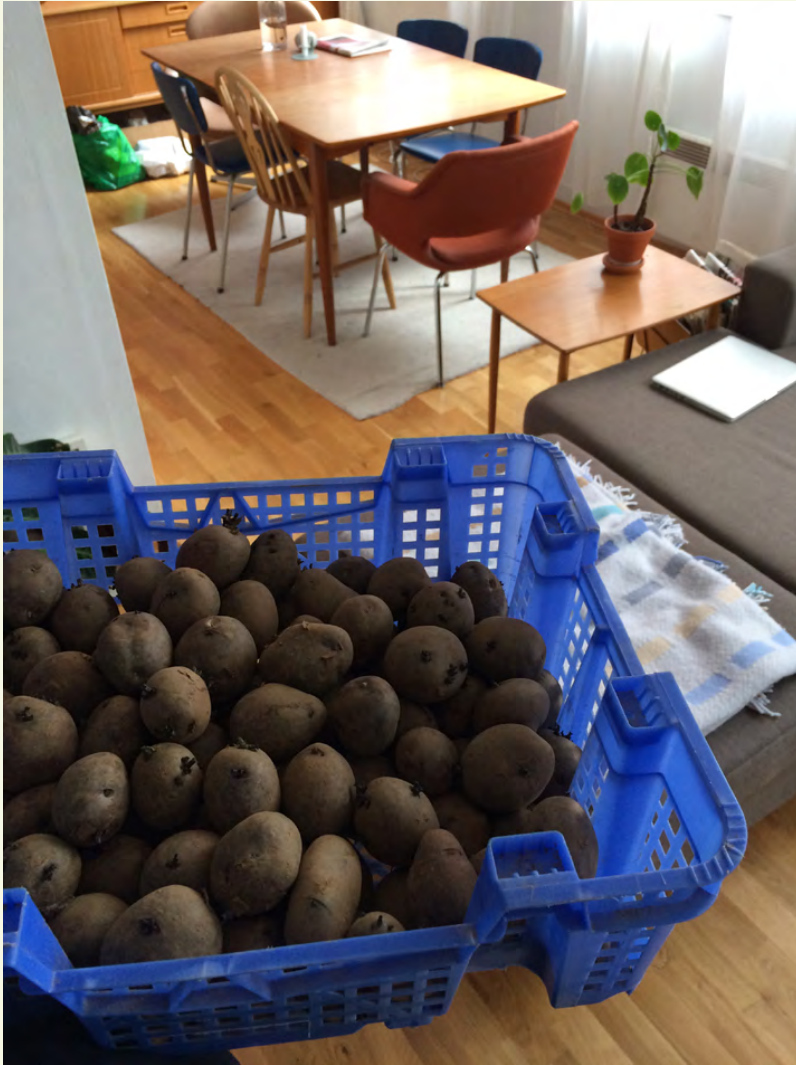
The garden projects have been a catalyst, initiating new developments that I could choose to follow.

One could draw an analogy of the experience of the dead soil in my project to the inexperience at the starting point of the project. As the first seeds, the project in Dropsfabrikken and the project at Havnehagen, was planted, they started to work and have an effect in the world. The projects grew, both in the physical spaces, in the mental soils of the people involved, and in the social ecologies between the spaces, the plants and the people. At the same time these projects also started feeding the soil of the research project, to form my thesis and affect all the decisions that came.

Of course, the soil is not “dead” at the start of the project. I am not starting from scratch. I have my background, my roots and education, my skills and limitations, my political views and my project description and the framework of artistic research – to mention some of the things that are already living in the metaphoric soil of the project. I have a certain set of skills and limitations, and how I use these skills and challenge my limitations is what makes up the project.

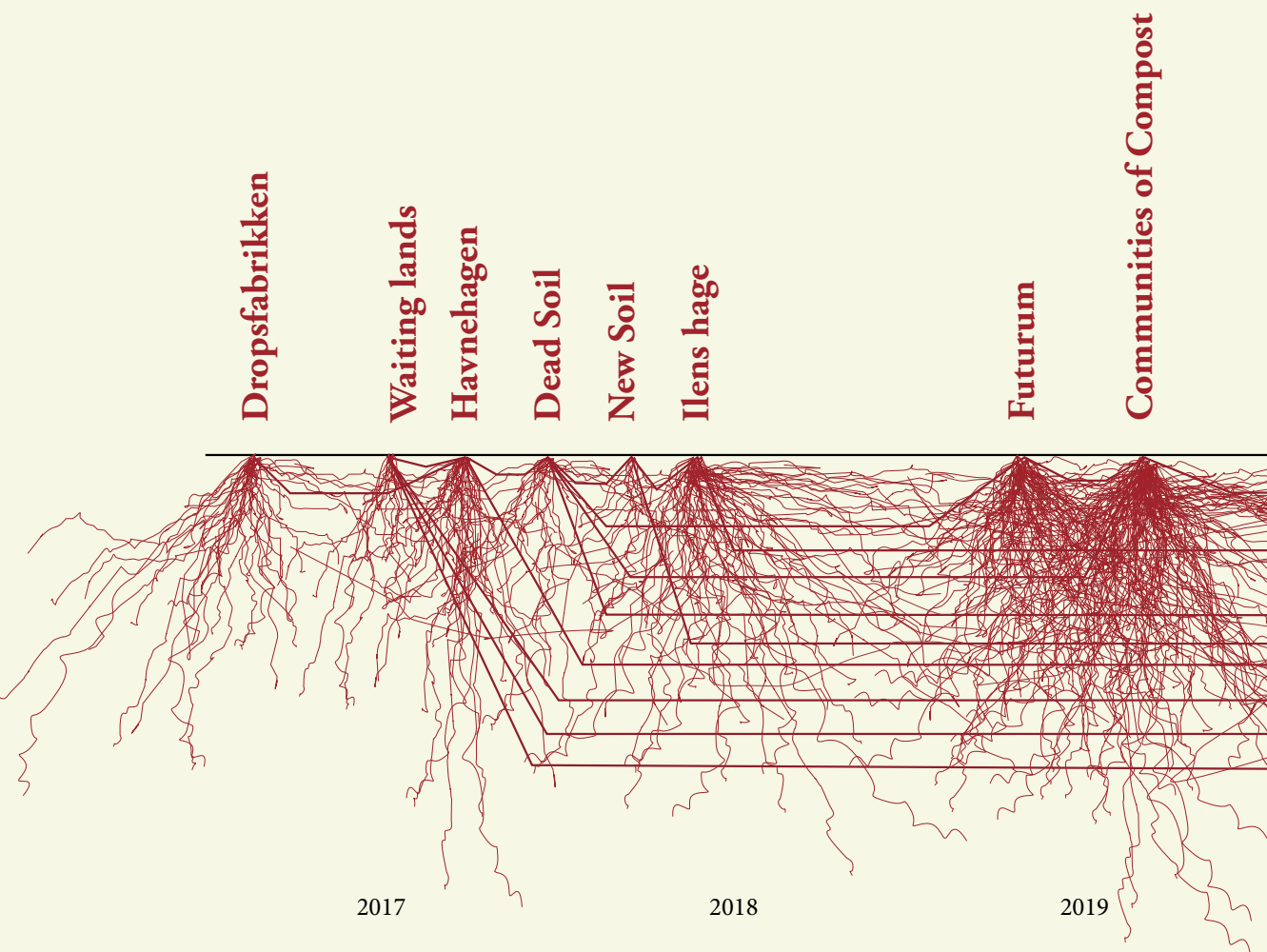
For me this has been one of the things that have made the project interesting to work with. By going into the project, not just as a researcher, or as an architect, but as a citizen, as an individual, as an activist, with all of my background. I have used the skills that I have in a plethora of new roles – as an organizer, a writer, an artist, a photographer, filmmaker, researcher, gardener. I have used my practical skills, my tractor driver’s license, my contacts and relations, my people skills, drawing skills, making maps, illustrations and presentations to get access to space and to invite people. I have made calls and written applications and communicated my findings through a range of formats. This makes the project personal; it cannot be repeated by anyone else.

In many cases, it has been impossible to separate what is work from the rest of life. I have let gardening become a focal practice and allowed it to change my everyday life. I have allowed the project to seep into all aspects of my life, changing my habits and practices and ways of thinking. This opportunity, to go all-in, makes artistic research special. Maybe artistic research is as much about self-transformation as the production of artistic results? Doing a PhD is an education, a learning process which no one can go through without being severely changed, but this might be stronger in a project that is so tied to your own personality. Is it possible to make artistic research if you are not passionate about the subject and prepared to let the research change you deeply? A project like this is not something you can put aside for a moment, a vacation is not possible, you basically live, taste, feel, smell, sleep and dream the project. This is an enormous privilege, but it can also be quite exhausting.



Potatoes to plant, left outside my door as a gift from the janitor in my apartment building.

A timeline of gardens, exhibition projects and important events. These have been the tools of the project, and crucial part of the knowledge production. Beneath the surface these initiatives' roots stretch out and influence each other - both the ways I reflect upon what I have done, and impact decisions made throughout the project. Everything is connected under ground, where the experiences from the projects above are digested, composted, theorized and reflected and nourish the soil from which new projects might grow.

