

# **Regenerating the environment in a degenerating world:**

A case study of farmers in Denmark practicing regenerative agricultural methods

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Human Ecology Division  
Department of Human Geography  
Faculty of Social Sciences  
Lund University

Author: Ene Tea Christoffersen  
Supervisor: Alf Hornborg  
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Department	Department of Human Geography
Address	Sölvegatan 10, 223 62 Lund, Sweden
Telephone	+46 46 222 17 59
Supervisor	Alf Hornborg
Title and subtitle	Regenerating the environment in a degenerating world: A case study of farmers in Denmark practicing regenerative agricultural methods
Author	Ene Tea Christoffersen
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**Abstract:**

In response to climate change and the degradation of fertile soil, regenerative agricultural methods are gaining ground globally as a way to create a more sustainable agricultural practice, and in recent years Danish farmers practicing regenerative methods have mobilized in the Association of Regenerative Agriculture. These farmers are very conscious of the crisis stories that characterize our time and embody an activist dimension of connecting with their surrounding environment through the way they cultivate their land. Through qualitative methods including interviews, participatory observations, and narrative walking interviews, this thesis explores case studies of the farmers' relationship to their environment and how this way of engaging with the environment through regenerative practices compare with the capitalist ideology and imperatives of efficiency, rationality, and profit. The farmers' interaction and connection with the environment can be viewed as a counterpoint to the modern dualism that separates reason and feeling, mind and body, human and environment. However, they are still subject to the globalized neoliberal market economy where they are on a treadmill in which the downward pressure on prices creates upward pressure on inputs needed for production. This forces the farmers to adopt new technologies and increase the scale of production to stay in business. Nevertheless, the farmers and their association aim to contribute to the necessary changes to restore the environment through the production of food. These changes start in their everyday life, creating autonomous design that abstains from modernization and commercial aims in favor of more place-based and collaborative approaches. The farmers engage with this by introducing different ways of knowing, being, and making, through regenerative agriculture that actively brings them into a deeper relationship with the living world through the use of soft technology, cultivation of emotional commitments to non-human beings, picking up information from the environment, building local autonomy, and appreciating life quality rather than adhering to an increasingly higher standard of living.

**Keywords:** *regenerative agriculture, human-environment relationship, deep ecology, relational epistemology, autonomous design*

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# 1. Introduction

We are in the midst of several great and coinciding crises that haunt our lives and doings here on Earth. The vast majority of researchers point out that climate change is presently raging and that changes in the coming time will be more frequent and more intense due to human activity (IPCC 2021). Three of nine interlinked planetary boundaries have already been overstepped, including the rate of biodiversity loss, climate change, and human interference with the nitrogen cycle (Rockström *et al.* 2009). Worldwide, we lose topsoil<sup>1</sup> equivalent to a football field every five seconds due to erosion, and if this depletion continues the UN estimates that in 60 years there will no longer be topsoil left for crops to grow (UN 2019; Arsenault 2014). In 2015, the first major report took stock of the planet's soil and the problems related to the loss of fertile soil. In the preface, the Director-General of the Food and Agriculture Organization of the United Nations, José Graziano Da Silva, writes: "*This document presents the first major global assessment ever on soil and related issues. Why was such an assessment not carried out before? We have taken soil for granted for a long time*" (FAO 2015: 19). The soil that the earth contains is the basis of our food production and food security, it contains more carbon than the total above-ground vegetation, is home to more than a quarter of the planet's biodiversity and acts as the planet's largest water filter (FAO 2015; FAO 2020). In other words, the health of the soil is fundamental to human survival. Agriculture occupies more than a third of the earth's land area, and thus plays a huge role in either protecting or degrading the soil. In Denmark, agriculture occupies 62% of the land area with crops consisting mainly of fodder for animal stocking, which makes Denmark one of the most intensively cultivated countries in the world (Danmarks Statistik 2017). In response to climate change and the degradation of fertile soil, regenerative agricultural methods are gaining ground as a way to create a more sustainable agricultural practice. Regeneration stems from Latin *re-* 'again' and *generare* 'to grow, to create meaning to restore or rebuild oneself' (Ahl 2021: 7). Within the scientific field of biology, regeneration is described as the biological process by which living organisms replace lost cells, tissues or body parts (Grubb 1977). And finally, regeneration is the name of a global agricultural movement. In recent years Danish farmers practicing regenerative methods have mobilized in the Association of Regenerative Agriculture. The movement consists mainly of farmers and activists who work for the prevalence of regenerative farming through lobbying, the development of an educational

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<sup>1</sup> *Topsoil* can be described as the fertile soil extending to a depth of 13-25 cm. This soil has the highest concentration of microorganisms and organic matter and is where most of the Earth's biological soil activity occurs and is usually also the soil farmers turn over in plowing (Bahram *et al.* 2017).

institute, and the knowledge exchange of regenerative practices amongst practitioners (Regenerative a). Through the practice of regenerative farming, active work is being done to increase the amount of humus<sup>2</sup> and microbiological life in the soil, sequester CO<sub>2</sub> and improve the so-called *liquid carbon pathway* which describes the process by which atmospheric carbon is converted to fertile soil (Jones 2008). This process is partly about improving the soils' fertility in order to create good conditions for plants to grow, as well as to take care of and cultivate the earth's ability to sequester CO<sub>2</sub>, as part of a global response to the climate crisis and the enormous amounts of carbon that have been emitted into the atmosphere through modern history.

Naess (2008) identifies the cause of the tendency of exceeding planetary boundaries as a deeply entrenched material ideology and practices as regards production and consumption in modern societies. This can be viewed as a crisis in the way modern society is seeing the world – a crisis of worldview. The farmers practicing regenerative methods are very conscious of the crisis stories that characterize our time and embody an activist dimension of connecting with their surrounding environment through the way they cultivate their land. Based on this, I aim to explore the farmers' relationship to their environment and how this way of engaging with the environment through regenerative practices compares to the industrial society. The research question that drives this exploration is as follows:

*How is the human-environment relationship conceptualized within the movement of regenerative agriculture in Denmark, and how does this compare with the capitalistic ideology and imperatives of efficiency, rationality, and profit?*

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<sup>2</sup> *Humus* is central to regenerative agriculture's efforts to sequester atmospheric carbon (CO<sub>2</sub>) in the soil. It is a generic description for the stable organic material that remains when bacteria, fungi, earthworms and other micro-life have metabolized animal- and plant remains. A high humus percentage is generally associated in agriculture with both good soil structure and an active micro-life, which makes the plants more robust against fluctuating weather conditions and diseases as well as more sufficient at sequester the atmospheric carbon (Ahl and Skovgaard 2020).

## **2. Theoretical framework**

In order to examine the farmers' relationship with their environment, I engage with literature that addresses key issues within nature-culture dualism and environmental alienation. To further examine how this relationship compares with capitalist and modern ideology and imperatives. I draw on several theorists and scholars who challenge the dominating capitalist worldview based on the philosophy of deep ecology.

### **2.1 Deep ecology**

*Deep ecology* is an ecological and environmental philosophy established by philosophers Arne Naess and George Sessions in 1973. They reflected on the emergence of environmentalists and noticed how their messages were twisted and misused by not being transparent about how deep or shallow they were. Shallow ecology is mainly concerned with addressing the negative consequences of industry, such as lowering pollution levels or struggling against the depletion of natural resources, and how this affects human interests (Naess 1973). The philosophy of deep ecology acknowledges the importance of these interventions but stresses that the underlying causes of the environmental problems must be addressed simultaneously (Ibid.). Therefore, deep ecology emphasizes the ideological and cultural dimensions of ecological problems. For example, the socio-economic system must embrace a perspective that views the environment as an all-encompassing, interdependent system where human life can only exist in a web of relations with the nonhuman and restructure the modern human societies in accordance with such ideas (Ibid.). Deep ecology offers a radical shift and alternative to the modern anthropocentric worldview where ultimately the industrialized countries need to change their consciousness to address the root cause of environmental problems. Naess and Session created 8 principles of practicing deep ecology work as an overall theoretical framework for the analysis and discussion of this thesis. These principles will be unfolded in the analysis and discussion.

### **2.2 Knowing through experience**

The understanding of how knowledge develops within environmental relationships was pioneered in psychology by Neisser (1976) and Gibson (1979) and in anthropology by Ingold (1995). The central assumption in their work is that humans gain knowledge from their environment through perception, manifested in an *information pickup* and that this form of perception is a skill that is learned rather than something that just happens to us (Gibson 1979: 239; Neisser 1976: 52). The information picked up from the environment takes the form of *affordances* which can be described as possibilities that

the environment holds for the individual, and these affordances open up to us when we have certain anticipations of what is possible within the environment (Gibson 1979: 127). By engaging with these thinkers, I explore the lifeworlds of the farmers and how they connect and understand their surrounding environment, and how this compares with capitalist imperatives.

### **2.3 Ecology of emotion**

Many scholars view emotions as internal bodily states, experienced by individuals in social situations interacting with each other (Milton 2002: 3). Anthropologist Kay Milton, on the other hand, emphasizes that emotion can occur between individuals and their surrounding environment outside of social relation. She argues that emotions operate in the relationship between an individual organism and its environment, occurring when the organism interacts with entities of that environment (Ibid.: 4). For many people, much of their environment happens to be social, and thus much of their interaction is with other human beings. However, an environment is not essentially or primarily social, but simply an environment, consisting of entities other than human beings with which we interact (Ibid). Drawing on findings and ideas from anthropology, psychology, cognitive science, and philosophy, Milton discusses how humans come to understand their surrounding environment and develop emotional commitment toward it (Milton 2002). Using the work and thoughts of Milton, I aim to investigate if the farmers practice environmentally sensitive ways of living and if they have developed emotional commitments toward their surrounding environment.

### **2.4 Autonomous design**

Anthropologist Arturo Escobar elucidates how designs structure our being-in-the-world and how our being-in-the-world structures the kinds of designs we make. Design, by its materiality, ‘hardwires’ particular kinds of politics into bodies, objects, or spaces. The way we arrange our lives opens possibilities for what relationalities are possible (Escobar 2018). Therefore, he suggests *autonomous design* that abstains from modernization and commercial aims in favor of more place-based and collaborative approaches (Ibid.). In order to create autonomous design, the human species and whole societies must consider their ontology if we are to change our being-in-the-world, as the ontology has the potential to design our reality and thus generate the necessary social and environmental changes (Ibid.). I will engage with Escobar’s perspective to illuminate how the ontology of the farmers shapes their regenerative practices and how their practices influence the way they view the world.



