

Soil Care: Symphony Rehearsal

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Abstract	
Acknowledges	
Prologue	
1 Introduction	
1.1 Background:	
Minerals/Organic Matter/What Else Becomes Relevant?	09
1.2 Research Framework	12
1.3 Applied Research Tools	16
2 In Dialogue with Soil Through Craft	
2.1 The Power of Material and Narrative Matter	19
2.2 Material Gathering	22
2.3 Material Experimentation	33
2.4 Sensory Workshop	41
3 Discussion: Human–Soil Storytelling	
3.1 Piles of Soils, Piles of Precious	46
3.2 Invaluable to Life	48
3.3 The Beginning and the End	50
3.4 Humanity's Oldest Invention	52
3.5 Inspiration and Imagination	54
4 The Rehearsal: Conclusion and Reflection	62
5 References	66
6 Appendices: Transcripts/Notes	68

All photographs were taken by Tzuyu Chen

Abstract

In the age of ecological challenges, soil is crucial to address many of the crises that we face today. Current discussions around soil care have spread across disciplines in order to generate new ways of understanding the growing concern in soil. This thesis explores the topic of soil care through the lens of craft and design. The research conducts a collaborative craft practice to reclaim the attention back to the soil. When focused on soil care, craft making can be considered a dialogical practice for establishing conversations between humans (makers), soils (materials) and the human-soil interaction that exists within the local environment. In doing so, this research emphasises the collaborative effort of human and soil as an important narrative agency in the process of craft making. By utilising the practice-led approach, this research is driven by inquiring into whether collaborative craft practices would provide a different way to re-think and re-evaluate our relationship with soil. This thesis is a collaboration with five soil-related practitioners from diverse backgrounds: a construction worker, a farmer, an archaeologist, a ceramic artist and a soil scientist. The soil was gathered in three locations in Finnish landscape: a construction site, a farm and an archaeological excavation site. These three sites were considered representative of the societal, ecological and cultural aspects of human-soil relationality. The gathered soils were processed to make material to conduct a series of five sensory workshops. Each workshop was designed as a one-to-one interview with one of the five soil-related contributors during which research data were collected and created. Based on the empirical data collected throughout the research process, the research findings draw attention to the agentic power in which humans and soils both hold creative expression in the process of craft making. The results of the study are presented through five different human-soil storytelling associated with several crafted artefacts. Each artefact is profoundly connected to its maker, material and the local environment. The study shows the generative power that craft can offer as an effective platform for collaboration with other disciplines and for the development of new forms of understanding for issues related to soil care. This collaborative practice is facilitated by and articulated through its creative process, especially the critical reflections that arise during the process of making and material engagement.

Keywords: collaboration, craft & design, soil care, practice-led research, narrative agency

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Prologue

This thesis utilises a collaborative craft practice to redirect attention toward soil. This project “*Soil Care: Symphony Rehearsal*” came after the reflection on the previous working experience in a research project titled “*Trace from the Anthropocene: Working with Soil*” during the summer of 2019 in Venice, Italy.

Before that summer, in early May, as part of the course Curating and Storytelling in the Contemporary Design Master programme at Aalto University, I had a chance to participate in the exhibition team. The related field trip was led by Professor Maarit Mäkelä, leader of the research project, and Riikka Latva-Somppi, artist-researcher and curator. It provided us students with an immersive experience within the context of the local environment through the involvement of tasks, such as soil sampling and the developing of the narrative for the exhibition at the Venice Biennale. The exhibition displayed the evolving research process, including the gathered soil samples from different sites in the local environment Venice, the related working diary from the research group and the results of material experiments.

Later in July of the same year, I was involved as a research assistant in the team. My work was to co-design and executed the audience engagement activities with the project collaborators Helen Felcey and Dena Bagi. As we set-up the ongoing workstation for the visitors in the research pavilion at Sala del Camino, Venice, it became an everyday practice for me to observe and facilitate the process of the material engagement with visitors. By doing so, we aimed to connect the exhibition visitors to the surrounding, which was the local environment of Venice. Through the engagements with the local clay, participants and visitors were encouraged to share their reflections of the exhibition and their impressions of Venice during the process of making.

Throughout the journey of observation and idea exchange with artists, researchers and participants, I learned how craft practice has collaborative potential to build a collective narrative that brings together the manifold relations of human and non-human with multilayered perspectives. From there, a critical reflection of my personal experience in craft practice emerged, which prompted me to re-think the process of craft making and its generative power of collaboration.

To take on this exploration of collaborative craft practice is also to reflect on my personal educational background where craft and design are integrated and inseparable fields. I argue, that together they form a practice that involves our thinking and making with an interconnected dynamism, with humans, materials, environments are co-constructing our understanding towards the world.

Before I studied MA in Contemporary Design at Aalto University in Finland, I had finished my BA in Crafts & Design and specialised in ceramics at the National Taiwan University of Arts in Taiwan. This provides me with the strength to interrogate the role of craft in contemporary understandings and encourages me to ponder if as a designer-craft-practitioner I am capable to extend the flexibility of the in-between space that exists across these disciplines in the contemporary design framework.



1 Introduction

Soil Care: Symphony Rehearsal is a Master's thesis project that takes soils as its fundamental focus in a collaborative craft practice in order to reclaim attention for soils in an age of ecological challenges. This thesis utilises practice-led research as its approach to explore the potentialities of knowledge-generation on the topic of soil care. In doing so, the study aims to challenge the current understanding of the human–soil relationship and bring different insights into the topic of soil care.

In this research, soil not only plays a role as a material in the process of craft making, but it is also involved as a force of narrative agency that endows the crafted object with values and meanings. Different soils have been gathered in this thesis, each of them indicating the locational identity of the landscape and the transformative ability of the material life experience. These gathered soils were processed to make material to conduct a series of five sensory workshops. Each workshop was designed as a one-to-one interview with the five soil-related contributors during which research data were collected and created. By tracing the transformation of material and human interventions in the crafting process, this thesis questions whether collaborative craft practices can provide a different way to re-think and re-evaluate our relationship with soil.

1.1 Background: Minerals/Organic Matter/What Else Becomes Relevant?

Our engagement with the mineral world is manifold and complex. Soils, stones and minerals are generally considered commodities and natural resources in human society. But in many cultures across the world, they are 'alive' and embodied with strong cultural symbols, animate with either power or spiritual energy. For example, the Australian Aboriginal people believe that stones contain the spirits of ancestors and are the places where life rests at the end; moreover, clay and earth are often associated with the original form of humanity in mythology cross-culturally (Boivin, 2004, pp. 4-5). Such diverse meanings and values shape human engagement with the mineral world through a more-than-human mind. However, in today's capitalist societies, human faces a significant gap between recognising the importance of and its dependence on soils, stones and minerals and the understanding of those mineral worlds (Boivin, 2004). As many of the conflicts around the world relate to the exploitation of mineral resources, we should not ignore our relationship with the mineral world, from petroleum to coal and from diamonds to soil.

Think about the feeling of the crumbliness and softness beneath our feet, the smell of fertility in the air, the throwing clay on the potter's hand, a crust of dried clay on your skin and a shovelling archaeologist unearthing the story of the landscape. Different people indeed attach different significance toward the soil. Soil scientist and researcher Christian Feller and Edward Landa note in their book *Soil and Culture*: "Soils touch people's lives on a variety of levels—from the intellectual, to the pragmatic, to the spiritual" (Feller & Landa, 2010, p. xix). But why should we care? If our current world does not take soils into account in a variety of conditions, what we take for granted will eventually vanish.

Many of the crises we face today cannot be separated from soils. In 2015, the International Year of Soils was launched by the Food and Agriculture Organization of the United Nations (FAO) to call attention to soils and raise awareness across the globe. According to the key message of the conference, the current situation of soils is challenging and unstable. Soil erosion has continually accelerated, and about 33 per cent of the world's soils have already degraded ("Key messages | Global Symposium on Soil Erosion | Food and Agriculture Organization of the United Nations", 2015). Furthermore, the critical role of soils relates to climate challenges and other correlated issues that are linked to the topic, such as food crises, carbon segregation and other ecosystem services that are delivered by soil ("Soil facts", 2015). Soils are crucial to addressing these issues.