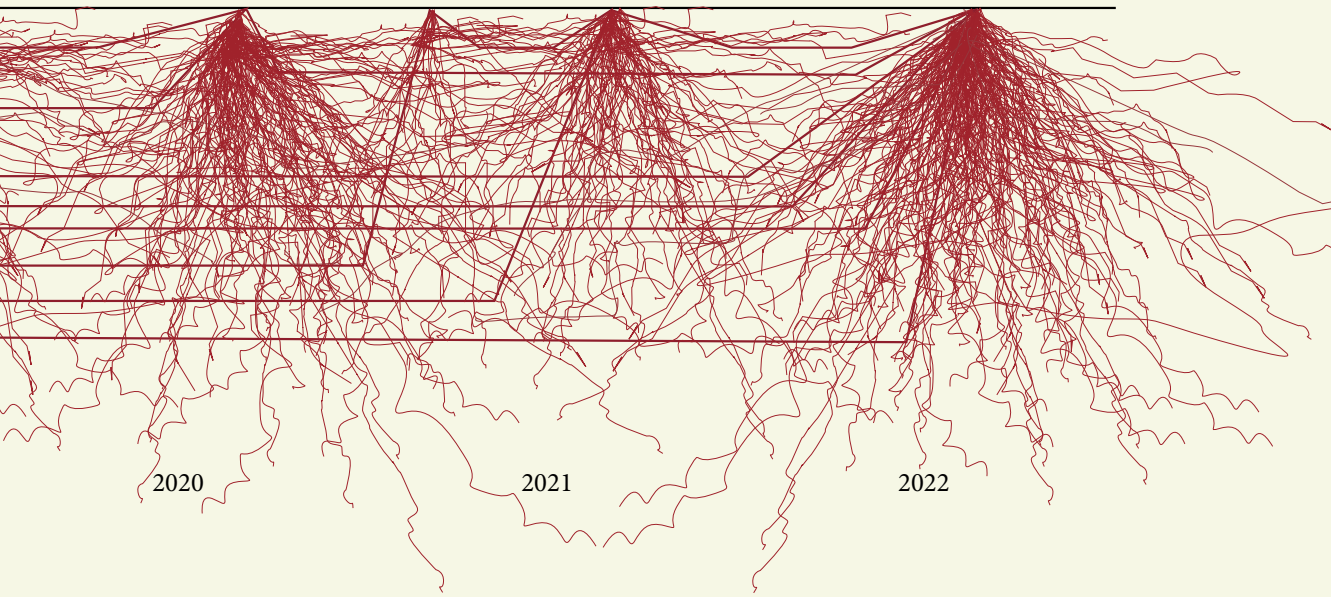


Losæter

New Roots

Do Earthworms Dream of Android Lawn Mowers?

Ecologies of urban gardening Final Exhibition



2020

2021

2022

Role as researcher-gardener-activist-individual

This project grew out of the gardens, the gardens have been my working tools and the starting point of the explorations. The project is formed by being in the gardens, of doing gardening, organizing and struggling for space, of failing and succeeding, doubting, envisioning and reflecting. Being part of and co-initiating these garden projects has been essential for my understanding of the practice and the experiences in the gardens have impacted the direction and development of the project.

Since my interest in this topic is both personal and professional, private and planetary it is hard to distinguish between who I am as I enter the garden. Is it the researcher looking for results of his experiments? The gardener who needs to water his plants? The neighbor gathering herbs for dinner? The architect interested in how the space is transforming? Or is it the ecologically engaged and concerned citizen trying to create some hope for a livable future? To be able to blend all these roles has been one of the privileges of the project – even if such a blending can be quite exhausting. Plants withering in my windowsill is not just a sign of negligence and inexperience, it debunks my thesis and messes with my hope for the future.

The blending of roles would not matter as much if my research topic was a private garden or growing herbs on my balcony, but since urban gardens are social spaces, I am also perceived in a certain way by my co-gardeners. Because I was involved in initiating the gardens I am easily seen as a “leader” by the other participants which further complicates the role of the researcher-gardener-activist-individual-organizer. It is not just for myself I must manage all these roles – everyone in the gardens will also have their perception of who I am. For me this has led to a cautiousness on how I influence the projects – a balance that has been challenging. On the one hand I want the projects to develop as much as possible, I want people to be active, to become involved, to be transformed by the garden and transform the garden back. Following my thesis, such a transformation comes out of spending time in the gardens, it comes out of new social relations between humans and humans and more-than-humans, it comes out of common projects, working days, taking on common challenges and responsibilities. It comes out of gaining knowledge, having courses on different topics, learning from each other, taking care of the compost together, cooperating on maintaining a potato patch, collectively building a tool shed or an entrance, and so on.

How should I interfere and act in these processes? Should I facilitate, organize, arrange? What if nothing happens? Should I stand in the background and observe, or interact and push the project in the direction I want it to go? How much should I be involved in the development? As an observer or a leader? This is further complicated by the role as a researcher, or at least it is not possible to claim any sort of objectivity if I actively try to make the changes that I want to see.

In the beginning, having no real experience in self-managed projects like urban gardens, I imagined that it would be run as a flat structure. There would be no hierarchy, the garden would organize by itself. People would take responsibility, get ideas, take initiative, and as these initiatives grew, more and more people would become engaged. As our skills in self-management grew, so would the ownership to the garden. This has happened to an extent, but I have also experienced that such an engagement needs to be facilitated for.

In the garden in Nyhavna we started out without an organized structure, no leaders or organization. We made a Facebook page where the daily communication could happen, where everyone could write if they were going to the garden to work, if something needed to be done, or if they had an idea for something to happen. We have a formal "board" with a leader, but only because it's necessary to get a bank account. There are some benefits of this kind of organization because everyone participates at the same level, but it might also limit the development in the garden, since it could create situations where no one is responsible, especially regarding new projects. One example is the tool shed that we have been talking about building for years. Everyone agrees that it would be nice, but no one takes the responsibility of starting to build it, of arranging the workshop, getting the materials we need and so on. In this case I think it also has to do with the constant threat of eviction, hearing every year that this will be the last year, which hinders bigger projects like a green house, a tool shed or planting of fruit trees.

In the garden in Ila, I tried a different approach. In the months after the initiation of the garden I organized an establishment meeting for all the members and asked on email and Facebook if someone was interested in being part of a “leader group” (styre). There were no set limits for how many people there should be in this group. In principle (and ideally) everyone could be part of the group, but we ended up with a group of six, myself included, but not as a leader. The benefits of having a group like this is that there will always be people who feel more responsible for the garden, a group of people will organize working days and take responsibility for certain tasks. The challenge is that the rest of the gardeners might feel like there is someone who has more responsibility to “do something”. One example is the summer of 2022 when we experienced a lot of vandalism and theft from the garden. As frustrated gardeners share their experiences on the Facebook page, others are commenting “what are the leaders planning to do about this?”. This comment reflects both a hierarchy that comes with such a group and maybe a frustration that the person writing is not in the position to do something about it. Maybe this situation is special because the suggested actions involve bigger decisions like restricting access and installing cameras, but having a “leader group” moves the decision making one level up. This is a problem because it limits the potential of the garden. If people expect the leaders to do something, it might restrain their engagement in the garden, thinking that a damaged hose, or a common field overgrown with weeds is something that the “leaders” will fix, instead of fixing it themselves, or better, taking the initiative for a collective weeding session.

This was not the intention of having such a group. In many ways it’s necessary to have someone who manages the bank account, who makes sure that the gardeners pay the yearly fee, reimburses expenses after things are bought, someone who organizes the yearly meetings and working days, who orders compost, and makes sure that there are seeds and potatoes and food for the common working days, sends out information on email-lists, or someone who takes the initiative to do courses and events in the garden. At the same time, when a group of people are in charge, it also reduces the chance that someone else will do it, because it feels like it’s someone else’s responsibility.

Looking back on how I have managed my role as participant in the gardens, it’s become something in between, taking some responsibilities and leaving others, arranging a working day or a common dinner, and then waiting for someone else to do it the next time. This balance has created activity in the projects which I have been responsible for, but has also allowed others to take initiative, which have been working quite well, in the garden in Ilens Hage and Havnehagen, but not to the same extent in my apartment building in Dropsfabrikken, where the engaged group that initiated the project have moved out and have not (yet) been replaced by new gardeners.

Participatory research?

In the initial project description, I imagined the project to be a Participatory Action Research (PAR), where the research project was developed together with my co-gardeners, generating knowledge of a system by trying to change it (*Lewin, 1946*) But the next question becomes, who wants to change the world and in what direction? In connecting urban gardening to Guattarian ecosophy, the project gets a distinct political direction. How do the other gardeners fit into this direction? Early in the process, it became clear to me that the garden projects would have to be formed collectively by the people involved and to give everyone the opportunity to have ownership to the decisions and development of the project. It's been important that all gardeners feel that it's their garden, their project and that everyone can join with their own interests and motivations. My role in the gardens has been as an initiator and engaged participant, but it's not my project – it's ours, and the development of the gardens should not happen under the banner of my research project.

Following this approach, the communication of my research and reflections to my co-gardeners has not been a priority. I have talked about the project when asked, explained what the research is about, invited my co-gardeners to exhibitions and presentations, but I have tried to make the gardens into common projects. This has been a conscious choice, to let others have their own experience of gardening.

In hindsight, and especially after the response from the final exhibition, I think I could have taken a more active role in communicating my reflections back to my co-gardeners and see if and how this affected the people and the spaces. And not just to communicate my ideas and perspectives, but to collectively work on theories, discuss what we have learned and experienced and what this means. This could for example be done through workshops and collective discussions that would for sure bring more perspectives into the development of the thesis, make it richer and more useful - and probably also produce some new thoughts among the gardeners on what we are doing. This would have been really interesting, and I sometimes regret not exploring this potential, but it's not the way I have chosen. Still, I think there is a great potential in combining artistic research with PAR through self-managed community projects like urban gardening, and this is something I hope to be able to explore further in the future.

