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„It all comes down to soil life!”

Exploring Boden.Leben – an Austrian farmers' collective
developing climate-adapted and sustainable agriculture

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Abstract

The following master thesis revolves around an Austrian farmers' association called Boden.Leben. In the collective different stakeholders – such as (mainly) farmers, advisors and researchers – engage in collaborative knowing and learning processes surrounding new and better treatments of soil to build climate-adapted and more sustainable agricultural forms. In the thesis, I am inquiring valuations which board members of the collective associate with the work being done at Boden.Leben. I am interested in how these valuations encourage and shape the collective work as well as how they motivate the farmers to partake. Further, I am interested in how this hangs together with problems in agriculture. Empirically, I have reviewed a variety of documents about Boden.Leben. I have participated in one field day organized by the collective, and I have conducted five qualitative interviews with board members of Boden.Leben. I analyzed this data using a situational analysis approach, with the interviews being the main material which I am basing the conclusions on. Theoretically, I am approaching the case from a pragmatist-sociological angle, drawing from concepts out of Valuation Studies and using the framework of social worlds/arenas. I conclude the thesis with an emphasis on the importance of acknowledging farmers' expressions of concerns and relevancies in agriculture as well as on the significance of spaces of reflexive social learning in which exchanges and interrelations between diverse agricultural entities can produce new insights and (mutual) understandings.

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1 Introduction

Humans have been cultivating plants and livestock for thousands of years, but industrial agriculture based on large-scale monoculture, as it is currently the dominant form of agriculture, only began in the 20th century. New technologies such as automated machinery, pesticides and fertilizers made it possible to rapidly increase production and efforts were made to spread these new and seemingly more effective methods across the globe. These efforts of agricultural extension and technology transfer, which peaked between 1950 and 1960, have proven to solve some of the problems in agriculture by increasing production, making crops more robust towards pests etc. and are today retrospectively framed under the term „*Green Revolution*” (see, e.g., Rose & Chilvers, 2018). Despite these methods having enabled a significant increase in yields and thus having provided food for many people, they have contributed to creating new problems such as soils losing fertility and stability, polluted groundwater due to the intensive use of fertilizers and concerns about health risks of pesticides. Further, climate change not only has come to pose a serious threat to the ways agriculture has been operating for the last half century but has also partly been caused by exactly these practices. Today, these problems are urgently calling for transformations to more sustainable forms of agriculture. Hence, across the globe initiatives within research, policy and agriculture are trying to find such new forms, with the current agricultural era being called “*agriculture 4.0*” (ibid.).

Some stakeholders stress to re-think the concept of modern, industrial agriculture as a whole – here Agroecology seems to be a current dominant keyword (see, e.g., Anderson et al., 2019; Charatsari et al., 2022; Warner, 2008). Others aim to build upon conventional methods focusing on advancing technoscience and linking it to agricultural practices – here areas of focus range from increasing knowledge and usage of soil science insights (see, e.g., Robinson et al., 2017) to using data-driven, highly technologized so-called „*precision farming*” methods (see, e.g., Austrian Agricultural Cluster, n.d.; Future Farming, 2018). Many efforts work towards what is referred to as “*sustainable intensification*” (SI), an approach that aims at increasing productivity, while, at the same time, not compromising ecological well-being (see, e.g., Wynne-Jones et al., 2020). Further, efforts have been made to open up agricultural knowledge and create spaces in which different stakeholders can come together to learn from one another as well as produce new forms of knowledge and agricultural practice (see, e.g., Giotitsas, 2019; Neef & Neubert, 2011). Generally, although focusing on different aspects, and often implying conflicting agri-political orientations (see, e.g., Bruckner, 2020a; Gerold, 2015 for discussions about this in the Austrian/European context), most initiatives seem to acknowledge an importance in accumulating and distributing agricultural knowledge as well as linking it with agricultural practice; building spaces for mutual cooperation between different stakeholders; and integrating local conditions, knowledges and practices when developing new development strategies, farming technologies and agricultural policies.

Zooming into Europe and further into Austria, the farmers' association "Boden.Leben"¹ (= "Soil.Life") is one such initiative in a larger ecosystem of efforts for transformation within and beyond the agricultural sector. Boden.Leben focuses on building and promoting climate-adapted and ecological agriculture and organizes exchange of agricultural knowledge and experience between first and foremost farmers, but also scientists and agricultural advisors. The exchange happens in so-called "*soil-webinars*", on agricultural field days, in online fora and via WhatsApp and revolves around anything related to soil management and soil care, e.g., soil fertility, biodiversity, the promotion of microclimate and soil life. The association's main goals are (1) to enable productive links between agricultural research and practice, i.e., to collect knowledge about soil-improving and erosion-reducing farming methods as well as incorporate them into everyday practice; (2) to foster knowledge transfer between farmers through expert days, field days, seminars and workshops as well as through the association's online platform; and (3) to raise awareness and sensitize about issues of soil protection to general publics (Boden.Leben, n.d.). The participating farmers are diverse in terms of farm type, farm size, farm location and thus, climatic conditions as well as production practices, such as till or no-till, conventional or organic. Further, they associate their work at Boden.Leben with differing agricultural meanings and values that come together in their collective learning practices.

Focusing on interviews with the board members of the collective, I would like to take a closer look at valuations that motivate the farmers at Boden.Leben to do their collective work surrounding soil care. By valuations I am referring to the ways in which farmers attribute worth to specific farming practices, to their ways of relating to other farmers and to ways of treating their soils, to name a few aspects. Valuing is, e.g., done when talking about motivations behind and benefits of the work done at Boden.Leben, and thus, is always closely related to practical aspects of their everyday farming life. I will elaborate on the concept of valuation more thoroughly in the theories section of the thesis and then, weave this together with the empirical work in the analysis and discussion chapters. Throughout the thesis, I am interested in how these valuations encourage and shape the collective work as well as motivate the farmers to partake. Further, I am interested in how this hangs together with problems in agriculture brought forward by the farmers. My research is both motivated out of an interest in the production and distribution of agricultural knowledge as well as a motivation to analytically engage with and practically support endeavors to build more sustainable and livable futures. My research is relevant for the field of Science and Technology Studies because it investigates processes of knowledge production as well as distribution happening in non-traditional realms, and it inquires how these processes are entangled with questions of meaning-making and valuing. Moreover, I hope that insights from my study will be of use for Boden.Leben and its members in their undertaking to build, distribute and cultivate healthier and more sustainable agricultural practices.

¹ <https://www.bodenistleben.at> (Accessed: September 30, 2022)

1.1 Thesis structure

The final text I present here is structured as follows: In chapter 2, I review literature relevant to the case at hand. Chapter 2.1 deals with broader developments in agriculture; chapter 2.2 with STS takes on agriculture and soils; chapter 2.3 with the so-called knowledge turn in agriculture; and chapter 2.4 with soils, values and motivations focusing on Austria. In the following chapter 3, I present the research questions that guided me in carrying out the master thesis project.

Chapter 4 presents the theory perspectives and concepts I use to look at the case and reflect on the results. I start with pragmatist-sociological thinking as the general theoretical perspective in which I situate my study in chapter 4.1; elaborating on the concepts of regimes of valuation and evaluative principles from the field of Valuation Studies in chapter 4.2; and tracing the social worlds/arenas perspective that helps me make a case in chapter 4.3. In chapter 5, I describe the methodological approach and the methodical steps I have taken. I begin in chapter 5.1 with introducing situational analysis as the methodological approach; I continue in chapter 5.2 with describing the data collection process by recapping the case, going over field access and sampling and explaining how I organized, conducted and transcribed the interviews. Then, I elaborate on the coding and mapping techniques I used in chapter 5.3, before departing into the main analysis in chapter 6.

I start the analysis chapter with comparatively describing the interviews, sharing working observations that guided the analysis, and elaborating on agricultural problems that matter for my case in chapter 6.1. I continue with exploring environmental, societal and sector specific agricultural problems from a farmers' perspective in chapter 6.2., then I shed light on how Boden.Leben responds to these problems through various values and purposes in chapter 6.3., and further elaborate in chapter 6.4 how improving exchange and improving soils is closely tied to one another. I explain this by matching Boden.Leben's values and purposes onto another. Resulting from that I describe how ways of interacting with one another, understanding each other as well as one's soils, and sharing knowledge and experiences is entangled at Boden.Leben. In chapter 6.5 I connect agricultural problems and values and purposes and provide a synthesis of the analysis as well as an outlook for the discussion.

In chapter 7 I discuss the findings regarding the literature I reviewed above, the research questions and the theories and concepts. Hereby, I reflect on factors influencing the (non-)uptake of soil care measures by farmers, such as their soil-related identities as well as different evaluative principles and regimes of valuation. In the concluding chapter 8 I provide a final summary of the thesis, share the main takeaways of my case, as well as reflect on limits of the study and outlooks for further inquiry.

2 State of the art

Coming from a social science background, and priorly not having been in close contact with agriculture when taking on this master thesis project, I did not have much prior knowledge about the field that I am studying. Thus, I had to do a fair amount of reading to be able to understand the field's basic language, themes and relevancies. I am sure there is still much to learn for me and I hope readers more knowledgeable about practical aspects of agriculture will keep this in mind when reading.

Depending on the scale I used, there were either large amounts or little to no literature related to the case. I could not find any literature when looking specifically at STS literature related to the case with a focus on Austria. However, when zooming out to look at research conducted in Europe, the USA and other parts of the world as well as when including journals other than STS ones I was confronted with amounts of literature, too large to review entirely. Therefore, I played around with the keywords to find texts about general developments in agriculture relevant for the case; about agriculture, soils and STS themes; and about agriculture in Austria. After reviewing a larger stock of papers, I picked the ones which fitted best to introduce the reader to the most important themes of the case, and built a foundation to base my further methodical and theoretical work in.

Generally, most of the relevant literature for my case touches upon themes of knowledge(s) and knowing in relation to agriculture and/or soil-related issues. Apart from classical STS journals like *Social Studies of Science* or *Science, Technology, & Human Values*, journals in which I found relevant texts for the case where, e.g., *Agriculture and Human Values*; *Sociologica Ruralis*; *Agriculture, Ecosystems & Environment*; *Environment and Planning A: Economy and Space* and the *Journal of Rural Studies* to name a few. The literature I am presenting here can be separated into four areas: (1) literature that helps me contextualize my topic of interest as well as situate it among broader agricultural developments; (2) general STS takes on agriculture and soils; (3) literature surrounding agriculture and knowledge; and finally, (4) literature that zooms in on agriculture, soils, values and motivations in Austria.

My research interest lies on valuations that motivate the farmers at Boden.Leben, thus making a difference between valuations and motivations and putting the focus on the former. However, for the literature review I equally considered motivations as a relevant key word, since most of the studies dealing with valuations and motivations in agriculture put their focus on the latter. Further, since the two concepts are so closely connected I identified studies inquiring either as relevant, nonetheless. Further motivations were the closest clue to the concept of valuations, for which not as much literature in relation to agriculture exists.

2.1 Broader developments in agriculture: contextualizing my case

To contextualize my case and research interest, I am referring to literature that traces developments in agriculture in relation to (technoscientific) expert knowledge. This literature often picks up the notion

of the green revolution alongside with industrialization and modernization of the agricultural sector, mentions shortcomings and negative effects of that period and then, sketches new developments, with some being alternatives to conventional, industrial, monoculture-based agriculture. Keywords here are agricultural extension, technology transfer, green revolution, „farmer-first” ideology (older developments) as well as farmer field schools, participatory technology development, participatory agricultural research, agriculture 4.0, sustainable intensification and agroecology (newer developments) (for research touching upon these developments see, e.g., Farrington & Martin, 1988; Neef & Neubert, 2011; Puig de la Bellacasa, 2015; Rose & Chilvers, 2018; Warner, 2008; Wynne-Jones et al., 2020). These discourses are too broad to sufficiently engage with them here. What I do want to get into further are the discourses surrounding agriculture 4.0, sustainable intensification and agroecology.

As mentioned in the introduction, there are currently various efforts to make up for urging problems in agriculture and transform the sector to be more ecological, while still maintaining productivity. Agriculture 4.0 is one popular label describing the currently on-going fourth agricultural revolution, which follows the *“first representing a transition from hunting and gathering to settled agriculture, the second relating to the British agricultural revolution in the 18th century, and the third relating to post-war productivity increases associated with mechanization and the Green Revolution in the developing world.”* (Rose & Chilvers, 2018, p. 1). Smart farming currently dominates debates around agriculture 4.0, with the concept receiving political attention and funding opportunities. The approach implicates, e.g., using precision farming methods when applying fertilizer, pesticides and herbicides; gathering big data, e.g., with drones, on which to base farming decisions on; and using robots and other advanced machinery in crop and livestock farming. All with the aim to increase yields, secure food supplies and, at the same, having the least possible negative effect on the climate and the environment.

While some aspects of this approach have potential, there is a rightful critique that we are dealing with an attempt to find a technological fix, that, at the same time, may foster societal resistance (Rose & Chilvers, 2018, p. 5). Another concept relevant in this context is sustainable intensification (SI). SI first appeared in the 1990s and has since been developed further. Citing Gunton et al. (2016) Rose and Chilvers (2018, p. 2) write: *“Gunton et al. (2016) consider it to be a process by which productivity is increased without damaging the environment, and where possible, also generating social, and environment benefits.”* This inclusion of societal and environmental long-term benefits aspects is promising, however, there is no assurance that SI will be the ideal solution, specifically when considering its focus on increasing productivity. In this context, alternative agricultural approaches could give answers where conventional, productivity-focused approaches do not deliver.

One key framework through which alternative agricultural research and development efforts are thought (see, e.g., Iles et al., 2017 for STS discussions about this) is the one of agroecology. Agroecology is a field of research, a practical approach and a social movement in agriculture following principles such as recycling, soil health, animal health, biodiversity, co-creation of knowledge, social values and

participation, to address problems in our current food systems (Wezel et al., 2020). Although my case does not use the framework itself, certain practices and logics of relating (scientific) knowledge as well as agricultural practices promoted within the framework of agroecology mirror those happening in the context of Boden.Leben. These are, e.g., the horizontal learning approach or the emphasis on the importance of diverse actors participating and learning from each other (Neef & Neubert, 2011). One can find both aspects in Boden.Leben. Further, a certain relevance of agroecological thought for Austrian agriculture can be derived from my so far empirical observations at an agricultural field day organized by Boden.Leben. There, an agricultural advisor referred to the concept in his talk. Within the Austrian context there are some debates surrounding agroecology as an alternative approach to climate smart agriculture (Gerold, 2015) – there is even an Austrian agroecological movement called „Via Campesina”². However, agroecology does not seem to be the dominant framework, as Austrian discussions about the latest European agricultural reform suggest (Bruckner, 2020b).

Nevertheless, some papers, and the presented frameworks for participation in agricultural knowledge, can be applied to my case. Even though the collective I am investigating is not labelled explicitly as agroecological, the learning approach taken at Boden.Leben manifests quite similarly as the one described in the literature. Thus, it goes beyond merely being applicable in agroecological communities. I believe it is fruitful to not only practice such learning approaches under the label “agroecology”, but to expand what agroecology can mean to other farming contexts as well.

2.2 Science-Technology-Society, agriculture and soils

Agricultural matters have been topic of many STS studies. I will not get into all these areas of discourse, but rather, list them here with references to further reading. These areas, e.g., include discourses about environmental movements in agriculture (see, e.g., Hess et al., 2008); about biotechnological as well as GM-controversies in relation to agriculture (see, e.g., Levidow, 2009; Yearley, 2008); and discourses about scientific governance concerning agricultural matters (Irwin, 2008)³.

A recent, more or less comprehensive, examination of cutting points between STS and agriculture can be found in the text *Agricultural Systems: Co-producing Knowledge and Food* by Iles et al. (2017) out of the fourth edition of *The Handbook of Science and Technology Studies* (Felt, 2017). Iles et al (2017) propose the idea that „*agriculture and food have been co-produced over the past century with material infrastructures, ecological landscapes, and social imaginaries, values, and institutions.*” (p. 944). This means that agricultural systems have been built „*through processes of knowledge-making and material work*” (p. 947). Further, they make an argument for agroecology as a desirable alternative to currently (still) dominant, conventional so-called „*productionist*” agricultural forms. They present a table

² <https://www.viacampesina.at/> (Accessed: September 30, 2022)

³ These areas are of course heavily overlapping with one another.

summarizing key themes, sites and ideas of STS inquiries into agriculture. Although lacking sufficient references, the table provides an overview of the past and future areas of inquiry and helps me situate my own case and research question, which is why I am presenting it here:

Table 32.1
Overview of Agricultural STS Themes, Sites, and Ideas*

	Established	Emerging
Major STS themes	Green revolution technologies Governance of food safety risks (e.g., BSE; more recently, leafy greens) Pesticide regulation The changing nature of public science in the biotechnology era Public understanding of GMOs, especially on a cross-national basis Standards for use in making foods and setting eco-labels Development of industrial agriculture technologies and organisms	<u>Agrobiodiversity</u> Seeds and IP <u>Farmer knowledge politics</u> Science in policy making aimed at markets and eaters
Key sites of STS work	Regulatory agencies Governments Agricultural departments Universities (especially land-grant universities in the United States) International S&T networks and institutions (e.g., CGIAR)	Food supply chains Food companies <u>Farms</u> <u>Extension field days</u> Social movements (e.g., the MST in Brazil)
Key ideas in STS		
	<u>Trust and deference to expertise</u> Constructions of risk and risk society <u>Lay/expert knowledge</u> <u>Boundary work around S&T</u> Credibility of knowledge used in regulatory processes	Technological determinism Standardization and classification <u>Local/indigenous knowledge</u> Disciplining of actors through surveillance <u>Embodied knowledge</u> <u>Community-based</u> <u>agrobiodiversity activities</u>

Table 1 *Overview of Agricultural STS Themes, Sites, and Ideas*, originally provided by Iles et al. (2017, p. 947); relevant themes, sites and ideas underlined by Sofie Haiden

With a book in preparation dedicated to human-soil affections (n.d.), an important voice in STS regarding soils is Maria Puig de la Bellacasa (2015, 2019; Robinson et al., 2017). Puig de la Bellacasa (2015) investigates human-soil relationships from a perspective of temporalities and care. She emphasizes a necessity for time for soil care which rejects current logics of rapid technoscientific advancement and innovation in agriculture. Said logics she links to exploitation of more-than human worlds. Puig de la Bellacasa (2019) furthers her work in a later article by emphasizing the importance of what she calls “*re-animating soils*” (p. 391). She points attention to urging questions such as “*how to feed a world populated by more humans without exhausting soils, how to confront the commodification of soil life*” (p. 393).

Having investigated diverse forms of soil research, communities of soil-focused growers and cultural-artistic manifestations of soil involvements, for ten years, she argues that a shift can be made out from seeing soils as a passive resource to feeling it as alive. Feeling soils as alive, thus, to understand and deeply care for the interdependent lively entanglements of humans and soils, is a way to build sustainable and livable futures that replenish with life the productionist technoscientific ideas of futurity

and progress (p. 392). Although situated in different intellectual and practical realms, Puig de la Bellacasa's emphasis on the importance of soil care, and her pointing to the fact that soils, just like humans, are inertly alive, resonate with the propositions and values that Boden.Leben brings forward. Further, her work demonstrates the importance of soil-related topics in and beyond STS.

Further, works touching upon STS themes in relation to agriculture thematize topics like responsible innovation, transdisciplinary agricultural research and farmer-expert relations. In *Agriculture 4.0: Broadening Responsible Innovation in an Era of Smart Farming*, Rose and Chilvers (2018) aim at developing the concept of Responsible Innovation for agriculture. They depart at two papers by Eastwood et al. (2019) and Bronson (2018), (cited by Rose & Chilvers, 2018, p. 2) in which concepts of Responsible Innovation are translated to agriculture. Rose and Chilvers (p. 2 & 5) argue that merely translating the concepts does not reach far enough for them to be applicable in diverse agricultural contexts, and for them to be reflexive. Reflexive, meaning that they learn from and are adaptable according to the practical areas in which they find application. Formulating their critique, and further, developing the concepts, they propose a more responsible alternative to conceptions of smart agriculture, which, as mentioned, currently dominate discussions about agriculture 4.0 (p. 2). In the text, they propose three areas around which improvements could be made: (1) They argue for a more systemic approach through which diverse networks and systems of agricultural innovation can be mapped and taken into account (p. 4). (2) They urge to broaden conceptions of inclusion, so that inclusion does not only mean to invite stakeholders to ready-made arenas of participation but to watch out for already existing (informal) forms of engagement (p. 4 & 5). Lastly, they argue for possibilities to test the sustainable innovations and interventions. This is to ensure that they are suited for the contexts in which they are applied, and that they produce results desired by the ones affected by them (p. 5).

All these aspects are highly relevant for my case, and ideas of them are partly already in action there, without having been implemented by an official force. Boden.Leben is an important node in a wider ecology of sustainable transformation-related movements in the Austrian context. Further, Boden.Leben exactly is such a non-government led arena of agricultural participation, that Rose and Chilvers (2018, pp. 4 & 5) highlight as important and worthy of recognition. Finally, the innovative outcomes of the farmer-researcher-advisor collaborations that take place at Boden.Leben are strongly directed at being applicable and location-sensitive. Some of the farmers work closely with researchers directly on their fields, and there, engage in feedback loops between farmer and researcher. Further, during the exchange about new and more sustainable techniques, the farmers exchange their knowledge and experiences back and forth between each other to adapt them to their specific needs. I will explore this further in later chapters (see chapter 6.4.2).

Another relevant text is *Making Research Collaborations: Learning from Processes of Transdisciplinary Engagement in Agricultural Research* by Manjula and Rengalakshmi (2021). The authors make a case for agricultural transdisciplinary research, in which natural scientists, social

scientists and non-disciplinary end users of the outcomes work together to co-create new knowledge and products. Further, they specifically highlight the importance of social scientists to join such transdisciplinary research efforts for more effective, more locally applicable and better adaptable results (p. 26 & p. 36). Further, emphasizing the solution-oriented direction of such research, the authors summarize: “*Research results of a transdisciplinary approach can be effectively translated into equitable and sustainable field-level interventions as farmers, being the end users of research, are active decision-makers in the research process*” (Manjula & Rengalakshmi, 2021, p. 26). Therefore, this kind of research not only helps develop technologies that are well applicable locally but that also improve the adoption rate thereof (p. 26) – a relevant aspect for my case.

I agree that agricultural transdisciplinary research collaborations can benefit by including social scientists. Already a well-organized participatory research collaboration between natural scientists and farmers can produce results that fall under the categories described above, as is the case for Boden.Leben. However, given my data, there are still many farmers with a lack of openness for change within the farming community. Boden.Leben farmers struggle to reach these farmers and interest them to adopt more sustainable soil management practices. This is partly due to the financial risks that come with departing from traditional ways of farming and not knowing if it will work out in a specific farming context. Here, participatory research that considers the individual circumstances and needs of each farmer can certainly be a way to improve the openness of farmers towards making sustainable transformations. Social scientists can, as described in the text (p. 28), take a mediating role between researchers and farmers, helping to communicate farmers’ needs, practices, local conditions and solutions, to help the scientists develop needs-based research. Further, social scientists can become engaged in feedback loops to “*fine-tune the technology, practices and methods to suit the local context and need*” (Manjula & Rengalakshmi, 2021, p. 28). This master thesis project, once the results are reported back to the field, might pose as such a feedback loop through which the farmers at Boden.Leben can reflect their practices.

Finally, looking at it with a focus on trust and social learning, Rust et al. (2022) investigate which sources farmers from the UK and Hungary trust to learn about innovative sustainable soil management strategies, and who influences them to take up these innovations in *Have farmers had enough of experts?*. Their point of departure is soil degradation as a pressing global problem that requires the uptake of new soil management practices to help preserve this crucial and slowly-renewable-resource. For the uptake of such practices trust in the information about soil care is needed. More and more farmers gather information from online sources, leading to the authors to ask if those sources are expert ones, as they traditionally were in analogue settings, or not. The results of their study show that farmers mostly rely on fellow farmers as trust-worthy sources for information and for new knowledge about soils. Further, specifically what the authors call “*farmer social media ‘influencers’*.” (Rust et al., 2022, p. 31) are important trust-worthy sources, rather than traditional experts. Key factor is that the farmers have a

higher trust towards their peers as opposed to official, government, or expert stakeholders, who, according to the authors, often are not empathetic towards farmers' needs. The results do not provide evidence that farmers who have adapted their farms to more sustainable soil care practices did so due to being influenced by online sources. Rather, they were influenced by seeing positive results of farmers they trusted in-person.

Being set in Europe, specifically in the UK and Hungary, the study is interesting to compare to my findings from the Austrian context. Further, the uptake of new and more sustainable soil management practices is a central topic for my case, with Boden.Leben farmers reporting about a general lack of openness of other farmers towards it. Further, the highlighting of digital channels and farmer influencers in the distribution and uptake of new soil care strategies (p. 38) resonates with my case. A big part of the exchange at Boden.Leben – specifically reporting, documenting, sharing and reflecting on real-time farming experiences – happens online, via social networking channels, fora and other services. Further, some of the board members already had online popularity, specifically on Facebook, which is also partly how they got to know each other and ultimately founded Boden.Leben together. Other aspects of the text, that I will also pick up in later chapters of this thesis, are the financial risks, but also benefits, that come along with making soil-related changes on the farm. Both the text and the data I gathered suggest that, while for some farmers trying improving cost/benefits can be an important factor to make changes, at the same time, for other farmers, financial risks are exactly what keeps them from making said changes (p. 32, p. 37; & see chapters 6.2.3, 6.3.2, 6.5.1 & 7).

2.3 Opening up knowledge in agriculture – developing social learning

In the prior chapter, I have painted a broad picture of the relations between agricultural developments as well as (technoscientific) knowledge(s) and STS. In this section, I refer to articles dealing with agricultural knowledge practices touching upon STS themes, i.e., taking a fine-grained look at different (often marginalized or neglected) forms of knowing and practicing agriculture. As Morris (2006, p. 113) puts it: „*In this domain, a research theme has emerged which, informed in large part by the sociology of science, problematises the dominance of scientific and expert knowledge and acknowledges the importance of 'other' forms of knowledge,¹ variously labelled as 'lay', 'local', 'traditional', 'experiential' or 'tacit'*”. There are several articles which fall under this so-called „knowledge turn” in critical rural sociology, agricultural studies and other disciplines at cutting points between social science and agriculture. I only want to exemplarily mention those which I found specifically interesting for my case (for further reading see, e.g., Burgess et al., 2000; Carolan, 2006; Clark & Murdoch, 1997; Eden, 2008; Kloppenburg, 2010; Šūmane et al., 2018). As it is where my case is situated, I am focusing on European or US-American contexts when investigating literature about relations of agriculture and knowledge, and am therefore – although it is an important area of research – not taking into account inquiries into agricultural knowledge practices in non-western areas of the world.