María Puig de la Bellacasa (2017b), who works across science and technology studies, feminist theory and the environmental humanities, points out in her book *Matters of Care: Speculative Ethics in More Than Human Worlds* that the time to care for soils is now. In one chapter, titled *Soil Times*, she underlines the urgent need for ecological soil care through speculative thinking, which involves using more-than-human ethics to consider the intricate entanglement of human–soil relations in our technoscience-based society. She advocates "thinking with care as a way to elicit conceptions and practices that have the potential to disrupt the reduction of soil to a resource for humans" (Puig de la Bellacasa, 2017b, p. 170). In addition, thinking with care means making time for and paying attention to discounted others "...by looking out for those humans and nonhumans who have the most to lose under the productionist-based arrangement" (p. 210). Puig de la Bellacasa's arguments are convincing: her understanding of soil's temporalities indicates that humans are not at the centre of a futuristic timescale of dominance. Despite this fact, our current economic values and progressive ethos still rejects slowing down and accounting for soil renewal. Soil is a slowly renewable resource that requires time-consuming care. In a fast-paced, production-oriented economy, making time for caring concern for soil is a kind of resistance to the disruptive effect of current practices.

When it comes to the ideas surrounding soil care, most of the time we are mainly focused on ecological issues, such as the intensification of agricultural or land-taking practices. Due to the complex ways in which humans relate to soils, the ongoing discussion has also spread across disciplines, such as soil sciences, ecology, anthropology and environmental ethics, in order to convey different forms of knowledge and generate new ways of understanding the growing concern for soils. One compelling example can be found in the film *Symphony of the Soil* (2013), written and directed by Deborah Koons Garcia. The aural and visual narrative enables us to perceive humans' synergistic relationship with soil; the story is formed as a symphony, touching the living environment that both humans and non-humans inhabit together. By understanding soil as a living ecosystem, we learn to appreciate the complexity that it entails, nurturing our care for the soil and its health.

Another current example that illuminates the issue of soil with multiple and wide-reaching perspectives, from the local to the global, is presented in the book *Field to Palette: Dialogues on Soil and Art in the Anthropocene* (Noller et al., 2019). The discussions in the book are framed around the six functions of soil as channels that unfold the meaning and value of soil. The book includes several art and design projects, conversations, texts and poems that all come together to contextualise the diverseness of soil.

I have presented the above ideas and literature to express the vital relevance of soil, its care, its synergy and eco-systemic relations and its diverse functions related to human society. Although exploring methods of care for soil has been an ongoing process across many fields, there is still much to learn, discover and draw attention to. In order to understand soil care differently, an exchange of knowledge that transgresses the boundaries of disciplines is needed. Therefore, I believe that through the lens of craft and design, this topic can be discussed from a different angle. To this, I considered craft making as acts that embody the care of soil through the process of material engagement between humans (makers) and soils (materials). By physically engage with soils and transform them, craft practice generates different forms of knowledge to the topic of soil care that science does not address.

The above ideas have motivated me to conduct this project. My investigation is driven by the research question, "*Would collaborative craft practices provide a different way to re-think and re-evaluate our relationship with soil?*" By conducting collaborative craft practices, I investigate whether they can foster a dialogue between disciplines, enabling an articulation of the different attitudes people have toward soil. The intention here is not to overemphasise the severity of the soil crisis but rather to open up the discussion surrounding soil care with collective perspectives for a better understanding of and, hopefully, more awareness about soil.

1.2 Research Framework

The initial idea in designing the research process refers to Puig de la Bellacasa's *'thinking-with'* care as a way of *thinking-with* soil. As Puig de la Bellacasa (2017a) described, care entangles changing relations that affect the way we know and care for, to care is to 'think-with' the net of relations among many conflicts and tensions. Sometimes, tension occurs and creates '*cuts*' to detriment the relationships within the net. She describes these frictions as *dissenting-within*, and through that we might be able to re-connect and to re-create the relations (p. 78). In this instance, there is a possible new growth through thinking with these '*critical cut*', its co-existing disruptive and creative potential may provide a different vibration and stimulation to the way we related to each other (pp. 78-79). Puig de la Bellacasa's concept of thinking-with care has been inspirations to my way of think about soil and its more-than-human entanglements. She has suggested a way to look into the more-than-human world as follows:

Thinking-with non-human should always be a living-with, aware of troubling relations and seeking a significant otherness that transforms those involved in the relation and the world we live-in. (Puig de la Bellacasa, 2017a, p. 82)

To apply the thinking-with principles to soil care, I considered the six soil functions as follows: soil serves as food and supports other biomass production, creates environmental interaction, is a biological habitat and gene pool, is a source of raw materials, is a platform for man-made structures, and offers cultural heritage (Frossard et al., 2006). These different functions form a web of relations on which our human-soil relationality is based. Thinking about these functions provided not only a scope for considering the net of relations that exist in the human-soil relationality but also a lens through which to speculate the possible design practice that may bring the multiplicity of human-soil relationships into a dialogue. Based on the six soil functions, the sites chosen for gathering soil included a construction site, a farm and an archaeological excavation site. These three sites were considered representative of the societal, ecological and cultural aspects of human-soil relationality. According to the six functions, I invited people with related backgrounds to share their perspectives on the topic of soil care, including a construction worker, a farmer, an archaeologist, a ceramic artist and a soil scientist.

Craft and Practice-led Research

The thesis explores the overlapping area where craft meets collaboration and integrates into practice-led research. In relation to my role, a designer and craft-practitioner, I consider craft making as a dialogic practice that interweaves the collective insights of soil care through a practice-led approach. That is by means, on the one hand, craft making is a designer's

research tool which guides the collaborative process, and on the other hand, the collaboration occurs and results in craft making that leads the research output.

The method of practice-led approach shares many aspects with making and in formulating the research process. As textile designer and researcher Nithikul Nimkulrat, points out, craft making has played an important role in facilitating the practice-led design research in the last two decades, and such nature of the practice "enables practitioners' voice to be heard and the implicit knowledge embedded in making to be reflected" (Nimkulrat, 2012). In terms of the role of making, ceramist and researcher Maarit Mäkelä and educator Sara Routarinne underline the role of making in practice-led research as a way to test and examine the assumptions and questions, they define it as "making is conceived to be the driving force behind the research and in certain modes of practice also the creator of ideas" (Mäkelä & Routarinne, 2006, p. 22). To this account, making is a way to answer and explore the conceptual issues or ideas that arise in the first stage. Throughout actively engaging in the process of making, the issues of interests can be articulated. Therefore, this kind of knowledge and the relationship with research inquiry seems to be constructed in an inverted way, to that, Mäkelä (2006) has emphasised the importance of the 'retroactive approach' in reviewing the research process. She suggests that the constant revisiting of the process can enable one to gain 'cumulative knowledge' and deepen one's understanding towards the creative process and the research output (Mäkelä, 2006, p. 78). Mäkelä's (2006) suggestions for the retrospective process have been vital to this thesis. By focusing on the documentation of each conversation that I had with the five contributors, my working diary and the documentation of creative processes, the research inquiry has become deeply interwoven with its creative practice. This has enabled a more profound understanding of soil care.

The goal of conducting practice-led research methods is to explore whether such a creative inquiry can provide different insight that allows for challenging the existing knowledge frameworks. Graeme Sullivan (2009), who is an artist, art theorist and educator, has stated the unique characteristics of practice-led research as follows:

What is of interest to practice-led researches, however, is the possibility of new knowledge that may be generated by moving from a stance more accurately seen to move from the 'unknown to the known' whereby imaginative leaps are made into what we don't know as this can lead to critical insights that can change what we do know. (Sullivan, 2009, p. 48)

As Sullivan describes, practice-led research offers a distinctive way of enacting the conceptions and constructions of new knowledge from the unknown to the known. In my research, I identify that this kind of character is evident and that only through the creative process can the research inquiry become clearer and more expansive.

In addition, Sullivan underlines that the inquiry is framed and embedded within the practice, and it is equally placed on the artist-practitioner, the creative product and the critical practice (Sullivan, 2009, p. 47). In my cases, the investigation was also placed on each collaborator of the project. Sullivan (2009) argues that the dynamic structure of the practice-led approach merges the theory into the creative process. Therefore, the research output can be perceived both *interactive* and *interpretive* to the viewing community, and the creative output can contribute to new kinds of understanding or critical review of the existing knowledge. He illustrates the framework of practice-led research with four interconnected elements, with the centre holding *theoretical practices* called 'making space', which are bounded with three other areas of inquiry: *dialectical practices*, *contextual practices* and *conceptual practices* (Sullivan, 2009, p. 49). Based on the concept of Sullivan's scopes, I developed my research framework, as shown in Figure 1.