### 3. Philosophy of science

This thesis project complies with two strands of philosophy of science including *phenomenology* and *critical realism* merged as *phenomenological critical realism*. Phenomenology can be understood as the study of the conscious human experience of a given phenomenon (Cohen *et al.* 2007). However, phenomenology is not a homogeneous science of philosophy and therefore consists of different trajectories within this school of thought (Farina 2014). I will apply Heidegger's notion of *existential phenomenology* where experiences cannot be separated from the context in which they occur. This approach Heidegger referred to as *dasein* which can be understood as the situated meaning of a human in the world where reality and consciousness are co-creations, and thus the human understanding always arises from the relationship between the two acting upon each other (Heidegger 1927/2007). Critical realism, on the other hand, focuses on causal mechanisms, and how they act as tendencies to influence the world we observe. To investigate these mechanisms, critical realism considers both agency and structures existing together in relation as ontological features of the world. Structures influence individual agents, whether it is their behavior, knowledge, identities, or actions. Individuals can then reproduce or transform these social structures through their actions. In this way, there is an ongoing cycle in which the structures affect the individual, and the individual affects the structures (Bhaskar 2002). These two philosophies of science, phenomenology and critical realism, provide a dual lens conducive to an integrated study design that enables exploration of the lived experience amongst the farmers and connects these findings with an already existing reality. This integrated study design can be described as *phenomenological critical realism* which integrates the natural and the social worlds by melding scientific realism and reflexive critical consciousness (Budd 2012: 79). Founder of critical realism, Roy Bhaskar states "*if we leave out social structures, or if we only have social structures and we leave out nature or inter-personal relations, then we are in a situation of absence, dialectically erroneous absence*" (2002: 74)". The ontology of phenomenological critical realism thus recognizes both a mind-independent reality and individual and social perceptions of that reality. The integrated approach makes it possible to explore the farmers' internal world and to situate these experiences and understandings in the context of the world *out there* existing independently of the farmers' consciousness. This philosophical lens is relevant for the scope of my research since I aim to explore the farmers' relationship with, and understanding of, their environment and further how these experiences and their regenerative practices relate to the capitalistic ideology and imperatives.

## 4. Methodological framework

For the scope of this thesis, I have chosen to engage with three farms practicing regenerative methods and the Association of Regenerative Agriculture, illustrating how “*qualitative case-oriented studies tend to restrict the number of cases to numbers between two and four*” (Flick 2009: 97). In qualitative research, there is a focus on illuminating and interpreting human experiences and social processes, such as how people think, feel, act, learn, and develop (Brinkmann and Tanggaard 2010: 17). It is based on concrete people and experiences to get a deeper understanding of how people perceive their lives and interpret the interaction with others, human as well as non-human (Kruuse 2007: 22). To study the farmers’ and association members’ relationship with, and agency towards, their surrounding environment and relate this to causal mechanisms within society, I have collected data through applied qualitative methods including semi-structured interviews, participatory observation, and narrative walking interviews.

### 4.1 Semi-structured interviews

For the main collection of empirical data, I have conducted four interviews with five representatives from three different farms using regenerative methods and one interview with two representatives from The Association of Regenerative Agriculture. The interviews were semi-structured, which is reminiscent of an everyday conversation but is characterized by having a special structure and a specific purpose (Brinkmann and Tanggaard 2010: 41). It is a planned but at the same time flexible interview that aims to collect nuanced descriptions of the interviewee’s world for the purpose of interpretation (Brinkmann and Kvale 2009: 48; 353). This structure allows the farmers to influence and affect the focus of the interview which can provide deeper and unexpected perspectives. Table 1. below lists the interviews conducted.

Interviews (6)			
Name	Organization	Role	Hours
Frederik	Godisgrønt	Farmer	1,5
Zoe	Brinkholm	Farmer	1,5
Nikolaj	Brinkholm	Farmer	1,5
Summer and Claus	Copenhagen Goatmilk	Farmer	1,5
Arendse	The Association of Regenerative Agriculture	Active member	1

Tabel 1. Overview of the conducted interviews.

## 4.2 Participatory observations including narrative walking interviews

Through participatory observation, I have engaged with the farmers and their regenerative practices at their respective farms to get a more intimate impression of how the farmers interact with their surrounding environment and how they practice the methods of regenerative agriculture. This method allows observing more hidden details, verbal and non-verbal, which might not appear through the conventional interview format (Tanggaard and Brinkmann 2010). Although the participatory observation I did can be classified as *active participation*, because I actively participated in their workflows, it is limited in terms of having contributed to my empirical data because the duration of the observations was 1-2 days. If I had been there for an extended period the unspoken details would be expressed to a much wider extent, which would have provided a more nuanced analysis and discussion of the research question (DeWalt *et al.* 1998). During the participatory observations, when moving from one task to another, I initiated casual conversations about their farms and regenerative practices which can be described as *narrative walking interviews* which aim to “*generate richer data because interviewees are prompted by meaning and connections to the surrounding environment and are less likely to try and give the ‘right’ answer. Indeed, it seems intuitively sensible for researchers to ask interviewees to talk about the places that they are interested in while they are in that place.*” (Evans and Jones 2011: 849). Thus, through these conversations, the farmers can break into asides and provide spontaneous glimpses into their world that might otherwise have been excluded in the conventional interview. Table 2. lists the participatory observations including narrative walking interviews carried out in the course of the research.

Participatory observations including narrative walking interview (4)				
Organization	Location	Content	Quotes from	Days
Godis Grønt	Lejre, Zealand, Denmark	Germinating seeds, putting insect nets on the fields	Christina, Frederik,	1
Brinkholm	Stevns, Zealand, Denmark	Germinating seeds, weeding	Zoe, Nikolaj	2
Copenhagen Goatmilk	Jystrup, Zealand, Denmark	Milking goats and putting up fences	Summer, Claus	1
Association of Regenerative Agriculture	Ringsted, Zealand, Denmark	Discussions of strategy and value set	Arendse, Anders, Sandra	2

Table 2. Overview of performed participatory observations including narrative walking interviews.

### **4.3 Comparative analysis**

Findings from the qualitative methods mentioned above constitute the empirical basis for this thesis. Tendencies can be identified in empirical data if two or more instances of a phenomenon have only one of several possible causal circumstances (Ragin 1987). In practice, this means that I engage with a comparative analysis method where statements and observations are being compared by similarities and written out as general tendencies.

## **5. Introduction to the case studies**

In order to collect empirical data about the regenerative agricultural movement in Denmark, I have visited three farms where I have engaged in their workflow and interviewed representatives from each farm. In addition, I have participated in one of the Association of Regenerative Agriculture's strategy meetings and interviewed active members. All the farms are located at Zeaand in Denmark and practice regenerative agricultural methods, and everyone except Copenhagen Goatmilk are members of the Association of Regenerative Agriculture. Throughout the thesis, I will refer to these farmers as *the farmers*. The reason I will not refer to them as *the regenerative farmers* is that the majority do not identify themselves as such. This is mainly because regenerative agricultural methods are not yet an official defined agricultural practice, and therefore some are worried if they can claim to be titled as such.

### **5.1 Copenhagen Goatmilk**

Copenhagen Goatmilk is animal husbandry and dairy founded by Summer and Claus in 2016 and is located in Jystrup. The animal husbandry consists of 75 goats grazing on 12 hectares of land, and the breed of goats is Danish Landrace which, as the name implies, is an original Danish breed. The couple refines a variety of products including cheeses, gelato, dulce de leche, goat meat, and soap. The products are sold within Denmark to restaurants, cheese merchants, specialty stores, markets, and their own farm shop.

## 5.2 Brinkholm

Brinkholm is an organic certified farm located at Stevns. Zoe and Nikolaj have run the farm since 2018, however, this year, Andelsgaarde<sup>3</sup> acquired the farm and is renting the farm to the couple. They are three full-time workers and a full-time trainee working at the farm during the summer season, and everyone lives at the farm with their families. They manage 35 hectares of land of which 1,5 hectares are a production of 70 varieties of vegetables, 21 hectares are field management, and the remaining area is left untouched. The vegetables are sold within Denmark to local customers, restaurants, markets, and from their own farm shop. Soon they will refine grain to flour in their newly constructed mill.

## 5.3 Godisgrønt

Godisgrønt is an organic certified farm that has existed since 2018 and is owned, founded, and run by Christina and Frederik. They are five full-time workers at the farm of which three are employed during the summer season. The farm is located in Lejre where they grow 60 different varieties of crops on 3 hectares of land and in a 600 square meter (non-heated) greenhouse. The people working at Godisgrønt do not live on the farm but rent the farmland from an ecological farmer. They sell their crops to local customers in the area and to restaurants in Denmark.

## 5.4 The Association of Regenerative Agriculture

The association was founded in 2019 in Denmark and is run by young farmers and activists who aim to work with and promote regenerative agricultural methods. According to the association, a regenerative practice means that “*the fertility of the soil is either maintained or improved, but never deteriorated*” (Regenerativ a). The purpose of the association is to bring society into harmony with the ecosystem of which humans and agriculture are part. They want a drastic transformation of Danish agriculture; from being a climate and environmental burden it must become an ecological and social benefit for society and nature. The road to such agriculture involves increasing biodiversity in the cultural landscape, carbon sequestration, micro-life enhancement in the soil, and animals on grass (Regenerativ b). The Association of Regenerative Agriculture in Denmark will be referred to as *the association* throughout the thesis.

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<sup>3</sup> *Andelsgaarde* is a Danish co-operative movement founded in 2018 with the goal to buy, rebuild, and lease farms to cultivate land regeneratively that reduce the climate and biodiversity crisis and produce more healthy food (Andelsgaarde).

## 6. Ethics and situatedness

Ethical standards entail a commitment to basic human rights of dignity and autonomy and are therefore crucial to all kinds of research (Hammersley & Atkinson 2010: 264). Therefore, before beginning the interviews and participatory observation, I received verbal consent from the interviewees to record and/or take notes. None of the informants wanted anonymity and all are therefore mentioned by name throughout the thesis. In fact, several of the participants made it clear that it was important for them to appear with their names when cited. In addition, I acknowledge my responsibility to minimize potential risk to the participants from their social environment due to the content of my study including physical, social, psychological, and economic harm. Further, it has been my deepest aim to show respect towards the people I am studying by being curious and open-minded in conversations, contributing what I can to the agricultural practice, and showing gratitude to them for having invited me into their everyday life. I have strived to minimize bias by reflecting and being aware of my positionality and situatedness. I reckon that humans often have ulterior motives that inspire us to study a certain phenomenon which can create expectations of what we want to achieve with the research. Therefore, I will shed light on my position and presumptions and accept if I have evidence that contradicts these. I have an urge to study and tell the story of regenerative farmers because I believe that cultivating and taking care of the land while producing nutritious food is one of the most important tasks for a sustainable and just transition of society. I am both fascinated by and thankful to the regenerative farmers who make it their life's work to protect and cultivate the land, so that local people can enjoy nutritious food today and in the future. I am aware that there is a risk of romanticizing this picture of practicing agriculture, considering the societal circumstances influencing the practice. However, coming from a small-scale organic agricultural family myself, I do know that it is hard work, and comes with a lot of obstacles, trying to create an agriculture that rebuilds the ecosystem. I have aimed to explore the way the farmers engage with their environment and simultaneously explore how the existing, hegemonic system might be able to assist the emergence of such worldviews and practices. This ambition is inspired by Arturo Escobar's comment that *"thinking about the effective redesign of institutions in this context becomes one of the most pressing cultural-political projects in which the academy can engage; at its best, it will do it by joining forces with on-the-ground struggles fighting for justice and the active acknowledgment of the value of all forms of life in the world"* (Escobar 2018: 217). This thesis is my attempt to do so.

## 7. Literature review

This literature review suggests a conceptual clarification of the notion of *regenerative agriculture* (RA) and shows how my study positions itself in relation to already existing research within this field. The concept of RA has received increasing attention worldwide as a method to restore and conserve natural resources while maintaining crop productivity (Olsson *et al.* 2022). However, a clear (scientific) definition is lacking, making it difficult for decision-makers, researchers, the agricultural sector, and the public to adopt and understand the practices, benefits, and challenges of RA.