The first text I want to mention, *Organic vs. conventional agriculture: knowledge, power and innovation in the food chain* by Morgan and Murdoch (2000), investigates the ways in which economic knowledge is distributed in two different food chain networks in the UK, namely conventional versus organic food chains. Looking at these food chains as ideal types, the authors work out that conventional network chains rely mostly on standardized or codified knowledge. Thus, they debase local and tacit knowledge forms, while organic networks chains combine a reliance on both standardized as well as tacit forms of knowing. The authors argue that since the organic example enables that „*knowledge is tied to both local practices of production and an acute sensitivity to ecosystems and natural processes*” (p. 171) it has a strength that conventional network chains does not have. Conventional network chains do not have to means to refer to local knowledges when needed. Organic food chains, however, give farmers the possibility to re-integrate their local tacit knowledge into standardized practices. Thus, the farmers act as „*knowing agents*” (p.171) as supposed to being acted upon from above. Although providing an interest glimpse into knowledge-related differences between organic and conventional farmers, for my case, these differences do not seem to manifest, as I have previously mentioned.

A text that also thematizes differences between organic and conventional farming, but in a more subtle way, is *Democratizing Knowledge: Sustainable and Conventional Agricultural Field Days as Divergent Democratic Forms* by Carolan (2008). Carolan describes how efforts for democratizing knowledge production and knowledge exchange can turn out differently in varying agricultural contexts. He turns to the agricultural field day as a site for participatory knowledge production, and claims that whether a field day is oriented towards conventional or sustainable models of agriculture impacts how these participatory practices take shape, and what forms of democracy they imply. At a conventional field day, goals, stakes and values of conventional methods of farming are not so much challenged, and experts hold a distinct role at the sustainable field day. At an organic field day, expertise is fluid according to the topic at stake, and assumptions, values, goals and stakes of farming are reflected upon. Although this summary might suggest otherwise, Carolan notes that his aim is not to proclaim either of these forms as better than the other. Instead, he wants to demonstrate that democratization of knowledge does not figure in one specific way, but that it can take many different forms.

The third text, *Exploring Knowledge-Cultures: Precision Farming, Yield Mapping, and the Expert-Farmer Interface* by Tsouvalis, Seymour and Watkins (2000), inquires farmers’ experiences with the precision-farming technique of yield mapping. The authors aim to understand the idea of knowing one’s field – as common within such practices – by thinking it through the concept of knowledge-cultures. Aiming to go beyond essentialist conceptions of knowledge as a fixed entity – including conceptions of expert, lay or local knowledge – they formulate this concept in order „*to acknowledge the fluid and interactive nature of different ways of sense-making*”. They claim that knowing is a social activity in which questions about who a good farmer is, what meaningful farming practices are and who gets to

define such matters are constantly negotiated. An aspect specifically interesting to my case is that „knowing one’s field” was an important theme I encountered in my field work as well.

What the texts presented above have in common is that they all describe how agricultural systems are entangled with knowledge systems and practices. They also demonstrate that the ways in which farmers and other actors link agricultural knowings and doings are worth looking into more deeply. Opening up knowledge in agriculture comes hand in hand with the development of concepts like peer learning, or social learning, arising. These concepts have been hinted on already in the works cited above (see chapters 2.1 & 2.2). In much of the literature, social learning through farmer collaboration is crucial (1) to engage in knowledge exchange and innovation; and (2) ultimately shape an agricultural transformation towards new and more ecological ways of farming.

For example, in *Understanding farmer co-operation: Exploring practices of social relatedness and emergent affects* Wynne-Jones (2017) highlights the ever-growing importance of farmer co-operation. Taking a Bourdieusian perspective, she investigates relations between individualist versus collectivist motivations of British farmers to co-operate. She concludes that co-operation “*can fundamentally alter peoples’ conceptions of how to relate to others. Moreover, it is relations in and of themselves that are valued and not only the calculable benefits that thinking in terms of capital would allow*” (p. 267). Further, she demonstrates that there are multiple and often unexpected outcomes to farmer co-operation, and that everyday practices and emotional affects are equally part of co-operative work as agricultural skills and know-how (ibid.).

In a later work, *Collaboration for Sustainable Intensification: The Underpinning Role of Social Sustainability*, starting with the idea that collaboration can be beneficial for sustainable intensification (SI), Wynne-Jones et al. (2020) investigate farmers’ preferences surrounding farmer collaborations in the UK. Doing so, they aim at filling a knowledge gap about (informal) collaborations across the agricultural sector. Despite recent literature suggesting a decline in farmer collaborations, their results show that an increase in collaborative activity between farmers is indeed present, and that farmers generally hold a preference for informal forms of collaborations. They further argue that SI might benefit from collaboration. This is because collaboration supports the possibility for efficiencies while, at the same time, enabling an improvement of farmers’ well-being, cultural shifts in farming practices and positive impacts on our environments (p.74). In a later section of this paper, I will discuss more thoroughly how the works are related and in which ways the findings are similar or different (see chapter 7). Interesting in Wynne-Jones et al.’s study is that, much like my study, it takes motivations, values and benefits associated with farmer collaborations into account.

Another example, although not recent but, nevertheless, accurate, is *Narratives of experience and production of knowledge within farmers’ groups* by Goulet (2013). The author describes how, starting in the 80s and 90s, farmers’ knowledge became increasingly more relevant. He mentions two key

elements, first, the local knowledges and experiences of farmers, and second, the coming together of said knowledges in farmer-to-farmer exchange within agricultural social networks. Farmers come together outside of traditional knowledge production realms in need “*to exchange, to confront their peers, share their experiences because of the lack of reference information about their existing innovative systems*” (Goulet, 2013, p. 439 & 440). In the text, turning to pragmatist sociology and Actor-Network-Theory, Goulet investigates the processes by which situated knowledges and individual experiences of farmers come together in a group, focusing on no-tillage farmers in France. He inquires concrete examples of exchange happening between the farmers and analyzes the mechanisms through which stories are told as well as experiences are shared so that credible knowledge is composed. The farmers do so by mobilizing witnesses, instruments as well as nature and its laws (p. 444). My analysis will be less focused on the detailed analysis of exchange mechanisms. Rather, I will draw a broader picture of entanglements between motivations, values, social, environmental and knowledge aspects at the agricultural collective Boden.Leben. I will do so by analyzing reflections and interpretations of experiences of board members of Boden.Leben as shared by the interviewees.

With soil conservation being the main topic of the collective, many of Boden.Leben’s farmers practice no-tillage or reduced tillage. While this is a similarity to the case of Goulet, there are still crucial differences between his case and mine. For the former there is a stricter obligation to work exclusively with no-tillage – more specifically with direct seeding – among the farmers (p. 442). For the latter, even though reducing tillage is welcome and promoted, the collective is still open to farmers who do not exclusively use no-tillage. Rather than obliging members to abide to specific farming rules, Boden.Leben welcomes all kinds of farmers to partake and engage in soil sensitive practices. What is indeed a similarity between the cases is the fact that both revolve around farmers that are partly geographically distant from one another, but are connected through similar interests, values and soil management practices.

The last text I want to mention here is the newly published *Experiential, Social, Connectivist, or Transformative Learning? Farm Advisors and the Construction of Agroecological Knowledge* by Charatsari et al. (2022). In it the authors investigate relations between advisors and farmers in an agroecological context. Although my study does not focus on advisor-farmer relations, but farmer-farmer relations, the ways knowledge exchange and construction as well as collective learning are thematized in the text highly resonate with how these processes occur within the farming community of Boden.Leben. In the text, the authors specifically highlight the knowledge-intensity of agroecological contexts, with knowledge being broadly defined as “*experiences, values, contextual information, and expert insights*” (Charatsari et al., 2022, p. 1), that enable actors to react to specific situations. The strong focus on knowledge matches with the one at Boden.Leben. Further, the broad definition of the concept of knowledge, resonates with the conceptualizations I found in the interviews with Boden.Leben board members. The text is thus well applicable to my case.

The paper takes the clear stance that top-down knowledge transfer models have not been successful and are thus not to be strived for. It also highlights alternative learning and knowledge transmission models happening in the context of agroecology. Here, knowledge has both an experiential as well as a social dimension. This means that the experiential knowledge of individual farmers is what forms the base of a collective knowledge exchange and construction process – both on- and offline – that can only happen within a social dimension (p. 2). Agroecological knowledge formation includes three types of learning: (1) experiential learning; (2) social learning; and (3) connectivist learning. Experiential learning describes the process in which farmers learn from their experiences and the changes thereof. Social learning describes learning through observing and reflecting other farmers' work. Connectivist learning means learning through relating diverse forms of knowledge coming from different (often unrelated) sources, be they human or technological ones (p. 2). When in action together, the three enable for new knowledges, understandings and perspectives to form. I will come back to Charatsari et al. (2022) at later points of this thesis (see chapter 7).

2.4 Soils, values and motivations in Austrian agriculture

Given that I am interested in valuations that motivate the board members of the Austrian farmer collective Boden.Leben, I was lucky to find several pieces of work that touch upon topics like farmer motives and values related to making on-farm sustainable adaptations, climate change adaptations, pest adaptations, etc., and that are situated in Austria. Below, I will present those works alongside with reflections on how they are relevant for my case.

For example, *The basic motivational drivers of northern and central European farmers* by Baur et al. (2016) investigates values and motivations of farmers in light of trying to develop agri-environmental schemes that farmers are willing to uptake. The authors use statistics and psychological concepts, thus, taking methodological and theoretical angles that are quite different from mine. However, much like me, they are interested in values in relation to motivations of farmers, specifically, they want to explore how they hang together with the (non-)uptake of agri-environmental measures (p. 93). They claim that while works in policy research on the topic are numerous, little attention has been put on the farmer side of the story, expect for the selected pieces of work which they base their study on.

Their point of departure is a study in which Swiss farmers' underlying values to preserve tradition – which they hold more strongly than the rest of the general population – explains their slow or lacking uptake of agri-environmental schemes. Baur et al. (2016) intend to broaden this approach to central and northern European contexts, investigating farmer values and motivations in Austria, Denmark, Finland, Germany, the Netherlands, Sweden and Switzerland. In their study they compare these values and motivations to the general population of each country as well as to each other (p. 94). The results relating to Austrian farmers, which are evidently the most relevant for my thesis, show that together with German

and Finish farmers, Austrian farmers are generally less open to adopt agri-environmental measures and more prone to preserve tradition than the general population (p. 99 & 100).

As mentioned, the authors use a methodological and conceptual approach that, while acknowledging its legitimacy, I do not find too useful for my work. Their focus on underlying psychological factors does not account for the social, cultural and everyday practical aspects of valuing and finding motivation. These aspects are, in my view, crucial to consider, specifically if one wants to base directions for policy on their findings. Further, even though legitimate as one piece of the puzzle, the sole basing of their results on quantitatively analyzed data does not account for nuance, but rather sees values and motivations as persistent givens. Trying to account for what is missing here, I will aim at including social, cultural and everyday practical aspects into conceptualizations of valuing and finding motivation. Hence, I will use an in-depth qualitative analysis approach.

A text that indeed accounts for contextuality and depth is *Why do we not pick the low-hanging fruit? Governing adaptation to climate change and resilience in Tyrolean mountain agriculture* by Grüneis et al. (2018). The text departs at acknowledging that climate change with its effect on the environment is an ever-growing threat to agriculture, and that climate change adaptation (CCA) is urgently needed. However, CCA efforts made by policy makers have not always been successful and adaptation barriers – such as measure not considering local specificities – remain. To shed light on current and potential local adaptation practices, the authors investigate local, everyday CCA practices as well as the motives behind them. Their focus lies on the Austrian mountain agriculture area Tyrol. Based on semi-structured interviews, they perform a cluster analysis and come up with six types of adaptation practices in the area. Three of them they identify as “*hidden adaptations*” (p. 394). These are bottom-up adaptation practices that are not taken primarily because of climate change but do have a positive impact on it, nonetheless. These practices are targeted towards “*productivity gain, support for farmers, awareness raising, environmental/ecologic improvement, increasing resilience, and conservation of cultural heritage*” (p. 390). Further, they are employed through farmers and farmer organizations as well as through non-climate-related government programs. The authors claim that these “*low-hanging fruit*” (p. 387) are interesting to policy makers, since they are implemented based upon local relevancies and needs of farmers in the area. Hence, they are already approved by them and most likely find wider acceptance and easier application among other farmers.

The text is relevant for me in many ways. First, it generally serves as an interesting example on how to investigate farmer motivations in sustainability transitions. Second, it gives a glimpse into the diversity of adaptation practices. Third, it is situated in Austria – even though on the other side of Austria as opposed to my interviewees, which are located in Lower Austria and Burgenland. Even though the focus here lies on climate change and policies – while for my case climate change plays one role among many and policies do not really play a role – the observations the authors come up with are, nonetheless, relevant

and resonate with my case. I will come back to this text at a later point and elaborate further, how it relates to my results (see chapter 7.2).

Another text that uses qualitative interviews and takes economic, institutional, environmental, social and cultural contexts into account is *Exploring farmers' behavior toward individual and collective measures of Western Corn Rootworm control – A case study in south-east Austria* by Kropf et al. (2020). It has, again, a behaviorist approach to farmers' motivations and behaviors, in this case towards Western Corn Rootworm (WCR) control measures⁴. However, it considers social and cultural aspects of human behavior, instead of just focusing on psychological determinants. According to Kropf et al.'s interpretation of the COM-B model, behavior (B) requires physical and psychological/cognitive individual capability (C); social/cultural and environmentally given opportunity (O); and motivation (M). Motivation implicates (1) environmental contexts and resources that encourage or discourage certain behavior; (2) internal reflective processes about identity, beliefs about capabilities as well as consequences, intentions and goals; and finally (3) automatic processes “*involving emotional reactions, desires (wants and needs), impulses*” (p. 6) among other aspects.

Using this model, Kropf et al. (2020) conclude that farmers' behavior regarding WCR control is influenced by various intra- and interpersonal factors. These can be personal knowledge and skills relating to WCR control, societal acceptance and normative obligations, trust in collaborating farmers, perceived severity of WCR infestation, expected efficacy of the measures, environmental conditions, financial consequences, farm type and size, or previous experiences (p. 12). The authors stress the importance of adjusting measures to local contexts that meet farmers' individual needs, and the importance of trust and open communication between farmers doing collective WCR control. Specifically, this latter aspect is crucial for cultivating farmer solidarity, an increase in knowledge about measures, and the possibility for farmers with successful results to share their experiences and encourage others to take action through peer learning (p. 13). Aspects like the importance of trust and open communication between the farmers as well as the necessity to take individual farming circumstances and needs into account when implementing adaptive measures – be they towards pests or other things like, degradation of soils, decrease in yields, extreme weather events and climate change – are highly important for my case as well (see chapters 6.2.3, 6.3.2 & 6.5.1).

An older text that thematizes farmers' logics surrounding adaptive measures – in this case adaptive measures towards climate change – is *Converting or not converting to organic farming in Austria: Farmer types and their rationale* by Darnhofer et al. (2005). The study looks at decision criteria and motives of farmers of the Austrian region of Waldviertel for or against the conversion from conventional to organic farming. The text takes a clear stance in favor of increasingly converting Austrian farms from

⁴ The Western Corn Rootworm (WCR) is an invasive species that is particularly economically threatful for intensive corn cultivation. Control measures are cultivation-related, biological, or chemical (Kropf et al., 2020).

conventional to organic. With this, it aligns with the policies out of ÖPUL⁵, the Austrian agri-environmental program (p. 39). As mentioned, the question whether organic or conventional is not necessarily relevant for my case, as both groups are represented as equally important at Boden.Leben. However, the text still provides me with some interesting takeaways.

The study being situated in Austria makes its data and results interesting to compare to my case. First, it shows that grouping farmers – whether into conventional or organic, or in soil care affine or not – these classifications do not account for the nuances in the practices of the individual farmers. Second, the qualitative study aims at integrating a methodological-individualistic with a structural approach, understanding structural factors as relevant for individual actors according to how they interpret them and take them up. These aspects can be applied to my case and are also reflected in the theoretical part of this thesis (see chapters 4.1 & 4.2). As I will elaborate in later chapters (see chapters 6.2.3, 6.3.2 & 6.5.1) the farmers of my sample show a high diversity in the ways they take up soil care and in the ways they engage in meaning-making work that incorporates both structural as well as individual elements. Further, the text mentions ÖPUL, which was brought up by some of the farmers of my sample.

Another text that not only mentions ÖPUL but takes it as a central actor in their story about adaption in Austrian viticulture is *Motivation Crowding and Participation in Agri-Environmental Schemes – The Case of the Austrian Öpul-Programme in Vineyards* by Kieninger et al. (2018). The authors investigate motivational patterns of vintners regarding their participation in the Austrian agri-environmental scheme ÖPUL. Based on descriptive and analytic statistics as well as 77 interviews, they inquire farmers' motivations from the conceptual angle of motivation crowding. This model investigates tensions between extrinsic and intrinsic motivation, often concluding that extrinsic motivation, such as financial means, can lead to a reduction of previously held intrinsic motivation. Even though policy makers attempt to motivate farmers through financial means, the study by Kieninger et al. shows that farmers are in fact motivated by a “*complex combination of different socio-psychological mechanisms*” (p. 369). These mechanisms either lead them to participate or not. For example, a prior short-term motivation through financial means can shift to a long-term motivation to farm more sustainably, strengthened by “*social learning, peer recognition, experience and good examples*” (p. 369). On the contrary, motivation to participate in ÖPUL can be hindered if farmers feel like they are controlled, and thus, lose autonomy, or if they are frustrated with administrative burdens. This specifically affects smaller farmers whose transaction costs, due to economies of scale, do not add up (p. 369). The authors thus argue for looking into motivations prior to developing agri-environmental schemes, and that developing them with context- and farm-specific sensitivity, could be crucial in the future.

⁵ ÖPUL = Österreichisches Programm für umweltgerechte Landwirtschaft

As demonstrated, several studies investigating farmers' motives and values take a psychology and/or micro- or behavioral economics perspective. One expectation is the text *Soil as a key criteria in the construction of farmers' identities: The example of farming in the Austrian province of Burgenland* by Wahlhütter et al. (2016). In the text, the authors investigate the importance of soils in how conventional and organic farmers from the Austrian region of Burgenland construct their identities (p. 39). With its focus on Austrian farming as well as on soils and the meanings associated with them, the text is highly relevant for my thesis. It emphasizes the importance of aspects such as symbol-, meaning-, social-, cultural-, aesthetic-, community- and value- related ones, and doing so, extends merely looking at technical, economical and environmental factors when thinking about transforming farms to be more sustainable (p. 41). One important aspect in the text, that also occurs in other ones mentioned above (Grüneis et al., 2018; Kieninger et al., 2018), is that adaptation happens in various contexts and farming circumstances. Respectively, it happens for various reasons, be they financial, social, or other.

What makes Wahlhütter et al. (2016) specifically interesting for the question of uptake of transformative measures regarding my case is its focus on the importance of soils and soil management strategies in relation to farmers' identities. The farmers' soil-related identities are built through reflexive (social) engagements with their soils, themselves, and, importantly, other farmers. Further, they impact the ways in which farmers are open to the uptake of sustainable measures or not. Additionally, farmers' aesthetic preferences, their mutual observation and mutual judgement concerning their different soil management strategies play an important role. They do so in the boundary work done between different identities and management practices as well as regarding farmers' respective openness to change. Due to its high relevance, I will pick this text up again in the discussion and compare it to the results of the analysis (see chapter 7).

From this literature review, I draw that farmers' motivations and values are crucial to consider. Whether when developing policy, or when investigating informal sustainability transitions, farmer collaborations, agricultural knowledge exchange as well as agricultural innovation. They shape how innovative efforts as well as exchanges of knowledge and experience are taken up and developed further. Thus, they are a crucial aspect of agricultural transformations. In this context, productive farmer exchange, mutual trust and peer learning are important for farmers to be willing to partake. Further, most texts I have reviewed emphasize how important it is for agricultural measures to be context sensitive. The extent to which they consider individual needs and local specificities of farmers strongly influences their openness towards adaptation and the successful implementation of adaptive measures. These different dimensions and concerns are relevant in the design of the research questions of this thesis. Further, they guide the data collection and analysis of the material.

3 Research questions

As mentioned, I am interested in valuations that encourage and shape the collaborative work done by the farmers of the collective Boden.Leben (see chapter 1). I am curious about what makes the collaboration as well as the knowledge gained through it valuable for its members. This implies an interest in their initial motivations to work together, valuations the farmers associate with their work or the knowledge that is gained through it, practical benefits they gain from it, unexpected benefits they gain from it etc. Given this, I understand valuations not as an abstract category decoupled from everyday life but as connected to practical and mundane relevancies of actors involved. Following Boden.Leben's own display of ambitions, differences between the farmers are meant to be productively bridged. Thus, I am interested in how these differences are talked about and how they matter for the work done at Boden.Leben. Further, I am interested in agricultural problems brought forward by the participants of my study and how these problems relate to their work at Boden.Leben as well as the valuations they associate with it. Agricultural problems as a central aspect of the research interest came about at a later stage of the empirical work, since all the participants began talking about agricultural problems on their own when talking about their work at Boden.Leben.

Empirically, I focus on the board members of Boden.Leben rather than interviewing members of the collective who do not hold a specific function in the organization. This has multiple reasons. Firstly, by focusing on the board members I manage to have a sample which is somewhat coherent and representative but does not extend beyond the scope of a master thesis. As of now, Boden.Leben has 10 board members of which I interviewed half. Secondly, all of Boden.Leben's board members in addition to their organizational function are farmers themselves, thus they enter the collaboration with the other members in context of their own practical interests as farmers and they also experience the effects of the collaboration directly on their farms. Thirdly, in addition to having practical, farming-related stakes in the collaboration, they have „idealistic” stakes so to speak as they are the ones who founded the collective and who are responsible for keeping it running. Thus, their motivations, expectations and valuations regarding the collective as well as their reflections about these aspects, are central for understanding the association.

I assume this leads to the board members having a) a crucial role for the organization and b) a role of specific interest for my research project. I do not assume that the board members are representative for the variety of members of the collective. However, being central figures for the organizations and its members, the way they approach their work and represent Boden.Leben within as well as to the outside is of central importance for the collective and its members. Thus, it is an interesting object of research for my study. Answering the main research question will be the red thread that runs through the master thesis:

RQ What kind of valuations can be identified among board members of Boden.Leben and how do these valuations motivate them for their collective work regarding soil care?

This question aims at exploring why the participants engage in the collaborative work revolving around better soil care, i.e., what makes the exchange surrounding soils as well as the insights gained through it valuable and meaningful for them. Exploring this I am interested in the valuations that board members of Boden.Leben engage in when talking about soil care measures, as well as about the exchange of knowledge and experience happening in the collective. The following sub-questions aim at differentiating potential dimensions of this over-arching main question.

SQ1 How do the board members of the collective practically realize the soil care-related exchange and activities between farmers?

With this question, I inquire how the exchange between the members is being organized and moderated, where it takes place, if it happens in more informal or formal settings and which tools are used to share knowledge, information and experiences. I further ask about how obstacles are overcome, how the farmers go about making themselves understandable for each other, share knowledge and learn from one another. Some participants might report similar or different starting points for why they are participating in the first place and what keeps them as active members. Some may have different understandings of how to communicate best. I am interested in how Boden.Leben manages to bring those farmers together and enables successful exchange between them.

SQ2 How do the different contexts in which the farmers are situated matter for their collaborative work and how do they shape the exchange and activities happening at Boden.Leben?

As mentioned, what makes Boden.Leben specifically interesting is that it welcomes very different farmers to participate in the collective work surrounding soils. Differences may concern farm size, farm location, farm type, and whether the farm is conventional or organic and impact which soil care-related measures are possible on each individual farm in the first place. I am interested in the ways these differences matter for the collaborative work taking place in the context of Boden.Leben and how they shape the knowledge exchange and practices happening there. With this question, I am further interested in how the different contexts of the farmers at Boden.Leben are related to the valuations and relevancies they bring forward.

SQ3 What kind of problems in agriculture do the board members identify and how are they related to the work of Boden.Leben?

With this question, I ask about how the participants discuss agricultural problems and how they relate them to their work at Boden.Leben. Here, I am interested in the concerns they bring forward and the ways they might attend to them through their collective work. Further, I am interested in how agricultural problems hang together with valuations brought forward by the board members.

4 Theoretical perspective and sensitizing concepts

In the following sub-chapters, I am tracing three lines of theoretical work that inform my thinking. Following a Grounded Theory approach, as I will elaborate later on (see chapters 5.1.1 & 5.2.3), I developed the theories- and sensitizing concepts part of this thesis in tight conjunction with the empirical work. Firstly, I ground my theoretical perspective in pragmatist-sociological thinking. Secondly, I introduce the concepts of regimes of valuation and evaluative principles. Finally, I use a social worlds approach to delineate my case and bridge the theories- and methods part.

4.1 Pragmatism and Symbolic Interactionism – from problems to action

Pragmatist-sociological approaches have their origins in the US-American pragmatist philosophy of Charles Sanders Peirce and William James from which both the Chicago School of Philosophy, featuring thinkers like John Dewey and George Herbert Mead, as well as the Chicago School of Sociology, featuring thinkers like William I. Thomas and Robert E. Park, developed. All three schools are considered predecessors of the sociological Symbolic Interactionism for which names like Herbert Blumer and Anselm Strauss are known (Schubert, 2009, p. 345). Strauss also together with Barney Glaser developed the methodological approach of Grounded Theory (Glaser & Strauss, 2010), which informs my empirical approach (Clarke et al., 2018). Several of these strands and developments, which overlap more than this list suggests, are relevant for the thesis: as a general theoretical lens, to think certain aspects of the case, or as a repository for methodological principles. I will start by shedding some light on how pragmatist-sociological thinking conceptualizes basic social science notions of action and social change, while reflecting why this approach fits my case better than other ones. I will end with an example on how pragmatist-sociological thinking might be applied to the case.

Schubert (2009, p. 345) describes: *“The main message of pragmatist thinking is that awareness, insights, and meanings develop in the course of creatively solving problems of action.”* The problems of action described here, when applied to my case, are the agricultural problems I have previously mentioned and that will be further explored in later chapters (see chapters 6.1.3 & 6.2). The new awareness, understandings and meanings that come along in solving problems of action, as described in the quote, can be understood as results from encountering and collectively trying to solve said agricultural problems. Hereby, new values and purposes are created, which I will elaborate on in later chapters (see chapters 6.3 & 6.4). What is interesting here is that neither does action happen completely independently from preconceived norms and valuing systems, nor is it strictly dictated by normative structures. Since every situation brings new challenges, action always requires creativity and experimentation to build upon pre-existing meanings and structures. This makes every action influenced by something old and established while, at the same time, always bringing forth something spontaneous and unprecedented (Schubert, 2009, p. 347).