Instead of making this into a participatory action research, I have chosen to use the gardens as tools for thinking, as experiments, as living laboratories, as reality checks, and as initiators of other processes. The gardens can be seen as artistic result in themselves. but most importantly my involvement in shaping these sculptures has triggered new artistic results, activism and explorations, like *New Roots*, *Waiting Lands*, *Do Earthworms Dream of Android Lawn Mowers?*, *New Soil*, *The Garden Sculpture*, *Futurum*, *Communities of Compost*. It is through these projects, in addition to my writing, that my perspectives on urban gardening comes through most explicitly. All these projects spring out of my experiences in the gardens, observations and conversations with my fellow gardeners, interpreted through the theories I find interesting, my perspective and lenses. For me, this has been a way to deal with the political ecologies of urban gardening, to leave the gardens as a common project for all gardeners, and then use these running processes in the gardens as departure points for new explorations.

Art and science – artistic research as a productive middle ground

When reflecting upon artistic research, we easily create a dualism between art and science, which makes a cliché out of both: “*Art becomes a paragon of non-methodological, autonomous and intuitive work, while science appears uncreative, methodological and articulate.*” (Benschop et al., 2014, p. 40) According to Benschop, Peters and Lemmens this dualist cliché is productive because it creates a space for artistic research to mix the two, “*a productive middle ground*” and the challenge of artistic researchers is to decide what makes up this mix.

This negotiation is felt for example in the tension between writing and doing. As a researcher I feel somehow obliged to read, write and publish. This document is an example of this urge. However, this is not just a result of the process, it is maybe more important as a tool. Through this tool, which lies under the surface, in the metaphoric soil of the project, the experiences from the projects above ground are digested, composted, theorized and reflected and might provide life to new projects. Writing has been essential for thinking, or as Anders Johansen argues, writing *is* thinking. It was through writing that I understood how little I knew or how unclear my thoughts were, and through writing (for others) that I managed to understand more clearly what I was doing through the process. (Johansen, 2003) By choosing words, by creating flows and paragraphs and links I have learned and thought about the project. This has helped me to find a style of writing that I like, a way of writing that makes me think, and hopefully a writing that could make myself understood.

At the same time, I have also found myself thinking too much without doing, reading and writing when I might should have been out in fresh air, organizing, composting, mulching, documenting or talking to people. This might be because I try to save myself from the risky, complex world of action or because I believe that reading and writing is what a «real academic» should do. I will be the first to admit that there could have been more hours with hands in the soil than in front of the screen, both for my own mental health, for the research and for the projects' sake. Doing is also thinking, and I am left with a feeling that my work might have been stronger if I had allowed myself to float further away from the screen, from reading pdfs to engaging more with the physical ecologies of the gardens.

But even though the balance might have been skewed towards the screen, I think *a* balance is important. The ideas, theories, analysis and interpretations, what I have learned from books and screens have something to do in the garden. It has a potential to guide, to steer, to change the practice. It matters how we think about what we do, to paraphrase Donna Haraway, and what we do matter for how we think. This also shows the inseparability of theory and practice. The practice affects our thinking and the thinking affects the practice, and to separate these two is as useless as separating nature and culture. (Dunlap, 2020, p. 989) One of the strengths of artistic research might be the necessity of both practice and thinking, in a complex ecology where these two constantly intermingle and interfere with each other.

Another example of artistic research as mix of art and research, concerns how information is gathered. In the beginning I planned to do repeated, regular, systematic interviews with my co-gardeners, to find out how gardening had changed them, asking questions that would hopefully reveal changes in all three ecologies. A typical research set up, where I wanted to find out, to prove, that urban gardening was able to do the things I hoped for. I wanted to be able to present my findings and say with confidence that, in this particular case urban gardening worked in this or that way across the three ecologies, summarized in neat abstracts and communicated easily to anyone asking at a dinner party. This would have been a possible route to go, but instead of following a garden project systematically, I chose what I consider a more artistic approach, to initiate new processes and to make other explorations. Instead of the systematic interviews with many gardeners over time, which would have taken a lot of time away from other developments, I did one-time interviews with some of the gardeners (those who volunteered) - more in order to learn how they thought about what they were part of than to prove something.

The result was a middle ground, and after going through the interviews again towards the end, I found a lot of interesting stuff that I had previously missed. I don't regret the missed opportunity of systematic interviews that might follow from a detailed research methodology design, what I do regret is that I didn't talk to more people, that I didn't do group interviews and that I didn't use a proper recorder. These recordings could add a lot for example to *The Garden Sculpture* video. It would bring other voices and perspectives into the project and provide something more than the written quotes in the text. How you say something matters, the enthusiasm, the tone of voice, rhythm and mood, things that are otherwise lost in transcription, could come to the fore, and make this video work much stronger. The same goes for images and videos. It was only during the last year, from the fall of 2021 and in the making of *Do Earthworms Dream?* that I started to document what I came across with an old DSLR camera, started filming, and started to care about angles, composition, and perspectives on the pictures I took. Before that the pictures were "just" documentation. If I started the process all over, there are thousands of things I would do differently, but one of these things is that I would make sure that the information I gather is high-quality. A good photo, a video or sound clip can be used in a variety of ways and communicate in other ways than writing. Considering the open-endedness of artistic research, you never know what you will need, but by being careful in how information is gathered allows for more possibilities of using the material. Other ways of disseminating, to spread knowledge in a variety of ways, is another potential that might be stronger in artistic research than in scientific research.

It also matters why the knowledge is spread. As the projects developed, I started to question the impulse to “prove” anything. What difference would it make if I could prove that people are changed by urban gardening? And is this the main task of an artistic researcher? Instead, I became interested in following the different threads that emerged through the project, and to focus on the transformative potential, to bring forward generative ideas, to challenge myself in new roles, to interpret what I experienced through the theoretical framework and connect and combine what I learned, and to communicate what I came across in new ways to different audiences, by using different mediums. Using the example of the interviews it is maybe more important to move people, to make a work that affects how people (and especially other urban gardeners) think about what they do, than to find out how they think.

Is this research? From a (conventional) scientific point of view, probably not. But maybe this is a special potential in artistic research, at least it might seem to resonate with how Henk Borgdorff defines artistic research:

“What is artistic research all about? It is about cutting-edge developments in the discipline that we may broadly refer to as ‘art’. It is about the development of talent and expertise in that area. It is about articulating knowledge and understandings as embodied in artworks and creative processes. It is about searching, exploring and mobilising – sometimes drifting, sometimes driven – in the artistic domain. It is about creating new images, narratives, sound worlds, experiences. It is about broadening and shifting our perspectives, our horizons. It is about constituting and accessing uncharted territories. It is about organised curiosity, about reflexivity and engagement. It is about connecting knowledge, morality, beauty and everyday life in making and playing, creating and performing. It is about ‘disposing the spirit to Ideas’ through artistic practices and products. This is what we mean when we use the term ‘artistic research’.”
(Borgdorff, 2009)

One way to interpret this quote is that artistic research also concerns the future. It has to do with creating something new, about changing the world directly rather than accepting it. In this regard it makes sense for architecture to be one of the accepted disciplines in artistic research in Norway. Architects and planners are actively creating the future. When the world around is reorganized, architects are one of the first professions to be contacted and contracted. With every building we build, every area we regulate, plan and zone, we decide how the world will look like and function, what is possible and not. It should not be necessary to say this, but all architectural acts are political and planetary, and these acts could either contribute to cementing the ecocidal status quo or point to ways out of it. This project has also been about finding out who I am as an architect, and what role I can play in this field of future-production.



Corten steel boxes overgrown with kale, happy future inhabitants with wheelbarrows and dirty boots having a chat with their neighbors in the greenhouse. As shown in the chapters on peri-urban soil, these innocent renderings are part of a reorganization of space, a transformation where capitalism creates growth by making nature work harder.

Architectural foundations

Urban Farming Village

This is a search that goes back to my architectural education. A turning point came as I was doing an exchange year in Lisbon, where I took a design course run by Portuguese architects. Having seen their works published in glossy magazines I wanted to learn from some of the best architects at the time. Instead, I ended up being frustrated with the superficiality and selfishness of architecture. Why are we doing this? Who do we design for? What is the point?

This frustration led me away from designing buildings and I when I came back to NTNU I turned towards more planning-oriented courses. In one of the courses, we traveled to China for six weeks, to study urban villages. This strange phenomenon happens when the cities grow around its surrounding villages. The farmland that sustains the villagers is swallowed by high-rise, gated communities, and the villagers make new livelihoods by renting out their houses to the growing rural migrant work force that keeps the Chinese economy growing. These urban villages are lively places, organically grown, with a vibrant urban life, in stark contrast to the surrounding gated communities and business districts. In the project *Urban Farming Village* my group proposed to introduce a large scale industrial urban farm into the village, as a way of contributing to China's food security, to create meaningful jobs for the migrants and to preserve the urban village on its own premises, creating new flows of food and waste in the village. This was my first introduction to urban farming, although in a completely different scale and way.

It was also a transformative experience to really feel how urbanization and industrialization transforms the world. To see the pace, power and form of the change was an experience that changed me. I had heard that in China "you can't see the sky" because of all the pollution, but it is something else to experience this, and connect this to all the things I surround myself with. Made in China got a new meaning as I could see the physical consequence of my consumption.

URBAN VILLAGE

URBAN VILLAGE



The result of the Urban Farming Villages was a website: <http://www.ntnu-aar4540.no/2012/group3/index.html>
Made by: Tomas Aasved Hjort, Asbjørn Hammervik Flø, Per Leif Bersvendsen, Jone Nordland, Ragnhild Pedersen Foss and myself.