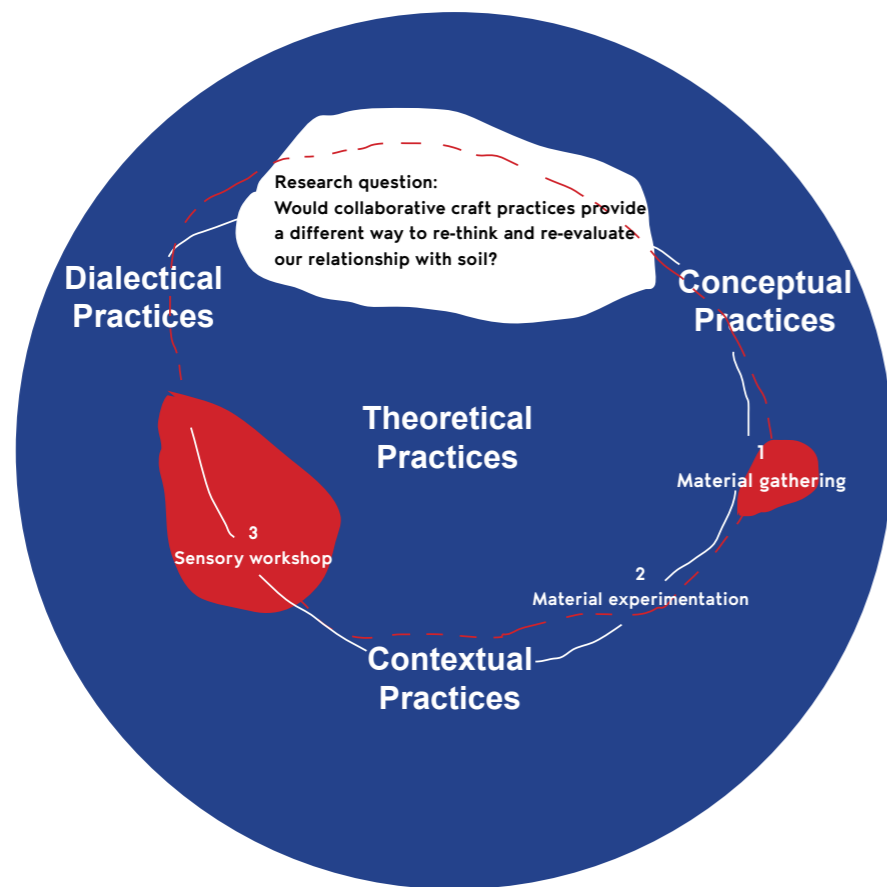


Figure 1. Research framework.

The research framework (Figure 1) shows the four areas that Sullivan has presented. In my adaptation, the research question has emerged in the theoretical practices area and constantly clarify by the surrounding area of practice. Next, the process of inquiry started from the *conceptual practices*, where design thinking plays the main role in structuring the possible way to investigate the research inquiry.

Here I will shortly introduce the four elements of process, and the actual implementation is presented in chapter 2. My approach for conducting these processes is for both 'collect' and 'create' the empirical data *from* and *with* the collaborators that were involved in the research process.

My methods started with (1) *Material gathering*, where local soils were collected in the Finnish landscape. There were three locations involved in the material gathering process, which includes a construction site in Vuosaari, the Majvik biodynamic farm in Sipoo, and one Stone Age archaeological site in Espoo. Each of them has implied different metaphorical meanings to the gathered soils, from cultural, ecological and societal aspects in relation to the web of soil functions. Meanwhile, the process of gathering soils also involved the engagement and dialogue with people who have a close relationship with the gathered soils as part of their everyday life.

Next (2) *Material experimentation*, is when the gathered soils have been processed into clay and slip material in the ceramic studio. The material experiment of Finnish local soils aims to perceive the transformability of soil, which goes from natural raw material to fired ceramic pieces. In total, there were ten soil samples gathered, processed and transformed into clay and slip forms by a ball mill machine, the machine mills the soils into fine particles and keeps the natural properties of the soils. After the material experimentation, the clay and slip materials were used in the (3) *Sensory Workshop*.

The *Sensory Workshop* was designed for both *collect* and *create* the research data, the workshop conducted semi-structured interviews with multi-sensorial human-material interaction. It invites the five collaborators to engage the topic of soil care through discussion and material engagement. The workshop titled *In Dialogue with Soil Through Craft* is a structured one-to-one interview with the follow soil-related collaborators: Atte Hermansson, Farmer, Majvik-Biodynamic Farm; Catharina Kajander, Ceramic Artist; Jan Fast, Archaeologist; Minna Hirvikorpi, Procurement Engineer, Vuosaari Construction site; Stephan Mantel, Soil scientist, Head of the ISRIC World Soil Museum and Curator.

During the workshop, each of the collaborators crafted one unique stone to express their attachments to soils. In the end, these stones have been constructed together as a musical instrument with related stories from the contributors.

These three phases of practical implementation were navigated through the research inquiry by *dialectical practices*, where craft making was considered as a way to establish dialogues with others (the five collaborators) throughout the entire creative process. Last, the area of the *contextual practices* presented the ideas and thoughts in text format. In Addition, in Figure 1, the red colour reveals the collaboration force in the duration of the creative process. The collaborative force firstly presents in the material gathering phase, where people from the site host my visit and introduce their relationship with soil. Most of them are later involved as contributors to the *Sensory Workshop* by working with soils that were gathered from their worksites. The collaborative effort is strongly connected to the creative process in the *Sensory Workshop*, with each of the contributors sharing their authentic voice on the topic of soil care and creating an artefact to represent their attachment to soils.

1.3 Applied Research Tools

Documentation

In this thesis, documentation plays an essential role in the creative process. Fieldnotes, working diary and photography are used for documenting each site-visit, process of making, thoughts throughout the research process. Documentation acts as reflective practice to recognise the pattern of the creative process.

Mäkelä and Nimkulrat (2018) have examined the crucial role of documentation as a research tool in practice-led approach. According to their findings, documentation (such as diary writing, photographing, sketching) effectively facilitates the creative process in the understanding of practitioner-researcher's "reflective experiences" and "experimental knowledge" (p. 12). They have noted this reflective practice relates to social scientist Donald Schön's idea of *reflection-in-action* and *reflection-on-action* (Schön, 1991). According to Schön, "doing and thinking are complementary" (p. 280). Schön has described the notion of reflection-in-action as follows:

Doing extends thinking in the tests, moves, and probes of experimental action, and reflection feeds on doing and its results. Each feeds the others, and each sets boundaries for the others. (Schön 1991 p. 280)

What is interesting here is that Schön has pointed out the limit of *reflection-in-action* and open another inquiry on *reflection-on-action*, which allows the practitioner to gain a deeper layer of understanding between thought and action (Schön 1991 p. 280). In my case, reflection-in-action and reflection-on-action are constantly driving each other, which allows the designer-researcher to capture different values and meanings of soil care that were generated through the creative process and collaborative journey.

Craft Making and Collaboration

In this thesis, I considered craft making acts as a dialogic practice that drives collaboration. Craft making is designer-researcher's tool, different test samples and crafted pieces made from the gathered soils were used in the *Sensory Workshop* for communicating and collecting research data. In this sense, craft making provides the workshop participants with a multi-sensorial encounter through *thinking-with* and *working-with* soil.

The generative power of craft and collaboration has been described in the book *Collaboration Through Craft* (2013), co-edit by visual anthropologist Amanda Ravetz, textile artist Alice Kettle and ceramics artist and educator, Helen Felcey. They have highlighted the collaborative characteristic of craft with its high sociality in relation to people, its profound dialogue between material and action, its connective power and encouragement with different levels of sensory participation. All these characters are constructing our understating of the surrounding world considerably. Therefore, to collaborate with others through craft can offer a way of thinking through making and enables knowledge exchange that blends disciplinary boundaries.



2 In Dialogue with Soil Through Craft

Before stepping into the empirical part of the thesis, I want to introduce the concept of material agency and narrative matter. I will begin with the argument of material thinking by art-theoretician Barbara Bolt, and from here, proceed towards the concept of material engagement presented by the cognitive and material culture scholar Lambros Malafouris. Next, I will link these two ideas to the thinking of narrativity agency, which has been discussed by the material ecocriticism scholar Serpil Oppermann; in a spirit of stories matter and the meanings that inherent in its material, the creative expressions and agentic power are all matter. Following with the thoughts by anthropologists Tim Ingold and Elizabeth Hallam, the journey of the empirical process is unfolded in this chapter: *In dialogue with soil through craft*.