This understanding of action sets pragmatist-sociological approaches apart from both strictly structure-oriented strands, in which all action is determined by social structures, and strictly subject-oriented strands, in which individual action is central. Action being situated in an area where both aspects matter is relevant for my case, in which established agricultural valuing systems and norms are both drawn from as well as challenged by the farmers at Boden.Leben. This is done by drawing from, while at the same, time newly interpreting and adapting normative structures. It is precisely this creative and experimental interpreting of traditional norms and structures while attending to practical problems that makes action comprised of both structural and individual aspects. Further, this coming together of structure and individuality, normative order and creative spontaneity in pragmatist-sociological thinking is relevant when it comes to social order and social change.

In Pragmatist thinking, social order is understood as a process of permanent ordering, the inherent openness of which makes social change possible in the first place (p. 346). Social change is triggered when crises of action give rise to doubts. This starts a fluent transition from practical to experimental consciousness, whereby old meanings and possible solutions are used, and while being reinterpreted are creatively modified. Practical consciousness is comprised of established and often unquestioned meanings. These meanings – even though practical action does not simply follow them but always newly interprets them – “*structure actions as internalized or even incorporated habits or traditions*” (p. 348). Experimental consciousness, then, is what sets in once crisis disrupts habits of action and requires for new meanings to be created. Finally, these new meanings must be proven to be justified and meaningful before they become new habits of action (p. 349).

When applied to my case, meanings and values surrounding the status quo of farming, as taught in agricultural schools and trainings, and generally accepted as good practice by the farming community, can be understood as practical consciousness. The established meanings of what it means to be a good farmer – although every farmer must reinterpret them to some extent in order for them to be applied on each individual farm – structure the daily practice at their farm and remain unquestioned. Only by encountering issues too pressing to ignore, like decreasing yields, erosion, pests, as well as increasing financial and societal pressures, habitualized, everyday habits of action can no longer meet everyday requirements. It is then that farmers start to reflect their “business as usual” and look out for explanations and alternative solutions. Here, as I will elaborate throughout this thesis, the farmers’ collective of Boden.Leben is one site at which old ways are reflected, traditional practices are questioned and new meanings and ways of farming are created. But challenging the status quo is not unconditional and frictionless. In addition to individual obstacles and risks associated with farm transitions, farmers must learn to deal with scepticism, even hostility from their social environment and, to some extent, accept that, for some colleagues, they now occupy a certain outsider role.

4.2 Valuation Studies – challenging and building regimes of valuation

But how come the farmers at Boden.Leben make the effort to swim against the stream despite these difficulties? The processes I have described at the end of the last sub-chapter can be explored further by adding a perspective on values and valuing to the equation. This means to investigate both the values and their corresponding motivations that matter for the farmers as well as to explore regimes of valuation and their respective principles that farmers at Boden.Leben aim to challenge. I will begin by differentiating the two terms valuations and motivations. I will describe the concept of motivations only briefly since it is not my main focus. Concepts around values and valuation I will elaborate on in more theoretical terms to later use in the analysis.

The way I use the terms, valuations and motivations both shape action, however, they differ in terms of the stages at which they do so and in terms of how explicitly or implicitly they manifest in situations. Motivations are what is often made explicit as an intention behind an action or the incentive to do something. They are concrete tangible forces that make certain actions and behaviors likely and others unlikely. Further, they often come to matter to make specific ends meet in a concrete situation and are often explicitly reflected by actors. For example, when applied to my case, a Boden.Leben farmer would describe reasons why taking better care of soils makes sense in a given situation. Even though they indeed shape reasonings for actions as well, valuations, on the other hand, I rather define as that what is always subtly shaping and guiding action. Even though they are always at play in concrete, practical situations actors do not always reflect on them explicitly. For example, when talking about the practical reasons because of which he takes care of his soils, a Boden.Leben farmer implicitly designates healthy soils as valuable. Further, valuations often built upon larger institutionalized systems of norms and values that may have persisted over longer amounts of time. Differentiations between the two concepts could be further theoretically explored. However, since the purpose of this thesis is not to perform a theoretical comparison of concepts, but rather to use selected concepts that are suited for the empirical inquiry, I will refrain from doing so. Instead, I will now dive deeper into the theories behind values and valuation that I will later use in the analysis chapter.

To do so, I draw from Valuation Studies literature. Valuation Studies is a new field in the Social Sciences which has emerged in the last 10-15 years and has its roots in STS, economic sociology, anthropology and management studies, among other fields (p. 2). The central aim is to investigate “*where the value or values of something is established, assessed, negotiated, provoked, maintained, constructed and/or contested*” (Valuation Studies Board of editors, 2020 cited by Asdal et al., n.d., p. 2). According to Asdal et al. (o.A.), Valuation Studies has three major roots within the Social Sciences – the pragmatism of John Dewey, French pragmatist Sociology and Actor-Network-Theory. In my thesis, I mostly work with an understanding of values and valuation as influenced by the pragmatism of John Dewey. Hereby, I am focusing on an understanding that sees valuing as something that we do to act towards something else. With this, I am further connecting to Pragmatist and Symbolic Interactionist thinking that conceives

of values as a result of action that aims at solving problems of action (see chapter 4.1). These strands of literature are also reflected in the methodological approach I based the data collection and analysis on (see chapters 4.3 & 5.1). For my case, using the concept of “regimes of valuation” as described by Fochler et al. (2016), I investigate how regimes of valuation surrounding traditional soil management practices are challenged by the farmers of Boden.Leben. I argue that, in their efforts to solve practical agricultural problems, they question old, established ways of farming, and suggest alternative ways of taking care of and thus valuing soils. Consequently, they contribute to the making of new regimes of valuation surrounding soil management and agriculture in a broader sense.

Fochler et al. (2016) develop the concept of “regimes of valuation” in the context of investigating valuation practices of junior researchers within the life sciences in Austria. Departing by pointing to a crisis of academic valuation practices and unsustainable academic growth, they investigate how PhD students and postdocs “*ascribe worth to people, objects and practices as they talk about their own present and future lives in research*” (p. 175). Doing so, they map different evaluative principles and their respective regimes of valuation. The former accounts for how worth is ascribed in specific situations, the latter considers discursive, material and institutional arrangements that a concrete valuation draws upon (p. 180). Specifically, their focus on institutional aspects of valuing – e.g., institutionalized metric evaluation of academic output – makes their perspective interesting. They conclude that, while PhD students refer to a range of different evaluative principles in their work and life as researchers, postdocs rather use the logic of one dominant regime of valuation to base their decisions as researchers on (p. 196).

Inquiring how evaluative principles and regimes of valuation affect what actors do as well as how they reflect on their decisions regarding these actions, this approach, much like the approach described in the former chapter, acknowledges both institutions and (infra-)structures as well actors and their individual agency. While regimes of valuation give structure by providing the actor with evaluative principles on which to base their actions on, the actor can then “*apply, modify or reject them in concrete situations*” (p. 180). This immanent possibility of the individual to newly interpret, apply, adapt, or reject this given structure makes regimes of valuation vibrant constellations susceptible to change. The more diverse – maybe even competing evaluative principles co-exist within a regime of valuation – the higher the chance for change to happen. At the same time, a given regimes can also be dominated by one evaluative principle, they can exert normative power to a higher degree than others, depending on the degree of institutionalization. The former case is called a heterarchical constellation, the latter is referred to as a hierarchical one (p. 179).

Taking inspiration from researchers that have applied tools to inquire scientific knowledge-making to the domain of agriculture (Goulet, 2013; Rose & Chilvers, 2018), I will use the concepts of regimes of valuation and evaluative principles and apply them to my case. In said case, different evaluative principles relating to different scales are at play. For example, to evaluate soil quality, some farmers

may ask how much yields can be produced, while farmers at Boden.Leben may ask how diverse the microorganisms in the soil are. The former principle could be seen as part of an agricultural regime of valuation that holds productivity as the main evaluative principle and neglects other aspects like ecological and social responsibility. On a different scale, namely the level of community and organization as it manifests at Boden.Leben, evaluative principles surrounding farmer exchange could, e.g., be a positive communicative climate, possibilities to disagree, or opportunities to share everyday farming experiences right when they happen. Here, different evaluative principles are at play. When it comes to outdated practices like intensive plowing, these practices are part of an institutionalized regime of valuation, since plowing – according to the participants – is still taught in schools and trainings and is seen as the status quo in farming. These exemplary snippets of insight into my case will be elaborated on in later chapters (see chapter 7).

4.3 Social worlds/arenas perspective – making a case

In the prior chapters, I have demonstrated how pragmatist-sociological approaches are helpful to conceptualize action, social order and social change regarding Boden.Leben and I have shown how values and valuation matter in respect to my case. What is now left to do is to find terms to conceptually delineate my case and the domain in which it is situated. In order to do so, as well as to bridge the theory and the methods part of this thesis, I will use the framework of „Social Worlds” as discussed by Adele Clarke and Susan Leigh Star (2008).

The framework historically originates in the previously mentioned theoretical tradition of the Chicago School of Sociology (see chapter 4.1) and – following a Symbolic Interactionist way of thinking – emphasizes the collective meaning-making and acting upon these meanings within multiple, often intersecting, social worlds. As they get more complex these so-called „universes of discourse” (Strauss, 1978 cit. by Clarke & Star, 2008, p. 113) then turn into arenas, which are compositions of „*multiple worlds organized ecologically around issues of mutual concern and commitment to action.*” (Clarke & Star, 2008, p. 113). Within these arenas, actors, collectives, things as well as symbolic representations and (narrative) discourses enter dynamic, interactive relations with each other and thus make collective meaning-making and collective action possible.

As mentioned above, the farmers of Boden.Leben come from various backgrounds and are thus differently socialized in terms of the farming practices they use, the regimes of valuation they draw from as well as the evaluative principles they employ. Further, while most members come from different agricultural backgrounds, some come from backgrounds in which agricultural practice is not carried out directly but plays an important role (such as agricultural advisors) and some come from non-agricultural backgrounds (such as politics or research). In more conceptual terms, these numerous backgrounds of the members of Boden.Leben can be thought of as varying, and often intersecting social worlds in which specific knowledge systems and values are shared, specific agendas are advocated, specific expectations

are held, and specific practices are done. Despite these differences, they collectively organize according to their mutual commitment to finding better ways of treating soil, i.e. they can be understood as „*multiple worlds organized ecologically around issues of mutual concern and commitment to action.*” (Clarke & Star, 2008, p. 113). I thus conceptualize Boden.Leben as a social arena comprised of the multiple social worlds of its member groups.

As this framework takes relations between different entities on differing scales into account, it will be especially useful to me when I theoretically and empirically examine how individual actors (i.e., farmers), different ways of knowing (e.g., seeing, measuring, talking or reading about soil) and treating soil (e.g., plowing soil or using no-till methods, using fertilizers on soil or reducing the use and aiming to cultivate soil life, etc.) are meaningfully related and hang together with agricultural systems of valuation. Although social worlds and their related entities can never be fully separated and thought of as independently from one another, to not go beyond a reasonable empirical scope for the master thesis, I am not inquiring all the embedded social worlds in the context of Boden.Leben but, as mentioned above (see chapter 3), I am only focusing on the embedded social world of board members as starting points of the empirical inquiry.

How I methodologically approached as well as practically gained access to the field, how I went about sampling and collecting the data, and how I analyzed said data, will be described in the next chapter.

5 Methods

5.1 Methodological approach

I situate myself in interpretative empirical social science research. With that I mean that I followed a methodological approach, which does not take social reality as given and acknowledges the researcher's role in co-constructing their object of study. I analyzed the collected data from this perspective, meaning that I reflected on my own role in shaping the object of study throughout the research process. Further, it means that I approached the research object openly, meaning that I did not have fixed ideas about the empirical field, the data I gathered and the results I was about to find. I also approached the research in a cyclic fashion, switching between data collection and analysis. This way, I adapted my methodical and conceptual proceedings according to the findings and avoided getting stuck on a specific approach that might not fit my research case. In the following subchapters, I will elaborate on my chosen methodical framework: situational analysis, and then, sketch how I collected and analyzed the data according to said framework.

5.1.1 Situational analysis

The primary basis for the empirical analysis is five interviews, which I conducted throughout the year of 2021 via Zoom. Even though my analytical focus will lie on these interviews, following a Grounded Theory approach, I will incorporate other empirical data as well. I did so, especially in the beginning phase of the master thesis project, by doing a participant observation at a field-day, by reviewing materials provided online by Boden.Leben or by collecting other relevant documents. In order to systematically incorporate these materials and further, to perform an analysis which integrates these various methods of empirical inquiry, I chose the methodological framework called situational analysis as described by Adele Clarke, Susan Leigh Star and others (Clarke et al., 2015, 2018; Clarke & Star, 2008).

Situational analysis, in its core, is based on a Grounded Theory methodology, broadly meaning that both theoretical and analytical steps are taken based on empirical work. It is a so-called theory/method package that links symbolic interactionism with Anselm Strauss's social worlds framework (see chapter 4.3) and combines it with „conceptions of situated action” as described by Donna Haraway (1988) as well as analytic concepts of Foucauldian discourse analysis and visual cultural studies (Clarke & Star, 2008, p. 128). By using this methodical approach, which operates using mapping techniques, I hope to contribute to an emerging stock of social science and STS inquiries, which Chilvers & Kearnes (2019) describe as „ecologizing participation”. With this they mean approaches, which aim to more accurately attend to the diverse, multiple and interrelated participatory practices happening within and beyond wider ecologies of systems and issues – in my case participation in meaning and knowledge making happening in the context of the farmers' collective Boden.Leben. Further, this approach

accounts for the situational character of, in my case, valuating practices, that also Fochler et al. (2016) emphasize.

In situational analysis, in addition to performing memo- and coding practices as would be done in classical Grounded Theory, the researcher generally operates by drawing three kinds of maps. (1) Situational maps: in these maps all entities relevant to the research objective – be it humans, non-humans, discourses, or others – as well as their relations are being laid out. (2) Social worlds/arenas maps: here „ *collective actors and the arena(s) of commitment within which they are engaged in ongoing discourse and negotiations*” are being laid out. (3) Positional maps: on these maps the major positions taken, and *not* taken are displayed. These maps consider a „*full range of discursive positions on particular issues [...] held by both individuals and collectivities*” (Clarke et al., 2018, p. 18). This approach – similarly to other theory/method approaches like discourse analysis – leaves a relatively wide space for the researcher to continuously make flexible decisions about how materials are collected and analyzed. Further, this approach, as it stems from Grounded Theory, understands theory and methods as well as data collection and analysis as mutually co-developing in a cyclic research process. Despite this openness, I did anticipate ways in which the data collection and analysis process will take place. These I will describe in the following sub-chapters.

5.2 Data collection

The data collection process for this thesis project extended over a period of one and a half years in total. The first half year was used to collect general material about the case, in the following year the interviews, which are the main source of material for the analysis, were conducted. As mentioned, while in the data collection phase, I simultaneously worked on the theories section, making sure the theoretical work was closely aligned to what I found out empirically. In the following sub-chapters, I will provide a short recap about my case for the reader to set the stage for describing the process of gaining access to the field and sampling in the next chapter. Lastly, I will describe the process of planning and conducting the interviews.

5.2.1 Recap: my case, the Austrian farmers’ collective Boden.Leben

As described above, my thesis investigates the Austrian farmer collective Boden.Leben. Boden.Leben organizes exchanges of agricultural knowledge and experience and aims at cultivating healthier soils. The exchange happens in so-called soil-webinars, on field days, in an online forum as well as via WhatsApp and revolves around anything related with soil and soil care. The participating farmers are diverse in terms of farm type, farm size, farm location, climatic conditions and production practices, such as till, no-till, conventional organic, etc. Further, they associate their work at Boden.Leben with differing agricultural meanings and values. For example, some see great value in refraining from using agrichemicals and thus, plow their soils, others may see more value in reducing tilling as much as possible and therefore, accepting the use of agrichemicals.

As mentioned above, what is interesting about Boden.Leben is that it allows for exactly this diversity and that it enables intense exchange between farmers situated in different social realms. What connects the farmers is the common endeavor to find and build climate-change-adapted and ecological agricultural forms by focusing on collective learning practices surrounding soils. This implicates that, when working together, they approach their work having been socialized in various regimes of valuation (see chapter 4.2). This makes Boden.Leben an arena of discourse in which different evaluative principles are employed to inform and structure action, be it by accepting, adapting, or rejecting certain evaluative principles.

In my thesis, I am specifically interested in valuations which board members of the collective associate with the work being done at Boden.Leben. I want to find out how these valuations encourage and shape the collective work and motivate the farmers to partake. Further, I am interested in how this hangs together with agricultural problems identified in the interviews or other materials (e.g., documents; field notes). I use the term valuations and the corresponding motivations to describe anything ranging from, initial motivations to work together, added values the farmers associate with their work or the knowledge that is gained through it, practical, expected or unexpected benefits they gain from it, etc. Therefore, I understand valuations and the following motivations not as abstract categories decoupled from everyday reality, but as connected to practical, mundane relevancies of the actors involved.

5.2.2 Field access and sampling

For my project, field access and the resulting data collection happened in two phases. In the first phase I was introduced to the case by a gatekeeper and gained general field access. In the second phase, I recruited the participants with the help of my gatekeeper.

The gatekeeper is a soil researcher who is also a member of Boden.Leben. Thus, he knows the collective well and is also familiar with developing a research project. I was introduced to him by my thesis advisor, who had encountered Boden.Leben through his own research and drew my attention to the case as a potentially interesting subject of study for a master thesis. My gatekeeper, my advisors and I had a consecutive meeting, in which the former told me about the collective. I took notes and discussed a plan for the master thesis with my advisors after the meeting. In this early phase of the empirical work – in order to prepare a plan for field access and data collection – I collected various materials that I encountered as I engaged with the case on- and offline. This was, e.g., links to video material provided by Boden.Leben, memos thereof as well as exported pdf-files and screenshots of the videos as well as Boden.Leben's website. I used these materials plus the respective memos, specifically in the beginning of the research phase to get familiar with the case, to generate research questions and to prepare the empirical work. Further, by documenting even small observations I was coming across, I acquired a better understanding for the case and, throughout the research process, I was able to trace how my understanding developed.

The main source of data for the analysis are five semi-structured interviews with farmers and board members of the farmers' collective Boden.Leben. I conducted four of the interviews in early 2021, the last one I conducted in the summer of 2021. My gatekeeper sent me a list of the board members' names, with their contacts and basic information about their farms. Based on this list, I contacted the participants individually via e-mail. I included both conventional as well as organic farmers in the sample to get an overview of the diverging meanings, values and expectations these stakeholders associate with their work at Boden.Leben. In the end, four of the interviewees turned out to be conventional farmers, one to be an organic farmer. Considering questions of representativeness of the sample, I included farmers of different ages, with differently sized farms and with different cultivation methods. For example, one owns a 30-hectare sideline farm, another is the proprietor of a 300-hectare arable farm and a third one runs a dairy farm with 75 hectares of farmland, of which 20 hectares are grassland. The farms of the interviewees are located in Lower Austria and Burgenland. I was not able to consider gender, ethnicity, or socio-economic background in the sample. In terms of ethnicity, as of now, the board members of Boden.Leben all appear to be white. In terms of gender, at the time of me gathering the data, the board consisted only of men⁶.

At first, I had planned to conduct one or two participant observations at a field day, seminar or workshop organized by Boden.Leben to observe the potentially diverging meanings, values and expectations in action. By conducting participant observations at one or two of these events, I expected to be able to observe these processes happening in the very spaces in which farming work takes place, which I hoped would enable me to consider the spatial and material dimensions of these processes. In the beginning phase of the project, I did carry out one participant observation at a field day organized by Boden.Leben. However, due to limited resources, I did not perform any other participant observations following the first one. Therefore, I will not include the initial participant observation in the main analysis. Nevertheless, participating at the field day was an important step in gaining access as well as a deeper understanding for the field, which I used to sharpen my research interest and generate the research questions. I analyzed all data I collected in a cyclical process using the coding and mapping techniques described above (Clarke & Star, 2008, p. 128). While it was important to continuously reflect on all data to make my case – memos, links, videos, articles etc. – the main analysis was based on the interviews and took place after I had gathered them.

5.2.3 Interviews

For the interviews, I used a semi-structured interview approach as described by Jensen and Laurie (2016, pp. 173 & 174). I prepared questions relating to my topics of interest and, during the interview, made sure to cover all the topics according to the flow of the interview. The topics I covered, each having one

⁶ In the meantime, in the beginning of 2022, a woman working as a rainworm researcher has joined the board.

to five respective questions, were about general information on the participant, their farm and their approach to Boden.Leben; their motivation for the work at Boden.Leben; benefits they gain (individually and as a collective); values they associate with the work, i.e., what makes it valuable for them; practical relevancies of the work; goals of the collective and how they relate to those goals; differences within the collective and how they are handled; the role of research for the collective; the role of soil knowledge for the collective; and the larger context in which the collective and the respective work is placed. One important aspect in the research questions is how the interviewees discuss problems in agriculture as well as how they relate the work at Boden.Leben to these problems. Before doing the interviews, I did not specifically develop questions about problems in agriculture when generating the research questions. Most of the participants began talking about problems in agriculture on their own when talking about their involvement at Boden.Leben. This turned out to be interesting and well relatable to my research interest. Therefore, I added this aspect later and – following a Grounded Theory approach – worked this topic into the research questions and theories section while already being in the empirical phase of the project.

Due to the COVID-19 pandemic each of the interviews took place via the video telephony software Zoom. They were all conducted in German, lasted between fifty minutes and two hours and were recorded using the tools of the software. For the sake of comparability, I began each interview with the same introduction, and I ended each with gathering informed consent about recording the interviews, to which all the participants agreed. I transcribed the interviews using Apple’s audio-software “Musik” and typed the transcripts directly into Microsoft Word, making time stamps at every five minutes marker. For transcription, I used the verbatim transcription style as described by Paulus et al. (2014, p. 96). This means that I wrote down everything I heard in the audio files, including word repetitions, stutters, filler sounds like “uhm” or “uh”, as well as dialect terms and pronunciations. I did so, in order to be close to the original content when analyzing. Sometimes, while analyzing, when I was not sure about emphases that could alter the meaning of what was said, I went back to the audio file and relistened to make sure my understanding was as close to how the interviewee might have meant it. Since the interviews were conducted in German, when inserting quotes into the thesis text I translated them into English. While doing so, I erased word repetitions, stutters, filler sounds and dialect words, while, at the same time, trying to keep the original meaning of the statement as best as possible. It was important for me that the meaning and the sentiment of what was being said came across despite the loss of the dialect, which is why I made sure to keep informal expressions and sentence structures as well as curse words and other ways of coloring the language that transport sentiment. The original German quotes can be found in the appendix (see chapter 11.5).

5.3 Analytical process

In this chapter I will describe the analytical process, starting with coding and memo-ing, then finishing with describing the mapping process. This is supposed to make the analytical steps traceable and provide the reader with insights into the process.

5.3.1 Coding and memos

For coding the interviews, I used the software ATLAS.ti. I began coding with an idea of what I wanted to find out in mind and generated the codes as I went forward, thus mixing deductive and inductive coding. When I noticed that I needed to add or adjust a code, I went back to the beginning of the interview and did so accordingly for the already coded parts before going forward. This way, I went through the interviews in a cyclic motion. I did not use one specific framework for coding, e.g., thematic coding or coding for action. Rather, I used a mixed approach in which I generated the codes exploratively, according to what helped me organize the interviews and make sense of them best. For example, I coded (1) for action, (2) for characteristics, (3) for general themes, (4) temporal dimensions, (5) dimensions of change and consistency and (6) contexts. As I went forward, I adjusted the categories I coded for and finally ended up with four categories: (1) characteristics, (2) context / temporal, (3) agricultural problems and (4) values & purposes.

After coding the first interview, I went over the codes again before continuing with the next interview. Codes I had used under five times I reconsidered going forward. If I felt like they lacked significance, I took note of it and did not continue using them. If they turned out to be informative or relevant nonetheless, I continued using them. The code „agri problems” I had used significantly more often than the others. Hence, I eventually split it up into several different codes and turned “agri problems” into its own code category. The codes I generated for the first interview were not exhaustive, thus, going through the second interview, I generated new codes as I went along and went back to the first interview and applied the codes to it as well. Further, when I noticed that I needed to add or adjust a code, I did so as well as going back to the beginning of the interview and doing so for the previous parts as well.

I added codes up until the last interview, however, most of the codes were created while coding the first two interviews. Going forward, the codes increasingly became exhaustive until saturation occurred. In the end, as mentioned above, I came up with four categories – (1) characteristics, (2) context / temporal, (3) agri problems and (4) values & purposes. While coding, I continuously wrote memos about the interviews as well as the codes and categories. In the memos, I followed a similar structure in which I had headings that I copied onto each new memo and filled up with information. The headings were, e.g., labelled: new codes, adjusted codes, or observations for analysis. This served the purposes of making the coding process traceable and to be able to quickly note down any reflections, observations and analytical thoughts I came up with while coding. These memos I used to clean up and synthesize the codes at the end of the coding process. Further, I used them for the analysis.

5.3.2 Mapping

The methodical approach being guided by situational analysis (see chapter 5.1.1), another method I used when analyzing the data was mapping. For this purpose, I used pen and paper as well as the software ATLAS.ti. I approached the material exploratively, while, at the same time, using the working observations and hypotheses to help me organize the material.

In the early stages of the analysis, I sketched situational maps by hand, which meant mapping exploratively to organize the data and to generate as well as test first hypotheses. At later stages, once I had conducted and coded all the interviews, I switched to digital mapping, drawing the maps in respect to what I found out while coding and writing memos. Since drawing the maps provided analytical insight as well, in the process of doing so, I also readjusted the codes and their respective categories according to the insights I gathered while mapping. Following this cyclical pattern, it was possible to explore the data openly while, at the same, time keeping the material and my analytical steps organized. To structure the mapping process I further used, the co-occurrence table tool in ATLAS.ti to find links between codes and code groups and then exported the results into an Excel sheet to organize the codes and analyze them further. I then used Microsoft Excel to generate tables and charts for data visualization. Then, I usually went back to ATLAS.ti, to draw maps of the data and visually analyze it.

The tables use color to differentiate between codes and are meant to be read as a medium between plain written text and charts or maps. Using the tables enables me to make use of the benefits of both written text and visual representations. They are less messy and thus easier to understand than maps. and they are more concise and quicker to read than plain text. I made use of tables specifically to present the codes in their raw form before taking analytical steps with them. The tables are to be read just like the rest of the text. Further, they can be used as reference points when looking at the maps. I generated the maps using ATLAS.ti. Usually, I first analyzed the data using the code co-occurrence table tool in ATLAS.ti. Then, I exported the results to a Microsoft Excel sheet, cleaned as well as formatted the data and then, went back to ATLAS.ti to draw the maps. I used both the qualitative memos I had written when coding and going through the data as well as analysis tools in ATLAS.ti when generating the code co-occurrence tables and maps. The following chapters feature the tables and visualizations I generated alongside with descriptions and reflections.