11:59-12:00-12:01

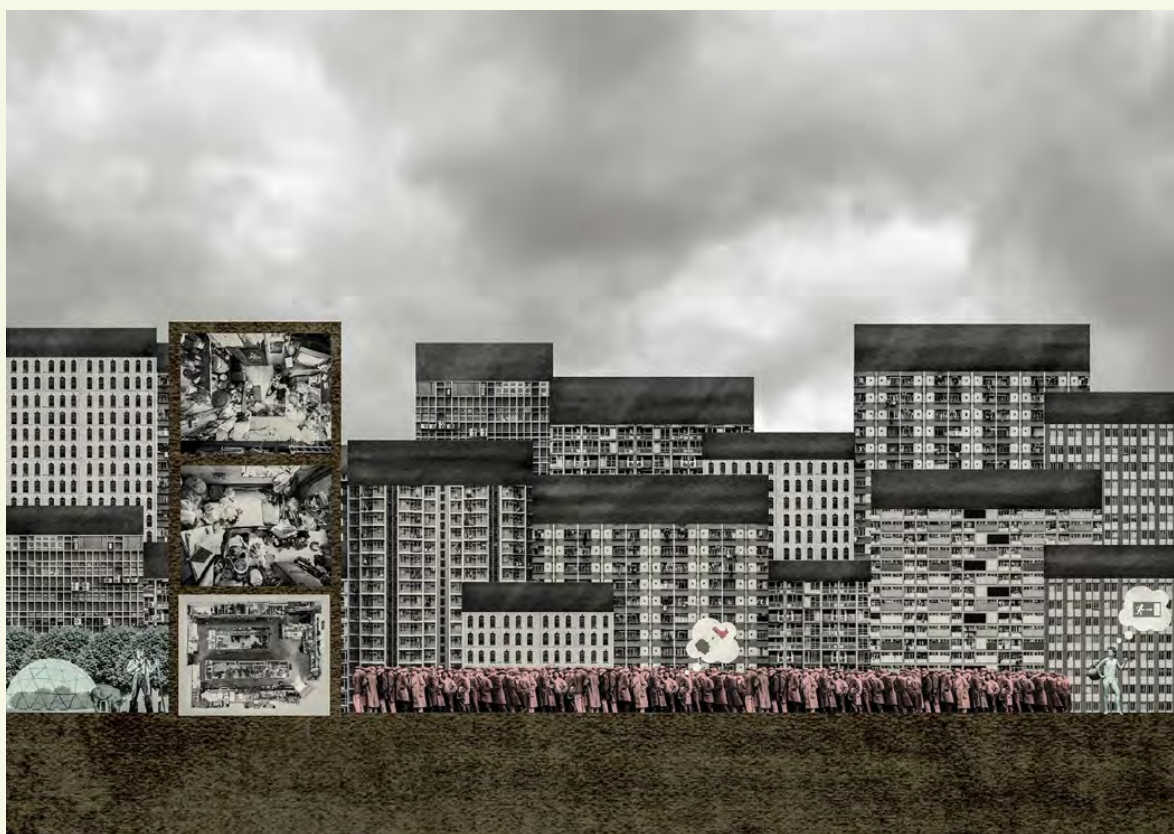
The interest in food and food production stuck, and together with Alexander Rullan I decided to use my master thesis to explore this topic. We wanted to learn more about how our food system worked and use that as a departure point for our exploration. We read Carolyn Steele's *Hungry City* and learned about how cities became disconnected from what sustains them, we learned about the boat with soy that keeps the Norwegian agriculture going, we read about the power structures and concentration of the food chains and agribusinesses and learned who profits from the food system. We understood how complicated the food chains are, how much energy that is lost along the way, how fragile this system is, how energy and environment-consuming our diets are. We learned about the shadows of the green revolution, about food sovereignty, food security and land grabs. All of this was new knowledge to us, and everything we came across indicated that the way we feed ourselves is unsustainable. We also understood that the food system is interconnected with many the other foundational structures of society, like the economic system and its need for growth.

We structured our thesis around a physics lecture by professor Al Bartlett, where he explains exponential growth. He makes a thought experiment of putting one bacterium in a glass at 11:00. It doubles every minute, so at 11:01 there are two bacteria, at 11:02 there are four and so on. At 11:59 the glass is half full, but at 12:00, just one minute later it is completely full and at 12:01 the bacteria will fill a new glass. We used this as a structure and title of the project.

11:59 is the situation today, where everything needs to grow, with no regard for the consequences. Even though we acknowledge that there are problems we refuse to deal with them, because they are far away into the future or happens to someone/somewhere else. We describe the status quo, through the analysis of our food system, with the bleak conclusion that a food crisis is unavoidable unless we act.

12:00 is the moment when acting is no longer a choice, but a necessity – a crisis. We saw that this was already happening in the world around us all the time, but in this part of the thesis we depict, describe, and illustrate a food crisis in Norway, in Trondheim, where for some reason (political, climatic, etc.) the industrial food system stops working. 12:00 is a dystopia.

In 12:01 we use the crisis to imagine a better world, our utopia. We imagine how this future plays out in the small village of Oppdal, in a society that is not obsessed with growth, a society more based around local resources, a future we would like to live in.



12:00 - a food crisis has reached Trondheim. From 11:59-12:00-12:01 (Rullan and Melås, 2013)

Transformative potential of food

Working with the thesis revealed to me the pedagogical potential of food. Learning about the food system was part of a de-alienation process, understanding where the food comes from changed me radically. It revealed the cracks in the neoliberal way of organizing society, how tightly enmeshed our food production is in this way of running society, and how hard it is - and will be to change this, and at the same time how necessary such a transformation will be. It opened my eyes to the dystopian aspects of society, both in the present and in the dim forecasts for the future, and introduced me to utopian thinking, the what ifs and why nots, that are becoming increasingly hard in a neoliberal society.

When a crack like this is revealed it opens up for seeing other cracks as well, and I started recognizing how the same growth-obsession ruined the world, not just in the food system, but in other ways of exploiting the environment, in the housing market, in the growing inequality, the consumer goods that we take for granted in the west, in our education system, in the way we view progress.

For me it was not just pedagogical, it was transformational, in the sense that it changed the direction of my life, professionally, privately, and politically, which was increasingly getting intertwined. I remember presenting the work on the mid-term evaluation to a local architect, getting the feedback that what we were doing was much more important than the project itself. He argued that we were building a foundation for future work. He was referring to the values behind the project, and a conscious evaluation of why you take one decision and not some other. He was recalling his own studies and stating that the most important and forming element of his education in the 70's was the activism he did on the side.

This might seem strange to someone reading this coming from the social sciences, trained in critical thinking, but the architectural education had little critical reflection on the forces that were shaping our surroundings, about the power relations and who decides, no discussion on architectural acts as political. This foundation that the reviewer was talking about is lacking, not only in architectural education, but among the general public, a consciousness that I think is crucial if we are going to imagine a different future.

Through working with the master thesis, I became more conscious of how the world around us works, and for me this was transformative. Learning about the food system will not transform everyone, but I think food has a special potential for a transformation, because it is so universal and essential. Discovering that our daily bread depends upon destruction and exploitation could be a start of at least desiring a different way of feeding ourselves.



The Golf course in Oppdal is being transformed during the crisis, from 11:59-12:00-12:01, (Rullan and Melås, 2013)

Artistic research, un-disciplinarity and transversality

This artistic research project is a continuation of this turn in my architectural education, and a privileged opportunity to continue to build a foundation for future work. Architecture and planning have an important role to play in the construction of the future, but to answer to the planetary urgency the profession needs a radical change, like many other professions. The architect-scholars Doina Petrescu and Kim Trogal claim that the situation we find ourselves in (the ecological crisis) demands new ways of organizing and sustaining ourselves, requiring “*new forms of collective politics, values and actions, in which space and architecture must play a role*” (Petrescu & Trogal, 2017, p. 2) From a feminist perspective they include all of the reproductive dimensions of the built environment, through the lenses of politics, values and actions. The right to the city is expanded into a social reproduction of space, not just having a voice, but “*real material rights*” claiming that “[t]he right to the city and a right to architecture involve not any architecture, but a just, ecological, creative, imaginative architecture that we claim as users, managers, citizens and architects” (Petrescu & Trogal, 2017, p. 4) In this definition of a social (re)production of architecture:

“the aspects of architecture that become important are not the ones of form, surface, style or even structure, but rather demand working upon the ecological, economic, collaborative and processual aspects of making space.” (Petrescu & Trogal, 2017, p. 4)

This is not a “new” way of doing architecture. This approach has been at the fringes of the architecture profession for many years, made its appearance from radical architects, utopians and activists, or challenged by fields like geography and its newer, more focused branch, urban political ecology. These other ways of making, understanding and defining architecture has been elaborated and developed by people like Tatjana Schneider, Hélène Frichot, Jeremy Till, Doina Petrescu and Constantin Petcou among many others. There are many voices inside the field of architecture that challenges and constantly expands the field, bending it to become more relevant to a world in crisis. It is however important to note that these voices do so by learning from other fields, by engaging with thinkers outside of architecture, by going into collaborations with artists and activists, by being engaged in spatial projects in new roles, with a diversity of approaches. One example is my colleague and research fellow Alexander Eriksson Furunes (Eriksson Furunes, 2022) who in his artistic research “*Learning From Bayanihan/Dugnad*” draws upon and expands the practice and history of dugnad, the process of working together on a mutually supportive project, and brings this into a contemporary discourse on architecture to see how this could be another way of socially reproducing our surroundings. Furunes’ project is situated within the world of buildings, but the buildings in themselves is not what is important, it is the process behind, how they are co-produced and what this process means for the lives of its producers that matters.