2.1 The Power of Material and Narrative Matter

Bolt has threaded the evolving thinking around the notion of material agency in her article *Material Thinking and the Agency of Matter*. She argues that the relation between maker and material should be “co-emergence” rather than the mastery of human intentionality, and it is through the performance of the material and the maker that we are able to perceive the dynamism of the material practice (Bolt, 2007).

Bolt’s idea resonates to Malafouris, who has presented the Material Engagement Theory (MET) in the fields of the cognitive archaeology, anthropology and cognitive science. Malafouris (2008) has pointed out the performative power of material agency and has metaphorically described it as “the dance between equal partners” (p. 25). To him, the agentic power between human and material is interactive and in constant flux through the material engagement. Malafouris’s (2018) point of view is that the material engagement approach provides a way to rethink the boundaries between mind and matter, humans and non-humans. He describes the material engagement as a place where “brain, body and culture conflate” (p. 4), and that our life experience, thinking and culture were grounded in an inseparable *becoming* process with the material world. This *becoming* is encompassed *with* and *thorough* the ongoing bodily movement that happens with the surrounding world. Malafouris has described the bodily movement with an example of drawing a line as “reflected intelligence”, in the following text:

The moving hand and its material traces do not just externalise the internal working of a mind. Instead, intelligence is enacted through them; it proceeds along lines and material signs of one kind or another. (Malafouris, 2018, p. 3)

From the above account, Malafouris invites us to perceive the material engagement as a way of thinking, which is to say that the material agency involves and holds in the process of creation an expressive power of negotiation. I want to continue such communicative and performative ability of human-material engagement from this point of view and thinking along with Oppermann and the conceptual theory of material ecocriticism.

Oppermann elaborated the idea of the agentic capacity and creativity of the material world in her co-written book *Material Ecocriticism* with the ecocritical theorist Serenella Iovino. The idea of a narrative agency is that material life experiences are considered as an expressive agent that inherently encompasses the world we inhabit, where human and non-human forces interconnectedly entangle and shape the storied world in everyday life; this narrative agency idea is the core of material ecocriticism (Iovino & Oppermann, 2014). I consider this way of thinking shifts our understanding from regarding material as a passive element that is manipulated by humans to an expressive agent that co-constructs meaning with humans, that is to say, it invites us to think that the process of making is always becoming something with other forces of agencies.

For this *becoming* process, Ingold and Hallam (2014) remind us: “making is to growing as being to becoming” (p. 4). In the introduction of the book *Making and Growing*, Ingold and Hallam took potter’s pot as one example to describe the forces that enter the passage of material life:

The story of clay does not begin with the potter, since the material he throws on the wheel has already had to be dug out from the ground and kneaded so that it is sufficiently pure and of the right consistency. Before that, it was sedimented through the deposition of the water-borne particles, over eons of geological time. And when does the story end? On leaving the pottery, the life of a pot has scarcely begun: think of all the hands or heads that will carry it and the substances it will hold until, cracked and discarded, it is returned to the Earth. Even this does not rule out the possibility that it might, one day, be unearthed by an archaeologist and pieced together from the fragment, only for its life to continue as a museum exhibit. ‘Finishing’, in short, is but a moment in the life of the pot: a rite of passage, perhaps, where it crosses a threshold from preparation to employment. (Ingold & Hallam, 2014, p. 1)

What Ingold and Hallam point out here is that the passage of material life experience involves constant transformation and intervention from forces, and these forces not involve only human actor(s) in the process of making but also the non-human agent(s) that affect the formation of the material and the capacity that supports the transformability of the material.

Ingold and Hallam described the transformability of material life to go from ‘raw’ to ‘made’ or from ‘natural’ to ‘artefactual’ in three phases: the first transformation happens when the material is acquired from its former life; the second stage is when the material has been through the transition and intervention by human or other forces; and the last one is that the material is reincorporated into different kinds of being in life (Hallam & Ingold, 2014, p. 2). To me, what is interesting here is that process of making reveals the unsaid stories of the convergence forces of—humans and non-humans—all participating *in* and *through* the process of accumulation and transformation. By using the words *making-in-growing* and *growing-in-making*, Ingold and Hallam suggest a different kind of thinking to surpass the binary divided of being and thing, of organic and inorganic, of living and non-living that has disentangled our interconnectedness with the surrounding world for a long time. When thinking about soil, it has embodied all the ambiguity of these binary dictions that were not easy to draw a clear line. Therefore, soil as a material agency in the process of making holds the other kinds of power that go beyond the divide dichotomy, a “liveness” agency to negotiate and challenge the way we think.

In this thesis work, I investigate the narrativity of human-material engagement as human–soil story-telling by exploring the above mentioned ideas into my craft practice. This study is driven by the research question: *Would collaborative craft practices provide a different way to re-think and re-evaluate our relationship with soil?* I want to re-think and question the means and the relationship between maker and material, how the material is acquired, what stories and relations lie in the material, by whom the material has been transformed, and what meaning has grown through the process of making.

2.2 Material Gathering

Step into the soils

The soils used in this thesis were collected from three different locations of the Finnish landscape: a construction site in Vuosaari, the Majvik biodynamic farm in Sipoo, and one Stone Age archaeological site in Espoo (Figure 2). The related visit and conducted fieldwork were done by the help of the project collaborators from these sites during the months of September and October of 2019. Via the visits, I was able to gain a deeper understanding of the relationship between humans, soils, and landscape by tracing the material back to the local environment while working with the people who are closely related to such place. Each of these soils have attached different meanings and values of the human–soil relationality, that formed strong narrations of human–soil storytelling. In the following, I will use my diary notes and documentary photos to show and share my encounters with each soil and place in three selected locations.



Figure 2. Three selected sites for material gathering, (top) a construction site in Vuosaari (centre) the Majvik biodynamic farm in Sipoo, (bottom) a Stone Age archaeological site in Espoo.

Soil, where we built, we fill, and we seal

We built our home on top and within the surface layer of the earth; we shape the landscape and re-shape it again and again. Soils have been sealed for commute route and infrastructure in the expansion of the urbanisation. On the risk of other species' habitats, we re-fill the land with industrial waste. Sometimes, we tend to ignore that what has been buried in the land will eventually form the soil of the future. Human activities are strongly affecting the soil formations, and this has become the reason why I choose to gather the soil from the Vuosaari's construction site. The impression of the place was noted as follows:

With permission from the construction site manager, my bare hand, helmet, a shiny reflective jacket and protection shoes, I entered the construction site in Vuosaari (Figure 3). It was a rainy day, surrounded by heavy machinery, an excavator, and piles of soils, stones and cements. The sound of the machine intensely uncovered the ground. My feet were trapped in the muddy earth while I walked. I saw the layers of the earth formed by soil; I saw the concrete structure that seals them alongside (Figure 4). (Extract from working diary, 2 October 2019)

During my visit, the people from the construction site told me that the place used to be a dump for different kinds of industrial waste and landfill. Therefore, in this case, the building company has taken the responsibility to re-fill it with the clean soil. To me, the soils gathered from the construction site implicated the human–soil relations on the way we live based-on the land-take practice in which reflect the ways we built, fill, and seal the soil.

Figure 3. Gathering soil from Vuosaari construction site, stepping on the muddy ground with protection shoes and vast.



Figure 4. Gathering soil from Vuosaari construction site. (top) A place has been excavated by a heavy machine, (centre) A pile of soil that I had climbed and gathered soil, (bottom) Soil gathering from the ground next to the construction base.

Soil, growing, caring, living

We are all familiar with soil as a great provider of the food for both humans and non-humans. We connect and value soil to the ability to grow, especially the fertile soil which is commonly used for food production. Soil is the habitat for countless microorganisms that the humans may not see with bare eyes; but soil is a living community into a farmer's eyes. Walking around Majvik, a biodynamic farm in Sipoo, a farmer Atte Hermansson guided me into the world where the relationships between soil, plants, animals, and humans strongly rely on each other:

As a farmer, taking care and maintaining the health of soil is the most important thing to sustain the farm. The cow house of the farm is what Atte calls "the heart of the farm", it is where the cow produces the compost manure that contains organic material for increasing the organic matter in soil. With a shovel, we walked to a place nearby the greenhouse with tomatoes and cucumbers, Atte dig the ground and said: this is the most beautiful and healthy soil in the farm, if you look close to the soil you see many organic matters (Figure 5), this is the topsoil, soft with air pore, the soil smelled good and fresh. The topsoil is the most important thing for nurturing the crops, and it takes time to form. On the next layer of soil, you can find yellowish sand and silt. Atte mentioned that plants tell a lot about the soil's health, he knows how to work with them by observing how the leaves grow and by the colour of their appearance. (Extract from working diary, 11 October 2019)

Talking and gathering soils with Hermansson has brought me to understand interspecies care in soil's living world. This also ponders me to think whether human values soils' wellbeing only because of our needs, and whether we only consider soil as a living world when it comes to the capacity of "growing"? But, what about the clay soils next to the road and under my feet (Figure 6, Figure 7), aren't they consider as living? Soil and clay collected around the farm have raised strong ethical relation for questioning what it means to consider soil as a living community and to what degree the soil is considered less "alive"?