6 Analysis and results

In this chapter, I present the empirical analysis of the data and the results I gathered from it.

I will begin tracing the starting points of the analysis and display the preliminary results from the beginning phase of the analytical process. Then, I will provide a comparative overview of the interviews that were the base of the analysis as well as provide the reader with concept maps of each interview. Furthermore, I will elaborate on working observations and hypotheses I generated early on in the

analytical process, and which structured the analysis going forward. I will end the sub-chapter by taking a closer look at the starting conditions of Boden.Leben, specifically at how agricultural problems have been of importance for the founding and continuation of the collective. In the next sub-chapter, I will explore how agricultural problems are discussed by the board members of Boden.Leben and elaborate on how they interrelate with one another. To do so, I will provide tables, maps, and, most importantly, direct quotes from the farmers I interviewed, alongside with reflections.

In the next sub chapters, I will depart from the agricultural problems addressed in the prior chapter and shift my point of view on the values and purposes that Boden.Leben comes along with, thus, in a sense, focusing on the various ways that agricultural problems are responded to by Boden.Leben. In the first sub-chapter about values and purposes, I will trace initial benefits, such as improving cost/benefits and unexpected side effects, such as ecological improvements that members experienced through the collective work at Boden.Leben. In the second one, I will enhance the analysis with a stronger focus on social, interactive and community aspects of Boden.Leben, investigating how they relate to the soil- and knowledge-related practices. Specifically, I will map out how improving exchange between farmers – both socially and intellectually – relates to improving soils and the various benefits this has for the farmers. Specifically, I will argue that environmental, knowledge and social aspects are deeply entangled and come together in the collective meaning- and knowledge making at Boden.Leben. As I will argue, the ways in which the farmers relate to each other, mediate their differences, and improve their understanding for each other is a key aspect for starting reflexive processes, improving the understanding of their soils, and ultimately, employing new and better ways of taking care of it.

In the concluding chapter of the analysis and results section, I will synthesize the above chapters by summarizing how the values and purposes of Boden.Leben respond to the challenges described above. Further, I will reflect on prevailing or newly arising challenges in agriculture before departing into the discussion chapter.

6.1 Starting points and first results

6.1.1 Point of departure: soil

As described above, I interviewed five farmers who are board members of the farmers' collective Boden.Leben. Among those farmers, four work conventionally and one works organically. All of them try to work as sustainably as possible given their individual farming circumstances. The types of farms covered in the sample are crop farms as well as livestock farms, such as arable farms and dairy farms. Crops that are cultivated are wheat, rapeseed, potatoes, sugar beets, rye, field beans, mustard, buckwheat, oil flax, poppy and corn, among other things. The regions which are featured are Lower Austria and Burgenland, thus, the weather and soil conditions are characterized by little to strong rainfalls, sandy and less sandy soils, as well as hilly areas and flatlands. The farm sizes range from

smaller farms of about 30 hectares to larger farms of a couple hundred hectares. (I1 25-27; I3 5-9; I2 56-64; I4 22-23; I5 19-26)

The farmers' aim is to use invasive farming technologies sparingly, and if so, responsibly. Further, they try to use „natural” technologies, like improving soil health and fostering microorganisms, as much as possible (see, e.g., I1 106-112; I3 520-530; I4 126-134; I5 400-407). They avoid intense tilling as much as they can, given their farming circumstances. Specifically, how much tilling can be avoided often depends on whether the farm is run conventionally or organically. Speaking of conventional and organic, the relationships between the two farming approaches were reported to be generally positive and productive by the interviewees. Even though often portrayed in the media as mutually exclusive, hostile camps, for the conventional and organic farmers in my interview sample, this was not at all the case. This goes as far as the farmers reporting that differences between the approaches sometimes have positive effects on the mutual learning efforts and that each approach has its own advantages and disadvantages (I2 1160-1165; I3 231-238; I4 766-768; I5 1400-1406).

For all of them, soil conditions and soil care are crucial priorities. This is reflected in the concept cloud displayed below. Using ATLAS.ti, I generated a concept cloud for each interview to visualize which concepts were emphasized. ATLAS.ti has a tool that auto-generates a list of all the concepts it makes out in a text. These lists can then be visualized. After generating each list, I went over it thoroughly to clean out all the words that ATLAS.ti mistakenly put into it and – for the sake of anonymity – made sure there were no names or any other words that could identify the farmer of the respective interview. Clearly, for each interview, the concept of soil takes a central position, meaning that it was mentioned most frequently in the interviews.

6.1.2 Working observations and hypotheses

While preparing, conducting and transcribing the interviews, I generated working observations and hypotheses to structure the analytical process as I went forward. These hypotheses further informed the coding process.

While transcribing the interviews, it became clear that problems in the agricultural sector were of relevance for the farmers individually, for the founding of Boden.Leben as well as their engagement in it. The agricultural problems identified by the participants ranged from problems they face at their specific farms to those they identify as general issues in agriculture, e.g., in relation to wider society, politics and the economy. Further, according to their character these problems can be grouped into environmental, societal and sector specific agri-problems. A more in-depth elaboration on this grouping as well as on how these agricultural problems relate to the founding of Boden.Leben and how the farmers' engagement at the collective responds to the problems will be discussed in chapters *6.1.3 Agricultural problems as starting conditions* and *6.2 Exploring agricultural problems through a farmers' perspective*.

What additionally stuck with me when conducting and transcribing the interviews was the order in which some of the farmers became aware of the benefits of taking better care of soils. While better soil care seems to come along with multiple interrelated benefits for individual farmers, agriculture as well as wider society, motivations to start engaging with it often began out of an initial interest in solving a farm related problem, like improving cost/benefits. This initial motivation later expanded as it became obvious that soil care comes along with many other benefits, e.g., it not only benefits individual farms as economic entities but also benefits the environment and the way farming is perceived by various publics. I will pick these aspects up again in chapter and *6.3.2 Unintended consequences of trying to solve a problem*.

Further, one of the first things I noticed when engaging with Boden.Leben was that the exchange between the farmers seemed to have a wide range of benefits for them as opposed to working on their own. My observation was that the exchange granted them a possibility to reflect on their work with other farmers, and further, the shared reflections of others triggered new reflexive processes in and of themselves. The notion of exchange between farmers as a core value of Boden.Leben and as one of the main drivers of collective learning occurred multiple times throughout each interview, as I will elaborate on in chapter *6.4 Improving exchange – improving soils*.

Finally, another observation I made early on is that the differences between the collective's members and the work to overcome those differences seem to be key for learning and developing new farming techniques as well as for forming Boden.Leben's collective identity. These differences are, e.g., differences in farming approaches, farm location, farm size, farm type or the farmer's age. Further, it is a characteristic of Boden.Leben that the members often emphasize in the interviews (I1 295-309; I2

1781-1782; I3 231-244 & 587-596; I4 787-808). My assumption was that the different farming conditions and their respective approaches complement each other to some extent, and that hearing about and witnessing them was an impetus for trying out new techniques. This observation well resonated with what I found when I engaged with the interviews more in-depth. The code category „characteristics” was generated to account for these differences and to see how they relate to other codes. I will pick up on this again in chapter 6.4 *Improving exchange – improving soils* and further elaborate on how this affects the social as well as farming-related aspects of Boden.Leben.

6.1.3 Agricultural problems as starting conditions of Boden.Leben

Returning to the first observation that I made in the analytical process, in this chapter, I will elaborate on agricultural problems as starting conditions of the farmers’ collective Boden.Leben. By starting conditions, I mean the circumstances under which Boden.Leben started and continues as well as the reasons for why Boden.Leben was founded and why farmers initially joined the collective. As mentioned, although not initially included in the research questions, when engaging with the case empirically, and specifically when analyzing the interviews, it quickly became clear that problems in the agricultural sector are and continue to be highly relevant for the farmers, the foundation and the continuation of Boden.Leben as well as its members’ engagement in it. Therefore, agricultural problems were later included as a main aspect of the research questions and, thus, are given their due attention here.

All four interview partners mentioned pressing agricultural problems when talking about how Boden.Leben was founded and why its work is important. Further, there are several instances in the interviews in which the participants began talking about agricultural problems out of their own initiative. They were mentioned in the beginning part of the interviews in which I asked about how Boden.Leben and their engagement in it had started (I1 12-21; I2 48-54; I3 1-3; I4 7-10; I5 15-17). On top of that, agricultural problems were identified in relation to questions about how Boden.Leben and the farming methods it promotes benefits them (I1 187-190, I4 356-357, I5 773-776); how the collective gained so many members (I1 508-511); common goals and motives (I2 1146-1149; I3 296-302); changes between before and after Boden.Leben was founded (I3 662-669); and the wider circumstances in which Boden.Leben was founded and exists (I4 1173-1179).

The problems that were mentioned were numerous and manyfold. They included, for instance, weather extremes that farmers must deal with; bad soil quality, which makes it increasingly hard to produce healthy and steady yields; financial pressures that farmers face; a lack of exchange within the farming community; a lack of openness of other farmers towards Boden.Leben; pressures from society to adopt more sustainable farming styles; undifferentiated public discussions about farming; and a general lack of exchange between agriculture and publics, to name a few. A table with an extensive list of the codes alongside with an elaboration on the meanings of each code will be provided in the appendix (see chapter

10). The table in the appendix can be used as a reference point for reading the tables and maps in the following chapters and if any of the codes mentioned are unclear.

Evidently, the problems the farmers mentioned occur on different scales, meaning that they range from problems they have at their specific farms to problems they identify as general issues in agriculture, e.g., in relation to wider society, politics and the economy. The participants generally addressed any of the above problems in the interviews. Some problems, e.g., soil- or climate related ones, were mentioned noticeably often and consistently by all of the participants. Given that the concerns mentioned re-occurred across the interviews and were discussed specifically in relation to Boden.Leben, I conclude that the problems identified in the interviews are not only relevant for the participants individually, but also for Boden.Leben as a collective, its beginnings and its continuation.

To explore this further, I generated a code co-occurrence table between the code „starting conditions” and each code relating to agricultural problems. A code co-occurrence table provides information about if and how many times a code has occurred in the same context as another one. In this case I used the table to check which of the agricultural problems codes were mentioned in the same contexts in which the interviewees talked about starting conditions of Boden.Leben. Hereby, I investigated which agricultural problems were especially important for the starting conditions of Boden.Leben. The assumption is that if an agri-problem code occurs in the context of a starting condition coded segment, this indicates that the agri-problem is of relevance for the starting of Boden.Leben. Further, if an agri-problem code occurs frequently in the context of a starting condition coded segment, it indicates that the relevance of the respective code might be high.

After generating the code co-occurrence table, I went through the segments in the table and checked if the codes appearing in the same contexts are also meaningfully related to one another. This turned out to be the case. For example, when asked about how Boden.Leben and their engagement started, the farmers identified problems they experienced (I1 527-530; I4 121-122; I5 57-60). Further, when talking about agricultural problems, they often got back to talking about how Boden.Leben makes a difference in relation to that specific problem, or a set of problems mentioned earlier (I1 996-1000; I3 371-373; I1 1055-1059; I3 679-684).

The codes that I identified as relevant for the beginnings of Boden.Leben can be grouped into three categories – environmental, societal and sector specific. „Environmental” problems are issues arising with the soils, the fields, in relation to the weather, or to the yields, and generally impact farming and its outcomes directly. „Societal” refers to problematic intersections between agriculture and publics such as blame, or pressure being put on farmers, e.g., in relation to climate change, undifferentiated public discussion about agriculture, or a lack of acceptance of farmers by publics. Finally, „sector specific” refers to concerns in the agricultural sector that are not directly about the environmental aspects or about societal aspects in relation to agriculture. They rather concern infrastructural, knowledge-related and

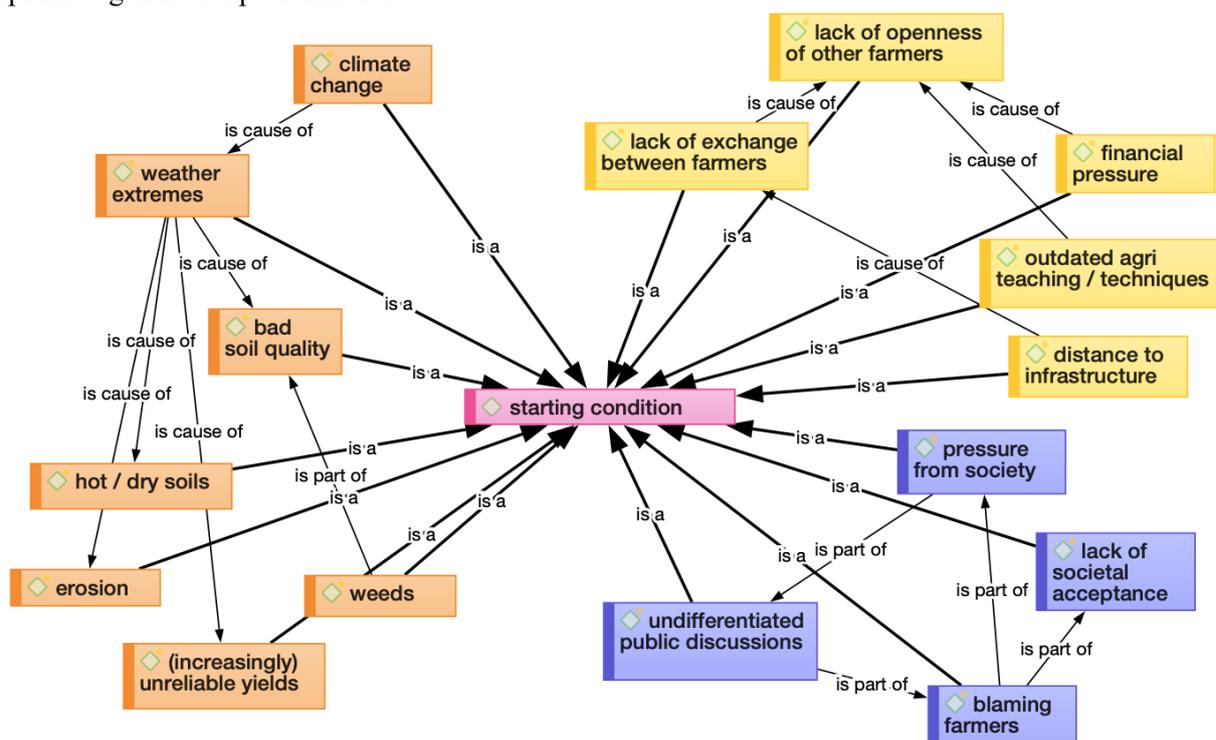
social aspects within the sector. The table below displays the agricultural problems that were identified as relevant for the beginnings of Boden.Leben by the farmers in their respective groups. It provides the reader with an organized overview of the codes and serves as a reference point for the map that will be presented in the next chapter. In-depth examples about how these topics are discussed by the farmers will follow in the next chapters.

Agricultural problems as starting conditions		
Environmental	Societal	Sector specific
• bad soil quality	• blaming farmers	• lack of openness of other farmers
• weather extremes	• pressure from society	• lack of exchange between farmers
• climate change	• lack of societal acceptance	• distance to infrastructure
• erosion	• undifferentiated public discussions	• outdated agri teaching / techniques
• hot / dry soils		• financial pressure
• (increasingly) unreliable yields		
• weeds		

Table 2 Agricultural problems as starting conditions by Sofie Haiden

6.2 Exploring agricultural problems through a farmers' perspective

In the following subchapters, I will explore each group of agricultural problems further, strongly relying on direct quotations from the interviews. Doing so helps to keep the analysis as close to the farmers' perspective as possible and allows the reader to gain tangible impressions of the material. First, I will display a map based on the table provided in the latter chapter, on which I am basing the storyline that will follow thereafter. The map visualizes the different agricultural problems that have been relevant for Boden.Leben, specifically in the starting phase of the collective. More importantly, it also displays the ways these problems relate to each other. I will elaborate on environmental, societal and finally, sector specific agricultural problems below.



Map 1 Mapping agricultural problems as starting conditions by Sofie Haiden

6.2.1 Environmental agri-problems

The left hand side of the map displays environmental problems as starting conditions, such as bad soil quality, erosion, overheated soils, stagnating yields, weeds etc. These are all related to soils as a valuable good, its health, composition and condition as well as its functionality to produce healthy crops and provide reliable yields. These aspects are currently posing challenges to the farmers (I1 527-530; I3 377-380; I4 121-122; I5 601-610). One farmer, e.g., describes: *„I feel, soils used to be more fertile than they are today, even though according to school knowledge, according to what we had been taught for years, we do everything correctly.“* (I1 527-530), another one even says: *„Already in the late nineties my father started to notice that the soils were getting worse.“* (I4 121-122). Both farmers refer to this in the context of talking about what triggered the changes at their farms that simultaneously connect to the founding of and their partaking in Boden.Leben. Further, they report that the problems mentioned are to a large extent caused by extreme weather events, such as droughts, intense rains and winds, which contribute to weeds and pests taking over and which again are associated with climate change (I1 514-515; I3 512-515; I4 359-365; I5 874-875; see map 1).

One farmer, e.g., describes extreme weather events and the resulting erosion of soil as one motivator for him and his father to change their farming style and pay more attention to soils: *„Of course, erosion is also an issue. [...] That was also a reason why my father and Erwin [name changed] made the changes, because we are in a hilly area and therefore have a lot of rainfall and we were very strongly affected by erosion.“* (I4 325-329). Another one describes how the founding of Boden.Leben happened shortly after yet another tough year due to extreme heat and drought: *„Yes, how did it come to the foundation [of Boden.Leben]. That was the year 2019, where already the year 2018 was not very easy. There was heat and drought. I knew there were some farmers who were dealing with how to get by under such conditions.“* (I5 57-60). The farmers he mentions are the ones he later teamed up with to found Boden.Leben. Later in the interview he adds that said environmental problems not only affect farmers at a small scale but ultimately lead to large scale issues that have a negative impact on wider society: *„If climate change continues as it is, there will be a serious supply problem in Europe.“* (I5 874-875).

In addition to climate-induced environmental problems, a decrease in soil fertility and quality as well as an increase in pests and in a proneness to erosion can also be traced back to irresponsible cultivation techniques such as heavily using agri-chemicals or tilling extensively⁷. For example, the plow, specifically when used too often or at too great a depth, does considerable damage to the soil. It (a) cuts through essential soil-life infrastructures such as rainworm holes or mycorrhiza networks and (b) leads

⁷ Tilling is a method of mechanically loosening and turning the soil with a machine to bury weeds and crop leftovers and prepare the soil before planting new seeds.

to the soil being more susceptible to erosion in case of strong rainfall or wind (JZ1236-1260). Further, using agri-chemicals, such as chemical pesticides as the number one solution leads to the pests developing resistance towards these chemicals and the need to keep using new and more pesticides, which are neither safe nor available (I5 1120-1122).

6.2.2 Societal agri-problems

Strongly connected to environmental problems are the issues displayed on the lower right-side of the map – the problems that I have labelled societal agri-problems. Despite climate change posing a great challenge for farmers as well, they are often blamed for it by publics and put under pressure to adapt quickly to the new climate conditions as well as to change their farming methods so that they are more climate friendly (I1 520-522, 996-1000; I2 1054-1061, I3 318-322). This societal pressure was an important motivating aspect for founding Boden.Leben. As one farmer puts it: „*It seems to me what was very beneficial for the members, for the rapid [formation of the] association was that there was simply the sentiment: us farmers are to blame for this and that. And we are now simply trying, well, how can we stand better in society, how can we sell it better, that we work in a climate-friendly way and are indeed sustainable.*“ (I1 996-1000). He later continues to say: „*I also believe that the interest [of farmers in Boden.Leben] would not be so great if it were not for Greta Thunberg and the Fridays for Future stuff, this also has its good side. One mustn't always see these things in a negative way, like it is often done by farmers.*“ (I1 1086-1089), thus also shining light on positive aspects of what is commonly experienced negatively by farmers.

Societal agri-problems further refer to common public misconceptions about agriculture, as well as the undifferentiated public discussions and a lack of societal acceptance resulting from them (I3 415-418; I4 718-723). One farmer describes: „*There is simply no linkage [to agriculture], they are so far away and the further that it goes into the cities, the less. And I don't think that's the problem per se, but, at the same time, I have the feeling that the city people believe that everything must be organic and eco and that the rural people are just environmental poisoners.*“ (I1 624-628). Another one describes: „*Many people know the end product, the food, and many want to have their say on the way to it, but no one understands that if I unscrew a screw here, the whole system will collapse.*“ (I3 415-418), when talking about how wider publics often have high expectations regarding agricultural transformations but due to their lack of understanding are ignorant about the systemic impacts these transformations will have on agricultural processes. At times, the misconceptions and high expectations farmers encounter from the outside lead to them being frustrated with their profession: „*As a farmer, you sometimes get the feeling that no matter what you do, it's always the wrong thing.*“ (I1 552-553).

The problems elaborated on above are described as part of a lack of interaction between agriculture and publics. Consequently, productive exchange between the two might help mediate differences and generate a better mutual understanding (I1 592-594; I3 371-322; I4 725-727; I5 702-704). One farmer

urges: „*The population should also know that not every farmer is just a well poisoner and does everything wrongly and sprays everything dead and so on. Such an image of agriculture could also be marketed better if one sees, the farmers, they have initiative, they want to do something for their soils.*“ (I4 718-723). In the context of talking about the sustainable measures that are being taken by farmers and the ways that farming is perceived by publics another one hopes: „*That is something that when you explain it to the public, I think they do realize that there's a lot that's being done.*“ (I3 371-373). Thus, working to increase communication, to educate publics about agriculture and to aim at bettering relations between farmers and publics is one of Boden.Leben's central points of departure.

6.2.3 Sector specific agri-problems

Evidently, farmers face problems with the environments in which farming is done, as well as concerning the relationship between agriculture and publics. However, the concerns mentioned are not solely environmental or societal. Displayed on the upper-right side of the map are agricultural problems that occur *within* the sector and refer specifically to community, social, infrastructural, economic and knowledge-related aspects of the farming community.

For example, there are few possibilities to get into exchange with other farmers (I1 95-98, I3 678-686), e.g., due to a lack of time, opportunity or – as displayed in the map – due to being too far away from infrastructures where exchange takes place (I1 79-83; I2 471-473; I3 180-182). This specifically affects farmers on the outskirts of densely populated farming areas. One mentions: „*I've talked with Martin [name changed] about it several times. He would like to visit a lot more, but the distance is just simply a problem.*“ (I1 253-255), and later remarks: „*I must say that I am somehow envious of my colleagues over there. Here, I'm almost completely alone, and there, they are more people in a nearer area and can more easily get into exchange and help each other out.*“ (I1 1147-1149).

This lack of exchange between farmers further contributes to another problem that was often mentioned in the interviews, that of a lack in openness, acceptance or understanding of other farmers for Boden.Leben and the soil-related measures promoted there (I1 313-317; I5 815-819; I4 517-523). At times, this goes as far as farmers outside of the collective discouraging Boden.Leben-farmers and even acting hostile towards them. One farmer describes: „*Sometimes I was scolded by my colleagues or made out to be an idiot or a fool. It's all rubbish what I'm doing, because it doesn't work, and it won't succeed.*“ (I1 51-53).

Reflecting on the multiple contributing factors of this lack of openness, another farmer speculates that this has something to do with tradition and the farmers' stubbornness to stick to it: „*I now give you a quote and that is the quote that explains everything: We have always done it that way. And it will remain that way.*“ (I4 512-513). With frustration he continues: „*If you talk to any farmer who, how shall I put it, stubbornly insists on this system, he will simply explain why it doesn't work for him and you will get either: my soil is too light, it doesn't work for me, my soil is too heavy, it doesn't work for me, it rains*

too much in my area, it doesn't work for me, it rains too little in my area, it doesn't work for me. So, these are always the same arguments, and it is very difficult to refute them." (I4 558-565). Later, he describes how he often finds out about hostile talk behind his back: *"Afterwards, you learn through the grapevine that you have been scolded by them in the pub at the regulars' table."* (I4 521-523).

Consequently, he assumes that one of the main reasons for the behavior of other farmers might also be financial pressures to make ends meet that most of them are under: *„On the one hand it is this: I do not want to change. I am afraid of new things. And on the other hand, I think it is often the economic pressure. That the farmers do not want to try anything new because they are simply afraid that they fail and then have a financial [breaks off sentence]. Because they all do indeed have to calculate very tightly.“* (I4 573-577). Ultimately, he does not want to blame his colleagues: *„Now, I don't want to talk badly about them all, or accuse anyone. I think there are many different reasons for this and I think this is one of them, or one of the main reasons.“* (I4 581-583). Evidently, since many farmers hardly get by as is, they cannot take the risk to experiment with new methods, especially when they depart strongly from what has been priorly taught at school or in agricultural trainings.

This connects to another problem, which has already been mentioned (see chapter 6.2.1) and which is another contributing factor for a lack of openness of other farmers. According to the participants, farmers have been and are still being taught outdated agricultural knowledge and techniques such as reckless tilling and prophylactic heavy usage of agrichemicals (I1 578-583; I5 778-779). Although it contributes to soil-life being destroyed and soil quality being compromised, using the plow has been the status quo in Austrian agriculture and is still taught in agricultural schools. The fact that some farmers at Boden.Leben promote to reduce tilling or get rid of it at all scares away many farmers who depend on these traditional methods. Reflecting on this, one farmer says: *„Because they get so hung up on the fact that we don't plow, that's actually the main reason. Because you can't [pauses] you just can't not plow. Someone once said that the plow is a myth, and a myth is difficult to attack.“* (I4 530-533). Further, heavy usage of agrichemicals is another irresponsible technique that is often still being taught at school. Talking about this, one of the conventional farmers of the sample says: *„Like we were taught in school, to just spray over everything prophylactically, I don't think that's right.“* (I1 115-117)

Additionally, not only the techniques that are being taught in school and at trainings, but also the ways in which they are being taught are experienced by the farmers of the sample as outdated, and thus, ineffective. For example, one farmer accounts that the way farming was taught at school was like being taught a recipe for cooking. He says: *„Except that's just not what it is. Agriculture is not a cooking recipe. In school, you are more or less presented with a recipe for plant cultivation. Yes, you take this much seed, you take this much fertilizer, you take this crop protection and then hopefully something comes out.“* (I5 791-794). Hereby, the problem is that every cultivation happens under unique and ever-changing conditions, due to differences in farm location, climatic conditions and soil composition, to name a few. These different and changing farming circumstances make it impossible to follow the same

instructions at every farm and in every situation, and thus, call for agricultural teaching and learning styles that equip farmers to adapt what they learn to their specific needs.