The framework of artistic research provided a freedom for an *un-disciplinary* approach that expanded my role as an architect. It was not my intention to leave what I have learned through my architecture education behind; it was more a desire to see what the skills I had acquired could do in a new setting. For me this has meant the freedom to choose to go into the directions that seems important from my standpoint, the freedom to work transversally.

Transversality is a term used by Guattari about connections across boundaries, and is sometimes referred to as a picket fence, where transversality is the horizontal planks holding the fence together. Transversality is a contrast to silo thinking, borrowing from many different fields to create new assemblages of knowledge, and using these assemblages in new ways, making connections relevant for new fields. Transversality as a “*borderless knowledge production*” (Tan, 2017, p. 78) makes sense in light of artistic research, which has been characterized as “*an activity for border-crossers*”. (Dombois et al., 2012, p. 11) The courage and opportunity to violate these boundaries can make new relations between fields and new combinations of knowledge. Transversality is: “*a conceptual tool to open hitherto closed logics and hierarchies and to experiment with relations of interdependency in order to produce new assemblages and alliances*” (Kelly, 2005)

Susan Kelly goes on to emphasize how alliances between practices and fields cannot leave the fields they have worked across intact. Transversality is a way to build a bridge between different locations, environments, fields, classes, between academia and the rest of the world, between architecture and the humanities. Ideally these bridges are not used for extractive, one-way communication, but instead become infrastructure for mutual relations. This bridging of constellations “*demand a repositioning of the self in relation to others, putting oneself in different roles and contexts*”. (Trogal, 2017, p. 171) Transversality means to connect different scales, from the planetary, through the political, social and personal. To work across domains, to learn from other fields, to connect and combine.

This freedom allowed me to explore, for example the topic of dead soil, to learn more about soil, to get interested in composting, to make exhibitions, write essays and opinion pieces, to engage in political activism, without worrying about how this relates to my field or profession. I have followed the leads intuitively and had the pleasure of being an amateur, entering into fields where I am an eager to learn and find ways of using my knowledge. The directions that the project has taken has to do with all my background and the specific situations I have found myself in. It has to do with my architecture education, the interest towards food and food production, a turn that in itself is probably tied to my background of growing up on a farm. It is intuitive and spontaneous, but never random.

This way of working is indeed fun and interesting, but also quite challenging, as I never really had the feeling of mastering anything. I am left with a plethora of blind spots, or maybe on the positive side, potentials. So many ideas that were never tried, things I should have done, half-thought thoughts, leads I could have followed, people I should have talked to, projects to visit or join or initiate, or tasks in the garden projects that could be taken better care of. So many loose ends, things I did not have the time to finish, but also a bunch of things I did but should not have done, regrets and failures. Still, these are important fragments of the compost pile of my thinking, and things that have shaped both this thesis and will affect my work in the future.

Open-endedness

One of the qualities and strengths of the artistic research approach is its open-endedness. For me, and the other artistic researchers that met up at Jeløya six years ago, we didn't know where the research would take us, and this is something we need to embrace. Every decision I make in the project is based upon all the other decisions, departs from the experiences I already had. Artistic research offers the freedom to interpret and be affected and changed by the experiences and outcomes of the process. Decisions are made intuitively and by curiosity, one lead is followed while others are ignored, and I had no idea where the process will lead me next.

This approach gave me the possibility to follow leads that emerged. In a research situation that was less open-ended, with a clearly defined research question and methodology I would maybe not follow the dead soil to the place where it was produced. It might not lead to a reflection on the nature of urban gardens or to a curiosity of the processes that made the soil. A more detailed plan of the research would maybe not lead to the idea of moving some of the doomed peri-urban soil into the city, and I might not develop an interest in how the peri-urban fields were developed. I might think that it was out of the scope of the research to imagine and speculate in other futures for these fields, transducing the potential of urban gardening. My perception of myself as an artistic researcher, allowed for an un-disciplinary approach that has shaped the process in completely different ways than it would if I considered myself as an architect doing a more conventional PhD project.

I approach urban gardening with a background in planning/architecture in a context of planetary crisis, with the ecosophic lenses on, with a broad research question/thesis trying to fuse urban gardening with the ecosophy of Félix Guattari. I go into this research with all my personality, which I use in a variety of new roles. What I learn from this process, the combination of all the knowledges, dissemination and results is the works strength. However, since this kind of work is so individual and personal, it is not just the physical, visible results that matter. Since a PhD is an education, it also educates a certain type of researcher, which is different from a "conventional", scientific researcher. I am not skilled in scientific research methodologies, I do not have the necessary training of rigorosity, of making results that are repeatable, or produce results that can easily be verified and proved. The process of artistic research is instead a creative one, that doesn't shy away from topics and research questions that are so complex that they can't be answered with scientific accuracy. The strength lies in its ability to handle these complex tasks, to engage within different fields and situations, and to produce and communicate knowledge from this mess.

To stand in what is going to become a garden, alone, waiting for the first gardeners, which I don't know, to arrive. To make plans, to take decisions on which materials to use, to negotiate for space, to go into meetings with the municipality, with the owners of a site with a proposition, to make phone calls, to ask for help, to be engaged in activism, to write, to take photos and make videos and exhibitions, and present the work in new ways to new audiences. All these experiences give confidence to handle new roles, and makes me able to do real life projects and adjust to a multiplicity of situations. I do not think my performance in these roles have been outstanding in any way, and these roles have been approached with a mixed feeling of excitement and anxiety. But it is the way I have handled these roles that make up the work, and it is through being in all these roles that I have developed in all these areas and have gained some of the generalist skills that architects claim to have.

The framework of artistic research allowed me to interpret this as a valid way of producing knowledge. In this mode you are not only allowed but encouraged to go into unknown directions. Not knowing what you are doing, where it will lead and how it fits in with what you thought you should be doing can be quite messy. The seminars, forums and fellowship of the artistic research program provided an assurance necessary to cope with the risk and uncertainty of such a process.

Dissemination

Artistic research opens up for other modes of communication. There is an expectation that the research findings are disseminated not only through writing in academic journals, but also some kind of wider exposition of the work, a communication towards a larger public. The only requirement is that there should be an *artistic result* and a *critical reflection*. This provides a freedom for artistic researchers to decide for ourselves what is communicated and how. This is essential to allow for a variety of approaches and methods, but it's also challenging to find out what to present and how to present it.

For me, the artistic research framework has been an opportunity to communicate to a wider group of people, to make an accessible piece of work. Something that my friends and family could understand, something that my fellow gardeners would be inspired by, outraged by or react to.

The gardens are results of the process, a continuous dissemination. They perform in the world and bring experiences and input and might be the strongest impact of what I have been doing and maybe I am most proud of. I have initiated processes and contributed to creating three spaces where urban people can grow some of our own food, spaces where we can meet and get to know our neighbors, spaces where we can learn, spaces we can transform and be transformed by. And these are works that might last and continue to make an impact on me and my co-gardeners indefinitely. The physical projects also affect the people that are not part of them. People passing by, people visiting, a camper van tourist joining us for a common dinner, the vandals ripping up the plants. This is one of the strengths of urban gardening. It is visible, it shows how space might be used differently, it performs, invites and tempts. The gardens communicate something, show glimpses of a different production and management of space in the city, a different way to make food, different relations between humans and nature, and this communication will continue regardless of my existence.

Apart from the garden projects I have tried to communicate and disseminate the results in a variety of ways. The expectation of artistic research has prompted me to make exhibitions, to write more accessible, political or poetic writing, I have presented the research for a wide range of audiences, for my colleagues, for other research fellows, for landscape architects and architects and planners, for municipalities, counties, and environmental festivals. I have written in newspapers, magazines, and books on artistic research and urban gardening. The expectation to communicate pushed me to go to the first meeting for the Futurum science festival to propose composting as a technology for new co-operations between humans and microbes, to expose my partial knowledge at the architectural Triennale and to make my first video installation for a forum on artistic research. I have used photography, video and writing, and made conceptual, practical and spatial installations, directly using my architectural education. In the final exhibition I tried to combine all of these to make a section through my work – to expose the different tools and findings and make some connections between these.



All along I have been part of the public debate, reacting to things that have happened, especially concerning destruction of soil, using the knowledge and concepts I have come across through the process. My interpretation of artistic research has allowed the work to have a direction, to criticize, to propose, to object, to interfere and engage critically in the newspaper. This has been a very meaningful way of communicating and it's been rewarding to receive feedback from friends and strangers that what I am doing makes sense. This has been a great source of energy in a PhD process that is otherwise often soaked in uncertainty and anxiety. The exhibition projects have also been good arenas for both communication and feedback, for talking about my project and discussing issues such as soil health, composting and urban gardening. The exhibition, *Do Earthworms Dream of Android Lawn Mowers* (2021) was particularly rewarding.

It was the expectation of communication that led me to accept the call for contributions. At the time I did not know what I wanted to do, but a sketch for a text on the temporality of soil was combined with spending time in the fields, taking pictures and recording video and sound, of finding a proper room and thinking about how this room could be used and then using the roll-out lawn of the waiting lands to criticize, expose and make the work into the aesthetic experience it was.