Schreefel *et al.* have systematically assessed definitions of RA in 28 peer-reviewed articles to find convergence and divergence in the definition of the term (2020). Their findings show that RA focuses strongly on the environmental dimension of sustainability, which includes themes such as 1) enhancing and improving soil health, 2) alleviating climate change, 3) optimizing resource management, and 4) improving nutrient cycling and water quality and availability (Schreefel *et al.* 2020: 6). These environmental dimensions are both articulated by objectives (e.g. improvement of the soil quality) and activities (e.g. the use of cover-crops). They improve food security by contributing to provisioning (e.g. food, fiber, and feed), regulating (e.g. water purification, soil erosion, and climate regulation), and supporting (e.g. soil formation and nutrient cycling) (Ibid.). In addition, socio-economic dimensions of RA improving economic prosperity and human health have been investigated, which relates to aspects of cultural ecosystem services (Ibid.). However, this dimension currently relies on divergent objectives and lacks a general framework for implementation. Therefore, Schreefel *et al.* propose a provisional definition that defines RA as "*an approach to farming that uses soil conservation as the entry point to regenerate and contribute to multiple provisioning, regulating and supporting services, with the objective that this will enhance not only the environment but also the social and economic dimensions of sustainable food production*" (2020: 6). El-Sayed and Cloutier (2020) further conceptualize a regenerative food system by highlighting the importance of place-based knowledge and local attunement based on research amongst small-scale indigenous producers. This attunement is established through strong cooperative relations not just with people but with all of creation, which in turn supports our foods. Therefore, relations must be reciprocal between nonhumans and the cosmos (Ibid.: 39-40). Olsson *et al.* further suggest that rather than immediately articulating a concrete definition, RA must be understood as an adaptive farming process that combines climate-resilient, science-based, and agroecology-focused practices with the community knowledge, history, and culture of each particular agro-climate zone (2022: 29).

Therefore, they propose solutions and standards adapted and shaped for the specific need of the region where they will be implemented (Ibid.). Newton *et al.* (2020) stress that whether and how RA is defined has consequences on how this form of food production is perceived by a variety of stakeholders, including producers, policy-makers, corporations, and consumers. Therefore, they suggest *"the need for contextual clarity and precision when using this term"* and suggest that authors explain their reasons for intentionally embracing ambiguity or flexibility when using the term (Ibid.: 6).

There is a general agreement amongst the farmers I have spoken with as to what regenerative farming constitutes. The practices that appear to be universal are having a high diversity of plant species, minimization or elimination of tillage (soil disturbance), and avoiding bare soil e.g. by using cover crops, with the fundamental aim of improving soil health, particularly increasing organic matter in the soil (soil carbon) and soil biology (particularly microbiology). However, RA is more than a mere collection of farm practices, as it is also a social movement with the objectives to dramatically change the industrial farming paradigm, to repair the damage done to planetary systems by mainstream agriculture on the farm, at the planetary level, and in the social spheres. It is not within the scope of my research to identify a rigid definition of RA amongst the farmers I have spoken to, but rather to investigate how these farmers, who consider themselves as a part of the regenerative movement, interact with their environment and further explore how this practice relates to the capitalistic system. Therefore, the understanding of RA will depart from the description provided by the farmers and members of the Regenerative Agricultural Association on which the analysis is based. In a Ph.D. thesis concerning regenerative farmers at Sogn Jord- & Hagebruksskule in Norway, Sofie Ahl states that the main focus is not to *"pass judgment on the potential of regenerative agriculture to "solve" the climate crisis or the potential of this form of practice to improve the lives of young people"* but rather to *"portray what it means for the regenerative farmers to wake up to the (red. ecological) crisis"* (2021: 10-11). Neither will I pass judgment on whether or not the farmers I engage with and observe hold the solution for the climate crises, but rather explore if the capitalistic system and worldview can endorse the practices of RA based on the assumption that a regeneration of the soil is a necessary part of solving the climate crisis.



## **8. Analysis and discussion**

Human beings cannot survive without engaging with their environment, and relational epistemology is an inevitable consequence of this fact (Milton 2002: 50). The development of knowledge and experiences is an intensely private process because every human being's perceptual experience is unique (Ibid.: 49). This makes it difficult to make broad generalizations about how the farmers practicing regenerative agriculture perceive their environment. Nevertheless, in the following chapters, I examine similarities among the farmers in an attempt to explore parallels in the farmers' relationship with their surrounding environment. I do so by focusing on the farmers' way of picking up information from their environment and their emotional commitment to the environment. In addition, I analyze and discuss how these ways of experiencing and engaging with the environment relate to the capitalistic ideology and imperatives of efficiency, rationality, and profit. The eight principles of deep ecology will be elaborated, and serve as an overall theoretical framework, throughout this analysis and discussion.

### **8.1 Knowing through experience**

*"Sometimes the more you know the less you see"* (Ingold 2015: 134).

In this chapter, I explore the farmers' interaction with the environment as a contribution to the production of knowledge. Experience can be described as the impact the environment has on the individual, and thus by focusing on experience, our attention is directed to the relationship between the individual and their environment (Brewer 1998: 205). Ingold points out, that it is within this relationship that the development of an individual, including the development of their knowledge, takes place (2015). Constructivism tends to deny the natural environment in knowledge production by assuming that the only experience relevant to this process is a social experience. However, Milton argues that to assume that learning is always socially mediated is to ignore that human beings are as capable as animals of picking up information directly from their environment (2002: 41).

#### **8.1.1 Picking up information**

The first two principles of deep ecology state that *"all living beings have intrinsic value"* which emphasizes that *"the richness and diversity of life has intrinsic value"* (Naess 2008: 28). These principles indicate that all life, non-human and human, has value in itself regardless of its instrumental utility to human needs, and that richness and diversity of life help the realization of this intrinsic value. In continuation of this, the human-in-environment image is rejected in favor of a relational

*total-field image* where "organisms exist as knots in the biospherical net or field of intrinsic relations" (Naess 1973: 95). This means that the intrinsic relation between two things, or organisms, belongs to the very definition of the basic constitutions of the two. A way of acknowledging the intrinsic value of, and our interconnectedness with, all living beings is picking up the information provided by them and incorporating this information into our interaction with the environment. A central assumption within the work on knowledge production in human-environmental relationships is that humans gain knowledge from their environment through perception, manifested in an *information pickup* (Gibson 1979: 239; Neisser 1976: 52).

All the farmers articulate this process of picking up information from their environment and express it as something that cannot be learned through cognition alone. Arendse, an active member of the association, states this by emphasizing that "*there are many things that you can't read in books, which is becoming familiar with the landscape you are in. That particular landscape is not described in the books. I think what often goes wrong in the agricultural practices in Denmark is that you think you can farm according to the books, and then do the same at every farm, but you have not learned to read the landscape and its specific needs, and thereby learned to cooperate with the life and the processes that are there.*" This worldview contrast with the hegemonic, extinction-oriented practice described as *plantation science* striving for control of human and nonhuman landscapes dominating the capitalistic worldview (Tsing 2010: 201). These two different approaches to the environment that Arendse expresses above are what Ingold describes as *thinking through making* and *making through thinking*. The dominating practice in capitalistic cultures is the latter, where our creations and interventions are based upon an abstract idea starting in the cognitive mind independently of the surrounding environment. Thinking through making, on the other hand, is interventions and ideas informed, guided, and determined by the surrounding environment (Ingold 2015). Ingold describes these two approaches as two different kinds of education and ways of gaining knowledge. On one hand, there is *induction* drawing the learner into the rules and representations of a culture, and on the other hand, *ex-duction* drawing out the learner into the world, as it is given to experience (Ingold 2015: 134-45). The modern construction of knowledge, which is dominated by induction and making through thinking, is based on the belief that an environment only can be known through its representation (Masschelin 2010: 276). Through this approach, we can no longer open up to the environment, nor it to us. Through education in the sense of ex-duction, where we are exposed to and engage with our surrounding environment, we can escape these assumptions. As Arendse mentioned in the previous quote, something is being represented through the book, but it is not guaranteed that

this representation applies to the land in her care. She shares this belief with the other farmers, and Nikolaj from Brinkholm describes that working with the soil is about knowing and sensing it and that this *“can only be learned through experience. You can’t just read an analysis or a research result. You simply need to know your land and your environment. It’s about knowing every corner of your field.”* Additionally, Claus from Copenhagen Goatmilk believes that conventional farming largely operates according to a script that just needs to be implemented, stating that *“someone has already thought for you.”* When he works with the regenerative methods, he cannot simply implement an already executed script because *“what is regenerative in this area is different from other places, and therefore you can’t use a theory on the landscape 1-1.”* Therefore, he must practice thinking through making by picking up information about his surrounding environment in order to *know* what the environment needs to regenerate.

### **8.1.2 Embodiment of the ecological self**

Every farmer that I have talked to acknowledges the value of the non-human entities in their surrounding environment by picking up information from these entities and incorporating these into their practices. However, the value of the environment was hardly ever articulated without its relation to the usefulness of their agricultural practice. Summer from Copenhagen Goatmilk articulates this by stating that *“when the goats are well, we are well too. We help one another. They provide me with milk which I can make into a product and sell.”* And her partner Claus agreed by stating that *“it’s the holistic mindset. Holistic means that you consider the whole. You do something good for the environment, the animal, the product, the economy, and yourself.”* The regenerative farmers are aware that they are very much dependent on the well-being of other species and describe their value as being characterized by this dependence and collaboration. I wondered if the farmers could be claimed to express the first two principles of deep ecology when taking care of the well-being of non-human species depends on their properties of creating fertile soil or making business flourish. However, Naess stresses that extensive moralization within environmental movements gives a false impression that humans are primarily asked to sacrifice, show more concern, and have better morals to create a better world (Talukder 2016). Rather, altruism and total self-sacrifice are not necessary to cultivate an ecocentric and deep ecological practice if the individuals embody an *ecological self*. The ecological self is morally neutral and identifies and collaborates with all living things and implies a worldview where everything is part of everything else (Naess 1989). This worldview contradicts the mechanistic perspective of industrial society, which can be described as a culture of *separated selves* (Ibid.). When the farmers have a deeper sense of who they are by the cultivation of an ecological self,

a sense of inter-beingness, altruism can be understood as taking care of ourselves too, because all is one. Zoe from Brinkholm expresses this perception by stating that *“the regenerative method reminds me that I am a part of nature. I cannot harm it. If I harm nature, I harm myself,”* and her partner Nikolaj endorses this view, stating that *“everything is interconnected in cycles, there is nothing separate, there is nothing that exists for itself. Everything exists together. I am constantly reminded of that during the season. I am reminded of life and death. For me, cohesion is where things are connected. Although it seems separate that the stream is not the tree, at some point the tree will absorb the water of the stream and uses it in its growth.”* This process of understanding our ecological self is referred to as *self-realization*, where individuals perceive themselves as more than a narrow ego and start to realize the fundamental interconnectedness with everything in the natural environment. The process of self-realization amongst the regenerative farmers is expressed in the practical methods of regenerative agriculture where symbiosis and connection with everything are at the center. Arendse emphasizes this stating that *“it’s very satisfying to work with something that makes life grow. As a human being, you are a positive driving force in the world, where you collaborate with plants, animals, and mechanisms, where you are not elevated above all, but a part of the system, and in that collaboration, biodiversity is flourishing.”* At the same time, the farmers are very aware that they do interfere with their environment by making a cultural imprint; they simply aim for this imprint to regenerate the soil and ecosystem instead of depleting it. Nikolaj expresses this by stating that they *“try to imitate what we see in nature, but we do know that it’s culture when we make a field to grow crops.”* Human beings can only achieve this ecological consciousness of self through the process of identification, which will be elaborated on in the next chapter concerning the ecology of emotions. Once identified with the natural environment, the individual can feel the ecological wholeness, the interconnectedness of plants, animals, and landscapes.