Another one reflects on the inconsistent quality of learning opportunities from the time in school until long after: „*The first training was at school. There you got a certain basic knowledge and it simply depended on the respective teacher whether that was something good or not and then you come out and have presentations that are made, for example, by companies, which are usually very one-sided and very specialized in topics.*“ (I1 1055-1059). He also adds that these presentations are often mediocre and not really interesting to the majority there. Another farmer shares a similar conception and adds that besides the teaching being „*almost like at school*“ (I3 682), such events never really allow for extensive exchange afterwards, like it is done at Boden.Leben.

The outdated techniques and teaching methods that farmers experience at trainings or at school again connect to another structural problem when it comes to agri-training and other knowledge-related aspects. According to the farmers I spoke with, there is little possibility for farmers to get into productive exchange with agricultural researchers. Scientists are often researching within their „own bubble“ and fail to connect their research to agricultural relevancies. Further, even if there are relevant scientific findings, they often do not make their way to farmers due to a lack of linkage between agri-research and -practice: „*What ordinary farmer has contact with a scientist unless he happens to meet him at a field day somewhere.*“ (I4 1059-1061), or: „*It is also a topic for us, so to speak, that things that were researched in science have actually ended up in the drawer most of the time.*“ (I5 1550-1552). As a result, in cases where there is relevant research, farmers have little chance to get educated about it, and thus, miss out on learning or developing knowledge-based agri-techniques. Trying to counteract these deficiencies by helping to increase collaboration between agricultural research and practice and facilitating access to relevant scientific knowledge is thus, one of the key motivations of Boden.Leben.

As I have shown above, environmental, societal and agricultural problems together make up a combination of core incentives that triggered Boden.Leben’s founding and through which members find motivation to keep their work at Boden.Leben up. This leads to the assumption that to tackle them one must consider each of these dimensions on its own as well as in relation to one another. In the following chapter, I will shift my perspective from the problems to the possibilities that farmers have to improve their situation. Specifically, I am going to focus on values and purposes that members of Boden.Leben gain through their engagement – even if they might be unintended.

6.3 From problems to gains

While the last chapter focused on agricultural problems that mattered for the beginnings and continue to play a role in the continuation of Boden.Leben, this chapter is going to revolve around values, benefits and purposes that the work at Boden.Leben comes along with. Thus, this chapter can be read as a responsive continuation of the prior one. First, I am going to talk about the codes in the category values

and purposes, which will be the main actors of this chapter. Second, I will elaborate on the chronology in which these values and purposes came to matter for the board members of Boden.Leben.

6.3.1 Values and purposes of Boden.Leben

The codes in the category “values and purposes” describe the ways in which the farmers’ collective Boden.Leben is valuable and beneficial for the farmers participating in it, thus describing motivational factors for the participants. The majority of the 24 codes in total describe actions. Specifically, they describe what Boden.Leben enables its members to do. For example, through Boden.Leben farmers can partake in a productive exchange with one another, mediate their differences and increase mutual understanding. They also have access to resources that help them solve problems, save resources and improve cost/benefits at the farm. Doing so, they improve their soil and crops, improve yields and learn to deal with climate change effects. Furthermore, Boden.Leben helps them share and learn new ways of farming, start reflexive processes and increase their understanding of their soils and the techniques they apply on it. This is, e.g., done by organizing knowledge and making it accessible. Apart from the codes which target action, there are three other codes that indicate (1) when participants generally mention that Boden.Leben provides *added value*, (2) when participants mention *exchange* between farmers *as valuable in itself* and (3) when participants speak of *expectations* they have towards Boden.Leben. Most of the codes can be roughly grouped into three categories: farm-related, community-related and knowledge-related values and purposes.

A table with an extensive list of the codes alongside with an elaboration on the meanings of each code will be provided in the appendix (see chapter 10). The table in the appendix can be used as a reference point for reading the tables and maps in the following chapters and if any of the codes are unclear. In this chapter, I provide a selection of the most important codes and a possible grouping thereof.

Values and purposes		
farm-related	community-related	knowledge-related
● to improve soil / crops	● to communicate with peers	● to demonstrate new possibilities
● to improve cost/benefits	● to increase farmer's autonomy	● to increase understanding (cognitive)
● to save resources	● to organize respectful/productive exchange	● to organize knowledge
● to solve a problem	● to mediate differences	● to make knowledge accessible
● to use agri technologies responsibly	● to increase understanding (mutual)	● to start reflexive processes
● to deal with climate change effects		
● to improve yields		

Table 3 *Values and purposes* by Sofie Haiden

For the table above, I selected 17 out of 24 values and purposes codes depending on their relevancy and importance to the analysis. This I evaluated qualitatively when putting the codes into context with the material, analysis and results as well as in terms of the number of times they were used and the number of times they occur in relation to other codes. The grouping of the codes serves the purpose of organizing the codes and providing a better overview over them. Further, it is a way of disentangling the codes, and thereby demonstrates how much they in fact hang together. As one can see, the ordering of the codes is not in every case straightforward and might as well be changed up.

For example, the code “to use agri-technologies responsibly” might as well also be put in the group of knowledge-related values and purposes as one requires (practical) knowledge about different ways of using agri-techniques as well as moral and long-term thinking skills to decide which technique will be the most effective and, at the same time, sustainable one in the long term. However, since the main reference point of that code is specific farming styles at their own farms, I decided to put it into the farm-related values and purposes group. Further, the code “to demonstrate new possibilities” might also be put in either the farm-related or community-related group, since new possibilities mostly means new possibilities related to farming and demonstrating them is an act usually done between peers. However, for me the innovation-, learning-, knowledge- related aspects of demonstrating, seeing and learning about new farming possibilities lead me to put the code into the knowledge-related values and purposes group. As mentioned above, playing around with grouping the codes of which I present one possible solution above, is a way for me to organize, disentangle and entangle the codes, and thus think through the ways in which they differ, are similar and relate to one another. In the next sub-chapter, I will mostly focus on farm-related values and purposes and elaborate on the chronology in which they came to matter for the farmers.

6.3.2 Unintended consequences of trying to solve a problem

In this chapter I will discuss the chronology in which some of the values and purposes came to matter for the board members of Boden.Leben. This chapter focuses on values and purposes that came into effect as improvements on the individual farms and for now excludes values and purposes that imply interaction and collective meaning- and knowledge-making between the farmers. This will be focus of the next chapter *6.4 Improving exchange – improving soils*.

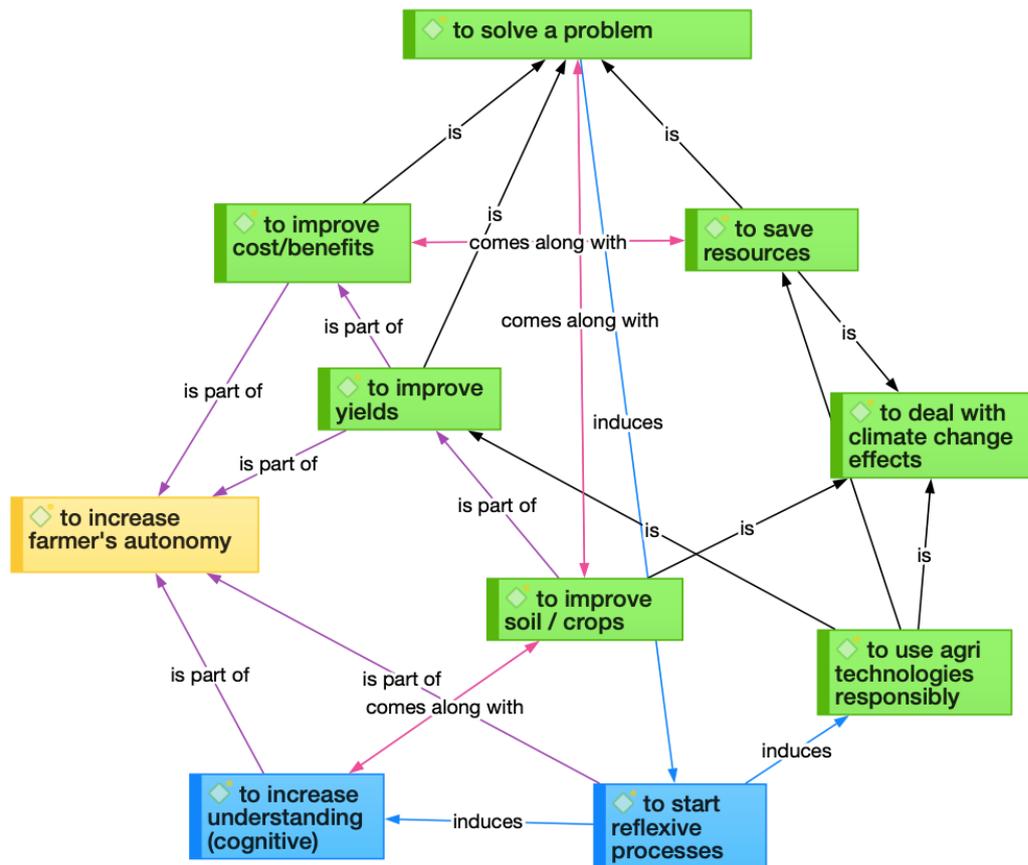
This chapter revolves around the initial intentions for their engagement at Boden.Leben that the participants mentioned in the interviews. For most of them, it started out with concrete, tangible problems, directly on the farms that needed solving. What in some cases followed next, was the observation that to tackle some issues such as improving cost/benefits, improving yields, etc., led to many other benefits – e.g., improving soil quality, making crops more robust, saving resources – or the other way around. Often, the farmers initially did not expect these added benefits (I4 286-289). When asked about how their engagement with Boden.Leben began at the start of the interview, most of them took degrading soils and decreasing yields as the starting point of their story (I1 707-710; I2 161-168; I3 8-14; I4 120-134). The soils had become increasingly compromised over the years, both due to invasive farming techniques as well as weather extremes such as strong rains, winds and droughts. For the farmers of the sample, this led to cultivation becoming tougher and, thus, more expensive.

One farmer, e.g., describes how each year, he and his father had to use a stronger tractor to be able to plow the soils which were becoming increasingly tough to work with. This meant that the fuel consumption for the tractor increased (I4 257-271). He states that trying to keep fuel costs down and

thus improve cost/benefits was his initial motivator to make changes at the farm. Now being a strong advocate for soil care, he says: „*The initial main reason for making the transition was actually not the soils but simply a saving operating costs.*“ (I4 269-271). What happened was that when reducing tilling he started noticing that it was not only saving him money, but that it was beneficial for the soils as well. Another practical measure he took, which led to a coincidental realization about how to improve his soils, was related to intercropping. He began using more intercrop seeds than necessary to make up for losses if some did not spring in the summer due to drought, only to realize that heavy intercropping significantly improves his soils and thus its ability to produce healthy crops and steady yields. During the interviews, he describes „*The primary reason was that you have more plants to secure that. But the fact that this creates more diversity in the soil is something you only find out later. That you have actually done something good, only unconsciously.*“ (I4 286-289).

All in all, he reflects that reducing operating costs and improving soil quality were the main problems he aimed at solving by making changes at his farms and claims that it was similar with the other farmers of Boden.Leben's board. Talking about how soil-related topics are currently becoming increasingly popular and are catching the attention of more and more farmers he remembers that, back then, when these topics were not as well-known, farmers had to discover them out of a different motivation: „*I would say that for most of the farms in our board, the change was more for other reasons, to save operating costs and primarily to improve the bearing capacity, because we are, for example, in an area where we still have more rainfall, and the bearing capacity of the soil was often very problematic in the fall or spring, and if you no longer plow the soil or work it less, it simply becomes more stable, and that was also sometimes a reason.*“ (I4 303-309).

As a result of degrading soils, farming also became more expensive due to a decrease in yields (I1 534-537). With the yields decreasing and/or becoming less steady, they ceased in paying off the resources and efforts put into them. Thus again, with the purpose of improving cost/benefits, soil-related measures were taken, and connections with other farmers experiencing similar situations were made (I5 57-60). Of course, not all the farmers experienced the benefits of soil care in this order. Another one does mention the cost/benefits improvements thanks to proper soil care, for him however, they were not the most important priority, but came as an add on: „*And [the measures] help me tremendously, because I have better yields, healthier plants and, if you think about it further, it might even save me on crop protection and fertilizer, or fuel due to less tractor runs.*“ (I2 1132-1138).



Map 2 Unintended consequences of trying to solve a problem by Sofie Haiden

As visible in the map, another major benefit of the soil-measures that became increasingly relevant with time was the positive impact they have in relation to climate change and its effects on agriculture. The measures help the farmers to keep their soils robust and healthy and, as a result, less prone to be affected by weather extremes such as droughts or intense rain. One farmer describes: „Only if we build up the soil and make it more resilient to stress factors, can we live and survive in the long term, even in drought, heat and extreme [weather] events. And it’s not just drought and heat. At some point, there will be heavy thunderstorms, and the water will be somewhere in the next creek or in the next cellar, and we don’t want that, we want to keep the water in the field.” (I5 601-610). Further, not only do the measures help the farmers deal with climate change effects, but they also generally impact the climate positively. As another farmer says: „Just by changing the way you treat the soil, you could contribute so much to climate change, to microclimate, to water quality.“ (I4 1182-1184), and later: „If, for example, it were possible to ensure that no agricultural land in Austria lies bare over the winter but is covered with catch⁸ crops, then we would already have done so much for the climate.“ (I4 1205-1205).

⁸ Catch crops (or also intercrops) are crops such as white mustard or clover, that are grown in the seasonal gaps between two main crops, such as corn or wheat. Catch crops improve soil fertility by bettering soil structure, supporting soil life, reducing erosion and helping with the soils nutrient supply. Due to these benefits, farmers in Austria are encouraged to make the extra effort to plant catch crops through financial rewards.

Lastly, through Boden.Leben the farmers get sensitized to use agricultural technologies responsibly. From the standpoint of the collective, some agricultural technologies like tilling or agrichemicals are not inherently bad but they are used excessively or wrongly which leads to them having negative impacts on the soils, environments and the climate: „*Farms that plow very shallowly, use the plow consciously, for example, to control weeds once in the crop rotation. This is quite different from these intensive farms that do not grow catch crops, plow extremely deeply and even in the fall in wet conditions. That this is not good for the soil is clear.*” (I4 1254-1258). Thus, Boden.Leben sensitizes to reconsider the usage of such technologies, teaches to use them only when there is no alternative, and promotes the usage of natural, less invasive technologies if possible. For example, one of the farmers was experimenting with a pest management strategy for his poppy cultivation that does not rely on pesticides but on planting other plants strategically to distract the pests: „*I put the flax and buckwheat a little lower than the poppy, so that the flax does not have such optimal conditions, so to speak. It will spring, but it will look a little sickly, and when flax looks a little sickly, the dung flea prefers to go for the flax rather than the poppy. It worked [pauses] the flea went for the flax.*” (I5 402-407).

The measures taken and the benefits that resulted from them, that I have described above, enabled reflections about how and why said measures led to improvements. These reflexive processes were enriched through interactions with other farmers – as will be topic of the next chapter – and, further, led to the farmers gaining a deeper understanding of their soils and the interlinked processes happening within it. As a result, the combination of gaining new knowledge, applying it, solving some of the pressing problems, growing better crops and producing steadier yields has been and still is an important factor for the farmers when it comes to increasing their autonomy. This means that they are less dependent on external trainings or funding, less dependent on invasive pest and weed measures and more secure in their earnings.

Concluding this chapter, it is important to remember that the benefits that better soil care implies for the climate are welcome at Boden.Leben, especially when they help to establish better relations between farmers and publics. However, specifically in the beginning, they were understandably not the main concern of the farmers – which ultimately was and is to make ends meet at their farms and to survive as farmers under difficult circumstances. As one farmer puts it: „*Logically, we want to survive, we want to live from what we work and that is, so to speak, the main benefit of what we do. We live from it, and we live better from it than without. And the fact that this method of cultivation has positive side effects for the climate is very welcome and we are of course happy to take them with us, and they are also very good for public relations.*“ (I5 690-698).

6.4 Improving exchange – improving soils

In this chapter I am going to add crucial dimensions to the analysis – the social, communicative and peer dimensions of Boden.Leben. Further, I am going to explore how these aspects are linked to environmental, agricultural, economic and knowledge-related ones. In the first subchapter, I am going to present and elaborate on a code co-occurrence table I generated for the analysis. In the second subchapter, I will present and discuss a map of the code relations displayed in the prior chapter.

6.4.1 Matching values and purposes

To analyze the ways in which values and purposes of environmental, agricultural, economic, knowledge-related, and most importantly social nature hang together and are mutually dependent, I developed a code co-occurrence table matching relevant values and purposes codes to see which ones occur in the same segments. Like I described above, the code co-occurrence table makes it possible to match two sets of codes and provides a table which shows how many times the respective codes occur in the same segment. The codes in the rows and columns are the same, that means of each code combination there is a duplicate. Through the middle, there runs a diagonal set of code combinations where each has the number zero. This is where the same codes meet. After generating the table, I cleaned and formatted it using color, so I could analyze it more easily. The backgrounds of the boxes turn increasingly dark as the numbers in them get higher, specifically, they get darker after each 50-mark. The colored visualizations guided me while analyzing and is supposed to support the reader in navigating the table. The last row consists of the sums going from top to bottom per column, indicating the total amount of times the code matched with another from the table.

Generating and analyzing the code co-occurrence table, I was guided by memos that I wrote while coding the interviews as well as the hypotheses I generated at the beginning of the analysis phase. The hypotheses that specifically guided the analytical steps taken in this chapter are the last two from the chapter *6.1.2 Working observations and hypotheses*. The first one being the observation that the exchange enabled by Boden.Leben is of crucial value for its members; the second one being that the differences between the members of Boden.Leben are valuable for the mutual understanding and learning processes. Both aspects – exchange and diversity – indeed hang together with several other benefits that the interviewees identified. When looking at the table and matching it with the relevant interview parts, one crucial aspect is the task of organizing a respectful and productive exchange in which farmers can mediate their differences and increase their mutual understanding. However, other aspects that co-occur with the communication between fellow farmers are a possibility to organize knowledge, access knowledge, start reflexive processes and increase the cognitive understanding of their soils, farms, and the impact of their farming practices.

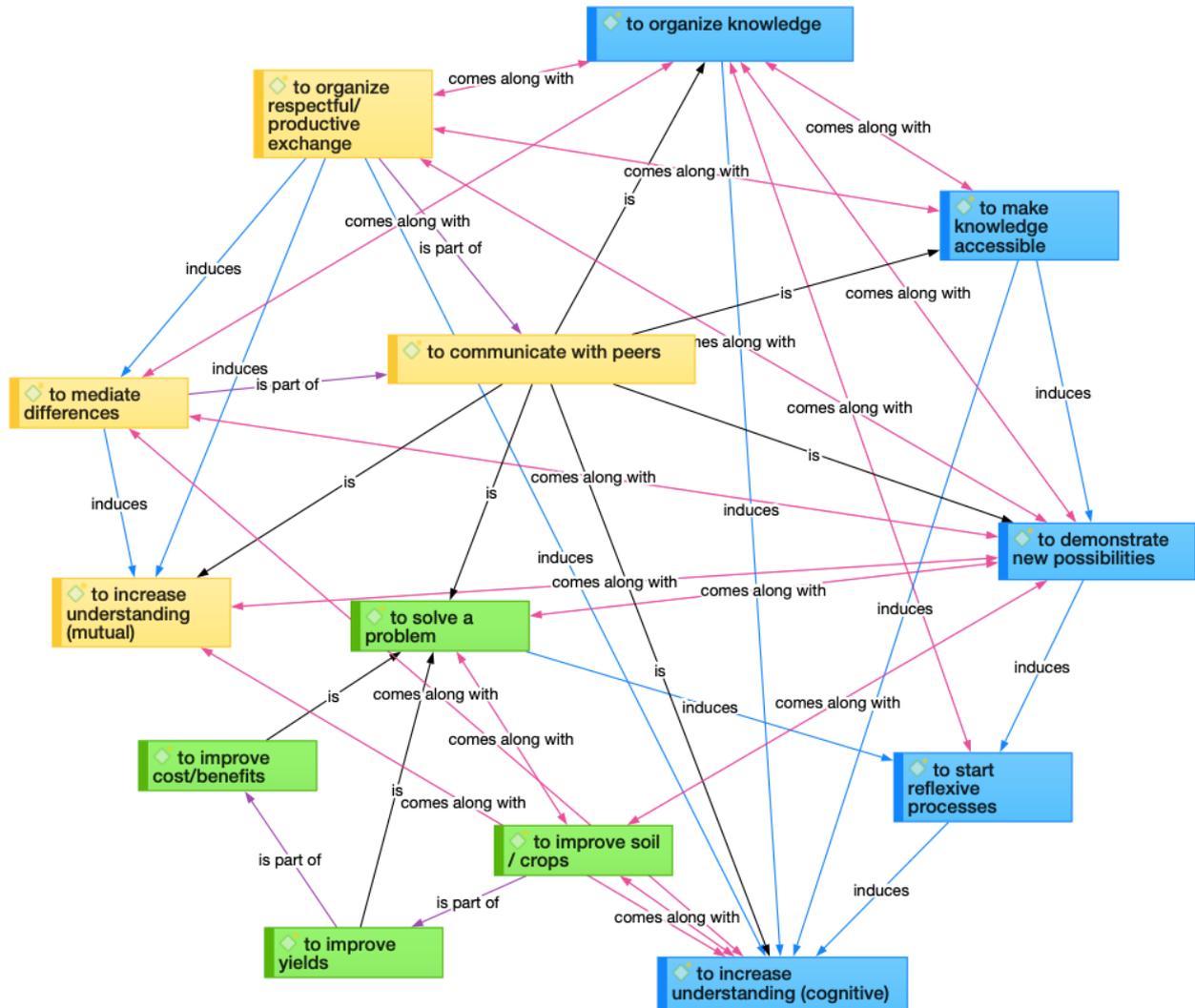
Code co-occurrence table of values and purposes (selection)													
	•to communicate with peers	•to demonstrate new possibilities	•to improve cost/benefits	•to improve soil / crops	•to improve yields	•to increase understanding (cognitive)	•to increase understanding (mutual)	•to make knowledge accessible	•to mediate differences	•to organize knowledge	•to organize respectful/productive exchange	•to solve a problem	•to start reflexive processes
•to communicate with peers	0	29	1	5	0	37	13	34	17	43	23	11	28
•to demonstrate new possibilities	29	0	1	10	1	30	10	17	12	16	14	8	25
•to improve cost/benefits	1	1	0	9	5	4	0	0	0	0	0	2	2
•to improve soil / crops	5	10	9	0	12	13	1	4	2	4	4	12	6
•to improve yields	0	1	5	12	0	2	0	0	0	0	0	0	0
•to increase understanding (cognitive)	37	30	4	13	2	0	14	35	17	35	22	7	31
•to increase understanding (mutual)	13	10	0	1	0	14	0	4	23	6	21	1	7
•to make knowledge accessible	34	17	0	4	0	35	4	0	4	49	11	5	14
•to mediate differences	17	12	0	2	0	17	23	4	0	9	26	3	8
•to organize knowledge	43	16	0	4	0	35	6	49	9	0	22	5	16
•to organize respectful/productive exchange	23	14	0	4	0	22	21	11	26	22	0	2	9
•to solve a problem	11	8	2	12	0	7	1	5	3	5	2	0	9
•to start reflexive processes	28	25	2	6	0	31	7	14	8	16	9	9	0
Total:	241	173	24	82	20	247	100	177	121	205	154	65	155

Table 4 Code co-occurrence table of values and purposes by Sofie Haiden

Given this, what can be taken away is that soil-related, knowledge-related and community-related values and purposes all intersect with each other, with the strongest match being „to communicate with peers” and „to organize knowledge”. The codes with the highest total amount of matches are the following codes: „to increase understanding (cognitive)”, which indicates that Boden.Leben helps farmers to increase their understanding of soils and soil-related interlinkages; „to communicate with peers”, which indicates that Boden.Leben enables more possibilities for exchange between peers; and „to organize knowledge”, which indicates that making knowledge accessible, e.g., via organizing field days, or entertaining the various online outlets, is one of Boden.Leben’s benefits. This indicates that knowledge-related and community aspects of Boden.Leben must be thought together. The following chapter is going to explore this further.

6.4.2 Interacting – understanding – knowing

The following map visualizes the analysis and its results. When explaining it below, I will again rely strongly on quotes as I find it the best way to bring across a vivid, realistic impression on how these themes come to matter for the farmers I interviewed.



Map 3 Interacting – understanding – knowing by Sofie Haiden

The yellow boxes represent community values and purposes, the blue boxes represent knowledge-related ones and the green boxes represent soil-related ones. Without having to consider every link on the map, when looking at it, it becomes clear that the different types of values and purposes have numerous intersections. From this, I conclude that these aspects not only are inextricably linked, but are also mutually dependent in the ways they come into action.

To **communicate with peers** is to **organize knowledge** is to **increase understanding**: „When you exchange, you often come up with things or thoughts come to you, because you get to reflect on what you did. Something you normally don't do because you never get to exchange with anyone. Then you realize, yes, that was actually the point, and this could be the explanation why this or that worked or didn't work. The exchange and getting to know people and other circumstances brings you further or

rather encourages you to try new things.” (I1 96-102). At Boden.Leben, the farmers exactly have this possibility to **interact with each other** during webinars, on field days and on their designated online platform – all these aspects are ways to **organize and share knowledge and experiences**. Additionally, Boden.Leben helps to make knowledge better **accessible** for farmers. This is done by providing it in a form that is interesting and understandable for them. For example, when organizing agricultural seminars or webinars the board members make sure to include both scientific and practice-oriented speakers, since they know from experience that this is well received by attendees: *„The good mix has worked so far. You have a scientist and, in between, you have a practitioner. Because then the farmers sit in there, they see pictures, also with machines. They see, that’s how one works, and that’s how the other uses something. And then, you don’t just have graphics and tables, but you also have the practical side, and that’s how this mix makes a difference. [...] This is well received.“* (I4 982-994).