It was interesting to present my work in a new way and to get instant feedback, to see how people reacted, how they were moved, angry, sad, or frustrated. After the experiences from this exhibition, I decided that this could be a way of presenting some of my other findings to the public, which resulted in the final exhibition *Ecologies of urban gardening* (2022).

The continuous disseminations of the research, through writing, exhibiting and the physical performance of the gardens are not just ways to communicate results. They are also tools. This communication does something in the world. The plants wither, the soil is dead. Working with an exhibition makes me stumble upon new perspectives and theories that start to change the work. I encounter new people from which I can learn. Looking at the garden through the camera lens makes me discover things I haven't seen and thought before. The physical experience of seeing soil getting destroyed triggers an emotional reaction that shapes the tone, mood and rhythm of a text. Baking the first potatoes on the fire with my co-gardeners makes me believe that what I am reading, and writing makes sense also in the real world. This continuous conversation with the public has been important for how the project has developed.

Concluding remarks

So, what have I learned, and what do I bring with me? I think it's hard to say at this point, since the project points in many different directions which I am eager to explore, and how these directions are followed and combined and used in new settings also depends on future possibilities. However, as a way of concluding I will try to draw out some of the most important results which will for sure be part of my foundation for the future.

I have used the lenses of Félix Guattari's ecosophy to explore the practice of urban gardening. I have tried to adapt, simplify, transform and add to this theory to make it usable in this new situation. This has been a guide and a tool through the process and has been influencing how I do the practice and how I take decisions. In the text you have now read I have emphasized five themes that I find important, well aware that these would probably be completely different if someone else handled this theoretical tool through the same process. I have explored some of the *aesthetic experiences* that urban gardening provides, which might be able to change us deeply, across the three ecologies. I have seen how urban gardening can transform a space and its people to become more diverse and related this to Guattari's term *heterogenesis* – the production of diversity, which is a counterforce to the capitalist homogenization of the world and the human subjectivity. Through the experiences of the dead soil, I learned about soil ecology and how urban gardening practices can *rescale the urban metabolism*, redirect flows of organic matter to maintain and repair soil health, and how this corresponds to mending what Marx called the metabolic rift. The project has also led me to an engagement with the peri-urban fields, which started a reflection on *temporalities*, on the difference between building and destroying soil, of care time and capitalist temporalities and how being in the urban garden can help us discover and care for the ecology we depend on and are part of. The attention to peri-urban soil land revealed to me how the reorganization of these fields are important in the re-production of capitalism, how these fields need to make harder to make more growth. To follow this political game showed how urban gardening can be used as a tool for strengthening the status quo, through *neoliberal recuperation*, which also led me to try the *détourn*, *speculate in and transduce* other futures for these fields.

The ecosophic approach also has a potential as a tool in other situations. I am now unable to look at a landscape without considering both the deep geological time embedded in the production of the landscape. I cannot ignore the political ecology of a transformation, how the reconfiguration of nature is always political and planetary and how the way we shape the world today has consequences long into the future. I will not be able to look at a project, a building, a space or a landscape without considering the mental, social and physical ecologies of the space. How was it made? Why is it made in that way? Who made the decisions? What was the intention? Where did the materials come from and how did the production of the materials affect ecologies along the way? How is the local ecology connected to the planetary? How does the space affect its users or people living there and the relations between them? How does it affect their relation to the rest of nature? How does it affect the way they think, act, interact or don't act, interact and think? What can be done to change this? How could such a process start? Guattarian ecosophy as a tool for spatial analysis and for initiating spatial practices and potentials will always remain part of my toolbox and affect future projects.

The last key takeaway that I will mention is the ability to work across, link, relate and combine. To set processes in motion, to be part of these processes and allow them to change me, to reflect upon what's happening, to relate this to other places, to theories I believe in, to other situations. To combine the knowledge that is created, for example not just find out where the dead soil comes from, but to make a mix that works better, to trace the processes back, to document and present and use this exploration to reflect upon the nature of urban gardens, building on and expanding theory. Like in ecology, it is not the study of the things that matter most, but the relations and interactions between. In my thesis synthesis has been more important than analysis, to put together rather than to pick apart, to keep adding rather than focusing. I have tried to resist fragmentation and specialization, by combining, compositing and understanding how different kinds of knowledges, in theory and practice, connecting things to each other, and then try to communicate the knowledge created in different ways.

Since new layers, relations and connections always can be added, this project will never be completed or finished. It feels inexhaustible, it grows faster than I can keep track, and even to the last minute I am left with so many things I would like to add, develop, investigate and create. It is more a foundation to build from. The skills I have acquired, the gardening skills, organizing skills, writing skills, ways of communicating, the perspectives and lenses are all new tools for me, tools that I am eager to continue to learn how to use. Not finished products, but small sprouts that might be further developed, processes to be started, frameworks to be filled, structures to build from, soil to plant stuff in. At best, transformative ideas, built upon the shoulders of other transformative ideas, sketches that must be further worked on, in practice and in theory. Too many tools for me to handle, but by bringing these things into the world I hope that they might make sense and be useful also for others, that they might be nourished, cared for, and be allowed to grow, or be ripped up and thrown in the compost pile if they do not make sense.

One of the aims of the project is to act both as a critique and as an alternative. To point out that things are not working, that we need to go in a different direction, and then to explore one of the many directions we could go from here. This duality is necessary in our times of urgency. The future is dark, but the solutions that are presented to us are never any fun. It involves either external solutions, promises of technologies that fix our problems, or implies some kind of lack or loss, of privileges, of consumer goods, of quality of life. It is rarely pointed to how a radical and necessary transformations of society might be better for us, how it might make our lives more meaningful, more fun, less boring.

Through this project I have explored urban gardening through the ecosophy of Félix Guattari, looking at the practice through the interconnected lenses of the physical, social and mental ecologies, which is necessary in order to deal with the foundations of the ecological crisis. I have been looking for hope, trying to create it, trying to change a small part of the world while learning about it. I have seen that even though the challenges are overwhelming, it is possible to do something. It is possible to act in meaningful ways, and these actions might not just slow down the escalation of the ecological crisis, they might also build a better world. **Urban gardening shows how humans might learn how to repair and regenerate, not just the ecologies and habitats we are part of, but also ourselves.** I have found glimpses of hope in the strong experiences of gardening, the engaged and hopeful people I have met, the explorations the process has sent me on. I have found it, in many moments, but still, the hope is fragile. It needs to be constantly kept alive, reproduced, and cared for, which is extremely tough when the reality of the ecological crisis hangs over us. It gives me a lot of energy to be in the gardens, to meet my fellow gardeners for a common meal, to introduce new people to the garden and see how eager they are to start, to see the diversity growing throughout the seasons and years, to see the damp from the compost, the first sugar snap peas shooting through the surface of the soil, or to wander through the lush garden on an August night. In these brief moments I can vaguely imagine other futures, other trajectories. In these moments I believe that it is possible to structure good lives and futures around the production of space, around new human and more-than-human communities, around preparing, producing and eating food together.





Writings

A selection of texts published through the process

Den hodeløse kyllingfabrikken/The headless chicken slaughterhouse,

Opinion piece, Adressavisen og Avisen Sør-Trøndelag, 2017,

Bjørn Inge Melås and Anders Melås (Melås & Melås, 2017a, 2017b)

This was a reaction to the plans of building a new chicken slaughterhouse on prime agricultural land in my hometown of Orkanger. We argued that building down a protected habitat and fertile soil to build a slaughterhouse to «make jobs» and profit for one of the biggest supermarkets was a bad idea. This is an example of one decision, made by politicians and companies every day that destroys our conditions for existence piece by piece. We argued that the sum of all these decisions would be fatal, and that pursuing infinite economic growth would put us in the same situation as the poor broilers collapsing under the own weight.

Kyllingfabrikken / The Chicken Slaughterhouse

Høringsuttalelse. Orkland Kommune, 2017

Bjørn Inge Melås and Anders Melås

We followed up the opinion piece with a longer version sent to the municipality in «the hearing process». They wouldn't listen, and the slaughterhouse is now in operation.

Signalbygget

Essay, Syn og Segn, (Being published in issue 4, 2022)

Bjørn Inge Melås

This text is a follow up of the first writing on the chicken slaughterhouse. The factory is now up and running, slaughtering 160.000 chickens each shift and through this essay I reflect upon the cultural landscape and the ecologies that this new infrastructure makes, pushing the agriculture in Norway in a more industrial direction and continue to rely upon import for feeding the broiler chickens. The essay reflects upon this imperial way of living, and how the constant making of monocultures connect both to the ecological crisis and heightens the risks of new pandemics.



Den hodeløse kyllingfabrikken, Illustration for the text in the newspaper.

Signalbygget, remaking both the local and global cultural landscape.



Raseri og Kjærlighet /Rage and Love

Essay, Pan, (Harvest magazine), 2018

Bjørn Inge Melås (Melås, 2018)

<https://www.harvestmagazine.no/pan/kjaerlighet-og-raseri>

This essay was written after COP 24, where the Norwegian prime minister was happy with the result even though he admitted that we were steering towards three degrees of warming. I argued that the reason we are not getting anywhere is because the underlying causes are not dealt with. In the Paris agreement there is no trace of critique of the growth economy. The essay relates this to protests from Fridays for future, Extinction Rebellion and the yellow vests in France and argued that these movements are reactions to an unjust and ecocidal economical system that our leaders refuse to question. Since these movements are fighting the same forces, they could also fight together and create a stronger counterforce. The essay uses the 68 slogans «underneath the street, the beach» to argue that by fighting the oppressive systems alternatives might also be discovered and argued that envisioning a different future is important to be able to create it. I argue, drawing on Arne Johan Vetlesen, that hope might not be what we need. Hope can mean remaining in the boat long after we should have left it, and that instead we need love for the life on earth and rage against those who destroy it, and that these two feelings could be coupled together, both in protests and in constructive attempts to build another world.