### **8.1.3 Affordances and anticipations**

According to Gibson, the information picked up from the environment takes the form of *affordances* which can be described as possibilities that the environment holds for the individual (Gibson 1979: 127). These affordances open up to us when we have certain knowledge or *anticipations* of what is possible within the environment. When the farmers embody an ecological self this feeling of self will affect which possibilities they experience in their surrounding environment. Claus tells that when the goats first arrived, they stood in the stable for two months and got very stressed and infected with worms. Then they decided to bring the goats outside all year round, only bringing them inside when they are being milked or it rains heavily, which helped the animals get rid of the infection and their

stressful state. When I asked how they found out that the goats needed to be outside, both Claus and Summer replied *“from themselves”* and followed up by stating that it is their philosophy that *“the closer the animals are to their natural environment, the better it is for them, and thus for our production as well.”* Thus, they have the anticipation that the goats’ natural environment will be rewarding to both the animals and themselves, which opens up affordances in the act of letting them outside. This information is provided by the animals when they show symptoms of stress and infection, and instead of muting this information by e.g., treating them with medicine to cure the worm infection, Claus and Summer pick up the information and adapt it to their practices. Neisser believed that this perception is *“a matter of discovering what the environment is really like”* and that this discovery happens when information is being picked up from the environment rather than imposing meaning upon it (Neisser 1976: 9). Anticipations are also shaped by the farmers’ theoretical foundation, which they have acquired through various agricultural schools, YouTube videos, books, and knowledge verbally exchanged with other farmers. This theoretical foundation again creates certain anticipations which direct the farmers’ attention toward specific affordances provided by the environment. This mechanism is expressed by Christina from Godisgrønt when she says that *“our knowledge comes from our theoretical foundation, which we have from the agricultural school and internships, but we also learn through experiments and mistakes. We observe what is happening. Observe - adjust - observe - adjust - observe. That process strengthens my intuition.”* Although our anticipations are constructed mentally, our surrounding environment and the information received from it are not (Milton 2002: 42). The anticipations are discovered through perceptual engagement with our surroundings, which is the condition in which humans and all other perceiving non-humans normally live and engage (Ingold 1995).

As human beings pick up information from the surrounding environment, simultaneously we pick up information about ourselves as physical bodies and agents within this environment leading us to the next chapter on the significance of emotions when interacting with the environment (Milton 2002: 67).

## 8.2 Ecology of emotion

Rather than suggesting that the human understanding of the world is solely culturally shaped, Milton argues that it is shaped by direct experience with the environment in which emotion is a basic ecological mechanism that connects human beings to their surrounding environment and shapes motivation for action (Milton 2002). Before I go deeper into this chapter concerning the ecology of emotions, I will conceptualize how emotions and feelings differ from one another and how these concepts are to be understood in this context. When humans interact with the environment and its components, it induces emotions (Ibid.: 149). *Emotions* have been described as the bodily changes occurring whereas *feelings* refer to the subjective experience of those changes (Damasio 1999). Following Damasio, Milton operates with the understanding of emotion as a bodily response described as "*changes in the body (including the brain) of an organism which are induced by environmental or internal stimuli*" (2002: 149). These bodily changes arise outside the consciousness and are perceived as feelings of e.g., interest, fear, enjoyment (Ibid.: 91).

### 8.2.1 Person-based identification

The third principle of deep ecology accentuates that "*except to satisfy vital needs, humans do not have the right to reduce the diversity of the ecosystems*" (Naess 2008: 28). This requires deeply entrenched respect and veneration for non-human beings and entails an intuitively clear and obvious value axiom that stresses the equal right to live and flourish (Naess 1973: 1-2). Milton argues that *person-based identification* plays a significant role in humans' respect for and commitment to protecting their surrounding environment because it generates empathy for non-human beings which motivates concern for their welfare and rights (2002: 82). Person-based identification should not be understood as human characteristics experienced in non-human beings (i.e., anthropomorphism), but rather it depends on *personal involvement* with the non-human beings. People perceive person-based identification when the non-human entities relate actively to ourselves, i.e., when the environment *does things to us*; when it makes crops grow or destroys them (Ibid.). Conversely, we also relate to the environment when it responds to what we as humans *do to it*; ecosystems change, soil degrades or becomes fertile when we interact with it. Arendse expresses how she experiences the environment responding to her when she practices regenerative methods, stating that "*you are a positive driving force in the world, which makes things grow, flourish, and restore.*" Similarly, Zoe explains how she noticed the environment responding to her when she and her partner started applying regenerative methods in the fields: "*When we came here the field was like a desert planet. The structure of the soil was dry and lumpy. Now, we have worked on the soil for five years using cover crops and other*

*methods and it's just full of stuff, insects, and worms. There is movement and roots. It is alive.*" She further elaborates how this response from the environment *"allows us to grow amazing vegetables full of life force."* These experiences apply to all the farmers I have talked to and leave the impression that they cultivate person-based identification and are very aware of how they affect the non-human beings in their environment, and how these respond to this interaction.

### **8.2.2 Live and let live**

Naess argues that a restriction of respect and veneration only in relation towards human beings is anthropocentrism, which has detrimental effects on the life quality of humans themselves because a part of our life quality depends upon the deep pleasure and satisfaction we receive from close partnerships with other forms of life (1973: 2). The farmers express this sense of pleasure during the regenerative practices making soil, plants, and animals thrive. Summer describes this by stating that *"we do not consider the animals as slaves for us to make money. They are a part of us, they help us, and we help them. We are attentive to the animals and notice when an animal isn't well. When we keep the farm small and we know every goat, there is more soul involved in the practice."* The attempt to ignore our dependence on other forms of life, and to establish a master-slave role, has contributed to the alienation of humans from themselves and continues to do so (Ibid.). Thus, *"the deep ecological movement emphasizes principles of diversity and symbiosis"* (Ibid.). Following this, the notion of *survival of the fittest*, coined by engineer Herbert Spencer in 1864, inspired by naturalist Charles Darwin's theory of natural selection, should be interpreted in the sense of the ability to coexist and cooperate in complex relationships, rather than the ability to suppress, exploit, and kill (Spencer 1864). Evolutionary biologist Edward O. Wilson has reevaluated the assumption that the primary force regulating evolution is intense competition (1984). He found that competition makes sense only when we consider the unit of evolution to be the individual, but when the focus shifts to the level of a group, cooperation is a better model, not only for surviving but for thriving (Ibid.). Author Richard Power expresses that there is a *"symbiosis at every single level of living things, and you cannot compete in a zero-sum game with creatures upon whom your existence depends"* (Dixon 2020). And yet, most of the modern agricultural systems, and world economy, operate on the principle of competition. Claus recall an incident at their farm that demonstrates how they practice collaborative symbiosis: *"At one point the goats had fleas, so I was told I had to use flea repellent to make it go away, so I did, but it resulted in the flies transporting the flea repellent to the birds, which meant that the bird population declined and the number of flies increased heavily. We found out that if the goats were exposed to more sunlight, then the UV rays would reduce the number of lice. That way, we*

*helped rebalance the ecosystem.*” In continuation of this, Naess stresses that *live and let live* is a more powerful ecological principle than *either you or I*, because the latter tends to create destruction within communities of the same species and reduce the diversity of forms of life (1973: 2). Even though the farmers might acknowledge the intrinsic value of weeds, pests, and predators, they are unlikely to feel inclined to protect those species. However, Naess emphasizes that *“any realistic praxis necessitates some killing, exploitation, and suppression”* (Ibid.: 1). Thus, the identification with the non-human does not guarantee that entities in the environment will never be destroyed, but the identification will limit the destruction to what is necessary because all destruction will be deeply felt.

### **8.2.3 Experiencing biophilia**

Cultivating person-based identification can regenerate unpleasant feelings, because the damage to the environment is experienced as a personal loss which can provoke sadness and anger (Milton 2002: 57). These unpleasant feelings I observed amongst the farmers, e.g., when Frederik from Godisgrønt expressed that *“after we use a cutter to move the soil, earthworms are lying in halves on the ground. It was not a nice feeling at all, it almost hurts physically in the body.”* This emotion, experienced as physical sensations in the body leading to unpleasant feelings, can be argued to be due to his person-based identification with the micro-life in the soil. According to regenerative methods, micro-life must be disturbed as little as possible, because it helps create a fertile and better structure of the soil. Thus, Frederik is aware that the environment is responding to his cutting by degrading the fertility of the soil which affects the yield and restoration of the ecosystem. This awareness and presence of unpleasant feelings, stemming from the person-based identification, can be argued to contribute to his intention to gradually become more regenerative. The person-based identifications forming emotions and feelings can be argued to express love and empathy that the farmers carry for their environment and can be described as *biophilia* referring to an *“emotional affiliation between human beings and other organisms”* (Wilson 1984: 31). This emotional affiliation can be expressed by feelings ranging from peacefulness to fear-driven anxiety, from awe to indifference, from attraction to aversion. The notion of biophilia suggests that the presence of a diverse environment is important for the emotional health of human beings (Heerwagen and Orians 1993: 168). Therefore, the destruction of diversity in our natural environment deprives us of various opportunities for emotional fulfillment (Nabhan and St. Antonie 1993). Zoe emphasizes this emotional fulfillment when experiencing and mirroring the seasons, stating that *“since we moved here to Brinkholm, we became more isolated, but I don’t feel isolated, because here I’m a part of the cycle. Now it’s spring, and*



*everything is sprouting and popping up, and I feel the same energy rise in my body. For me, it's no longer hard to overcome the long, dark winter. The trees are naked, the animals are under the soil, so I also go to that state because it's my nature. I realize that once we start to question: why am I like this? Why am I feeling so heavy in the wintertime? When we put high-performance expectations for ourselves, then the problem starts. But if you just feel yourself being heavy like the outside, then it is not so problematic. Just be like winter.*" Similarly, Summer expresses that the well-being of the goats has a direct impact on her well-being, explaining that *"when the animals are well, we are well too because we are family in a way."* Even though the farmers do not earn a high salary, and work long hours, it is my impression that it induces well-being and a sense of purpose to work with the soil and create more life and diversity in their environment. This is not to romanticize their life. It is hard work. Rather, it is to exemplify how the well-being of the environment has a direct impact on the well-being of the farmers. The farmers experience that they are a part of their surrounding environment, and when the non-human beings are flourishing so are they.