Boden.Leben also works on making specifically agri-scientific knowledge better accessible to farmers and thus, strengthening **ties between agriculture and science**. Boden.Leben, e.g., organizes research collaborations between farmers and scientists and shares the resulting outcomes with their members in digestible formats: *„Regarding knowledge transfer, [...] we also prepare the research results that we have so far for our members. [...] Currently, we just received the paper, or the handout. [The researchers] have prepared it especially for us so that we can make it available to our members [...], so that they not only see that we are researching something, but that they also have personal access to the research results.“* (I4 1553-1561). One farmer who makes his fields available for the researchers to do tests and measurements remarks: *„This is actually priceless. You have the opportunity to really measure something scientifically directly on site and these are your numbers from your work from your location, which is highly specific. So, I profit from it twice, three times, four times over.“* (I2 650-656)

Boden.Leben’s commitment to **making knowledge accessible** is especially relevant for farmers who do not have enough time or live too far away to attend events in person in order to still access the conversation. Talking about field days, one farmer says how important it is: *„[...] that you really always change locations, that different members have the chance to get there with shorter travel and driving distances.“* (I3 168-170). He further talks about how the fact that knowledge is provided via new mediums such as on Boden.Leben’s website, Facebook, YouTube and other digital networks, has helped to **access different farmers** that otherwise would not be able to partake. Here the COVID-19 pandemic played a role in furthering such online formats: *„Every member has access to our member area [...]. [For one,] there is the exchange there. Secondly, videos of the presenters of all webinars are also made available there. [...] What we have learned from Corona and will continue to do in the future is that we always make [our content] available to people who may not have time at that moment or who are further away, so that they can get the knowledge.“* (I3 175-185). Another board member remarks that in addition to the **accessibility in respect to time and place** the online content offers that Boden.Leben makes are also attractive because the price-performance ratio is right: *„We have noticed farmers coming up and*

saying: *Oh, your webinars are so interesting. With every company I also have to pay for lectures and even if I can't come down to you, rarely maybe because we are somewhere 500 km away, but we pay the membership fee so that I simply have the service offer of your webinars.*" (I2 470-474).

Another important aspect of **organizing knowledge** and **making it accessible** is to create spaces in which **respectful and productive exchange** is possible: *„In the association, the exchange is, first of all, professional. And not that you get a slap on the wrist or whatnot when something comes up. Rather, if good ideas come along, we'll be happy to take them on board and accommodate them, but not in the opposite direction, so that you're constantly getting roasted because of this and that.“* (I3 789-793). This is especially relevant when it comes to **mediating differences**. Differences may concern farming approaches, farm location, farm size, farm type or the farmer's age and usually require effort to be overcome for the sake of good communication: *„Indeed, often, here and there, there is this discussion barrier that first must be overcome, because, for example, someone from the drylands swears by certain things because it simply works for him or says that and that doesn't work for me. And someone from the wetlands of the Mostviertel, for example, says that it works for him without any problems because he has more rainfall. [...] Then, you first have to make sure that they come to a common denominator, that they know that the conditions are completely different. But then, you can also help each other out.“* (I4 821-828). Precisely this readiness to help each other out by mediating differences **increases mutual understanding**. Further, sensitizing the farmers for the different farming conditions at each farm ultimately enables them to **learn from each other**.

And different farming conditions are certainly present at Boden.Leben and are exactly what makes the collective so interesting: *„And also [we have] the most diverse systems. One swears by this tillage variant, the other by this one, one by this intercropping mixture, the other by this one. And we have everything from forage farms to pure arable farmers, to pig farmers, dairy cow farmers and sheep farmers. We now have a very broad base, and I think that's extremely important, because it gives us a very good basis for discussion in our member chat room.“* (I4 741-747). For the **exchange** to be **respectful and productive** means to respect and value exactly these differences, to formulate criticisms constructively, and thus be able to **gain new insights**. This seems to work well and be fruitful for the farmers at Boden.Leben: *„This quickly turned out to be very constructive and it also has a good effect on the outside, because this „from farmers for farmers“ is simply really being practiced daily and we try to make the best of it across all production methods and simply allow many opinions to be valid and also try to make mutual consultation independent again.“* (I2 214-218). Boden.Leben board members organize this **respectful interactive climate** by moderating discussions and intervening when communicative standards are not adhered to. Further, they have gotten into the habit of welcoming new members to introduce themselves, the kind of farm they have, how and where they work, what the farming conditions are, etc., to get everyone on the same page in advance and prevent misunderstandings: *„Because we have a round of introductions in our social network, which not*

everyone does, but where you are asked, if you are new to the association, that you introduce yourself briefly in the introduction group. [...] Then one knows approximately the circumstances, who produces where and that has also helped a lot to take the wind out of the sails a bit in the discussions.“ (I4 858 – 866).

A respective and productive exchange further means to recognize different stages of transformation that farmers are at. Making **soil care-related changes** on one's farm is a steady process, which **evolves differently** on every farm: „You can't implement what I'm doing today one-to-one, because there were steps, it was a journey to get there. [...]. Everything would be technically possible, but if it doesn't 'click' in the brain or if I haven't understood the system, I won't be successful with it. [...]. You can't make a recipe of it. [...] In practice, you take a pinch more or less or the temperature is different. You need to have a feeling for these things and one can only do that when they're mentally ready. And for that I think you need seminars, lectures and trainings. You have to demonstrate it and it can't be forced.“ (I1 809-821). The way the participant compares the impossibility to perfectly re-create a cooking recipe to farming is a theme that reoccurred throughout the interviews (see also I5 791-794 or p. 48 of this paper & I5 815-816). Further, the quote captures the emphasis on the importance of **process-orientation**, the value of **tacit knowledge**, the consideration of **differences**, as well as the focus on **empowerment** and **self-determined learning** that this board member imagines for Boden.Leben.

Another farmer takes a similar stance, specifically emphasizing the importance of **demonstrating** instead of just talking about new ideas: „If you just tell someone, yeah ok, then he's heard it, but if he sees it and sees for himself how it works and how it can go, well that works. Just leading with good example, and explaining, and showing, really just nudging with the nose, then it works.“ (I5 966-970). This **demonstrating of new possibilities** to one another can be quite fruitful as one farmer describes: „And therefore, this demonstrating. We do that in the discussion, and that also happens in these chat groups. [...] If someone is trying something, another person already writes the experiences he has had and says: Watch out for this or that. And some say yes, he tries it anyway and then there's the opinion no, it went wrong or yes, it worked or so [...]. And these are things where really everyone can learn from everyone.“ (I3 446-452). As the quotes illustrate, **demonstrating new possibilities** can mean to show or being shown **successful results** of a **new technique** or educating about new and **better soil care strategies**. This is again closely tied to **making knowledge accessible**. Further, this triggers **reflexive processes**, in which farming-related routines, traditions and biases are reconsidered, and new ways to think about and to do farming are incorporated. This can, e.g., be induced by encountering and sharing problems and – with the help of others – **solving these problems**. Along the way, the farmers **increase their understanding about soils** and new farming practices they can then apply on their farms to again **improve their soils and crops**.

Such a process can be described the following way: „When you read in the [online] group, someone has solved something this way and you know he comes from there, and there it has these climatic conditions

and so on. You can then make your own considerations about it and say, no watch out, I can't do it like that, but I could do it in a modified form by leaving something out and maybe adding something that I have good experience with or so. So absolutely, you can look for something out of everything and put it together, and then learn, and then you discuss again with a few, and then you try, and then you post your experiences again after you have tried." (I5 1174-1183). Another quote that illustrates how **communicating** with one another, **challenging** each other and **demonstrating** new things, triggers **reflexive processes** and successful developments of **new techniques**: „Therefore, exactly this exchange, I find so [breaks of sentence]. If he hadn't said that, I would never have been motivated to do it, but when he said it wouldn't work, I said, now more than ever, it will work. And these are actually things where I have to say, that it in fact worked out then sparked again new ideas.“ (I1 1471-1475).

Boden.Leben's **initiatives**, the **collective learning** and the **changes** that are being made for the sake of soil care pay off when it comes to **improving, soil, crops and yields**: „At this point, I am confident that we will achieve – I don't want to say peak yields in the future – but we will achieve more stable yields, especially in situations of stress, through these measures that we are taking. Starting with intercropping, continuing with humus build-up in the broadest sense, soil build-up in the broadest sense, and continuing with no-till measures. Fertilization is also very important as we have now seen, we have started a new fertilization project, which is about fertilizing the plant more naturally.“ (I5 211-217). Another farmer similarly talks about how much he has profited from the soil care measure taken, and adds that beyond that he is able to **save resources** at his farm due to the changes he made: „And [the measures] help me tremendously, because I have better yields, healthier plants and, if you think about it further, it might even save me on crop protection and fertilizer, or fuel due to less tractor runs.“ (I2 1132-1138 or p. 53 in this paper).

Matters of **knowing** are always interlinked with **social and community aspects**. To interact with one another is key to increase **intellectual and emotional understanding** and thus gather **new insights**. At Boden.Leben the ways in which the farmers relate to each other, **mediate their differences** and **improve their understanding for each other**, is a key aspect for **starting reflexive processes**, **improving their understanding of their soils**, and ultimately **employing new and better ways of taking care of them**.

6.5 Synthesis and outlook of analysis

In the above chapters, I have laid out how Boden.Leben started, how agricultural problems have played a role in its beginnings and continuation, and I have talked about the various values and purposes Boden.Leben members gain through their participation in the collective. In this concluding chapter of the analysis and results section, I am weaving together the agricultural problems with the values and purposes I have identified. By doing so, I will shed light on how the benefits of Boden.Leben tackle the issues mentioned above, and I will reflect on problems that might prevail or arise new even with

Boden.Leben's efforts. This chapter aims to synthesize the analysis laid out in the previous pages, give a final overview of the results and, thus, form the base of the discussion in the following chapter.

6.5.1 Connecting agricultural problems with values and purposes

We started out with an ever-worsening deterioration of soil quality and with it, an increase in erosion, weeds and pests, as well as a decline in reliable and stable yields. A situation both environmentally and economically threatening for farmers, agriculture and broader publics.

The farmers I interviewed reported about overheating soils, losses in soil stability and fertility and soils being washed away by rain or blown away by wind. Many of these issues had been caused by increasingly extreme weather events, such as droughts, or sudden strong winds and rainfalls, phenomena to a large extent caused by climate change. Another underlying cause for the decrease in soil quality and, thus, the inability of soils to withstand extreme weather events, had been a misuse of agricultural technologies of various sorts. For example, it had become the status quo to use the plow excessively, even on wet and therefore vulnerable soils. Further, agrichemicals came to such frequent use that farmers often employed them prophylactically, even before any problems on the fields arose. All of this contributed to damage being done to the soils (see chapter 7.2.1). These unsustainable farming methods – although they had been taught at agricultural schools and trainings as best-practice – created problems that led to agriculture and farmers being presented in a bad light. Farmers were and are still confronted with attributions of blame, appeals to undo the damage and calls to quickly change to more environmentally friendly ways of farming (see chapter 7.2.2). But the political and societal pressure is not the only motivation to transform agriculture.

At the same time, changes were also required within the agricultural community. In addition to the already mentioned outdated agricultural teachings and farming methods that are still being practiced, there had been generally little opportunity for farmers to learn about how to make sustainable and at the same time feasible changes. Further, there had been a lack of exchange between farmers as well as between farmers and researchers, politicians and publics. Improving communication between the latter three would help to (1) gather insights into current agri-research and how to apply it; (2) bring agri-political concerns directly from farmers to the political field; and (3) improve mutual understandings and relations between farmers and publics. However, the lack of exchange between the farmers is what was missing the most on a day-to-day basis. This came with a lack of opportunities to help each other out, to pass on knowledge and experiences, to learn from each other's differences and different farming approaches. Not being connected with other farmers and some farmers being too far away from infrastructures that could make connections and learning opportunities possible led to farmers being alone in trying to deal with ever-worsening farming circumstances (see chapter 7.2.3). Those were the conditions under which Boden.Leben formed.

Over time, several of the problems mentioned above were addressed and eased thanks to the initiatives of Boden.Leben and its board members. First, through its on- and offline events at which scientists, consultants and, most importantly, farmers gather, Boden.Leben enables productive exchange between these groups. Specifically, farmers getting together and sharing knowledge, ideas as well as experiences in a respectful setting helps with improving the lack of openness of some farmers towards Boden.Leben, the soil care measures promoted there, and towards giving up the old ways. By increasing mutual understanding, by learning to come up with new solutions and by increasing the understanding of their fields and soils, they depart from having to fall back on outdated and unsustainable farming techniques. Along with adapting new techniques come improvements in cost/benefits and, most importantly, in the soils. These improvements lead to the soils being less prone to erosion despite increasing weather extremes, and they generally lead to healthier crops and a bio-diverse fields. This helps with the problem of unstable and unreliable yields and, thus, alleviates the financial pressures the farmers are under. At the same time, healthier soils and crops as well as bio-diverse fields both have a positive impact on the environment and help to deal with the negative effects of climate change (see chapter 7.4.2).

Even though Boden.Leben manages to reach and connect numerous interested farmers to participate and collectively learn from each other, a lack of openness of farmers who do not already have an initial motivation for Boden.Leben's topics remains. Not only do those farmers find various excuses why the soil care measures would not work for them, but they also scrutinize and even act hostile towards farmers who do adapt such measures (see chapter 7.2.3). In this regard, the board members of Boden.Leben have not yet found a way to reach those farmers and still struggle with the often rude rejection they are faced with. Another area in which there is still more room for improvement is the relationship between agriculture and publics. At the point of time when the interviews were conducted, there was still quite some frustration with pressures put on farmers by publics, with undifferentiated public discussions and with the lack of societal acceptance towards agriculture. It can be assumed that to see noticeable improvements in the relations between agriculture and publics, more time needs to pass, and efforts continuously need to be made. Nevertheless, even though there is still a lot of work to do, the board members of Boden.Leben are confident, that over time and with continued communication efforts, relations will improve and mutual understanding will increase (see chapter 7.2.2).

7 Discussion

In this chapter, I will weave the results presented in the prior chapter together with literature of the state-of-the-art section (see chapter 2), my research interest (see chapter 3), as well as the theoretical perspective and sensitizing concepts (see chapter 4). Doing so, I am particularly interested in reflecting about why soil care and sustainable measures might be taken up by farmers and what possibly prevents successful uptake. I will begin by reflecting on general reasons identified in the literature as well as in my data. Then, I put the focus on uptake practices regarding the farmers' soil-related identities. Finally, I reflect on the uptake and non-uptake of soil care measures using the concepts of regimes of valuation and evaluative principles.

7.1 The manifold factors influencing the uptake of soil care measures

With regards to my research questions, I have been able to gain insights into the agricultural problems which mattered for Boden.Leben, both at the time of its founding and continuation. Further, I have elaborated on valuations that motivate the farmers for their collaborative work. Furthermore, I have been able to shed light on possible factors preventing other farmers to engage and take up the soil care measures promoted at Boden.Leben. According to the literature I have reviewed as well as to the results from my study, there are various influential factors affecting uptake or rejection of soil care and sustainable measure. These factors can be related to, e.g., individual circumstances at the farm, financial matters or social and community-related matters. Here, trust in sources of information, financial risks concerning adaptive measures, prior knowledge about soils, or accessibility of knowledge are important keywords.

For example, when investigating the uptake of more sustainable soil management strategies from a perspective of trust and social learning, Rust et al. (2022) note the importance of online exchange when it comes to successful uptake of sustainable transformative measures. Specifically, what the authors call "*farmer social media 'influencers'*" (Rust et al., 2022, p. 31 or p. 15 in this paper) were important sources of trust for the farmers they studied. Similarly, the online notoriety of some of the board members of Boden.Leben and their personal expertise on soil matters make them credible and important sources of knowledge for the collective's members and crucial when it comes to motivating and teaching them about how to implement soil management changes.

However, if and to what extent Boden.Leben and its locally known board members have increased the uptake of sustainable soil management practices in recent years is unclear. Based on the empirical evidence I have gathered, it is not valid to draw conclusions on whether larger structural changes have been initiated by Boden.Leben. This is due to the small sample size and to the heterogeneous statements it contains. The farmers of my sample do report of an ever-increasing rise of new members who are interested in adapting their farms. However, at the same time, they share their frustration with difficulties

in motivating fellow farmers to focus more on soil care, as I have described above (see chapter 6.2.3). To explore this tension on a structural level would be interesting for future studies.

When inquiring the uptake of new measures, it is important to examine financial aspects which come along with making on-farm adaptations. These are well described in literature and emerge in my data as well. In my case, financial risks were frequently referred to as factors inhibiting uptake of sustainable transformations (see chapters 6.2.3, 6.3.2, 6.5.1 & 7). However, when it comes to financial motivators the picture is not so clear. The results from the literature review suggest that financial motives are only one aspect out of many, and that they can function as a first short-term motivation for adaptation. This short-term motivation can later develop into a broader ecological motivation when supported by peers as described in the study by Kieninger et al. (2018). But, as argued by Wahlhütter et al. (2016, p. 51), if financial incentives are to serve as the only motivational driver, they can be expected to not lead to a substantial and long-term change in farming culture.

These findings from the literature attesting low effectiveness of financial incentives resonate with what my interviewees reported. One, e.g., remarked, that farmers who are under financial pressure take adaptive measures at their farms mainly motivated by financial incentives not by a readiness to care for soils. Due to the intensity of the financial pressure, they often disregard if the soil quality, the ecological health and other similar aspects are neglected, as their main goal is to get the highest possible yield per square centimeter (I1 698-703). Another board member reflected on his observation that the farmers of his area who take on adaptive measures only to receive money, usually do not understand the purposes of such measures, and do not apply them to their full beneficial potential. This, e.g., means that while planting intercrops right after the harvest at the beginning of July would be sensible in terms of its positive effects, farmers who mainly plant intercrops to receive funding often plant them not until late August, because that is the official deadline set by the funding agency (I4 1325-1329). Other farmers would only plant the minimum number of intercrops required to get funding while they could, with the same effort, have a stronger positive impact on the soils by planting a higher amount and more diverse types of intercrops (I4 1345-1351). That same board member further mentioned at an earlier point in the interview, that solely being driven by financial motivators is not only unhelpful but even harmful. In this context, he describes what he calls “*rich fathers, poor sons-principle*” (I4 169), a phenomenon where the senior farmer only cares about producing high earnings, leaving the junior farmer with degraded soils, unable to make good earnings off from them in the future.

At the same time, adaptations to sustainable farming can also be motivated by short-term, practical relevancies at the farms and do not always have to be motivated by a grander purpose – such as climate change – to be meaningful and effective. Considering motivational factors, it is useful to come back to Grüneis et al. (2018; see chapter 2.4). The authors mention the fact that, in the case of their study, many adaptation practices that farmers come up with are not primarily driven by climate change – rather by financial or social pressure as well as individually experienced problems on their farms, such as issues

with crops, soils, or yields. Thus, it does not make sense to demand that farmers simply switch their motivational base from money to climate, since in reality attainable farm adaptations and sustainable transformations can be triggered through various motivational factors regarding the (everyday) relevancies of farmers.

Equally to what Grüneis et al. (2018) describe, the farmers of my case – while acknowledging climate change as an immediate problem and welcoming positive effects of their practices on the climate – are often motivated by non-climate related drivers and adapt their farms due to many other reasons that are equally as pressing as climate change related ones. Thus, for my case, adaptation respectively does not mean to adapt to climate change per se, but to adapt to concrete problems – degrading soils, decreasing yields, weather extremes, financial pressures – with climate change being a more abstract factor in the equation. Another interesting aspect the authors raise is that “*hidden adaptations*” implemented by local initiatives, i.e., adaptations that are not directly related to climate change but have a positive impact on the climate nonetheless, at the same time, contribute to farms becoming more resilient (p. 394). This is something I have equally observed and described as an increase in autonomy and self-sustainability throughout my thesis.

For building up autonomy and self-sustainability, it is first and foremost crucial for the farmers to be able to exchange with their peers. Here, accessibility is an important factor for farmers. Similarly to what Charatsari et al. (2022) describe regarding their case, for my case too, processes of knowledge exchange and construction happen in face-to-face settings such as seminars or field days but also in digital settings such as webinar and member’s fora. As mentioned above, digital tools, first, enable better accessibility, specifically for farmers who live and work remotely, and second, they allow participants to share experiential knowledge close to when the experiences are made. The knowledge that results from such processes are “*not the sum of the different “knowledges” carried by their members but a novel product that expands previous knowledge, thus encompassing new forms of value*” (Charatsari et al., 2022, p. 11). These new forms of value can be motivational factors and come in different, interrelated forms. As described by Wynne-Jones (2017, p. 267), values and purposes – or as she says, benefits – are “*interwoven, rather than singularly defined (as economic or environmental or social)*”.

7.1.1 Farmers’ identities and soils

According to Wahlhütter et al. (2016), a crucial factor influencing uptake is how farmers tie their identities to soils and how their soil-related identities are built in social processes through engagements with other farmers and themselves. The authors (p. 51) describe that farmers compare their soils before and after they apply changes at their farms, and they compare their soils to the soils of other farmers who do not apply any changes. Further, the farmers are aware that their own soils are being judged and used for comparisons by others as well. This is something that also frequently occurred in my data Here, not only questions of yields play a role but also of aesthetic preferences.

Wahlhütter et al. (2016, p. 50) write: “*when looking at their own or other fields [...] farmers referred to stories of success, failure, superiority, strategies, right and wrong, good and bad, values and morals*”. This is another aspect that was discussed by my interviewees similarly to how is presented in the text. For example, one of the board members stated that more traditional farmers, who reject soil care measures such as intercropping, would evaluate heavy intercropping on a field during winter as “untidy”, while preferring a “clean table” as the freshly plowed, bare field is called within the farming community. Further they not only prefer a plowed field, but they scrutinize and devalue farmers whose field looks “wild” due to intercropping (I4 605-614). These differences in aesthetic preferences and how they relate to conceptualizations of being a “good farmer” are crucial for making boundaries among different soil management techniques and for the farmers’ openness or reluctance to try out new techniques (p. 40 & 51).

The strong connection between the soil management strategies and the identities of farmers might be an explanatory factor for the non-uptake of soil care measures. Farmers who see their identities strongly tied to traditional soil care strategies and the aesthetics that come along with them might be reluctant in following Boden.Leben’s propositions. Mutual observation, judgement and thus, control can further negatively impact if and how new, more sustainable practices are accepted and taken up. Control enforced by other farmers through negative reactions, disrespectful behavior or talking about others behind their backs (as described by some farmers of my sample, I1 51-53, I4 521-523 & see chapter 6.2.3), has the potential to hinder a cultural embedding of new practices (Wahlhütter et al., 2016, p. 51). Intriguing in relation to my case is the question why and how the farmers manage to overcome the scrutiny of others and to practice what they consider to be the right way of doing agriculture.

Wahlhütter et al.’s (2016) study points at differences between conventional and organic farmers which for my case do not seem to apply. Wahlhütter et al. (2016) present organic farmers as the major players in fighting traditional, unsustainable farming techniques and setting a better example when it comes to soil management. In practice, this might often be the case, however in my sample, initiative to make and promote drastic change in soil management strategies is shown by conventional and organic farmers alike. Furthermore, since overall – as the article points out – soil, its management and evaluation strategies are highly symbolic and interpreted by farmers according to their “*knowledge, practical experience and their worldview*” (Wahlhütter et al., 2016, p. 52) efforts to introduce new and more sustainable soil care strategies will require a change in the meanings and symbols surrounding soils. This is an undertaking that must consider the individual departing points of farmers and, doing so, will require time and effort.

7.1.2 Regimes of valuation and evaluative principles

Important aspects to bring in for understanding the meaning constellations based upon which farmers at Boden.Leben aim at developing and promoting new soil management strategies are those of values and

valuation. I have laid the groundwork for this argument by introducing the concepts of regimes of valuation and evaluative principles in the theories and sensitizing concepts section (see chapter 4.2). In relation to my case, I will describe the evaluative principles identified in the data that are part of regimes of evaluation which influence if soil care measures are taken up or not.

Regimes of valuation contributing to farmers not making changes in their ways of managing soil employ evaluative principles that value: (1) *Tradition*, both institutionalized by being taught at school and in trainings as well as practiced and passed on for generations. Valuing these traditions, by being socialized into them, makes the farmers hold on to them as opposed to employing new practices that depart from what is familiar. (2) *Short term productivity*, by means of engaging in practices that according to traditional norms and values directly provide high yields through large-scale monoculture. These are preferred over practices that might not grant higher yields in the beginning, but pay off in the long-term. (3) *Low financial risk*, meaning that farmers, specifically those who struggle to make ends meet, value the safety of farming practices they already know, as opposed to trying unfamiliar and potentially financially risky, new soil management techniques.

Regimes of valuation which contribute to the farmers making changes in the direction of soil care and sustainable soil management employ evaluative principles that value: (1) *Soil* and its health per se, meaning that the soil and its health is acknowledged as of fundamental importance to agricultural production, and not taken for granted. This also means that the quality of one's soil is not only checked at the surface but also below the ground. (2) *Microorganisms* in soils, meaning that the value of cultivating microorganisms in soils for it to be healthy and fertile is acknowledged and accounted for in soil management strategies. This, e.g., implies reducing plowing when possible. (3) *Respectful exchange* with peers, soil researchers and advisors, in which a mediation of differences sparks reflexive processes; shared experiences of successful uptake by other farmers encourage uptake initiatives themselves; and knowledge flows provide insights into new possibilities. (4) *Creativity and experimentation*, as opposed to following instructions as one would with a cooking recipe. This means to value curiosity and innovative initiative to try out new things, think about alternative solutions and implement them. (5) The effort to build a *positive relationship between agriculture and publics*, despite misconceptions, lack of exchange and poor mutual understanding. This implies communicating with publics, acknowledging public concerns and trying to address them.

My attempt to delineate evaluative principles from the data is not to be seen as a spot-on explanation for (non-)uptake of adaptive measures, since neither the literature nor my data can fully explain what motivates farmers to make transformations at their farm. Yet, it is an attempt at reflexively getting closer to understanding the valuations that motivate farmers' decisions regarding the (non-)uptake of soil care measures. What is interesting is that it resonates with claims in the literature (see chapter 4.2) that regimes of valuation, consisting of multiple, diverse evaluative principles, are more likely to drive change, while regimes of valuation drawing from few dominant evaluative principles do not.

8 Conclusion

In this master thesis I introduced my case, the farmers' collective Boden.Leben, and my research interest (see chapter 1). I traced lines of literature that help me make sense of broader agricultural developments; agriculture and soils from a Science and Technology Studies perspective; knowledge and social learning in agriculture; and soils, values and motivations in Austrian agriculture (see chapters 2.1-2.4). Against this background, I presented the main research question in which I asked about the kind of valuations that can be identified among board members of Boden.Leben and about the ways these valuations motivate them for their collective work regarding soil care. To deepen and extend the main research question, I formulated sub-questions in which I asked about how the board members practically realize the exchange and activities between farmers, about how the different contexts of the farmers matter for their collaborative work and about the kinds of agricultural problems that the board members identify and relate to their work of Boden.Leben (see chapter 3).

In the theories and sensitizing concepts chapter, I elaborated on Sociological Pragmatism and Symbolic Interactionism to conceptualize the ways in which problems and actions are related in my case. Further, I described the concepts of regimes of valuation and evaluative principles out of the field of Valuation Studies, which I later used for the analysis. Lastly, I introduced the social worlds/arena perspective which helped me delineate my case and bridge the theories and methods part of the thesis (see chapters 4.1-4.3). In the methods part, I described the methodological approach of situational analysis which informed the empirical work, followed by a description of the data collection and analytical process. I briefly gave a recap about my case, out of whose board I interviewed five members. Further, I described how I analyzed the interviews in a cyclical process of coding and mapping (see chapters 5.1-5.3).