Figure 5. Visiting and gathering soil around Majvik farm in Sipoo. (top) Farmer Atte Hermansson presented the importance of the organic matter in the topsoil, (centre) Visiting the heart of the biodynamic farm: Cowhouse, (bottom) Hermansson pointed out the way plants act as indicators of soil's health.



Figure 6. Gathering natural clay around Majvik farm.



Figure 7. Natural clay road under my feet and with the track of the vehicle.

Soil, memories, times, dwelling in past

Soil is the memories of the earth, the history of the landscape, a place where all the living and dying happens, it is constantly changing, moving and decomposing along with the passed time. Soil is the cultural heritage, the stories of the landscape. My field trip to the Stone Age excavation site in Espoo with archaeologist Jan Fast has been documented as follows:

On the way driving to Korkoontie in Espoo, Jan shared with me many stories related to the Finnish landscape and its Stone Age history. These stories clash with the modern view that we appreciated through the window while passing by. I told him that I felt like I was travelling back in time.

The excavation site that we were heading can date back to the Stone Age that happened approximately 4,000 years ago from today; it was a place where people lived their life on the beach. Jan explained to me that the Finnish landscape has been rising very fast in the past and is still rising now. The road where we were and most of the surrounding landscape was previously part of the sea. Imaging now we were driving on the past seabed.

The beach has become a mild slope surrounded by road, modern buildings and the railway. We arrived at the site and met up with Janne Soisalo, the leading archaeologist of the excavation site. Janne showed us the findings of the site, they were fragments of pottery, stone, fireplace, unearth sand layer and clay layer (Figure 8). I saw how the layers of the earth had been carefully opened by the shovel and tool.

Jan and Janne helped me to identify the Stone Age soil and the archaeology team helped me to collect soil samples. My first soil sample from the excavation site was the Stone Age beach sand and the second sample was collected from the natural clay layer. I gathered the samples with my bare hands, while touching the clay soil, I thought of the pottery fragment that Janne had shown me before, and I wondered whether the Stone Age people had also gathered their material from the same clay I am now collecting, and whether they had used it for making artefacts.

I stood on the slope and watched the modern residential area. The sun was shining through the slope, warming up the excavation site. Maybe this is why the Stone Age people choose this location to settle and live their lives, because of the Sun, Jan said. I closed my eyes and imagined how that might have been like. (Extract from working diary, 23 October 2019)

Fast's words had reminded me of this note from the book *The Arts of Living on a Damaged Planet*:

As humans reshape the landscape, we forget what was there before... Admiring one landscape and its biological entanglements often entail forgetting many others. Forgetting, in itself, remakes landscapes, as we privilege some assemblages over others. Yet ghosts remind us. Ghosts point to our forgetting, showing us how living landscapes are imbued with earlier tracks and traces. (Tsing et al., 2017, p. 19)

The sun from that moment, the slope of today and the sand from the past have become the ghosts that to remind us about the tracks and traces of memories, of times, and of the landscape that someone had dwelled in the past (Figure 9). The soils that I gathered from the site have somehow attached the spoke of time.



Figure 8. Ongoing excavation work reveals the Stone Age beach sand, (left) Pottery fragments from the site.



Figure 9. Excavation team uncovered the fireplace and the sun shines through the excavation site on the slope.

Tracing soils to their natural environment is, therefore, to understand what we could read from their original context and to consider the forces that constitute the reality or that intervene the reality. I have created a deeper connection with both, the human agents and the material agents from the site, while talking with the people, when sampling from the field, and while touching and sensing the texture of soils. These two agents, the humans and the material, have now become creative agents too.

All of these encounters, with the construction worker, farmer and archaeologists have enriched my understanding of the human–soil interaction and the liveness landscape. Each of them introduced different ways to “read” the soils. The process of gathering soils has brought me to appreciate different metaphorical meanings that soil can have and the empowered narrative that is profound in them.

2.3 Material Experimentation

This part of the thesis is about processing the gathered soils into a material that can be used in the craft making and for conducting the *Sensory workshop*. In this case, material experimentation played a significant role in understanding the material’s capacity and its different features related to their local environment. The results of the experiments demonstrate the transformability of each gathered soil, and it also shown that soils as a material agency in the process of making hold a creative expression.

As a ceramist, I have intimate connections with soil, clay and minerals. For me, tracing a material to its geological origins has become a way to understand its local environment and read the earth. Such physical and emotional encounters are vastly different from ordering a bag of commercial clay from a shop. The materials even behave differently. While processing soils can be time-consuming, and impurities and variations in consistency can create challenges, all these difficulties have nonetheless reversed my thinking about the convenience of ready-made materials. My experimenting has been essential to my process of finding a material’s voice. My role is to reveal how soils gathered from different localities speak their own unique languages through their materiality.



Figure 10. The gathered soil samples from different sites.

There are ten different soil samples that were gathered during the visits (Figure 10). All of these soils were processed into clay and slip form by using the ball mill machine in the ceramic studio that situates in Aalto University's Väre building (Figure 11, Figure 12). While processed (Figure 13), these soils were ground into fine slip, meaning that they maintain its natural properties. All of the soils were fired up to different temperatures, from 1050°C to 1120°C. The result of the ceramic test pieces is displayed in (Figure 14, Figure 15).



Figure 11. Illustration of the process by author.



Figure 12. (top) Processing the gathered soils by using the ball mill machine. (bottom) Making test pieces with the gathered soils.



Figure 13. (top) Making slip samples from the gathered soils, (bottom) Ceramic test pieces after fired to 1080°C and 1100°C.



Figure 14. Selections of the test pieces. (top) Natural clay soil and fired samples from Sipoo, (bottom) Soil and fired ceramic samples from the Vuosaari construction site.

Vuosaari construction site

Majvik biodynamic farm, Sipoo

Stone Age archaeological site, Espoo

Raw

Unfired

1050°C

1080°C

1120°C



Figure 15. The results of material experimentation. All the ceramic test pieces were displayed accordingly with the temperature of firing and with its raw soil.



2.4 Sensory Workshop

As previously mentioned in the research framework, the *Sensory Workshop* was designed to *collect* and *create* the research data in order to understand what soil care means from multiple points of view. From my perspective, craft is a practice that embodies care, therefore the workshop invited the people involved in the gathering of the soils, who have a close relationship with soil and are soil-related practitioners from different fields. In addition to the three participants who hosted my visit earlier in the study, I invited two others: Catharina Kajander and Stephan Mantel, who are each linked to human–soil relations. Kajander presents her close relationship to soil as a raw material for ceramic making, while Mantel, a soil scientist, brings insights into soil care from the field of soil science. As a head and curator of the ISRIC World Soil Museum (ISRIC: short for the International Soil Reference and Information Centre), Mantel is also devoted to raising awareness about the importance of soil.

The *Sensory Workshop* contributors and participants are: Minna Hirvikorpi, Procurement Engineer at the Vuosaari construction site; Atte Hermansson, Farmer at the Majvik-Biodynamic Farm; Jan Fast, Archaeologist, who showed me the archaeological site in Espoo; Catharina Kajander, Finnish Ceramic Artist; and Stephan Mantel, Soil Scientist, Head of the International Soil Reference Information Centre (ISRIC) and Curator of the World Soil Museum in the Netherlands. All the participants have agreed to use their names and images in this work

The material used in the workshop was the processed soils in its clay and slip forms. Artefacts that were produced through the material engagement from each workshop have embedded the idea and stories of each contributor. By *working-with* and *thinking-with* soil, the five contributors have shared their personal and authentic aspects to the topic of soil care.

The workshop was divided into three parts; in the first part, the collaborators described his/her relationship with soil in relation to their everyday work. The second part had two exercises. For the first exercise, I made of ceramics with the collected soils several *singing stones* that have inscribed at the back different questions (Figure 16). The questions inscribed in the *singing stones* are: (1) What role and meaning does soil have in your field of practice? (2) If you could choose one word to represent the value of soils, what would it be? (3) What would soil care means to you? How could humans take better care of soils? (4) Is soil living?