Arkitekturdagen: Ta et oppgjør med arbeidsmanien

/ The Architecture Day 2019: Get rid of the work mania.

Opinion piece, Arkitektnytt, 2019 Bjørn Inge Melås (Melås, 2019)

<https://www.arkitektnytt.no/debatt/ta-et-oppgjor-arbeidsmanien>

The theme of the Oslo Architectural Triennale in 2019 was degrowth, and also the theme of the yearly event Arkitekturdagen. In this main event for Norwegian architects, different perspectives on how architects could contribute to a degrowth development of society were lifted. Different strategies were discussed, but all of them were concerned with the resource use of building materials. In the text I argued that even though these things are important, degrowth is a far more radical transformation of society. My challenge to the Norwegian Architects was to work one day less, both for their own sake, and for those coming after us. We have to get rid of the work mania, and by working less, architects could be able to contribute much better in their families, in their neighborhoods, in their relations than working in projects that often concentrate the accumulation of capital. I grounded this in Lafargue's «Right to be lazy» and research done by the New Economics Foundation on reducing working hours and argued that working less has a plethora of good consequences. I end the text by arguing that «nedvekst» (downgrowth), the Norwegian term, gives the impression of lack, of cut, of reduction should be replaced by «motvekst» (countergrowth) that hints towards counterforce, resistance and countercultures, about fighting for other kinds of growth, other forms of meaning and happiness. Eternal growth hinders us from seeing all the futures we could have, «motvekst» is about breaking lose and seeing the opportunities that come to life when the most unrealistic thing to do is to continue as usual.

Hva skal vi med gateplagerne? / Do we need the E-scooters?

Opinion piece, Morgenbladet, 2020

Bjørn Inge Melås (Melås, 2020c)

<https://www.morgenbladet.no/ideer/debatt/2020/10/01/hva-skal-vi-med-gateplagerne/>

This text was written in rage over the new electrical scooters flowing into Norwegian cities. This happened after the government in 2018 decided to equate small electrical vehicles with bicycles. In the text I use Ivan Illich's framework in *Tools for Conviviality* to argue that an e-scooter and a bicycle are two radically different things. Illich argued that beyond a certain threshold tools start to become counterproductive, destructive, dangerous. He proposed a multidimensional balance as a framework evaluating our relation to our tools. When a technology crosses a certain point, it becomes manipulative and start controlling us more than we control the tool. On the other side there are convivial tools that develop human skills and knowledge. In the text I argued that the e-scooter is a manipulative tool. It is a commodification of transport over short distances, a product that creates an expectance that we should move by using as little as possible of our own energy. This passivates its users and lead to emissions and waste. According to Illich we need tools to work with, not tools that work for us, and a perfect example of this is the bike, a democratic and efficient mode of transport that doesn't generate needs it cannot satisfy and that makes its users stronger, healthier and more autonomous.

Grenser er frihet / Limits are freedom

Book review, Pan, (Harvest Magazine), 2020

Bjørn Inge Melås (Melås, 2020b)

<https://www.harvestmagazine.no/pan/grenser-er-frihet?token=96XWLFHh9EhHHLYQJlHKw1JkepWZC7p>

This is a book review of Giorgos Kallis book *Limits: Why Malthus Was Wrong and Why Environmentalists Should Care*. In the review I introduce the main aspects of the book to Norwegian readers and bring forward Kallis' claims that in the light of unlimited desires, the world will always be limited, it will never be enough. Creating austerity is essential for capitalism, since it depends on creating lack. If something is free and abundant, it cannot be profited off. In the book Kallis confronts the limitlessness of the economy and tries to redefine limits as a necessary part of a good life, using Castoriadis' concept of autonomy, the ability to set our own limits.

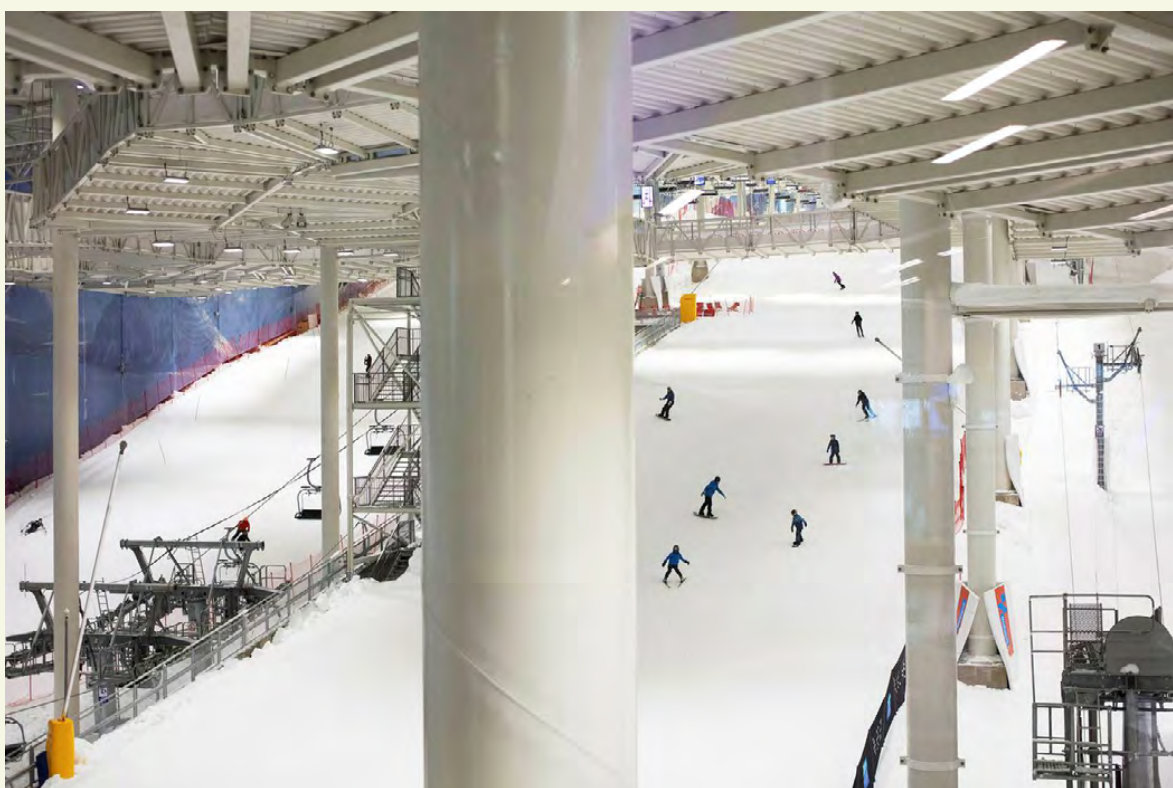
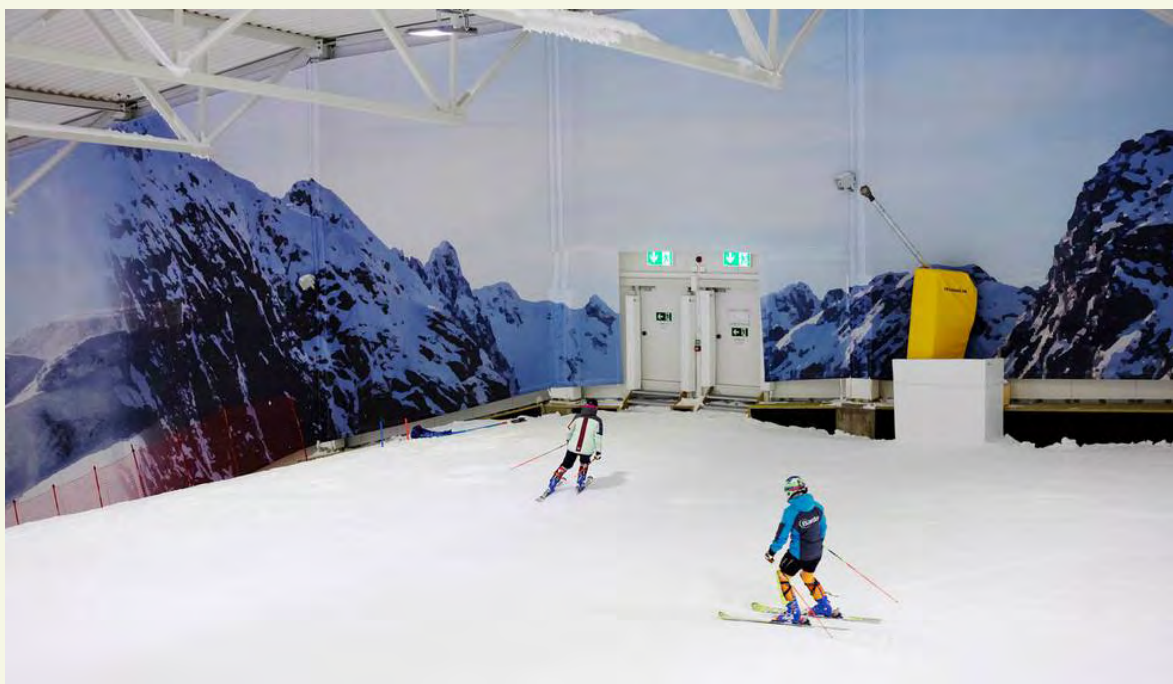
Den siste vinteren / The last winter

Essay, Morgenbladet, 2020

Bjørn Inge Melås (Melås, 2020a)

<https://www.morgenbladet.no/ideer/essay/2020/03/03/den-siste-vinteren/>

In this essay I depart from one of my passions, snowboarding, to reflect upon what is being lost as the climate becomes warmer. Snowboarding is one of those rare moments where I feel creative, an opportunity to play and be totally immersed in what I am doing. It is written from a specific experience of powder snow, and I describe how these feelings of pure joy and play are increasingly being mixed with feelings of sadness and rage as the climate gets warmer. I relate these feelings of loss as the winter experiences are diminished to what Glenn Albrecht refers to as Solastalgia, the feeling of missing a place that has been destroyed, a homesickness while you are at home as the planet deteriorates. Through the essay I reflect upon the new term «wild snow» which describes the snow that falls from the skies without being spitted out from machines first. The wild snow is threatened by extinction and so is all the joy and all the culture connected to it. I argue that as the world around us deteriorates, so do we, and that this should give us even more reason to fight for the beautiful things we still have.