To present the analysis, I began by describing the sample, five Boden.Leben board members of which four have a conventional farm and one has an organic farm. Further, the sample features smaller and larger farms, as well as different types of farms such as sideline, arable and dairy farms. These differences in farm sizes and types among the sample mirror the diversity of farms involved as general members of Boden.Leben. One of the hypotheses, I described at the beginning of the analysis chapter, is that exactly these differences and the exchanges happening between these different farmers, play an important role for the successful work at Boden.Leben. Another important hypothesis and working observation I described was that the initiative to collectively work on soil-related topics was born out of the need to solve practical agricultural problems that the farmers experienced in relation to their work (see chapter 6.1). I described the agricultural problems, relevant to the farmers, in the second sub-chapter of the analysis chapter. Here, I identified environmental, societal and sector specific agricultural problems, and explained how said problems relate to one another and mutually depend on each other (see chapter 6.2).

In the following chapter, I brought forward ways in which the farmers at Boden.Leben attend to these problems through their collective work at Boden.Leben and, I described the benefits that come along with their work. Here, I illustrated how the initial motivations behind the uptake of soil care measures, as practiced and promoted at Boden.Leben, were often not directed at larger issues such as climate change adaptation per se. Instead, motivations behind adaptive practices were directed at solving concrete practical problems the farmers were encountering at their farms. Only later did the farmers realize the encompassing benefits that better soil care can have not only for farming processes and outcomes, but for the environment, for societal relations and for present and future farming grounds (see chapter 6.3).

In the following chapter, I further explored community and social interaction aspects at Boden.Leben. Hereby, I demonstrated how community-, knowledge- and soil-related aspects and benefits of the work at Boden.Leben are inextricably linked and mutually depend on one another. I did so by describing how improving soils and solving problems requires: a cultivation of respectful and productive exchange; a hand in hand improvement in mutual understandings and understandings for soils; and a circulation of knowledge and experience surrounding soils and soil management. This works best when knowledge is circulated between a variety of different farmers in a reflexive way. Only through a vibrant combination of community-, knowledge- and soil-related aspects can new insights be gained and farming practices improved (see chapter 6.4). Throughout the analysis chapter, I heavily relied on direct quotes of the board members I interviewed to present my findings. The quotes better reflect the farmers' perspective than any paraphrasing of mine could. Further, they keep the readers understanding of the findings as close to the material as possible (see chapters 6.3-6.4).

After presenting the analysis, I discussed my findings by reflecting on them in regard to the research questions, the literature from the state of the art and the theories section. Hereby, I specifically reflected on the manifold factors influencing the successful uptake or non-uptake of soil care measures such as trust, social ties, risk and risk mitigation, financial pressures, prior knowledge and accessibility to knowledge and resources. I demonstrated that these are themes I found both in the relevant literature as well as in the data of my study (see chapter 7.1). Further, I laid out how farmers' identities strongly rely on different forms of managing, valuing and understanding soils and soil care, and that these soil-related identities then play an important role in the ways that better soil care and sustainable measures are taken up or not taken up (see chapter 7.1.1). Finally, I applied the concepts of regimes of valuation and evaluative principles to the findings of the analysis. Hereby, I demonstrated that regimes of valuation which employ multiple and diverse evaluative principles are more likely to lead to change, while regimes of valuation drawing from few dominant evaluative principles do not (see chapter 7.1.2).

To now piece together the findings that I have thoroughly elaborated on in the chapters above, and to formulate the conclusive remarks for my thesis, I will again refer to chapter 4.1. In said chapter, I talked about how according to pragmatist thinking "*awareness, insights and meanings develop in the course of creatively solving problems of action.*" (Schubert, 2009, p. 345). The agricultural problems that I

have empirically inquired in chapter 6.2 can be seen as such problems of action, whose creative solving creates awareness, as well as establishes new understandings and meanings. These new understandings and meanings manifest for the farmers in novel ways of reflecting their work and finding motivation to make changes at their farm. Further, they manifest in the values and purposes that come along with the work at Boden.Leben.

This leads me to the first main takeaway of this study: agricultural transformation and innovation is strongly rooted in attempts at solving (everyday) agricultural problems. These problems are not necessarily concerns that are put forward by researchers, activists or policy makers, but they are put forward by the farmers themselves, and relate to the day-to-day experiences at their farms. I argue that when engaging with (sustainable) agricultural transformations it is crucial to start with the concerns voiced by farmers, as opposed to trying to push relevancies that might not be prevalent in the farming community onto farmers from above. To re-iterate, problems that were mentioned in the interviews were: weather extremes that farmers must deal with; bad soil quality, which makes it increasingly hard to produce healthy and steady yields; financial pressures that farmers are under; a lack of exchange within the farming community; a lack of openness of other farmers towards Boden.Leben; pressures from society to adapt more sustainable farming styles; undifferentiated public discussions about farming; and a general lack of exchange between agriculture and publics, to name a few. These problems resonate with current agricultural problems as defined in the literature (see chapter 2).

Another main takeaway is that for agricultural transformations to begin, to be successfully developed and to be taken up it is crucial to create spaces in which environmental-, knowledge- and social/community-related aspects can be accounted for in an integrated way. In these spaces, as in the case of Boden.Leben, farmers, soils, textbook knowledge, experiences, crops, advisors, numbers, researchers, graphs, pictures, friendly encounters, heated discussions and various other things are meaningfully related. These vibrant relations ultimately lead to new ways of thinking and doing farming, not because they are planned top-down, but because the conjunction of all of these different aspects naturally, and often coincidentally, enables for new insights to arise. Here, differences between the farmers, e.g., in terms of the type, the size and the location of their farm, are crucial to spark reflexive processes and to strengthen the farmers' ability to know their own soils and relate as well as adapt various information and knowledges to their farms. Closely connected is the importance of reflections triggered through farmer-to-farmer exchange. These reflections can be induced, e.g., by merely telling a fellow farmer what you have done on the field or by having discussions about new techniques. Ultimately, these new insights, benefits and values are interrelated and successively amplify each other.

It is important to highlight that the understandings of learning and engaging with knowledge practiced in such spaces challenge traditional ways of understanding what it means to learn. As I have demonstrated, according to my interviewees traditional relations between agricultural knowledge, learning and practice are thought in a linear, straightforward way. One learns an established way of

farming, and then imposes that way on their fields, regardless of context and potential changes in the circumstances. Alternative relations between knowledge, learning and practice, as pursued at Boden.Leben, function in a much more reflexive way. Things that are learned at school are challenged as well as continuously adapted to different situations and circumstances. New knowledge and new techniques are acquired through exchanging different knowledges and experiences. Further, insights are gained through experimenting and combining different sets of understanding. Here, a very different understanding of learning is at play. One that is on-going, adaptive, inherently social and sensitive to the context of the respective farm(er). Further, as mentioned earlier, digital tools, specifically social networking tools, play an important role for communities of learning and practicing in which these understandings are followed.

A question that remains open is to which extent broader landscapes of collectives and associations like Boden.Leben play a part in developing and cultivating these understandings of learning. An example of a potentially interesting collective is the initiative called “Humus Bewegung” (= humus movement)⁹, which is a network of farmers and advisors with a focus on humus development and soil revitalization. Another one is the association called “Land schafft Leben” (= countryside creates life)¹⁰, whose goal is to educate consumers about food production. I am under the assumption that collectives like these are potentially interesting spaces in which similar approaches as the ones at Boden.Leben can be found. This, however, was something I could not inquire further within the scope of my thesis.

Another limitation of my study concerns generalizability, not only in terms of the larger picture in the Austrian landscape of farmer collectives, but also in terms of Boden.Leben itself. This has to do with the empirical method of choice, qualitative interviews, as well as the limited availability of resources for this master thesis project, which restricted the sampling strategy by size. Given their organizational position and role model function in the collective, the five board members I interviewed can (to some extent) be seen as a representation of the collective’s values, approaches and practices. However, they do not account for each member’s perspective and understanding of their partaking at Boden.Leben. Hence, it must be assumed that there are opinions, viewpoints and practical approaches that were not captured by interviewing the five board members.

Further, although using the method of qualitative interviews enables to bring forward finer nuances and subtleties that quantitative approaches do not bring forward, qualitative analysis is also not a direct representation of the social context under inquiry. Reports and interpretations extracted from the field are always inherently constructive and performative, therefore, when analyzing them it is impossible to catch every aspect of the social life under study. It is quite possible, even likely, that there are concerns,

⁹ <https://www.humusbauern.at/start> (Accessed: September 30, 2022)

¹⁰ <https://www.landschaftleben.at> (Accessed: September 30, 2022)

disagreements and dimensions to Boden.Leben that remain off the radar. Another aspect that my study touches upon, but cannot conclusively resolve, is the question about potential structural changes inflicted through the work of Boden.Leben. As mentioned above, the interviewees of my sample reported both an ever-growing interest in Boden.Leben by publics as well as a steady increase in the number of members of the collective. However, the interviewees also talked about the difficulties in bringing Boden.Leben's themes and the soil care measures promoted there to farmers.

To account for the limits of this thesis, and to propose incentives for further inquiry, one could consider a larger sample size as well as the usage of mixed methods in which, e.g., additional information about a larger number of farmers of Boden.Leben could be inquired and related to the results of the analysis. Additionally, to enrich the analysis with more depth, and uncover further dimensions of the collective work at Boden.Leben, it could be interesting to perform participant observations at seminars or field days, as initially intended. Doing so, the manifold ways in which the work is carried out in practice could be observed and compared to the reports in the interviews. Finally, to inquire structural aspects surrounding Boden.Leben it could be interesting to look at broader landscapes of farmers' collectives in Austria, and their understandings of learning and soil management practices. Doing so, one might be able to draw conclusions on what role Boden.Leben, and farmers' collectives like Boden.Leben, play in potential cultural shifts in relation to agricultural research, learning and practice.

In a broader sense, institutional arrangements – such as changes in infrastructures of agricultural funding and knowledge production – might be interesting to explore further. This is where the findings of my thesis provide starting points to base further research designs on. Further, the findings of my study give a glimpse into farmers' relevancies regarding current problems in agriculture, demonstrate how successful agricultural knowledge exchange can take place and describe likely relevant aspects when it comes to sustainability transitions in agriculture. Thus, they might be of interest for policy makers to incorporate farmers' relevancies as well as consider context-specific, experiential and farmer-oriented ways of agricultural learning when creating programs for sustainability transitions and general policies surrounding agriculture.

9 References

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11 Appendix

11.1 Table 5 – Agricultural problems codes + descriptions

Code		Meaning
• lack of openness of other farmers	36	Indicates participant pointing out that farmers outside of Boden.Leben have little openness, acceptance or understanding for Boden.Leben and the soil-related measures promoted there. This goes as far that farmers outside of Boden.Leben discourage Boden.Leben farmers and even act hostile towards them.
• weather extremes	34	Indicates that participant is identifying weather extremes as a problem. Weather extremes are partly caused by climate change and can e.g., manifest as intense heat, long periods of drought, intense rainfalls, or strong winds/storms. These extreme weather events can e.g., lead to erosion, pests, compromised crop quality etc. This, in turn, affects yields negatively.
• bad soil quality	27	Indicates that participant is identifying low soil quality as a problem. This can mean that soils lack fertility, cohesive qualities, water absorbent qualities or microorganisms; that they are overly dry, prone to erode, polluted or produce little yields, among other things.
• climate change	27	Indicates that participant acknowledges climate change as a problem – one that has partly been cause by agriculture, or that affects agriculture negatively.
• hot / dry soils	27	Indicates that participant talks about the problem of overly hot or dry soils. This is mostly caused by intense heat or long periods of drought. Hot soils can e.g., lead to important microorganisms in the ground dying; dry soils e.g., lead to crops drying out or soils being more prone to erosion.
• outdated agri teaching / techniques	27	Indicates that participant identifies either (1) agricultural teaching (e.g., in school or at trainings) or (2) agricultural techniques (such as intense) tilling as outdated, meaning that they no longer represent the status quo of modern, sustainable, soil-protective farming but are still taught/practiced.
• misuse of agri technologies	26	Indicates participant pointing out that specific agricultural techniques (some scrutinized, some not) are often not inherently bad, but only wrongly used by farmers, e.g., due to tradition or outdated agricultural teaching. This e.g., applies to tilling or using agricultural chemicals.
• erosion	20	Indicates that participant talks about the problem or soil erosion. Erosion in agriculture means that the soil gets lost from the fields due to it being e.g., blown away by wind or washed away by water. Soils with low soil quality are generally more likely to erode.
• undifferentiated public discussions	18	Indicates that participant sees the way public discussions are held as problematic. These discussions usually surround topics like agriculture, climate change, agri chemicals, CO2 emissions, etc. What is being problematized is that blame is easily shifted to farmers and that publics often lack knowledge about farming, jump to conclusions and hold uninformed expectations.

• financial pressure	16	Indicates that participant talks about financial pressure in relation to agriculture. This is often about the difficulty of individual farms to make ends meet, especially small farms, but also about e.g., a pressure to produce cheaply and provide cheap foods.
• blaming farmers	14	Indicates that participant is talking about how farmers are often blamed for things going wrong in agriculture and beyond; farmers are for example blamed for climate change, CO2 emissions etc.
• pressure to perform	13	Indicates that participant points to a pressure from e.g., politics to produce steady, reliable, and high in number yields.
• bureaucracy	11	Indicates that participant talks about the negative effects of bureaucracy on them e.g., them having to use a lot of time doing paperwork instead of farming, them having to specifically classify everything they do even though there sometimes are no available boxes for what they do, or them being in other ways restricted by bureaucratic workloads.
• distance to infrastructure	11	Indicates that participant talks about the problem that some farms are out of reach of important infrastructures due to their location; those infrastructures can be research infrastructures, factories, industry etc.
• pressure from society	10	Indicates that participant speaks of a felt/observed pressure from society towards agriculture. E.g., a pressure to produce less CO2, farm more sustainably, make more yields, produce cheaper products, etc.
• pests	9	Indicates that participant points out to the problem of pests such as the potato worm or the wireworm. While pests are a normal concern in agriculture, how they are being managed is important. Here farmers can turn to agri-chemicals as well as to less invasive methods.
• (increasingly) unreliable yields	8	Indicates that participant talks about the problem that yields have become increasingly unreliable due to e.g., dryness, pests, extreme weather events etc.
• lack of financing options	8	Indicates that participant mentions the scarcity of financing options for agricultural research.
• weeds	8	Indicates that participant points to weeds as a problem that needs to be tackled. While weeds are a normal concern in agriculture, how they are being managed is important. Here farmers of Boden.Leben have to weigh the negative side effects of weed measures like tilling or using agri chemicals.
• industrialization	7	Indicates that participant frames industrialization, specifically agricultural industrialization as a problem.
• lack of exchange between agriculture & science	7	Indicates that participant points out and problematizes a lack of exchange between agricultural actors and scientific ones.
• lack of exchange between farmers	7	Indicates that participant points out and problematizes a lack of exchange with agriculture, i.e., between different farmers.
• operational blindness	7	Indicates that participant identifies operational blindness as a problem. This means that with an increase in specialization and differentialization in agriculture, different agricultural sections have become more and more separate from each other; e.g., milk farmers rarely exchange with wine farmers etc.; thus, a lot of mutual learning potential gets lost.
• Betriebssterben	6	Indicates that participant identifies an increasing decline in farms as a problem.
• disadvantage for single farms	6	Indicates that participant talks about that single farms have disadvantages towards bigger ones.

• lack of exchange between agriculture & publics	6	Indicates that participant points out and problematizes a lack of exchange between agricultural actors and publics.
• pressure to expand	6	Indicates that participant points out to a pressure to expand their farms. This pressure to expand is e.g., taught in schools or inflicted by politics.
• contradicting expectations	5	Indicates that participant talks about the problem that expectations and pressures that are brought towards farmers from publics or politics are often contradicting each other; e.g.: pressure to expand and pressure to be organic and farm sustainably.
• lack of individuality	4	Indicates that participant mentions that individual needs of farms are often neglected in e.g., agricultural teaching and continuous training, in policies, in state support of farms.
• lack of societal acceptance	4	Indicates that participant talks about a lack of societal acceptance towards agriculture. This means for example, that publics criticize use of agri-chemicals but at the same time expect steady yields.
• temporal contradictions	3	Indicates that participant talks about a contradicting temporal logic between e.g., research and agricultural practice, agricultural practice is a lot more fast paced.
• digitization	3	Indicates that participant identifies digitization as a problem.
• throwaway society	2	Indicates that participant problematizes society as one in which things are thrown out too easily. This aims at shifting the blame about climate change away from agriculture and to wider society.
• ban of agri chemicals	1	Indicates that participant talks about policies to ban agri chemicals as threatening to their ability to counteract pests, weeds and produce yields reliably and to sufficient amounts.

Table 5 *Agricultural problems codes + descriptions* by Sofie Haiden

11.2 Table 6 – Values and purposes codes + descriptions

Code		Meaning
● added value	78	Indicates that participant is describing Boden.Leben and their engagement in it as valuable and beneficial either to them, to farmers who participate or to agriculture and wider society. This code was e.g., used when comparisons were made between farms who don't use soil care measures and those who do or between before and after soil care measures were employed – in both cases the code was used when measures provided a benefit.
● exchange as value in itself	59	Indicates that participant points to exchange between mostly farmers, but also between farmers and researchers or farmers and publics to be inherently valuable. This code was applied anytime a participant said something that implied this.
● expectations	37	Indicates that participant talks about expectations that they had or have in relation to Boden.Leben.
● to communicate with peers	88	Indicates that participant talks about Boden.Leben enabling more possibilities for exchange between peers and acknowledging that this is beneficial and valuable.
● to increase understanding (cognitive)	82	Indicates that participant talks about Boden.Leben enabling the farmers to increase their understanding of soils and soil-related interlinkages and acknowledging that this is beneficial and valuable. This can e.g., mean that they gather knowledge about soils which they can then apply on their farms.
● to improve soil / crops	73	Indicates that participant talks about Boden.Leben enabling the farmers to improve their soils or crops and acknowledging that this is beneficial and valuable. Improving soils and crops is closely tied together and can be e.g., encouraging microorganisms in the ground, thus providing the crops with more nutrients, or improving water absorbent qualities in the soils to ensure water supplies to the crops.
● to organize knowledge	72	Indicates that participant talks about Boden.Leben enabling for knowledge to be organized and acknowledging that this is beneficial and valuable. Organizing knowledge is closely linked with making it accessible and is done via organizing field days, entertaining the various online outlets, organizing communication and knowledge flow, etc.
● to make knowledge accessible	70	Indicates that participant talks about Boden.Leben enabling the farmers to access knowledge better and acknowledging that this is beneficial and valuable. This means e.g., that knowledge is provided in a form that is interesting and understandable for the farmers, e.g., via on-field demonstrations or experiments. Further, this also means that knowledge is provided via new mediums such as on Boden.Leben's website, or on Facebook, YouTube, and other digital networks. This is especially relevant when it comes to scope of reach, as it enables farmers who do not have time or live too far away to attend events in person to still have access to the knowledge.

<ul style="list-style-type: none"> ● to demonstrate new possibilities 	58	Indicates that participant talks about Boden.Leben enabling the farmers to demonstrate and get demonstrated new possibilities to one another and acknowledging that this is beneficial and valuable. Demonstrating new possibilities means e.g., showing or being showed successful results of a new technique or educating about new and better strategies etc. This can happen in person or digitally and is closely tied to increasing exchange between farmers, mediating their differences, and making knowledge accessible.
<ul style="list-style-type: none"> ● to communicate with science 	54	Indicates that participant talks about Boden.Leben enabling more possibilities for exchange between farmers and researchers and acknowledging that this is beneficial and valuable.
<ul style="list-style-type: none"> ● to start reflexive processes 	50	Indicates that participant talks about Boden.Leben enabling the farmers to start reflexive processes and acknowledging that this is beneficial and valuable. Reflexive processes here means to rethink farming-related routines, traditions and biases, and incorporate new and potentially better ways to think and do farming. Reflexive processes can be triggered via exchange, encountering problems, getting informed etc.
<ul style="list-style-type: none"> ● to communicate with publics 	49	Indicates that participant talks about Boden.Leben enabling more possibilities for exchange between farmers and publics and acknowledging that this is beneficial and valuable.
<ul style="list-style-type: none"> ● to organize respectful/productive exchange 	46	Indicates that participant talks about Boden.Leben enabling the farmers to partake in respectful/productive exchange and acknowledging that this is beneficial and valuable. This is relevant when it comes to mediating differences and increasing mutual understanding and ultimately learning from each other. Exchange is respectful and productive when differences are respected, criticisms are formulated constructively, and new insights are gained. At Boden.Leben board members organize a respectful communicative climate by moderating discussions and intervening when communicative standards are not adhered to.
<ul style="list-style-type: none"> ● to use agri technologies responsibly 	42	Indicates that participant talks about Boden.Leben enabling the farmers to learn how use agricultural technologies responsibly and acknowledging that this is beneficial and valuable. Some agricultural technologies like tilling or using agri-chemicals are not inherently bad but are used excessively/wrongly. Boden.Leben sensitizes to reconsider the usage of such technologies and continue to use them responsibly if so.
<ul style="list-style-type: none"> ● to mediate differences 	36	Indicates that participant talks about Boden.Leben enabling the farmers to mediate their differences and acknowledging that this is beneficial and valuable. Differences can concern their farms and farming methods as well as their opinions (agri-political or otherwise). Mediating them can e.g., mean to communicate respectfully and get sensitized for each other's circumstances.
<ul style="list-style-type: none"> ● to increase understanding (mutual) 	35	Indicates that participant talks about Boden.Leben enabling the farmers to increase their mutual understanding and acknowledging that this is beneficial and valuable. Mutual understanding means e.g., that the farmers get sensitized for the different farming conditions at each farm, and thus, gather a better understanding on why a respective colleague farms the way they do.

<ul style="list-style-type: none"> ● to increase understanding (mutual) 	35	Indicates that participant talks about Boden.Leben enabling the farmers to increase their mutual understanding and acknowledging that this is beneficial and valuable. Mutual understanding means e.g., that the farmers get sensitized for the different farming conditions at each farm, and thus, gather a better understanding on why a respective colleague farms the way they do.
<ul style="list-style-type: none"> ● to deal with climate change effects 	29	Indicates that participant talks about Boden.Leben enabling the farmers to deal with climate change effects better and acknowledging that this is beneficial and valuable. E.g., the soil-related measures promoted at Boden.Leben help the farmers to keep their soil robust and healthy i.e., less prone to be affected by weather extremes such as droughts or intense rain.
<ul style="list-style-type: none"> ● to solve a problem 	28	Indicates that participant talks about Boden.Leben enabling the farmers to solve specific problems they might have at their farms and acknowledging that this is beneficial and valuable. E.g., a farmer might encounter a specific issue on the field and start a discussion in one of the fora organized by Boden.Leben. Through the exchange which is triggered knowledge is shared and solutions might be found.
<ul style="list-style-type: none"> ● to increase farmer's autonomy 	18	Indicates that participant talks about Boden.Leben enabling the farmers to increase their autonomy and acknowledging that this is beneficial and valuable. Increasing autonomy means e.g., that farmers are less dependent on external trainings or funding, or that they are self-determined.
<ul style="list-style-type: none"> ● to improve yields 	15	Indicates that participant talks about Boden.Leben enabling the farmers to improve their yields and acknowledging that this is beneficial and valuable. Improving yields means to get high, healthy, reliable, and high-quality outputs of their farming efforts.
<ul style="list-style-type: none"> ● to improve cost/benefits 	13	Indicates that participant talks about Boden.Leben enabling the farmers to improve cost/benefits at their farms and acknowledging that this is beneficial and valuable. The knowledge they gather at Boden.Leben and the new farming techniques they draw from it enables them to produce better results with less resources invested.
<ul style="list-style-type: none"> ● to save resources 	13	Indicates that participant talks about Boden.Leben enabling the farmers to save resources and acknowledging that this is beneficial and valuable. Saving resources is similar to improving cost/benefits but differs from it as it is not only about the ratio between how much money/resources go in and how much output comes out, but rather also about saving natural resources, thus farming sustainably when looked at it from a bigger picture.
<ul style="list-style-type: none"> ● to influence politics 	11	Indicates that participant talks about Boden.Leben enabling the farmers to influence politics and acknowledging that this is beneficial and valuable. Influencing politics can e.g., mean that Boden.Leben's soil-related propositions are being considered when policies are made. This is usually acquired through connections individual members have into the political sphere.
<ul style="list-style-type: none"> ● to communicate with industry 	2	Indicates that participant talks about Boden.Leben enabling communication with industry and acknowledging that this is beneficial and valuable. Communication with industry can e.g., be economic or research collaborations with an agriculture-related company.

Table 6 *Values and purposes codes + descriptions* by Sofie Haiden

11.3 German interview template (original)

Einstiegsfragen:

- 1) Am Anfang würde ich Sie bitten, Sich und Ihren Betrieb (kurz) vorzustellen.
- 2) Was mich auch interessieren würde: wie hat das mit dem Verein für Sie begonnen und was ist Ihre Rolle im Verein.

Themenbezogene Fragen:

Motivation:

- 1) Was war die Ursprungsmotivation sich mehr mit dem Boden zu beschäftigen und dann den Verein zu gründen?

Vorteile:

- 2) Welche Vorteile bringt die Zusammenarbeit für Landwirte? Was haben Sie da für Erfahrungen gemacht?
- 3) Welche Vorteile erbringt es, dass man sich jetzt mehr mit dem Boden beschäftigt?
- 4) Ich habe von den bisherigen Interviews den Eindruck bekommen, dass die Vorteile einerseits ganz nah bei den Betrieben liegen, andererseits, dass die Arbeit auch für größere Zusammenhänge vorteilhaft ist. Stichworte sind hier zum Beispiel, Klima, oder das Verhältnis zwischen Gesellschaft Landwirtschaft. Wie sehen Sie das?

Werte:

- 5) Was macht die Zusammenarbeit speziell bei Boden.Leben wertvoll? Was ist da Ihr Eindruck?
- 6) Was macht das Wissen, das durch die Zusammenarbeit erlangt wird, wertvoll?

Praktische Relevanz, Alltägliches:

- 7) In welcher Hinsicht ist der (Wissens-)Austausch bisher hilfreich für Sie? Vielleicht anders formuliert was hat sich für Sie verändert, seit es ihn gibt.
- 8) Inwiefern sind die Aktivitäten relevant für Ihre tägliche landwirtschaftliche Praxis? Wie kann man sich das vorstellen?
- 9) An wen würden Sie Sich am ehesten Wenden, wenn sich bei Ihrer Arbeit eine Frage ergibt, ist da der Verein eine wichtige Anlaufstelle für Sie?