Figure 16. Each of four singing stones has been inscribed with a different soil-related question.

The participants had to choose the stone they wish to get a question from, and then I would hit on that stone, making it sound. Each stone sounded differently, it was as if they were responding to something by making a sound, listening to the sound was like hearing the voice of soil. Most participants found this activity interesting and were intrigued by the idea of soil having a voice (Figure 17).



Figure 17. Participant reading question from different singing stones.

The second exercise, *mapping relations*, challenged the collaborator to think of their field of work in relation to the six soil functions: food and other biomass production, environmental interaction, biological habitat and gene pool, source of raw materials, platform for man-made structures, and cultural heritage (Frossard et al., 2006). As a reflective thinking exercise, the participants were encouraged to think through their relationship with soil and to draw down the connecting line(s) according to the following statement: *Thinking with the six soil functions from the perspective of your work. Does it overlap or detriment to each other?* (Figure 18)



Figure 18. In the Sensory workshop, (top) the construction procurement engineer Minna Hirvikorpi has illustrated a conflict line between the function of platform for man-made structures and the function of cultural heritage, (bottom) The farmer Atte Hermansson drew a conflict line between the function of platform for man-made structures and the function of food and other biomass production.



The last part of the *Sensory Workshop* was to make a stone. Each contributor had to work with the local soils (the people who were involved in the process of soil gathering had worked with the soil that was gathered from the site) and create their own stone. Each of the participants reflected *through* and *with* the material while making. Some of the participants made more than one stones for sharing and representing their ideas. (Figure 19) As a result of the *Sensory Workshop*, all the participants' stones have been put together with the singing stones that I had made as one artefact.

Figure 19. Each contributor was crafting their stone during the Sensory workshop. (left to right) Vuosaari construction site procurement Engineer, Minna Hirvikorpi in Aalto University; Farmer, Atte Hermansson in the Majvik Farm, Sipoo; Archaeologist, Jan Fast in Aalto University. Ceramic artist, Catharina Kajander at Aalto University; Soil scientist, Stephan Mantel in the World Soil Museum in the Netherlands.

The discussions with the five contributors have a significant impact to understand different values and meanings that soils can have, and the multiplicity that exists between human–soil relationality and wider ecology. I will open the discussion in the following chapter that I call *Human–Soil Storytelling*.

3 Discussion: Human–Soil Storytelling

In the following part of the thesis, I will share in detail extracts from the discussions I had with each contributor, during the Sensory Workshop, around the issue of soil care, along with my learnings and thoughts. In the thesis, the role of the contributors is crucial, as it is through them that my research inquiring and understanding of soil care has expanded and grown deeper. The storyline is divided into five different narrations, one for each contributor. The following tilted of each story is based-on the word that each contributor has chosen for representing the values and their attachment to the soil.

3.1 Piles of Soils, Piles of Precious - a story about soil and construction in collaboration with Minna Hirvikorpi the Procurement Engineer at the Vuosaari construction site.

"...we live in the city and here not so much soil is visible... When the construction work started, I was not at the site. But I had visited before... and realised the place was not nice at all. Now, when I know what kind of building there will be, I think it is better. The place will be better after that, because this place was like a junk ground". (Hirvikorpi, 2019)

The construction site will be a new building for the Vuosaari Upper Secondary School, it is the first life cycle project in Helsinki and is operated by the City of Helsinki and YIT Caverion Suomi Oy. Hirvikorpi says that in the construction business, soil has many roles. For example, the typology of the construction depends on the kind of soil there is; clay soil is not as valuable as sand is in the construction business, sand can be re-used for filling the base, on the contrary to clay, most of it has to be removed for being able to start a construction work. Hirvikorpi implied how the building company has been responsible and taking care of soil, to this, she said:

The building company, of course, has the responsibility to take care of the soil. That also happened when we built a place where there were a lot of houses; we had to plan and think about how and where to put the trees, plants, and distribute the soils around the environment. It is about putting something back. As you can see now at the site, we take something out and put something, like concrete, back...but we have to also put some soils for the plants. This is how in the construction area we think about soil.

Similarly, when we build roads and other things, we have to take care of the area where the built is done, and do it with care, so we do not ruin that area... Although there are always compromises needed to be done, our designers and the people who plan the area always need to think about how the soil and the environment interact in good status. (Hirvikorpi, personal communication, December 17, 2019)

Talking with Hirvikorpi reminded me about the piles of soils that I had climb when I was gathering soils from the construction site. During our conversations, I found that although we talked about and work with the soil from the construction site, it connected Hirvikorpi to the countryside of her memory and the fresh smell of soil. For her, there has a distance between urban area and countryside: asphalt road, cement building had disconnected us to soils. Perhaps this is also a kind of part that we have overlooked. At the end of the workshop, she said to me: *"Your own hands and feet had been there, you saw the beginning of it, and later on, you will see what the place will become"* (Hirvikorpi, 17.12.2019).

While me and Hirvikorpi were having the conversation mentioned above, she was creating her stone (Figure 20). Hirvikorpi's stone shows her own appreciation to the natural capacity that the material has. When she was making the stone, she told me that she did not want to decorate any patterns, nor to destroy the natural surface of the clay, because it is the natural beauty of this soil. The clay soils from the construction site are easily cracks. After firing the stone, the nature and characteristic of the material created a big crack that cuts across the centre of the stone.



Figure 20. Stone made by Minna Hirvikorpi with the soil that gathered from the construction site.

3.2 Invaluable to Life - a story about soil and farm in collaboration with Atte Hermansson, the owner of the Majvik biodynamic farm

"It is out of value; it is invaluable. Because it is from soil, we all live. Without soil, there is no life" (Hermansson, 2020).

Hermansson chose the word "invaluable" to represent his attitude towards soil. As a farmer, Hermansson thinks about and works with soil almost all year long. Soil is the central part in his farm, the medium where plants grow. Soil care to him can be considered as an everyday practice, to what he said:

To me, soil care means a lot. It is fundamental for my work to take care of the soil. As a human, I give back organic material, compost, in such way, I give my care to the soil. I plant the soil. Take care of soil is also a work of art, something we build up. Humans should see the value of soil and its importance to realise that soil is not something you can only take from, but that you also need to give something back to the soil; otherwise, we will all be in trouble at some point. (A. Hermansson, personal communication, January 31, 2020)

Hermansson explained to me that in biodynamic farming, the most important things are the nutrient cycles and the organic matter cycles. When you take something from the soil, you put something back to maintain the balance. During our discussion, he mentioned that in food production, there is a strong collaborative relationship with the cultural heritage, because seeds are considered as part of the cultural heritage of the landscape that contains genes of the plants and its environmental condition. He protects this collaborative relationship by carefully choosing which seeds to plant; that is how he cares for soil. After the workshop, Hermansson invited me to have lunch with him and other members of the farm, before we started eating, we held hands and closed our eyes to show gratitude to the great provider–nature. This conversation has shown me how Hermansson tries to maintain the harmony of nature and that he understands the farm as one partnership that involves soils, cows, plants, seeds, between others.

While me and Hermansson talked about how good the quality of the clay that he had found was, and donated to me from the farm, Hermansson crafted his stone with the idea of the fingerprint marks to represent the human act (Figure 21), he also thought about how the shape will affect the sound of the stone. After his piece was fired, it does sound very different compare to the others. Hermansson crafted his stone very carefully, by pressing his finger to the clay that surrounded his farm, it somehow expresses his relationship with his farm and the attentiveness that he pays to maintain the rhythm of nature.



Figure 21. Stone made by Atte Hermansson with the clay soil that he had found nearby his farm and donated to this project.

3.3 The Beginning and the End - a story about soil and memory in collaboration with Archaeologist Jan Fast

"Soil is everywhere and in everything in my practice. Soil is in my clothes, in my pocket, in my eyes and under my fingernails" (Fast, 2020).

Soil represents the "birth" and the "beginning of everything" according to Fast. In the field of archaeology, Fast considers soil to be an essential part of his work; he has to dig through different layers of soil to find archives and artefacts that have been covered by it, soil is what reveals these treasures to him. Soil to him has a very important role in relation to the cultural landscape and to his profession. Fast shared his thought of soil care as follows:

The concept of soil care is not very familiar to me. I understood that it is a big concept and a very important one. But first I think like a "normal" human being, I think of soil, probably, as the most concrete thing that you encounter after the air in everyday life. Since we are born and until our death, soil is there, and we are even buried in it; so, why not take care of it? Generally speaking, I do not think people are so aware of soil as a material to take care of, I think people wonder more about air.