#### **8.2.4 Emotion motivating action**

Milton argues that emotions are the prime motivator of human activity and that anything has the potential to induce emotions that generate feelings (Milton 2002: 4). Human beings are conscious beings, who experience these feelings and are aware of them, and thus can use these feelings to guide action (ibid.: 149). Feelings are motivated by identifying what matters the most to us and what we hold most sacred, and what we hold most sacred informs our actions in the world, whether it is eagerness for power or an urge to protect the environment (Ibid.: 150). Thus, this sense of sacredness driving action is fundamentally emotional and therefore *"without emotion there is no commitment, no motivation, no action"* (Ibid.). However, anthropologist Cecilie Rubow emphasizes that enjoying nature and having a close relationship with it is not equivalent to a sense of responsibility and commitment, stating that *"love for nature and care for the environment are not necessarily woven into each other"* and thus *"people's contemporary enactments of nature do not (necessarily) translate into effective forms of responsibility"* (2022: 18-19). Therefore, to engage and enjoy the surrounding environment, e.g., being an enthusiastic bird watcher or living by and enjoying the shore, does not generate protection in itself. What motivates humans to protect the environment *"depends on the context in which they learn about the world, the kinds of personal experiences they have, the ways in which they engage with their fellow human beings and with their non-human surroundings"* (Milton 2002: 109). Frederik emphasizes that he felt concern and empathy towards the environment and climate situation before he became a farmer while living in Copenhagen. However, he emphasizes

that this commitment was *"less consequence focused. It's so easy when you go to the supermarket, to just choose the cheapest product"*. The difference between now, when he is a farmer, and then is that he has *"strong images, relationships, and knowledge. Now I know and have experienced how the environment is being regenerated, so I feel a stronger commitment"*. This indicates that Frederik's level of emotional commitment increased when he moved from Copenhagen to Lejre, when he was exposed to the natural environment, engaging with the cycle of growing vegetables, and how the agricultural practice affected the ecosystem. He and the other farmers experience how the environment responds to their behavior directly and continuously every day, which cultivates a stronger sense of person-identification towards the environment, creating feelings of empathy that can lead to protection of the environment. Due to the person-identification of the environment, the farmers feel a sense of *purposefulness* when protecting it. Nikolaj states that purposefulness arises when he senses *"cohesion and connection, [to] make the earth healthy, cultivate nutritious food, create meaningful jobs"*. Thus, the feeling is motivating action leading to change.

### **8.2.5 The Cartesian split**

The dichotomy between *rationality* and *emotion* is often said to characterize modern culture, deriving from Descartes' distinction between mind and body (Winter 1996: 34). Emotions are seen as beliefs and properties of the body whereas rationality is seen as science and property of the mind (Milton 2002: 21). When it comes to the protection of the environment, Milton argues that there is not a consistent opposition between emotion and rationality, but an ongoing debate about the role of emotion in decision-making (Ibid.: 24). The Cartesian split between body and mind, emotion and rationality, thought and feeling has been challenged by neurological evidence which suggests that emotion is essential to decision-making (Damasio 1994). This is because rationality is itself a feeling which is emotionally constituted, because what makes a thought rational is the direction provided by emotion (Milton 2002). Thus, it can be argued that the opposition between emotion and rationality is created to protect particular ideologies and interests (Ibid.: 150). This split and maintenance of particular interests are experienced by the farmers in their daily regenerative practices. Frederik believes that it is meaningful to take time to build a relationship with and learn from the environment. However he stresses that *"it requires a surplus of energy. After all, we are also part of the capitalist system. If we weren't subject to it, then we could give ourselves more time, allowing ourselves to go more in-depth with the relation to the soil. But I'm insanely busy all the time, and no matter how I move things around in the budget, there is no big profit, which we need to pay reasonable wages."* Thus, the time for nourishing the relationship with the environment is limited due to the capitalist

market forces. Arendse explains how she experiences the split between rationality and emotion in agricultural practices, arguing that *“what often goes wrong in the way we run agriculture is that you think you can farm according to the books, no matter where you are, and then you do a bit of the same thing, on all farms. But one has not learned to read the landscape, and the specific needs, and thereby learned to cooperate with life and the processes that are present. You can’t learn that at the university, you have to learn it by using your heart, maybe a little clichéd, instead of the brain.”* Accusations of emotionality can be argued to be used as instruments of power to put down opponents, e.g., when people's engagement in non-market interests challenges the operation of the market. Milton emphasizes that *“the market systematically destroys whatever it cannot encompass. This includes not only nature and natural things but also health, family, friendship, spirituality, knowledge, and truth.”* Failure to put the things people hold most sacred at the center of public decision-making makes societies undemocratic (Ibid.: 150). Therefore, Milton suggests that a *“full recognition of the emotional basis of all our actions might help to broaden the parameters of public discourse and give non-market interests a chance of being heard and respected”* (Ibid.: 151).

### **8.2.6 Why emotions matter**

The fact that emotional attachment motivates action disproves the opposition between emotion and rationality in capitalist culture and exposes this distinction as a myth. It can be argued that the goal of this myth is to support a capitalistic, neoliberal market economy that destroys the natural environment and excludes emotional attachments from public decision-making that might support environmental ways of living (Milton 2002). As stated previously in this chapter, emotions matter for our commitment to, and protection of, our surrounding environment. By interacting with non-human entities in the environment and creating person-based identification, we can develop a sense of empathy for the environment that enables us to protect it. However, not all interaction and pleasant feelings about the natural environment will lead to the protection of it. It matters *how* we interact with our environment, and *what* environment we are surrounded by. I argue that the farmers’ interaction with their environment generates the necessary response to create person-based identifications with non-human entities. This is because they interact with a natural environment daily and because their environment forms the foundation of their basis of existence, making them more attentive to it. Although I observed that the farmers’ practices with the environment form the basis of an emotional commitment to the land, I also argue that the modern distinction between rationality and emotion, as well as the neoliberal capitalist market system, make it difficult to maintain this connection. If the established economic system is to survive, human beings have no choice but to treat the environment

and non-human beings as mere resources to some extent (Ibid.: 53). By depersonalizing the environment and its entities, science removes the sense of responsibility towards it, and Milton emphasizes that *"instead of taking from persons, we are taking from impersonal things and substances, so the need for cultural conventions to discharge that responsibility disappears"* (Ibid.). In this manner, science serves capitalism by making exploitation of the environment acceptable. Thus, modernist ways of knowing, grounded in science and sustained by economics, are *"deeply embedded in the experience of everyday life"* (Ingold 1999: 91), which creates a tension between personal and impersonal understandings of the environment in contemporary and capitalist society.

I suggest that this tension creates dilemmas for the regenerative farmers, and shapes the practices and understandings of regenerative farming, which will be elaborated on in the next chapter concerning technology, economy, and a sense of urgency.

### **8.3 Technology, economy, and a sense of urgency**

The fourth and fifth principles of deep ecology underline that the extent and nature of current human interference in the ecosystem are not sustainable (Naess 2008: 28). In consequence with this, the sixth and seventh principles propose that deep ecologists must actively and consciously contribute to structural and ideological change, emphasizing that "*decisive improvement requires considerable changes: social, economic, technological, and ideological*" (Ibid.). In this chapter, I particularly discuss how the hegemonic economic system influences the use of technology and how the use of technology shapes the farmers' relationship with their environment and has social and environmental impacts.

It is part of human nature, the personal and cultural unfolding of human beings, to search for technical improvement (Naess 1989: 94). Nevertheless, technological change fundamentally influences the relationship between humans and their environment. Farming and the use of agricultural technology are no exception. Heidegger argues that technology cannot be separated from human values, and claims that technology is not just a thing, it is a matter of how humans relate to their environment (Heidegger 1977). Thus, different technologies are, in effect, different ways of relating to reality. Modern technologies, such as machines, are expedient ways of domesticating the environment since the use of machines objectifies entities in the environment and turns them into a resource that can be quantified, calculated, and rationed. Consequently, modern humans tend not to see the environment as a phenomenon they are part of, but rather to view it as a natural resource for everyday business (Heidegger 1977: 15). Emerging trends in the literature on technology classify technologies as either *hard* or *soft* (Botchie *et al.* 2018: 216). Hard technologies can be described as tangible physical technologies with a reduced need for human interference that make things easier and faster by reducing the number of choices for the users (Ibid.). In that sense, hard technology structures the spaces in which our opportunities for creativity and interaction with the environment become limited. Soft technologies, on the contrary, are flexible and empower creativity as it constitutes the experience, knowledge, and skills associated with the used technologies (Ibid.). In addition, the perspective of deep ecology suggests that technologies manifest the ideals of a worldview. This means that the use of technology is shaped by the dominating beliefs in society, including hegemonic ideas of agricultural practices (Naess 1989: 95). By differentiating between hard and soft technology, and putting them into a cultural and economic context, I aim at examining how the use of technology influences farmers' relationships with their environment and which environmental and social impacts the technologies cause.

### 8.3.1 Technology allowing cohesion

When rearing goats, Summer and Claus consciously use a limited number of technologies; however, a central machine in their workflow is a milking machine. The machine is small, movable, and hand-held, which enables the couple to find creative solutions for the daily milking routine. Claus explains that he has made countless changes in the barn so that milking is more gentle, quicker, and enables better working positions. Hence, this technology is being adapted to the need of animals and the environment, instead of the other way around, allowing autonomy and flexibility. At Brinkholm and Godisgrønt the use of tractors, seed drills, bed-formers, and the like are part of the daily workflow, and Nikolaj describes himself as a *"big supporter of technological development."* However, he underlines that *"there's a limit. I am not a fan of all-encompassing robot technology."* Incorporating this kind of hard, self-propelled technology reduces contact with the environment in which the technique operates and the commitment to the environment is reduced in favor of the commitment to the technology (Naess 1989: 103). Thus, apathy or inattention toward the environment increases, and awareness of the changes in the environment caused by technology decreases (Ibid.). Zoe is aware of the fact that empathy and attention increase when engaging with the soil, stating that *"I put my hands in the soil, and the black nails remind me to choose consciously, to regenerate, to give something back to nature."* Similarly, Nikolaj recognizes the purpose of using soft technologies expressing that *"you get a lot of information by touching and smelling the ground, digging a hole and observing. This kind of sensing a machine can't do."* Further, he emphasizes that cohesion with the surrounding environment is essential to the regenerative practice, and that *"technology must not step in and replace that cohesion."* Thus, the farmers favor and use technology that allows them to engage with and learn from their environment. This part of soft technology can also be described as *tacit knowledge* gained from the interaction with the environment, which is difficult to gain in a formal or standardized manner as it requires embodied experience (Botchie *et al.* 2018: 216).

Even though the farmers favor the use of soft technologies to nurture contact with their environment, they feel a strong sense of urgency about restoring the soil and thus upscaling the regenerative practices to which they view technology as an important contributor.

### 8.3.2 Urgent upscaling

According to Naess, an ecocentric and deep ecological approach entails *"emphasis on smallness of scale and hence community identity in settlement, work and leisure"* (Naess 1989: 16). Within the UN regulations, a farm is considered small when it is under 10 hectares (European Commission 2021). Most farmers practicing regenerative methods in Denmark can be categorized as small-scale

farmers including Godisgrønt and Copenhagen Goatmilk. Although Brinkholm, with its 25 hectares, cannot be categorized as such, it is a relatively small farm compared to the average farm in Denmark, which comprises 200 hectares (Nielsen 2020). Additionally, Zoe has an awareness that it is not the goal to *"become bigger and bigger and bigger"* but rather to *"go deeper and deeper and deeper."* What drives her is not profit, efficiency, and quantity, but rather the quality and well-being of the environment and community. However, there is a general urge among the farmers and within the association to disseminate and upscale the regenerative methods within the agricultural practice in Denmark. Nikolaj states that *"I hope I can influence my colleagues who do not use regenerative methods"* because, as Frederik emphasizes, *"if the big farm owners don't see the trick in this, then nothing will change."* The RA farmers and their association focus on *results* rather than *methods* to inspire and get the conventional farmers on board with the regenerative agenda. As expressed by Arendse: *"What appeals to me about regenerative farming is that it is results-based. It's not so much about what methods you use as long as you manage to make the ecosystem better than it was before."* Thus, the focus on results and action is present among the farmers as part of the upscaling process. Frederik stresses that he has the urge to deal with the human species crossing the planetary boundaries by stating that *"we can't just wait for a collapse. I believe that there will be a collapse of the ecological, economic, and social system in a foreseeable future"* and Nikolaj votes affirmatively: *"Forecasts indicate that we will no longer have fertile soil in about 50 years. Therefore, we must cultivate fertile land for future generations."* In these statements, there is a *sense of urgency* that drives the desire to get every farmer in Denmark on board with the regenerative agenda. Therefore, the regenerative farmers and the association are willing to stay open and curious about *any* method, including various technologies, if the method or technology regenerates the soil and ecosystem. Their intention is not to practice agriculture through dogmatic methods as seen within the movement for permaculture, which is an agricultural practice with a prefixed set of methods. Arendse believes that permaculture is the ultimate ecocentric agricultural practice, but because it is such a complicated understanding of the ecosystem, she argues that it is too complex and idealistic to contain the potential for great change and might counteract the urgent need for change within agriculture. She emphasizes that *"there is a need for us to compromise. There is a need for a serious alternative offered to the big farmers who own most of the land, who need methods to improve the condition of the soil today."* However, when upscaling a practice by incorporating new technology there is a risk of promoting mass production, as elaborated in the next section.