Ziele Verein:

- 10) Auf der Website habe ich gelesen, der Verein hat unterschiedliche Ziele definiert. Das waren glaube ich, Wissenschaft und Praxis verbinden, Austausch zwischen Landwirten und Öffentlichkeitsarbeit.
 - a. Welche davon interessieren Sie am meisten, können Sie mir dazu etwas erzählen?
 - b. Gibt es einen Schwerpunkt, der im Verein allgemein besonders wichtig ist?

Unterschiede Verein:

- 11) Ich habe jetzt öfter gelesen, was Boden.Leben so spannend macht ist, dass da ganz unterschiedliche Landwirte zusammenkommen. Was ist da Ihr Eindruck dazu?
- Würden Sie sagen, dass es beim Verein eher unterschiedliche Ansätze gibt? Wie wirkt sich das auf die Zusammenarbeit und den Austausch aus?
 - Glauben Sie, dass diese unterschiedlichen Herangehensweisen eine Rolle bei den gemeinsamen Aktivitäten spielen?
 - Kommt man da auf gemeinsame Nenner?

Wissenschaft und Praxis:

- 1) Im Verein ist ja auch die Zusammenarbeit mit der Wissenschaft wichtig. Inwiefern ist das für Sie und generell für die Mitglieder relevant?

Boden:

- 2) Das zentrale Thema im Verein ist ja der Boden. Wie ist es dazu gekommen, dass das das Thema ist, um das es sich dreht?
- Ist der Boden der gemeinsame Nenner oder gibt es da andere Themen, die ausschlaggebender sind?

Größerer Zusammenhang:

- 12) Inwiefern hängen die Aktivitäten und Ziele im Verein mit allgemeineren Veränderungen in der Landwirtschaft zusammen? Was ist da so Ihr Eindruck?
- 13) Gibt es Zusammenarbeit mit anderen Vereinen?

Schlusssequenz:

- 3) Wir kommen jetzt langsam zum Schluss, haben Sie noch abschließende Gedanken, die Sie gerne anfügen möchten?

11.4 English translation of interview template

Introductory questions:

- 3) At the beginning, I would ask you to introduce yourself and your farm (briefly).
- 4) What I would also be interested in: how did it start for you with Boden.Leben and what is your role in the association.

Topic related questions:**Motivation:**

- 14) What was the original motivation to get more involved with soils and then to start the collective?

Benefits:

- 1) What are the benefits of the collaboration for farmers? What experiences have you had with that?
- 2) What are the benefits of now being more involved with soil?
- 3) I got the impression from the interviews so far that the advantages are on the one hand very much related to the farms, and on the other hand that the work is also beneficial for larger contexts. Keywords here are, for example, climate, or the relationship between society agriculture. How do you see that?

Values:

- 1) What makes the collaboration at Boden.Leben specifically valuable? What is your impression?
- 2) What makes the knowledge gained through collaboration valuable?

Practical relevancies, day-to-day:

- 1) In what ways has the (knowledge) exchange been helpful to you so far? Perhaps phrased differently what has changed for you since it started.
- 2) How are the activities relevant to your daily agricultural practice? How can one imagine that?
- 3) Who would you most likely turn to if a question arose in your work, is the association an important point of reference for you?

Goals:

- 1) On the website I read that the association has defined several goals. They were about connecting research and practice, farmer exchange and public relations, as I recall.
 - a. Which of these are you most interested in? Please tell me about them.
 - b. Is there a focus that is particularly important in the association in general?

Differences:

- 1) I often read that what makes Boden.Leben so interesting is that very different farmers come together there. What is your impression regarding this?
 - a. Would you say that there are rather different approaches in the association? How does that affect cooperation and exchange?
 - b. Do you think these different approaches play a role in joint activities?
 - c. Are you able to come up with common denominators?

Research and practice:

- 4) In the association, collaboration with science is important. How is that relevant to you and to members in general?

Soils:

- 1) The central topic in the association is soil. How did this come to be the topic the collective's work revolves around?
 - a. Is soil the common denominator for the members or are there other topics that are more crucial regarding this?

Broader context:

- 1) To what extent are the activities and goals in the association related to broader changes in agriculture? What is your impression?
- 2) Is there cooperation with other associations?

Final sequence:

- 1) We are now slowly coming to the end of the interview. Do you have any final thoughts you would like to add?

11.5 Original German quotes

Original quotes listed in order of appearance:

I1 527-530: „Die Böden woan rein gfühlsmäßig früher fruchtbarer wie heit obwohl ma laut Schulwissen laut dem was uns Jahre lang gelehrt is worden ois richtig mocht.“

I4 121-122: „Mei Vota hot uh Ende der Neinzger scho ongfogn, doss er gmerkt hot jetzt hoid dass die Böden schlechter werden.“

I4 325-329: „Erosion is natürlich zusätzlich a Thema [...] des woa a a Grund warum mei Vota und da Erwin [Name geändert] eben auf des umgstöt hoben weil wir eben a in an hügeligen Gebiet san und deswegen a dementsprechend viel Niederschlog ham und wir sehr stark von Erosion betroffen woan.“

I5 57-60: „Jo wie is es zur Gründung gekommen. Des woa des Joa zwotausend neunzehn wo schon des Joa 2018 net sehr einfach woa. Des woa Hitze Trockenheit. Es hot, i hob gwusst, es gibt a paar Landwirte, die sie damit beschäftigen wie ma mit dem hoibwegs leben kann.“

I5 874-875: „Wenn der Klimawandel so weiter fortschreitet wie bisher, wird's a ernsthaftes Versorgungsproblem in Europa geben.“

I1 996-1000: „Was sehr förderlich woa für die Mitglieder, für die rasche Verei[nsbildung], dass da amfach die Stimmung is: mia Bauern sein Schuld an diesen oder jenem. Und, dass ma jetzt einfach versucht, najo wie kimma gwasi gesellschaftlich besser dastehn, wie kimma gwasi des besser verkaufen, dass mia klimaschonend oabeitn und eh nachhaltig sein.“

I1 1086-1089: „I glaub a des Interesse [von Bauern in Boden.Leben] wäre net so groß, wenns net die Greta Thunberg geben tät und die Fridays for Futures Sochn, des hot a sei Guats. Ma derf des net immer, jetzt wo vo vielen Landwirten a gsehn wird ois negativ gsehn wird.“

I1 624-628: „Da föhlt anfach der Bezug [zur Landwirtschaft], sie seind so weit weg und je weiter ois dos in die Städte einegeht, je weniger is des. Und gleichzeitig, des is meines Erochtens noch goa net des Problem, owa gleichzeitig, howi des Gefühl, die Städter glauben es muas ois bio sein und öko und der am Laund is der Umwödvergifter.“

I3 415-418: Des Endprodukt, des Lebensmittel, kennen vü, aufn Weg dorthin wollen vü mitreden, aber kana versteht wenn i durtn an Schraub aussa drah dass nocha des ganze System dann zambricht.“

I1 552-553: „Weil ma kriegt als Londwirt teilweise a des Gefühl, du mochst wurscht wo dmochst is ois verkehrt.“

I4 718-723: „Die Bevölkerung soid jo a amoi wissen, dass net jeder Landwirt nur a Brunnenvergifter quasi is und ois schlecht mocht und ois tot spritzt.“

I3 371-373: Des is was, was schon da Öffentlichkeit, wonns das ener erklärst glaubi bewusst wird, dass da sehr vü gmocht wird.“

I1 253-255: „Mitn Martin [Name geändert] habi des öfter gred. Der tat sie vü gern mehr anschauen, aber die Entfernung is hoit anfach a Problem.“

I1 1147-1149: „Da bin I irgendwia neidisch eben auf meine oberen Kollegen. I bin bei mir fost komplett alla und se san doch in an näheren Grätzl mehr Leit und kinna si noben leichter austauschen und gegenseitig aushöfn.“

I1 51-53: „Teilweise bin i von meine Kollegen donn beschimpft worden oder als Blödmann oder Spinnerei hingstellt worden. Und des is olls a Schaß wo i do moch weil des geht ned und des funktioniert net.“

I4 512-513: „I gib da jetzt a Zitat und des is des Zitat, des olles erklärt: Des homa scho immer so gmocht, des bleibt a so.“

I4 558-565: „Wenn du mit irgendan Londwirt redst, der auf, der eben, wie soin jetzt sogon, so stur is auf diesen System beharrt drauf, der wird donn anfoch erklären warum des bei ehm bei ihm net funktioniert und da kummt entweder: mei Boden is zu leicht, des geht net bei mir. I hob zu schwere Böden, des geht net bei mir. Bei mir regnets zu viel, des geht net bei mir. Bei mir regnets zu wenig, des

geht net bei mir. Also des sin immer diese, immer diesölbem Argumente und des is hoid donn a sehr schwer, dass ma solche entkräftet.“

I4 521-523: *„[Hinter]her erfoat ma des über fünf Ecken, dass ma im Wirtshaus im Stammtisch ausgericht worden is vo denen.“*

I4 573-577: *„Auf da an Seiten is es dieses: I will mi net verändern, i hob Ongst vor Neuem. Und auf der andern Seiten glaub i owa a es is oft da wirtschaftliche Druck. Dass anfoch die Landwirte nichts Neues probieren wollen, weils anfoch Ongst hoben, dass scheitern und donn a finanzielles „[bricht den Satz ab]. Weils jo doch olle sehr eng kalkulieren müssen.“*

I4 581-583: *„I wü jetzt net olle irgendwie, i wü net, des net schlecht reden oder irgendwie wen was vorwerfen, owa es gibt glaub i viele verschiedene Gründe dafür und des is glab i ana davon, oder ana da Hauptgründe.“*

I4 530-533: *„Weil sie se so versteifen auf des weil wir net pflügen. Des is eigentlich da Hauptgrund, weil des geht net, [pausiert] des geht einfach net, dass man net pflügt und so. Irgendwer hot dos moi gsogt so, der Pflug is a Mythos und a Mythos is schwer angreifbar.“*

I1 115-117: *„So wie mas früher von der Schul aus glernt hot, so alibi mäßig glei über ois drüber foan, des holt i net für richtig.“*

I5 791-794: *„Nur des is es eben net, die gaunze Landwirtschaft ist kein Kochrezept. In der Schule bekommst du mehr oder weniger im Pflanzenbau ein Kochrezept vorgsetzt. Ja, man nehme so viel Saatgut, man nehme so viel Dünger, man nehme diesen Pflanzenschutz und dann kommt hoffentlich des raus.“*

I1 1055-1059: *„Die erste Weiterbildung woa in der Schule. Das hast du host a gewisses Grundwissen erhascht und do is hoid abhängig gwesn von dem jeweiligen Lehrer, ob des was guats is oder net guat is und donn kummst du ausse und host hoid Vorträge, die von Firmen gmocht werden, die sind meistens sehr einseitig und sehr themenspezialisiert.“*

I3 682: *„wie in da Schui“*

I4 1059-1061: *„Welcher Otto-normal-Landwirt hot jetzt Kontakt zu an Wissenschoftler, wenn ihn net zufällig irgendwo auf an Födtoog irgendwo kennen lernst.“*

I5 1550-1552: *„Es is nämlich auch ein Thema bei uns, sozusagen, dass Dinge, die in der Wissenschaft erforscht wurden, eigentlich in der Schublade zumeist gelandet sind.“*

I4 269-271: „Da Hauptumstellungsgrund woa eigentlich net vorrangig der Boden, sondern anfoch a Betriebsmitteleinsparung.“

I4 286-289: „Da war eigentlich da vorrangige Grund, dass ma mehr Pflanzen hat um des abzusichern. Owa, dass durch des mehr Diversität im Boden entstehet, des erfoat ma donn eigentlich erst nachträglich, dass ma do eigentlich was guats gmocht hot, nur unbewusst.“

I4 303-309: „I würd amoi sagen, bei de meisten Betriebe bei uns im Vorstand woas eher die Umstellungen aus ondre Gründe, oiso eben Betriebsmittel einspoa. Vorrangig a die bessere Tragfähigkeit, weil wir zum Beispü san a in an Gebiet wo ma doch mehr Niederschlog noch hom und do woa jetzt im Herbst a zum Beispiel, oder im Friüjoa die Tragfähigkeit der Böden doch oft sehr problematisch. Und wemma en Boden eben nicht mehr pflügt, beziehungsweise weniger beaoarbeitet, wird er anfoch trogfähiger und des woa a mitunter a Grund.“

I2 1132-1138: „Und das hilft mir wahnsinnig, weil i bessere Erträge hab, gesündere Pflanzen und dadurch vielleicht sogar weiter gedacht Pflanzenschutz und Düngemittel einsparen kann.“

I5 601-610: „Nur wenn wir sozusagen den Boden aufbauen und resilienter machen gegen Stressfaktoren können wir dann sozusagen auch langfristig leben und überleben auch bei Trockenheit und Hitze und Extremereignisse. Es is ja nit nur Trockenheit und Hitze, irgendwann kommt dann so wie jetzt eben a schwerer Gewitterregen und des Wossa is irgendwo im nächsten Bach oder im nächsten Keller und des woll ma ja auch nicht. Wir wollen ja das Wasser am Feld behalten.“

I4 1182-1184: „Ma könnte a allein durch die Umstellung der Bewirtschaftung des Bodens scho so vü zum Klimawandel, zum Kleinklima, zur Wossaqualität beitrogen.“

I4 1205-1205: „Wenn ma es zum Beispiel schaffen würde, dass kein Boden landwirtschaftlicher Fläche in Österreich übern Winter nackt liegt, sondern mit Zwischenfrüchten bedeckt is, dann hätten wir scho so vü fürs Klima getan.“

I4 1254-1258: „Betriebe, die eben sehr flach pflügen und im Pflug nur bewusst einsetzen, zum Beispiel zur Unkraut Kontrolle amoi in der Fruchtfolge. Das is dann wieder ganz was anderes als wie diese intensiv Betrieb, die kane Zwischenfrüchte anbauen, extrem tief pflügen und des im Herbst bei nasse Bedingungen. Das des fürn Boden net guat is, des is kloa.“

I5 400-407: „Hob den Lein a Spur tiefer als den Mohn ablegt und den Buchweizen, damit der Lein sozusagen nicht so optimale Bedingungen hot. Er wird auflaufen, wird aber etwas kränklich dreinschauen und wenn Lein etwas kränklich dreinschaut, geht da Erdfloh lieber auf den Lein als auf den Mohn. Des hot funktioniert [pausiert] der Erdfloh hat sich den Lein hergenommen.“

I5 690-698: „Logisch, wir woin überleben. Wir woin von dem was wir oabeiten leben und des is sozusagen der Hauptnutzen von dem was wir machen. Wir leben davon und wir leben besser davon als ohne. Und, dass diese Oat und Weise der Bewirtschaftung angenehme Nebeneffekte fürs Klima hat, is sehr erfreulich und die nehma natürlich gerne mit und mit denen kamma auch sehr gut eigentlich Werbung mochen net.“

I1 96-102: „Man geht im Gespräch a oft drauf oder an kummt sie Dinge, weil mas revue passieren losst, des wossm normalerweis sog i jo net mocht, weils di mit kann Mensch austauscht. Wird da erst bewusst, jo des is jetzt ajo genau des und des woa der Punkt und kanntat die Erklärung sein, warum dieses oder jenes funktioniert hat oder nit funktioniert hat. Der Austausch und das Leit kennen lernen und andere Gegebenheiten bringt donn a hoit persönlich weiter beziehungsweise spornt des on neiche Dinge a wieder zum Probieren.“

I4 982-994: „Der gute Mix, des hot immer funktioniert. Weil, dass ma irgendwie an aus da Wissenschaft hot und immer dazwischen hot ma an Praktiker. Weil do sitzen die Londwirte donn drin, da segns Büder mit Maschinen a bisl und, a so oabeitet der und der setzt des so ein. Und donn hot man net nur Grafiken und Tabellen, sondern donn hot ma donn eben a die praktische Seiten und do mochts dieser Mix eben aus. [...] Des wird gut ongnommen.“

I4 1553-1561: „Punkto Wissenstransfer [...] wir bereiten diese Forschungsergebnisse, die wir bisher haben eben a für unsre Mitglieder auf. [...] Do homa jetzt des Paper bekommen, oder des Handout. Des homs [die Forscher] extra für uns aufbereitet, dass ma des dena Mitglieder zur Verfügung stellen können. Und des hoid eben a Grund, oiso, dass se net nur segen, wir forschen was sondern, dass sie persönlich a Zugang von die Forschungsergebnisse haben.“

I2 650-656: „Das is eigentlich unbezahlbar. Du hast da irgendwie die Möglichkeit, dass du jetzt wirklich mit Wissenschaft da direkt vor Ort was messen kannst und das sind deine Zahlen von deiner Arbeit von deinem Standort, das is ja hochspezifisch. So profitier ich ja doppelt, dreifach, vierfach davon.“

I3 168-170: „[...] dass da wirklich immer die Standorte wechselst, dass unterschiedliche Mitglieder die Chance haben mit kürzeren Anwegen und Fahrwegen hinzukommen.“

I3 175-185: „Jeds Mitglied bei uns hat an Zugang zu am Mitgliederbereich wo da Austausch is [...]. Punkt zwa durt a die Videos zur Verfügung stengen vo olle Webinare die Videos von de Vortragenden. [...] Was ma jetzt von Corona glernt haben in Zukunft weiterhin mochn, dass ma des immer für Leit die eventuell zu diesen Zeitpunkt grad ka Zeit hoben oder weiter weg a san des Wissen se hoi können donn.“

I2 470-474: „Merkt man, da kommen teilweise Bauern: ma eure Webinare sind so interessant, bei jeder Firma muss ich auch zahlen für Vorträge. Ich zahl auch wenn ich nicht zu euch runterkommen kann, selten vielleicht, weil wir sind irgendwo 500 km weit weg aber wir zahlen die hundert Euro Mitgliedsbeitrag, damit ich einfach den Service Angebot von euren Webinaren hab.“

I3 789-793: „Vor oim im Verein [is] da Austausch auf da fochlichen Seite und net wonn nocha irgendwas net kummt, dass dann ane Deckel kriegst oder sonst was, sondern schau, kummen irgendwo guate Ideen, donn nimmt ma die gerne auf bringt ma die gerne unter aber net in die umgekehrte Richtung, dass dann dauernd ane drüber zogn kriegst, weil des und des net kommen is.“

I4 821-828: „Es is dann eben oft a, eben a hiernd do diese Diskussionsbarriere di erscht überwunden werden muss vo ondre, weil dann zum Beispiel ana ausm Trockengebiet auf bestimmte Sochen schwört, weils amfoch bei ihm so funktioniert oder sogt des und des geht bei mir net. Und ana ausm Feuchtgebiet ausm Mostviertel zum Beispül, der sogt, des geht bei mir ohne Probleme, weil er eben mehr Niederschlog hot. [...] Und do muss ma donn amoi schauen, dass die auf an Nenner kummen, dass die wissen, dass das anfoch komplett ondre Bedinungen san. Owa man kann sie donn a wieder höfen.“

I4 741-747: „Und [wir haben] a diverseste Systeme. Oiso da ane schwört auf diese Bodenbearbeitungs-Variante, da ondre auf diese, da ane auf diese Zwischenfruchtmischungen, da ondre auf diese. Und vom Futterbauberieb, übern reinen Ockabaua, bis zum Schweinehoiter, Mülchkuhhoiter, Schafhoiter homa olles dabei. Wir san mittlerweile sehr breit aufgstöt und des find i aber a extrem wichtig, weil wir donn a sehr gute Diskussionsgrundlage in unserm Mitgliederbereich zum Beispü hoben.“

I2 214-218: „So hat sich das eigentlich dann recht schnell sehr konstruktiv ergeben und es macht ja nach außen a gute Wirkung, weils wirklich „von Bauern für Bauern“ das anfach wirklich gelebt und über alle Produktionsweisen hinweg versuch ma das Beste draus zu machen und lassen einfach viele Meinungen gelten und versuchen auch wieder Beratung unabhängig zu machen.“

I4 858 – 866: „Weil wir a Vorstellungsrunde a in unsern Social Network drinnen hom, was sie quasi, mocht ned jeder owa, wo jetztan gewünscht wird, wemma neu zum Verein dazua kummt, dass ma sie in der Vorstellungsrunden kurz vorstellt. [...] Donn was ma ungefähr die Gegebenheiten, wo wer produziert und des hod a vü dazu beitrage,n dass ma do bei de Diskussion abisl den Wind aus die Segel nimmt.“

I1 809-821: „Ma kann des was i heit mocht net ans zu ans umsetzen, weil des woan Schritte, des woa a Weg durthin. [...] Des warat ois technisch möglich, owa wonns im Hirn net klick mocht oder wonn i des System net verstondn hob, wieri damit kann Erfolg hobn. [...] Net a Zettel nehmen und a Rezept mochn. [...] In der Praxis da nimmst hoid a Priserl mehr oder weniger von durtn und des siacht ma, oder die Temperatur is oft ondschst ols beim ondan, und de Dinge die muas ma im Gefühl hobn, und des konni

erst wenn i geisigt so weit bin und do glaubi dafir brauchts einfach Seminare und Vorträge und Schulungen und des muas i aufzagn und es derf ka muas geben.“

I5 966-970: *“Wennst es jemandem nur sogst, jo ok, hot ers ghört, aber wenn ers sieht und selbst sieht wie des funktioniert und wie des laufen kann, oiso des geht. Nur mit quasi guten Beispiel voran gehen und erklären und zeigen, wirklich mit der Nase draun hinstoßen dann funktioniert des.“*

I3 446-452: *„Und drum a dieses Herzeigen. Und des moch ma a in der Diskussion, des passiert a in dieser Chatgruppen. [...] Hot irgendwer was ausprobiert, hot a onderer scho de Erfoarungen was er gmocht hot dazua, glei eine schreibt und gsogt: ge pass auf des oder des auf. Und monche sogn, jo er probiert trotzdem und dann gibt's a die Meinung, na es is schief gonga oder jo es hot funktioniert oder so. [...] Des san Sochn, wo wirklich jeder von jedem da lernen kann.“*

I5 1174-1183: *„Wemma sowas liest in der Gruppe und jemand hat des auf diese eine Art gelöst und man weiß der kommt von dort und do hots die klimatischen Voraussetzungen und so. Man kann dann schon so seine eigenen Überlegungen dazu anstellen und sagen, na pass auf so kann is net mochen wie der, oba i könnts in abgewandelter Form machen indem i do was wegloss und durt vielleicht wo i guate Erfoarungen mit irgendwas hob des vielleicht dazua nimm oder so. Jo oiso durchaus, man kann sie aus allem heraus irgendwas zusammensuchen und zusammenreimen und dann lernen und dann diskutiert ma wieder mit a poa und dann probiert ma und dann stöt ma wieder seine Erfoahrungen rein nachdem man probiert hat.“*

I1 1471-1475: *“Daher is genau dieser Austausch find i so [...]. Wenn er des ned gsogt hätt, do wari nie motiviert gwesen, des zum mochn, owa wenn er sogt des geht ned, hobi gsogt es jetzt erscht recht, des geht Und des sind eigentlich a Dinge wo i sogn muas, dass des geht hot mi wieder auf ondre Ideen brocht.“*

I5 211-217: *„Und mittlerweile bin i zuversichtlich, dass wir – i wü jetzt net sogen Spitzenerträge einfahren in Zukunft – owa wir werden stabiler Erträge einfoan, besonders in Stresssituationen durch diese Maßnahmen, die wir setzen. Angfangen über Zwischenfrucht, angfangen über Humusaufbau im weitesten Sinn, Bodenaufbau im weitesten Sinn, bis eben zu Direktsaatmaßnahmen. Düngung is sehr wichtig, homa jetzt do eben a gsegn, wir hoben a neues Düngeprojekt gestartet da geht's darum die Pflanze natürlicher zu ernähren.“*

11.6 German abstract

Die folgende Masterarbeit beschäftigt sich mit dem österreichischen, landwirtschaftlichen Verein namens Boden.Leben. In diesem engagieren sich verschiedene Interessengruppen – (überwiegend) Landwirte, Berater und Forscher – in kollaborativen Wissens- und Lernprozessen rund um einen neuen und besseren Umgang mit dem Boden, um klimaangepasste und nachhaltigere landwirtschaftliche

Produktionsformen aufzubauen. In der Arbeit untersuche ich Bewertungen, die Vorstandsmitglieder des Vereins mit der Arbeit bei Boden.Leben verbinden. Mich interessiert, wie diese Wertvorstellungen die kollektive Arbeit fördern und prägen und wie sie die Landwirte motivieren, sich an der Arbeit zu beteiligen. Außerdem interessiert mich, wie die oben genannten Aspekte mit Problemen in der Landwirtschaft zusammenhängen. Empirisch habe ich eine Vielzahl von Dokumenten über Boden.Leben untersucht, an einem von dem Verein organisierten Feldtag teilgenommen und fünf qualitative Interviews mit Vorstandsmitgliedern von Boden.Leben geführt. Diese Daten habe ich mithilfe des Ansatzes der Situationsanalyse ausgewertet, wobei die Interviews das Hauptmaterial darstellen, auf das ich mich bei meinen Schlussfolgerungen stütze. Theoretisch nähere ich mich dem Case aus einem pragmatistisch-soziologischen Blickwinkel, indem ich auf Konzepte aus dem Feld der Valuation Studies zurückgreife und den theoretischen Ansatz zu sozialen Welten/Arenen verwende. Ich schließe meine Arbeit mit einer Betonung der Wichtigkeit, die von den Landwirten zum Ausdruck gebrachten Anliegen und Relevanzen anzuerkennen und der Bedeutung von Räumen reflexiven sozialen Lernens, in denen der Austausch und die Wechselbeziehungen zwischen verschiedenen landwirtschaftlichen Entitäten neue Erkenntnisse und (gegenseitiges) Verständnis hervorbringen können.

11.7 English abstract

The following master thesis revolves around an Austrian farmers' association called Boden.Leben. In the collective different stakeholders – such as (mainly) farmers, advisors and researchers – engage in collaborative knowing and learning processes surrounding new and better treatments of soil to build climate-adapted and more sustainable agricultural forms. In the thesis, I am inquiring valuations which board members of the collective associate with the work being done at Boden.Leben. I am interested in how these valuations encourage and shape the collective work as well as how they motivate the farmers to partake. Further, I am interested in how this hangs together with problems in agriculture. Empirically, I have reviewed a variety of documents about Boden.Leben. I have participated in one field day organized by the collective, and I have conducted five qualitative interviews with board members of Boden.Leben. I analyzed this data using a situational analysis approach, with the interviews being the main material which I am basing the conclusions on. Theoretically, I am approaching the case from a pragmatist-sociological angle, drawing from concepts out of Valuation Studies and using the framework of social worlds/arenas. I conclude the thesis with an emphasis on the importance of acknowledging farmers' expressions of concerns and relevancies in agriculture as well as on the significance of spaces of reflexive social learning in which exchanges and interrelations between diverse agricultural entities can produce new insights and (mutual) understandings.