Soil is in constant change; it is not a steady thing. In Finland, it was accumulated during the Iron Age; the older layers of soils have vanished... and the oldest possible remains included the bedrock of Finnish habitat. So, why not take care of the soil and understand its real meaning as part of the history and the geology of this country? Especially in Finland, where the situation of building and construction is quite good because we have an extended unbuilt area, which I guess is well-preserved. I think it should maybe be a question of how we start thinking about which areas and which kinds of soils, and where that we should bring forth the idea of taking care of them.

Soil care is a huge concept, but I think already informing people about the needs to take care of soil; to raise awareness of the soil that will probably help to take better care of it in the future. And this is not something I just imagine here in the workshop, it is something I have to think about in my work too, when I see constant change, and of course, change can be stopped... That's why I am aware that seeing those changing in my work areas are disappearing or vanishing in days or in hours." (J. Fast, personal communication, January 29, 2020)

Fast understands soil care as a notion to appreciate the value of soil. From his point of view, soil is a common heritage, it is the beginning and the end of everything; "Eventually we are all soil", he said.

While we are talking, Fast crafted two stones with the Stone Age in his mind (Figure 22). The first stone represents his understanding of the ornaments and patterns found in artefacts from that era, which he has illustrated on the stone's surface. He notes that we commonly perceive the Stone Age's patterns in artefacts to be decorative, but they have functional purposes behind them, such as releasing moisture from the clay in order to not break when firing the artefacts. Ornamentation can also be related to a specific ethnical group, culture, or even a person. The second stone Fast made, is a figure that looks like an item he found in a Stone Age archaeological site in Finland. Fast described that the Stone Age people used to use their fingers to form human figures through clay. Thus, in this stone, he used a similar technique to interpret his understanding of it. He explains to me that those human figures were probably used several times in one's life and covered with different material, such as soil or blood, so he added slip to his stone. The two stones that Fast made have embedded his knowledge about the Stone Age and about the founded pottery remains.

I was surprised by how an archaeologist can tell through soil about the history of the landscape and how it has been changing, moving and accumulating. We have lost and forgotten memories about how the landscape used to be, but soil can recall, it carries this stories and memories in its layers, and it is through them that we are able to read and remember the past.



Figure 22. Stones made by Jan Fast with the soil that gathered from the Stone Age excavation site in Espoo. (left) The gathered Stone Age beach sand mix with the natural clay soil collected from the site, (right) The gathered natural clay soil painted with the Stone Age sand.

3.4 Humanity's Oldest Invention - a story about soil and art in collaboration with Ceramic Artist Catharina Kajander

"When human discover that they could use the soil for making... that was fantastic!" (Kajander, 2020).

Soils as a raw material in pottery making are one of the earliest exploitations done to the natural resources. Kajander has been working with Finnish earthenware and influencing the thinking around the use of local material for a long time. She has shared with me her personal encounters with soil-clay-ceramic:

My first contact with soil was when I was five years old; I was sent to the countryside during the summertime because my parents had to work all the time. I used to go to a small village where there is a small river; we used to bath there. On the bottom of the river you can find clay, it is a mud-like clay, and me and some other children used to make things out of it. In the field nearby the river, there was a factory that made bricks out of that same clay; I used to see how the bricks were made and loaded into the kiln. The factory had been doing this for three generations then, but after the war in the 1950s, the factory's main production was the drainpipe. At that time, I had never thought that I will be making anything related to clay as my profession, but definitely, this subconsciously influenced me.

Back in 1966, I was accepted to the school of arts (now Aalto University), then I was interested in sculpture. There used to be a decorative sculpture programme for architecture, but it closed. That is how I ended up studying in the ceramic department, because I wanted to do modelling. Then I remembered the factory in my childhood, so I went back to the small village and talked to the owner, I talked about my childhood memories to what he became very enthusiastic and said: "Yes, come here! You can stay on the third floor and do whatever you like". So, I started to go to this factory, and eventually, he employed me to make the joint point for the drainpipes. That is how I started to use Finnish earthenware, and when my interest in this tradition began.

I made the decision to do a project about Finnish traditional earthenware. So, I applied for a scholarship for travelling and visiting all the living potters in Finland, that was in the 1970s. But it was not an easy job to find them, as nobody knew who and where they were. At that time everybody in art school just wanted to work with stoneware. I thought it was a pity because we have such nice clay and history in earthenware. After six-week travel, I became very conscious about the ecological way of thinking in the material. (C. Kajander, personal communication, January 27, 2020)

To Kajander, the idea of soil care is closely connected to ecological thinking, which means the material that she chooses to work with is related to its local context. She also understands the connection there is in all soils, which goes from agricultural practices to the earthenware material. Kajander appreciates and sees beauty on the Finnish earthenware that the local environment provides, this has increased her sensitivity towards the environment that surrounds her.

Unfortunately, she has noticed how during her years of practice that the clay soil in the coastline of Finland has changed, and that through the years it has become sandier. In her view, the most important thing to help take care of the landscape and its living ecosystems is to take in practice a very basic action, to not pollute the water neither the soil.

Kajander created two stones with a simple but strong signature that represents the presence of the human (Figure 23). In the first stone, she seized the clay in her hand as tight as possible, and when she let go, the clay showed the stress marks of every finger. In her second stone, she slapped the clay in her palm until the clay had printed and remembered the traces of her palm.

I respect the way Kajander relates to material in her art practice, because nowadays in the global market, people could easily buy their material online which can be imported from places miles away. The relationship between maker and its material becomes thinner and flatter. Learn to appreciate what nature environment has endowed; the material can implicate the identity of its local environment as a memory of the landscape that bounds our culture and nature together.



Figure 23. Stones made by Catharina Kajander with the natural clay soil from Sipoo, donated by the farmer Atte Hermansson. (left) imprint of human grasp, (right) traces of human palm.

3.5 Inspiration and Imagination - a story about soil and curiosity in collaboration with Soil Scientist Stephan Mantel

"Look! if you take the skin, it's part of your whole being" (Mantel, 2019).

Mantel, the head and the curator of the ISRIC World Soil Museum in the Netherlands, pulled open his sleeves and pinched the skin of his wrists and told me that: soil is the inseparable skin of the earth, which is a part of the whole life. Until today, As a soil scientist, he has been working for 26 years at the International Soil Reference and Information Centre (ISRIC). He shared with me the story of how he got interested in becoming a soil scientist as follows:

Soils continue to inspire me... I was always on the backseat of the car, looking outside the window, travelling for days, crossing mountains, going to desert plains, going to different climates. I was always travelling through the environmental radiant, of climate, of land use, but also of rocks and soils... why do we have different environments, and what does it mean?

Soil science caught my interest because soil is such an important natural resource and in which much of the primary activities done by man are based-on it. Soil science is a complex science, I always feel I am still at the beginning, learning about soils... there is still so much to learn about soils.

I want to convey students and other people the basic knowledge on this natural resource "soil", to show them the different faces soils have in the landscape, the history of soil and also the stories that are related to soil... and of course, speak about soil's potential and the problems it is facing today... for example, I am often interested in how soil affects society and people. People come here, to the museum, mostly, with no knowledge about soil, but at least they are sparked when they come in... I want to encourage people to have more curiosity for soil, to have questions so ultimately there will be more answers. (Mantel, personal communication, December 28, 2019)

Mantel emphasised that there are almost no big societal issues in the current world which ultimately are not related to soils. But if we just purely look at soils, loose our view from society, soils by itself still a complex world that involves so many processes and history. Mantel has shared his viewpoint on soil care as below:

The perspective of vanishing the soil rather than the crop or thinking about a single-use, what that means to you or what the benefit of using that soil means to you personally and taking a longer-term perspective. Actually, if you care for the soil and the quality remains, your children and grandchildren can also benefit from it and maintain life as your generation or even better. Also, there are different conditions different varieties for soils and quality decline; it can be climate-related or other societal or economic pressures. But for me, soil care means that you have broader perspectives and longer-term perspectives. (Mantel, personal communication, December 28, 2019)

During the workshop, Mantel has crafted his stone to reflect on his career (Figure 24). He let his imagination go and create a shape like a mountain range. He said that is where the parent materials from and where soil formed in the landscape, from the highest part to the lowest part, the landscape and geography are all involved in the soil formation.



Figure 24. Stones made by Stephan Mantel shown the imagination of soil formation, this stone made by the gathered soil from the construction site.