The last winter, photo series for the essay by Knut Egil Wang

Hvorfor skal vi bygge ned matjorda? / Why are we destroying the agricultural land?

Opinion piece, Adresseavisen, 2021

Bjørn Inge Melås (Melås, 2021b)

<https://www.midnorskdebatt.no/meninger/ordetfritt/2021/04/18/Hvorfor-skal-vi-bygge-ned-matjorda-23814035.ece?>

In this text in the saga of peri-urban fields of Trondheim I questioned the developers rush to build on agricultural land. I bring forward the municipality's reports stating that there is no need to use this land for development in the short, medium or long term. To build on these fields is not something the city wants or needs, it's what the developers desire. I argue that the developer's sense that agricultural soil, food security and climate is an important topic, and that's why they need to act now, before it's too late - because they will not be allowed to destroy it later. I end with an appeal to the politicians to start prioritizing the human need for food - instead of the developer's desire for profit.

Kritiserer TOBB: Og de skal belære oss om etikk og moral?

/ And they are going to teach us about ethics ?

Adresseavisen 2021

Bjørn Inge Melås (Melås, 2021c)

<https://www.midnorskdebatt.no/meninger/ordetfritt/2021/02/18/Kritiserer-TOBB-Og-de-skal-bel%C3%A6re-oss-om-etikk-og-moral-23508181.ece?>

This was a direct response to one of the developers threatening the politicians in the media. In a last effort to get their visions through they threatened to sue the municipality if they didn't get to build on agricultural land. They claimed that if the process was halted the municipality would have to pay back the 100 million kroner the developers had already spent. The developer (TOBB) requested the moral compass of the municipality: «*A compass is an important tool, especially when you are going for a long hike. It helps us to navigate and go in the right direction. The same is true for our moral compass. It lies in all of us - and is crucial if we are confused. Then we can use our moral compass to find the right direction.*» (Bergquist & Sotberg, 2021) The right direction, according to the developers, is to allow the continued development on the agricultural land. It was a reply that wrote itself. We are used to hearing the common arguments by the developers, how the city must be developed - for the city, for the poor people, for sustainability, However, to throw ethics and moral into the debate, in the most controversial development project in Trondheim where a group of developers, through a dirty game of threats and lobbying have been allowed to develop a huge agricultural land in the outskirts of the city in order to cash out enormous profits is a bold move. I ended the article with something like this: «*If the developer's achieve something with their threats and lobbying, and manage to get their 9 billion in profit, it cannot be called anything else than a death stab for local democracy. It is a mockery of food security for future generations, a soil destruction catastrophe, horrible city planning and a moral collapse*». (Melås, 2021c)

Rotvoll: Mat for framtida? / Rotvoll: Food for the Future

Opinion piece, Adresseavisen, 2020

*Asbjørn Barlaup, Gunnar Alstad, Ingrid Frost Nilsen, Bjørn Inge Melås
(Barlaup et al., 2020)*

<https://www.midnorskdebatt.no/meninger/ordetfritt/2020/10/21/Rotvoll-%E2%80%93-mat-for-framtida-22859027.ece?>

This opinion piece was written together with the Competence Center for Urban Gardening in Trondheim, and the regional and local farmers association. In the piece we pick apart the developer's argument that it is impossible to do agriculture in the peri-urban fields and argue that *if* this was true, these fields would still be perfect for developing the urban agriculture in Trondheim. We also depart from the interest shown by Rotvoll through The Urban Farmer and New Roots, to highlight that the transformation of thinking around how food is grown in urban areas is already ongoing, also among the developers.

Høringsuttalelse Rotvoll

Trondheim Kommune, 2022

Bjørn Inge Melås

A last appeal to the municipality's administration and politicians to spare the soil at Rotvoll in the next round of long-term regulation. In this text I listed three reasons to regulate the land back to agricultural purposes:

1. There is no need.
2. It is bad urban planning.
3. The areas are viable for agriculture. If not for the industrial, large-scale agriculture, these peri-urban fields are perfect for the upscaling of urban gardening.

All off these arguments should *in themselves* be enough to protect the agricultural fields in Rotvoll. I argue that fertile soil is not a renewable resource (in human timescales), that a decision to build on the soil is irreversible and is taken on behalf of all generations coming after us. This piece was also exhibited in the final exhibition.

Ökologien des urbanen Gärtnerns

In the book: Die Keimzelle: Transformative Praxen einer anderen Stadtgesellschaft. Theoretische und künstlerische Zugänge. Transcript Verlag 2021 (Ecologies of urban gardening in The Germ Cell: Transformative Practices for another Urban Society. Theoretical and artistic approaches. Transcript Verlag 2021)

(Melås, 2021d)

After presenting my project at the CA2RE (Community of Artistic and Architectural Research) conference in 2020 I was asked to write a book chapter for this German book on urban gardening. It starts with the experience of dead soil and follow the journey of reviving the soil, while presenting central aspects of my thesis and project in German.

An English version can be found in the attachments, and was also published as:

Ecologies of urban gardening

in the book I: CA2RE+ 1 1 STRATEGIES OF DESIGN-DRIVEN RESEARCH. Aarhus: Aarhus School of Architecture, ARENA (Architectural Research European Network Association) EAAE (European Association for Architectural Education) ELIA (European League of Institutes of the Arts) 2021 *(Melås, 2021a)*

KEIM ZELLE

Transformative Praxen einer
anderen Stadtgesellschaft
Theoretische und
künstlerische Zugänge

Anke Haarmann & Harald Lemke (Hg.)

[transcript]

Degrowth as a way of organizing nature,

Handbook for degrowth, De Gruyter

(In process, abstract accepted)

This book chapter will be handed in for peer review in August and hopefully published in the spring of 2023. It will be a synthesis of the chapters in this document, arguing how urban gardening is a degrowth way of organizing nature.

The abstract:

As Jason Moore argues, capitalism is not just an economic system, it is a way of organizing nature. It depends on an external, cheap nature to grow, a constant search for new spaces to exhaust and dispose of its debris. Nature must work harder, and this can be achieved through homogenization; a reduction of diversity into monocultures - not just by transforming rainforests into plantations, but also through a similar flattening of our inner landscapes. Capitalism is not just globalized, it is also integrated in our minds and the way we think, act and relate. The ecological crisis must therefore be approached not just by its physical manifestations, but also its mental and social ecologies. Through the artistic research project *Ecologies of urban gardening*, I explore urban gardening as a transversal practice able to work on all three ecologies simultaneously.

If capitalism is one way of organizing nature, then degrowth must be another. By using practical experiences from my research on urban gardening I will explore how a degrowth way of relating to nature could work. What happens if nature is not externalized and exploited? The proposition of degrowth might involve what Félix Guattari calls heterogenesis - the production of diversity. Urban gardens produce food, but also make diversity. Gardens replace parking lots and provide habitats for a variety of species, but also open up for a diversity of ways of being, sensing, thinking, knowing, caring, relating and living together. The environments we make, how we make them and who we include in the process matters - not just for the environments, but also for us, since we are reproducing ourselves in the process. Urban gardening might change both material and immaterial production and through practicing and developing alternatives the imaginaries of the future are expanded.

Selected presentations

Dyrkingscafe, Voll Gård, Gathering for urban gardeners in Trondheim, 2017
Urbanistene, Trondheim, Planning and Architecture Association, 2017
Grindaker, Oslo, Landscape Architecture Office, 2018
Geography seminar, Trondheim, Humans change the landscape, 2018
Garden Gathering, PrinzessinenGärten, Berlin, 2018
Practice-based research miniseminar, faculty, 2018
The eco-week, Voll Gård, 2018
Fagdag Urban Gardening, Presentation for municipalities in the region, 2019
Architecture Day, 2019, NAL
NLA, Norwegian Association of Landscape Architects, 2019
CA2RE Conference, Paper presentation 2020
New European Bauhaus, A Baltic Region Conversation, 2021
Design Dialogues: Ethical and Sustainable Food Futures, 2021
CA2RE, Recommendations for artistic research, Delft, 2022

Exhibitions

2019, Bioreactor, Futurum, NTNU Big Challenge Science Festival
2019, Communities of Compost, Enough: The Architecture of Degrowth, Oslo Architecture Triennale
2019, Collapse, updating and redesign a permanent exhibition on urban gardening as a response to the threat of collapse. In the exhibition Collapse, National Cultural Museum
2021, Do Earthworms Dream of Android Lawn Mowers? Artistic Research Forum, Galleri KiT
2022, Ecologies of urban gardening, Final Exhibition, Galleri KiT

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