### 8.3.3 Mass production or production by the masses?

Another way of framing soft and hard technologies is expressed in Schumacher's (1973) distinction between *mass production* and *production by the masses*. The system of mass production (hard technology), based on high energy-input dependency, high capital intensity, and human labor-saving technology, presupposes that you have already accumulated capital because large investments are needed to drive this form of technology (Ibid.). In contrast, production by the masses (soft technology) makes use of human knowledge and experience, enabling decentralization, is gentle in its use of scarce resources, and is designed to serve humans and non-human beings instead of making them servants of the machines and the profit-driven market (Ibid.). Schumacher operates with the concept of *intermediate technology*, which denotes a technology that is greatly superior to purely manual technology, but at the same time much simpler, cheaper, and freer than high technology (Ibid.). This kind of technology is described as self-help technology or democratic technology, as the majority can access it and it is thus not reserved for those already rich and powerful (Ibid.). The technological methods the RA farmers currently use can be categorized as intermediate technology to some extent because their machines allow self-expression and enable them to establish a decentralized production that is largely rooted in the local economy and input. However, even though their technology is relatively inexpensive, Godisgrønt has the capital funds to buy the technology and Brinkholm has the financial means due to a favorable lease of the land. It can thus be debated whether their use of technology can be described as intermediate, as it is not accessible to the majority.

Additionally, if the farmers and their association seek an upscaling process where there are no restrictions regarding the size of the farms or technological solutions, there is a risk that regenerative agriculture will fall under the category of mass production. Sofie Ahl's Ph.D. dissertation concerning regenerative farmers at the agricultural school Norwegian Sogn Jord- & Hagebruksskule argues that *"the regenerative farmers represent a break with the idea of growth, which has shaped modernity, and which still influences our way of looking - for example when we imagine future technologies inventions as a form of salvation from global warming"* (Ahl 2021: 171). Similar to this finding, my observation shows that regenerative farmers do not solely focus on a *technological fix*. However, I observed a nuanced technological reality where the farmers still believe that future technologies are a fundamental part of regenerative development. This raises the question as to whether the level of softness or hardness of these technologies is of concern to the regenerative farmers, and, more importantly, if they end up inadvertently contributing to mass production instead of production by the masses. In addition, the Norwegian regenerative agricultural school is not compelled to use



technologies, because they do not, like the farmers, sustain themselves from the profits of production and can therefore practice an agriculture that is more idealistic. The next section will explore the invisible cost of hard technology and mass production.

#### **8.3.4 The invisible cost**

In line with the ideals of a soft technological practice, it is essential to reflect on the raw materials that are unavoidably processed when producing and using technology and how this creates pollution and other damage directly and indirectly (Naess 1989: 95). The vast majority of the damage caused by the use and production of machines occurs indirectly; when materials used for the machines are extracted, ruining ecosystems when the machines are produced with poor working conditions and low wages, when diesel, oil, and gas are extracted to propel the operation of the machines. This dynamic can be viewed as *time-space appropriation*, where the rationale of industrial technology is to save time (labor) and space (land). However, world-system analysis reveals that this is achieved at the expense of human time and natural space elsewhere in the world (Hornborg 2011: 20). Affected by the technologies developed in the twentieth century, core nations of the global North were able to shift much of their industrial degradation of soil, air, water, and vegetation to the peripheral nations of the global South. Especially the massive increase in the combustion of oil has “*generated environmental problems at every moment of processing from extraction and transport through consumption, garbage disposal, air pollution, and climate change*” (Ibid.: 54). Even the pollution that the farmers’ machines emit directly into the atmosphere has indirect effects on the global climate, increasing the average temperature, which has the greatest negative consequences for humans and ecosystems in the global South. However, one of the features of regenerative agriculture is that it sequesters carbon in the soil. This focus originates from a global perspective where the farmers are aware of the indirect positive effect that their agricultural practices can have on climate by decreasing the average temperature. Despite this, nothing can be considered “*purely technical progress,*” and thus societies and users of technology must reject higher or more advanced technologies on account of their social and environmental consequences (Naess 1989: 94).

However, the rejection of technology is easier said than done, as forces of mute compulsion operate in neoliberal capitalist systems, pressing users and societies to continuously implement more and more advanced technology.

### 8.3.5 Mute compulsion

Capital accumulation has existed for millennia and can be understood as the exchange of goods to increase profits (Mau 2021: 127). What distinguishes capitalism from other modes of production is not the mere existence of accumulation, but its exclusive focus on wealth accumulation as the basis of social reproduction. Consequently, the use of technology can be argued to be part of a *mute compulsion*, because it is a necessity to generate a financial surplus to meet vital needs (Ibid.). Even though the farmers make efforts to decrease their input and keep their remaining input as local as possible, they are still pressed by the globalized neoliberal market economy in which the downward pressure on prices creates upward pressure on inputs needed for production. This forces the farmers to adopt new technologies and increase the scale of production in an attempt to stay in business (Foster *et al.* 2000: 12). Thus, the farmers' interaction with the environment is shaped, and partly determined, by the neoliberal market economy. Even though I have argued that the milking machine at Copenhagen Goatmilk and the tractors at Godisgrønt and Brinkholm can be viewed as a soft kind of technology, milking by hand and growing vegetables with a bent back and chopping iron would be a technology of a softer kind. But, as Frederik emphasizes, "*if you have to pay wages to people from the things you grow, it's just hard to do with a handheld scale.*" This mechanism can be described as mute compulsion, where profit is intimately associated with a technology that entails excessive demands on the environment and humans – if not directly on the local environment, then on an environment elsewhere.

The fact that the farmers do not oppose the capitalist mode of production in all areas is evident from their struggles to accumulate wealth. Currently, none of the farmers have wages that follow the Danish standard basic wage within the agricultural industry. Additionally, Claus has calculated their hourly wage to be 48 DKK, and therefore he must have a part-time job as an economist to sustain himself. Even though the farmers try to cultivate a mode of production that regenerates the environment, their economic situation pushes them to "*upscale, rationalize workflows, get leasing deals on machines, so we can be fewer people to cultivate more land,*" as Frederik expresses it. This logic, where technology replaces people, is an expression of development towards mass production rather than production by the masses. In contrast to Godisgrønt and Copenhagen Goatmilk, who pay off debt, Zoe and Nikolaj are in a favorable economic situation because Brinkholm has been acquired by the cooperative organization Andelsgaarde. This allows the couple to rent the farmland and houses at Brinkholm at a low price and means that they are consequently not forced to optimize efficiency to meet the conditions of the neoliberal market forces to the same extent as the other farmers. Nikolaj

explains that their economic situation “*gives freedom to make experiments to find the best regenerative methods*” and creates the preconditions for the development of regenerative practices. Andelsgaarde seems like a beneficial initiative for supporting a regenerative agricultural movement in Denmark; however, unless Andelsgaarde acquires most of the agricultural land in Denmark to rent to regenerative farmers, will there be a structural, economic, and political change that can accommodate the regenerative practices?

Even though the farmers and their association experience the mute compulsion towards applying advanced technology that has environmental and social costs, they insist on creating a better agricultural practice in Denmark with greater respect for the environment.

## 8.4 Paving way for the pluriverse

Turning the perspective of deep ecology into practice requires action to change existing social structures. Anthropologist Arturo Escobar states that the modern lifestyle in the global North and the way it fails to cultivate relationality between humanity and other forms of life plays the dominant role in creating contemporary crises. This chapter explores the ontology of the farmers and the association and how they, in their everyday life, cultivate a new way of understanding and engaging with the environment, embodying a new ontology that affects and designs the emergence of our world(s).

### 8.4.1 Obligation to act

The eighth and last principle of deep ecology stresses that *“those who accept the aforementioned points are responsible for trying to contribute directly or indirectly to the necessary changes”* (Naess 2008: 28). The farmers affirm that they are very aware of this responsibility, and part of what drives them to act is the trust that their practices are contributing to the necessary changes. Nikolaj is conscious that *“the climate crisis is coming. That’s what we’re preparing for with the regenerative practices. Resilience I believe is what is most important.”* Claus says that *“we have an obligation to do the best we can, with the resources and opportunities available.”* Ahl’s dissertation on regenerative farmers in Norway shows that the actions of these farmers are motivated by the fact that they have *“woken up to the crisis”* (Ahl 2021: 11). Similar to Ahl’s observations, the farmers I engaged with strongly believe that it is not enough just to be made aware of the crisis; it is crucial to do something active based on this knowledge and thus further initiating crisis awareness as a form of operative practice. Anders, an active member of the association, emphasizes that it is important to regenerate the nature of farming and make the regenerative principles operational. To do so, he stresses that the farmers and association must *“cultivate, test, monitor, document, and exchange experiences. We should think about the global and local at the same time. We’re part of the climate movement. It’s both small and large. It’s about the soil you stand on, but it’s also a global community including the whole ecosystem and planet.”* The farmers and the association work locally but are aware that they influence and are part of a global society. Naess stresses that deep ecologists must view ecological systems as *complex* instead of *complicated*, where organisms, ways of life, and interactions in the biosphere in general exhibit high complexity (Naess 1973: 2-3). This approach can be argued to be internalized by Anders stating that *“the whole must guide and inform our decision-making, and we must recognize that nature is a self-organizing complex system that we cannot*

*predict.*" The farmers' familiarity with this complexity can thus be viewed as a counterpoint to the modern ignorance of biophysical relationships and the consequences of disturbance.

#### **8.4.2 Autonomous design**

A way to act on and establish complex systems, according to Escobar (2018), is through the emergence of *the pluriverse*, where many worlds fit. The currently hegemonic *One-World World* is a single world according to the rules and historical experiences of the West, which emerged through globalization, shaped and designed in terms of capitalism, liberalism, and anthropocentrism (Escobar 2018). To shift from this to the idea that the world is composed of many different worlds containing different ways of knowing, being, and making emerge by radicalizing our imagination, and introducing a design that actively brings us into a greater relationship with the living world instead of separating us from it (Ibid.). A way to foster the emergence of the pluriverse is through *autonomous design* that abstains from modernization and commercial aims in favor of more place-based and collaborative approaches. Such design addresses issues of environment and politics while focusing on human experience based on the radical interdependence of all beings (Ibid.). This reorientation can be achieved through design and must shift our culture from the foundations of the *Enlightenment*, i.e., manipulation through 'objective' and 'expert' control, to the foundations of the *Sustainment*, i.e., maintaining a "*flourishing and dynamic mesh of relations*" comprised of ever-emergent ways of being (Ibid.: 117). As mentioned in the previous chapters, the farmers engage with this kind of relationality through soft technological practices, cultivation of emotional commitments to non-human beings, and picking up information from the environment.

However, to some degree, creating autonomous designs relies on logics that collide with Escobar's critique of abstract, linear logics, and even though he acknowledges this contradiction, he leaves it unresolved (Ibid.: 218-123). Therefore, the argument for the destruction of ontological dualisms in favor of the interwoven and unpredictable intimacy of relationality remains contradictory because of his own reliance on temporal abstractions. Nevertheless, this open-endedness is what Escobar is hoping to achieve, because then the perceiver must resist the "*very seductive notion*" of universal, unwavering truths and instead embrace the existence of a plurality of relations and accept an indeterminate mode of being and becoming (Ibid.: 203; 86). This can lead to the cultivation of *openness* to the needs that the environment communicates and allow emotional attachment to develop from this information and engagement. Among the farmers and active members of the association, I noticed this openness as a humble and curious attitude when engaging with their environment while practicing regenerative methods. At the association's strategy weekend, I experienced an intersection

between being reflective and pragmatic, between observing and acting. There is an aim to investigate scientifically whether soil quality and the ecosystem can be confirmed to improve with regenerative methods, how the regenerative agricultural system can be expanded and upscaled, and how the movement can be put on political agendas. On the other hand, the movement insists on being epistemologically modest, never claiming to have the full truth. The farmers insist on revising their own views and being willing to acknowledge their own faults and shortcomings and changing course when appropriate. This was articulated by Sandra, an active member of the association, expressing that *"we do not have the solution for the perfect agriculture, but we know that we must make the soil better in our care, and the methods of creating healthy soil and healthy ecosystems that can grow food for humans, we must experiment with."* She ends with the question: *"How do we avoid getting stuck in a fixed belief system?"* This can be understood as a recognition that the problems we face regarding the ecological crisis call for a form of attention that does not overlook or explain away crucial signs from the ecosystems on which we depend and allow plural perspectives to be part of the solution of the global degradation of fertile topsoil.

#### **8.4.3 Designing local autonomy**

To make autonomous design possible means creating local autonomy (Escobar 2018). Escobar believes that humanity is facing modern problems for which there are no modern solutions, hence there is a need to learn from a-modern or non-modern worldviews inspired by small-scale communities and their work to secure local autonomy (Ibid.). The various critiques of modern industrial capitalism, creating unsustainable and inequitable use of natural resources, can be traced back to Karl Marx's strong concern about the *metabolic rift*. Marx deplored the asymmetric exchange of nutrients and other material resources between town and countryside which resulted in the deterioration of rural soils and the accumulation of waste and sewage in urban areas (Hornborg 2011: 16). Despite the aforementioned mute compulsion in capitalist societies, the RA farmers aim to develop a degree of local autonomy and reduce the metabolic rift by selling locally and using predominantly local inputs. As stated previously, although technology and the energy to power it are not locally produced, the farmers increase local autonomy by using green manure, plants, seeds, and feed that is locally produced. In addition, all the farmers sell their produce within Denmark at local markets, to restaurants, through CSA (Customer Supported Agriculture) memberships, or from their farm shops. Summer refines the milk at their little dairy into a variety of products including different kinds of cheese, gelato, dulce de leche, goat meat, and soap. Equally, Brinkholm refines their grains by grinding them into flour in their newly constructed mill. Moreover, the farmers prioritize diversity

by growing 60 varieties of produce at both Godisgrønt and Brinkholm, which is a design opposite to the idea of rationalization, where everything is streamlined and made more efficient to meet the needs of the market. Following the thought of deep ecology, soft technologies entail the restoration of food systems, decentralization, and local autonomy, including local preservation and storage, which diminishes standardization and increases diversity (Naess 1989: 98). This is because self-reliance in local communities diminishes when the farmers are dependent on external inputs from the world market (Ibid.: 103).

#### **8.4.4 Better quality of life**

Escobar illuminates how designs structure our being-in-the-world and how our being-in-the-world structures the kinds of designs we make. Design, by virtue of its materiality, ‘hardwires’ particular kinds of politics into bodies, objects, and spaces. In this context, design should not just be considered as a product, but as a way of thinking, a way of being in the world, an ontology. The way we organize our lives opens possibilities for which particular relationalities are possible. Thus, capitalist societies must reconsider their ontology if we are to change our being-in-the-world, as ontology is our way of designing reality (Escobar 2018). Although economic structures shape the use of technology, and the farmers’ use of technology affects their relationship with the environment, their ontological beliefs affect their ways of designing their agricultural practices and what they consider quality of life. The philosophy of deep ecology emphasizes that ideological change entails “*seeking a better quality of life rather than a raised standard of living*” (Naess 2008: 28). This ideological change involves appreciating life quality rather than adhering to an increasingly higher material standard of living, which entails an awareness of the difference between big and great. This awareness is indeed present amongst the farmers, and Zoe stresses that “*this farm will be a bridge for people who got bored of the materialistic lifestyle in the cities. I think it’s a nice way to come back to nature and realize that this is the setting that we have from birth. It’s like calibrating to your true nature, and I am happy that I am a part of it.*” Here Zoe emphasizes that their way of living is a confrontation with a materialistic way of living while experiencing a higher quality of life when entangled with and engaged in the natural environment. Even though the farmers have woken up to the crisis, and feel compelled to act, their action is combined with feelings of joy and purposefulness when regenerating their environment. Escobar states that establishing nonmodern and alternative modern societies collectively includes questions of how we might cultivate ourselves as subjects who desire noncapitalist, nonliberal, and nonmodern forms of life (2018: 210). In doing so, he suggests a design process where “*critical design is critical thought translated into materiality. All good design offers*

*an alternative to how things are*” (Ibid.: 35). These designs can be carried out at different levels. Part of the purpose of the creation of the association is to change the structural design of society so that it supports the emergence of regenerative practices. The farmers I talked to, on the other hand, focus on regenerating “*the land they stand on.*” Common to both the farmers and the members of the association is that they are rooted in the same ontology and movement but re-designing structures and practices at different levels and areas of the agenda of regenerative agriculture. It should be mentioned that several of the active members of the association work as farmers as well and thus act on structural and practical levels of designing regenerative agriculture.

The crises are inseparable from our social lives, and thus we need to step outside of our established worldviews to bring about significant transformations. Therefore, ecologically inspired attitudes must also favor diversity of human ways of life, occupations, cultures, and economies – and oppose invasion and domination (Naess 1972: 2). It is important to emphasize that it is particularly the western population (the global North) that must internalize better quality of life rather than a raised standard of living. A raised standard of living is, of course, necessary in communities where basic needs are not covered.



## 9. Conclusion

Throughout this dissertation, I have explored the farmers' relationship with their surrounding environment, including the production of knowledge and emotional commitments, through the lens of deep ecology. I have argued that the farmers' interaction and connection with the environment at times can be viewed as a counterpoint to the modern dualism that separates reason and feeling, mind and body, human and environment.

The farmers are *thinking through making* when looking for more ecocentric ways of reading life in the fields and stables, to see and feel these connections. In doing so, the farmers acknowledge the intrinsic value of non-human beings by *picking up information* from the environment and incorporating this into their agricultural practices to regenerate the ecosystem. This worldview contrasts with the hegemonic capitalist ideology, in which the *human-in-environment* dominates and there is a tendency to ignore humans' relationship and connection with the elements in the environment. When the farmers pick up this information, it can be viewed as a process of *self-realization*, acknowledging their inter-beingness with the surrounding environment. This does not exclude that the farmers and their association are deeply engaged with the modern view of science. Many of the concerns driving their value system, e.g., soil and planetary health, are based on scientific knowledge, and practitioners are keen to use the modern scientific paradigm to achieve their aims.

As the farmers pick up information from the surrounding environment, they simultaneously pick up information about themselves as physical bodies and agents within this environment. Through regenerative methods, the farmers cultivate *person-based identification* when they become aware of how they affect the non-human beings in their environment, and how these respond to this interaction. The person-based identification increases *collaboration* rather than *competition* but does not mean an absence of killing, exploitation, and suppression of entities in the environment. However, the identification limits the destruction to what is necessary because destruction is deeply felt. The person-based identification creates feelings of purposefulness, experiencing the environment flourish, and sadness when the environment degrades. These feelings generate a sense of commitment to protecting the environment resulting in a gentler and restorative agricultural practice. Not all interaction and enjoyable feelings toward the natural environment will lead to the protection of it. It matters *how* we interact with our environment, and *what* environment we are surrounded by. I suggest that the farmers' interaction with their environment generates the necessary response to create person-

based identifications with non-human entities since they engage in the natural environment daily and it forms the basis of their lives.

The Cartesian split between emotions and rationality can be argued to serve to protect particular ideologies and interests, e.g., when accusations of emotionality are used as mechanisms and instruments of power to put down opponents when people's engagement in non-market interests challenges the operation of the market. It is my impression that the farmers cultivate and practice a more ecocentric worldview, building up relations with their surrounding environment, making efforts to keep their input as local as possible and sequester CO<sub>2</sub> in the soil and build up biodiversity on their land. However, they are still subject to the globalized neoliberal market economy where they are on a treadmill in which the downward pressure on prices creates upward pressure on inputs needed for production. This forces the farmers to adopt new technologies and increase the scale of production to stay in business. Additionally, and justifiably so, a *sense of urgency* amongst the farmers and the association triggers an urge toward upscaling where technology plays a central role, which also contains a risk of enforcing *mass production* rather than *production by the masses*. This dynamic can be viewed as *time-space appropriation* where time and space are saved at the expense of human time and natural space elsewhere in the world. I experience an awareness among the farmers and association of the fundamental fallibility of the system, which makes it a challenging task to grow food that rebuilds people and the ecosystem. However, they still insist on developing a better agricultural practice in Denmark that regenerates the damage that has been done to the environment.

Based on *crisis awareness* the farmers and their association aim to contribute to the necessary changes to restore the environment through the production of food. These changes start in their everyday life, one step at a time, cultivating a new way of understanding and engaging with the environment, embodying a relational ontology that affects and designs the emergence of our world(s). They do so by viewing ecological systems as *complex* instead of *complicated* where organisms, ways of life, and interactions in the biosphere in general exhibit high complexity. Practicing complexity can be viewed as a counterpoint to the western ignorance of biophysical relationships and the consequences of disturbance, opposing the rules and historical experiences of the west, which are shaped and designed by capitalism, liberalism, and anthropocentrism. The complexity of ecological systems can be developed by *autonomous design* that abstains from modernization and commercial aims in favor of more place-based and collaborative approaches. The farmers engage with this by introducing different ways of knowing, being, and making through regenerative agriculture that actively brings them into a deeper relationship with the living world through the use of soft technology, cultivation of emotional

commitments to non-human beings, picking up information from the environment, building local autonomy, and appreciating life quality rather than adhering to an increasingly higher standard of living.

The emphasis on ‘re’s’ in design – *regeneration*, *restoration*, *recycling*, *reusing* – can be viewed as a response to the devastation, destruction, degradation, and displacement caused by modern globalized development based on extraction and the destruction of natural resources and people’s dignity. The regenerative movement in Denmark acknowledges this and wants to redesign the current agricultural practices. Farming with regenerative methods might not be enough in the sense of pushing modern civilization towards a fundamental transition of society, i.e., towards a genuine redesign of the world in terms of interdependence, but it is a starting point for thinking about fields of food sovereignty and biophilic design. The regenerative practices are instances in which transition is already happening in everyday life, and can be understood and interpreted as transition design, practices, and strategies, which we will need to develop and cultivate while transitioning. The crises are inseparable from our social lives, and thus we need to step outside of our established worldviews to bring about significant transformations. Therefore, ecologically inspired attitudes must also favor diversity of human ways of life, occupations, cultures, and economies and oppose invasion and domination.

Still, of course, many questions remain unanswered, such as will the ontological understanding of the farmers and association create the necessary change quickly enough? How can the ontology of the regenerative agricultural movement be translated into realistic strategies and policies? I believe that exploration of the farmers’ relationship with the environment and whether this view is consistent with the hegemonic ontologies of society is one pillar of investigation regarding how our food system can and must change to regenerate the damaged environment.

## 10. References

- Ahl, S. I. 2021. *Regeneration – Mutually healing practices in a new agricultural movement*. Ph.D. diss., Department of Anthropology, University of Copenhagen.
- Ahl, S. I. and Skovgaard, S. 2020. *Lysbønder – 10 samtaler om genopbygning af jorden i Danmark*. Copenhagen: Forlaget Virkelig.
- Andelsgaarde. About us. Accessed August 1, 2022. <https://www.andelsgaarde.dk/en/about-us/>.
- Arsenault, C. 2014. Only 60 Years of Farming Left If Soil Degradation Continues. Accessed July 15, 2022. <https://www.scientificamerican.com/article/only-60-years-of-farming-left-if-soil-degradation-continues/>.
- Bahram, M., Hildebrand, F., Forslund, S. K., Anderson, J. L., Soudzilovskaia, N. A., Bodegom, P. M., Bengtsson-Palme, J., Anslan, S., Coelho, L. P., Helery, H., Huerta-Cepas, J. 2017. Structure and function of the global topsoil microbiome. *Nature*, vol. 560, 233-237
- Bellamy Foster, J., Magdoff, F., and H. Buttel, F. 2000. *Hungry For Profit - The Agribusiness Threat to Farmers, Food, and the Environment*. New York: Monthly Review Press
- Bhaskar, R. 2002. *From science to emancipation*. New Delhi, India: Sage.
- Botchie, D. Sarpong, D Bi, J. 2018. A comparative study of appropriateness and mechanisms of hard and soft technologies transfer. *Technological Forecasting & Social Change*, vol. 131, 214-226.
- Brewer, B. 1998. Experience and reason in perception, *Philosophy of mind*, Cambridge: Cambridge University Press.
- Brinkmann, S. and Kvale, S. 2009. *Interview: Introduktion til et håndværk*. Copenhagen: Hans Reitzel.
- Brinkmann, S. and Tangsgaard, L. 2010: *Kvalitative metoder: En grundbog*. Copenhagen: Hans Reitzel.
- Budd, J. M. 2012. Phenomenological Critical Realism: A Practical Method for LIS. *Journal of Education for Library and Information Science*, vol. 53, 69-80.
- Cohen, L., Manion, L. and Morrison, K. 2007. *Research methods in education*. London and New York: Routledge.
- Damasio, A. R. 1994. *Descartes' error: emotion, reason and the human brain*. New York: G. P. Putnam's Sons.
- Danmarks Statistik. 2017. Næsten to tredjedele af Danmarks areal er landbrug. Accessed 31 January 2022. <https://www.dst.dk/Site/Dst/Udgivelser/nyt/GetPdf.aspx?cid=24323>.

- DeWalt, K. M., DeWalt, B. R., and Wayland, C. B. 1998. *Handbook of Methods in Cultural Anthropology*. Calif.: AltaMira Press.
- Dixon, D. 2020. *Kinship, Community, and Consciousness*. Accessed 27 June 2022.  
<http://bathtubbulletin.com/kinship-community-and-consciousness/>.
- El-Sayed S. and Cloutier S. 2020. Weaving disciplines to conceptualize a regenerative food system. *Journal of Agriculture, Food Systems, and Community Development*, vol. 11, 23-51.
- Escobar, A. 2018. *Designs for the Pluriverse. Radical Interdependence, Autonomy, and the Making of Worlds*. Duke University Press Books.
- European Commission. 2021. The small farmers scheme. Accessed 10 July 2022.  
[https://agriculture.ec.europa.eu/common-agricultural-policy/income-support/additional-optional-schemes/small-farmers-scheme\\_en](https://agriculture.ec.europa.eu/common-agricultural-policy/income-support/additional-optional-schemes/small-farmers-scheme_en).
- Evans, J. and Jones, P. 2011. The walking interview: Methodology, mobility and place. *Applied Geography*, vol. 31, 849-858.
- FAO. 2015. Status of the World's Soil Resources. Main Report. PDF.  
[www.fao.org/3/cb3455en/cb3455en.pdf](http://www.fao.org/3/cb3455en/cb3455en.pdf).
- FAO. 2020. *World Soil Day. Keep Soil alive, protect soil biodiversity*. PDF.  
[www.fao.org/3/cb3455en/cb3455en.pdf](http://www.fao.org/3/cb3455en/cb3455en.pdf).
- Farina, G. 2014. Some reflections on the phenomenological method. *Dialogues in Philosophy. Mental and Neuro Sciences*, vol. 7, 50-62.
- Flick, U. 2009. *An Introduction to Quality Research*. London: Sage.
- Gibson, J. J. 1979. *The ecological approach to visual perception*. Boston, MA: Houghton Mifflin.
- Grubb, P. J. 1977. The Maintenance of Species-Richness in Plan Communities: The Importance of the Regeneration Niche. *Biological Review*, vol. 52, 107-145.
- Heerwagen, J. H. and Orians, G. H. 1993. *The biophilia hypothesis*. Washington, DC: Island Press.
- Heidegger, M. 1927/2007. *Væren og tid*. Danish translation of *Sein und Zeit*. Copenhagen: Forlaget Klim.
- Heidegger, M. 1977: *The Question Concerning Technology and Other Essays*. New York and London: Garland Publishing.
- Hornborg, A. 2011. *Global Ecology and Unequal Exchange: Fetishism in a Zero-Sum World*. New York: Routledge.
- Ingold, T. 1995. *Shifting contexts: transformations in anthropological knowledge*. London and New York: Routledge.

- Ingold, T. 1999. "Animism" revisited: personhood, environment and relational epistemology. *Current Anthropology*, vol. 40, 67–91.
- Ingold T. 2015. *The life of lines*. London and New York: Routledge
- Ingold, T. 2021. *Being Alive: Essays on Movement, Knowledge and Description*. London: Routledge.
- IPPC. 2021. *Sixth Assessment Report (AR6). Climate Change 2021. The physical sciences Basis*. Intergovernmental Panel on Climate Change
- Jones, C. 2008. Soil Community Tipping Points: Enhancing Crop Nutrition, Yield and Resilience Through Quorum Sensing. Accessed 2 July 2022. <http://www.notill.org/soil-community-tipping-points-enhancing-crop-nutrition-yield-and-resilience-through-quorum-sensing>
- Kruuse, E. 2007. *Kvalitative forskningsmetoder i psykologi og beslægtede fag*. Copenhagen: Dansk psykologisk forlag.
- Masschelein, J. 2010. *The Possibility/Impossibility of a New Critical Language of Education*. Rotterdam: Sense Publishers.
- Mau, S. 2021: *Stum Tvang – En marxistisk undersøgelse af kapitalismens økonomiske magt*. Copenhagen: Forlaget Klim.
- Milton, K. 2002. *Loving Nature - towards an ecology of emotion*. London: Routledge.
- Nabhan, G. P. and St Antoine, S. 1993. *The biophilia hypothesis*. Washington, DC: Island Press.
- Naess, A. 1973. The Shallow and the Deep, Long-Range Ecology Movements: A Summary. *Inquiry*, vol. 16, 95-100.
- Naess, A. 1989: *Ecology, community and lifestyle: outline of an ecosophy*. Cambridge: Cambridge University Press.
- Naess, A. 2008. *The Ecology of Wisdom: Writings by Arne Naess*. Counterpoint.
- Neisser, U. 1976. *Cognition and reality: principles and implications of cognitive psychology*. San Francisco, CA: W. H. Freeman & Co.
- Newton, P., Lee, C., Frankel-Goldwater, L., Bartel, K. and Johns, C. 2020. What is Regenerative Agriculture? A Review of Scholar and Practitioner Definitions Based on Processes and Outcomes. *Frontiers in Sustainable Food Systems*, vol. 4
- Nielsen, C. 2020. *Bedrifterne bliver større og færre*. Accessed 22 June 2022. <https://baeredygtigtlandbrug.dk/2020/09/bedrifterne-bliver-stoerre-og-faerre/>.
- Olsson, S. B., Ameen, M., Bajpai, S., Gudasalamani, R., Gajjar, C., Gupta, S., Hvilshøj, S., Krishnakumar, J., Lobo, C., Mukherjee, R., Naik, A., Raghavan, A., Singh, H., Subaharan, K.

2022. Framework For a Collective Definition of Regenerative Agriculture in India. *Ecology, Economy and Society – the INSEE Journal*, vol. 5, 23-30.
- Ragin, C. 1987. *The comparative method: Moving beyond qualitative and quantitative strategies*. Berkeley: University of California Press.
- Regenerativ (a). *Om foreningen*. Accessed 18 June 2022. <https://regenerativ.dk/om-os/>.
- Regenerativ (b). *Vi dyrker jorden for fremtiden*. Accessed 28 March 2022. <https://regenerativ.dk/>.
- Rockström, J., Steffen, W., Noone, K., Persson, Å., Chapin, F., Lambin, E., Lenton, T., Scheffer, M., Folke, C., Schellnhuber, H., Nykvist, B., de Wit, C., Hughes, T., van der Leeuw, S., Rodhe, H., Sörlin, S., Snyder, P., Costanza, R., Svedin, U., Falkenmark, M., Karlberg, L., Corell, R., Fabry, V., Hansen, J., Walker, B., Liverman, D., Richardson, K., Crutzen, P., Foley, J. 2009. A safe operating space for humanity. *Nature*, vol. 461, 472-475.
- Rubow, C. 2022. *Indendørsmenneskets natur*. Århus: Århus Universitetsforlag.
- Schreefel, L., Schulte, R. P. O., Boer, I. J. M., Pas Schrijver, A. van Zaten H. H. E. 2020. Regenerative agriculture - the soil is the base. *Global Food Security*, vol. 26.
- Schumacher, E. F. 1973: *Small Is Beautiful: A Study of Economics As If People Mattered*. New York: Blond & Briggs.
- Spencer, H. 1864. *The Principles of Biology*. Williams and Norgate.
- Talukder, M. 2016. On "Self-Realization" - The Ultimate Norm of Arne Naess's. *ResearchGate*, vol. 3, 219-235.
- Tsing, A. 2010. Arts of Inclusion or How to Love a Mushroom. *Manoa*, vol. 22, 191-203.
- UN. 2019. Soil erosion must be stopped 'to save our future', says UN agriculture agency. Accessed 10 February 2022. <https://news.un.org/en/story/2019/12/1052831>.
- Wilson, E. O. 1984. *Biophilia: the human bond with other species*. Cambridge, MA: Harvard University Press.
- Winter, D. D. 1996. *Ecological psychology: healing the split between planet and self*. New York: Harper Collins.