While visiting the World Soil Museum, Mantel has shown me the room where various soil profiles are stored as soil monoliths (Figure 25). He explained to me about the different consequences and factors that affect soil formations. During the discussion with Mantel, I had gained to understand that the six of soil functions: food and other biomass production; environmental interaction; biological habitat and gene pool; source of raw materials; platform for man-made structures; and cultural heritage (Frossard et al., 2006) are a helpful tool to think about the multiplicity in the human–soil relationality because it has grouped the knowledge that makes the complex human–soil relations more socially relevant and easier to communicate. Soil is very complex and can be difficult to understand sometimes. And through discussing with Mantel, I know that there is no international agreement or definition of what soil really is, to where it starts and where it ends, but this should not affect the way we care about soil. No matter if you consider soil as an organic or inorganic matter, living or nonliving, there is always the crucial value in the soil to sustain all life on Earth.



Figure 25. Soil profiles from worldwide in the ISRIC World Soil Museum, (centre) Stephan Mantel shown the Finnish soil monoliths, (right) Different themes related to soil are presented in the museum.

Through the above five different human–soil narratives, I have discussed how both humans and soils are collaborative partners in the process of making. The results are presented through five human–soil narratives associated with several crafted artefacts, each of which was profoundly connected to its maker, material and the local environment. Moreover, each of the stories passes on different attitudes to the soil. While working with soil, the workshop participants were thinking through the material and about their life stories, of soil and their practice. In this performance, material and human have become agents of the storytelling, empowered and expressed in the process of making. The final artefact of the *Sensory Workshop* is a ceramic xylophone (Figure 26, Figure 27), it is constructed together with all the stones that were created and used in the workshop. As a co-creation, this xylophone can function as an interactive instrument for engaging people into human–soil storytelling through an audio experience. All of these sensorial experiences with the material, clay and sound has elicited to re-think the values and meanings of soil. After this collaborative journey with the five contributors, I have gained a deeper understanding of the different human–soil relationships and my "inner soil" has been nourish.



Figure 26. A ceramic xylophone that consist all the stones that made by the gathered soils during the Sensory Workshop.



Figure 27. Detail from the artefact. The co-creation consists of all the stones that were created by the five contributors as well as the singing stones that were used in the workshop.

4 The Rehearsal: Conclusion and Reflection

Landscapes shimmer when they gather rhythms shared across varied forms of life. Shimmer describes the coming in and out of focus of multispecies knots, with their cascading effects. Yolngu cosmologies inform us; juxtaposed with the stories made available from many arts and sciences, vernacular and academic, we learn the liveliness of landscapes. Landscapes enact more-than-human rhythms. To follow these rhythms, we need new histories and descriptions, crossing the sciences and humanities. (Tsing et al., 2017, p. 25)

The above quote from the book *Arts of Living on a Damaged Planet* has always been in my mind and had inspired me since the very beginning of this project. I had already named my thesis project *Soil Care: Symphony Rehearsal* at the time when I was writing the research plan, and it is hard to believe that this project has now come to an end. Now is the time to explain the title of the project.

My intention to take on the topic of soil care was from a very personal starting point, I considered soil, stone and sand as my dear friends since I was a little girl and I still am; this has been in mind have also shaped my educational background and career path, choosing clay as a medium to work with. I consider myself a human who always wonder about the mineral world and who is compelled by them. However, as I see there were so many crises related to soil and other mineral recourses in the current world. I hope through my close relationship with soil and through the lens of craft and design, I can bring in different values for understanding the soil.

In this thesis, I have invited five different people, all of whom have different backgrounds and a close connection to the soil. Their voices have added diverse aspects to this work so that, in this final stage, they form a kind of symphony, sometimes in harmony and sometimes in contrast. It is like the ceramic stones they have made; they all sound different. Despite each of them sharing different perspectives on the concept of “care for soil”, I have gained an understanding of the different human–soil relationships people have. A farmer pays attention to the soil’s health and maintains the nutrient cycle of the land. A farmer’s soil priorities are different to that of a construction worker, who ensures well-planned environmental interactions. Further, an archaeologist reads soil as the memories of a landscape and humanity, and caring for the soil means remembering the tracks and traces that were the common heritage of the landscape and preserving it from vanishing. An artisan respects the choices of soil materials and how they represent various localities and affect the ecology. Last, into a soil scientist view is to think about the use of soil with longer-term perspectives rather than the benefits of single-time use. All of them see different issues in the soil. I think these various aspects are of equal value and equally valid for this research. In the end, the symphony rehearses by reflecting on how we relate to the soil; it is through this collective “rehearsal” that the issue of soil care can be better articulated and hopefully resonate with more people.

This research aimed to provide new forms of understanding for re-thinking our complex relationship with soil in order to communicate the importance of soil care better. Based on craft making as a dialogical practice for conducting collaboration and creative process, the research emphasises the agentic power that converges through makers (human) and materials (soil), it can be perceived that material’s life story and intervention of human as important narrative agencies that offer meanings to the artefact in the process of making. The results show the potential of collaboration through craft as a generative way of practice that enables critically reflect on the way we relate to soil and wider ecology.

Practice-led approach has supported my collaborative practice by its “accumulative” and “retrospective” characters (Mäkelä, 2006, p. 78). In the first stage, collaborating with others can involve many not-yet-knowing moments, uncertainty and the risk of unexpected situations to the research process. By undertaken these challenges, research is acknowledged through constant fertilise by each collaborator; this then shift the unknown to the known (Sullivan, 2009, p. 48).

On the other hand, collaboration offers multiple lenses to investigate the research inquiry and generates different kinds of knowledge that transcend disciplinary boundaries; while the designer-researcher gain more understanding into the research inquiry, collaborators are also spent the time to reflect on their own field of practice through engaging with the topic. In the end, the research shows the knowledge generation is through its creative process, designer-researcher, collaborators and artefacts (Sullivan, 2009, p. 47). Throughout the research, documentation has played an essential role in facilitating the retrospective process of the collaborative journey and its creative process (Mäkelä and Nimkulrat, 2018). It allows the designer-researcher to delve deeper into the topic through reflection-*in/on*-action (Schön 1991 p. 280).

Craft making as a dialogical practice offers a creative platform for collaborating with others; it allows different ways of engagement to discuss the topic of soil care. Through the variety of material engagement, craft making enables the designer-researcher, collaborators and soil (as material agency) to co-participating in human–soil storytelling. Humans and soils involved in the process of making are equal partners in the dance (Malafouris, 2008, p. 25), it co-constitutes and performs “creative expressions” with its maker; together they are all “narrative agency” in the process of making (Iovino & Oppermann, 2014). This mode of thinking material practice in the contemporary art and design framework can trace back to Bolt’s argument, concerning the relationship between the maker and its material. This argument evokes the crucial role of the material agency and the relation of its practice into another dimension, where all the forces of human and non-human are accounted. Thus, All the forces are flow in the process making, transforming each other, or in Ingold and Hallam's term *making-in-growing* and *growing-in-making* (Bolt, 2007; Ingold & Hallam, 2014).

This thesis takes Puig de la Bellacasa’s idea of *thinking-with* care and applies it to thinking with soil; this is a complex relational web that entangles our human–soil relationality (Puig de la Bellacasa, 2017a, 2017b). Utilising this framework, my approach focuses on the six functions of soil: food and other bio-mass production; environmental interaction; biological habitat and gene pool; source of raw materials; platform for man-made structures; and cultural heritage (Frossard et al., 2006). I have also selected five soil practitioners with related backgrounds: a construction worker, a farmer, an archaeologist, a ceramic artist and a soil scientist. These contributors have provided the research with different insights about their fields of practice and their personal attachments to soil. The findings of the study emphasise the differences between each soil practitioner, their ways of looking at soil, and their reflections on the concept of “caring for soil”. Through storytelling and the production of artefacts, the results of the study focus on diverse values and meanings rather than a singular narrative of caring for soil.

This thesis was driven by the research question “*Would collaborative craft practices provide a different way to re-think and re-evaluate our relationship with soil?*” The scope of the research stresses the performance of creative practices that can address the issue of soil care. Through engagement with materials and related stories, the research presents five different examples of human–soil storytelling associated with the material outcome. This research intends to raise awareness through storytelling, and it passes on stories about the different cultural and natural meanings of soil to the public. In doing so, it aims to extend human empathy to the non-human other: soil.

As a closing statement, this thesis contributes to practice-led design research in the field of craft and design. The results show the collaborative effort and its relationship between the creative outcome, material and the wider environment. The collaborative approach presents the potential of craft practice, and shows the effectiveness of that practice in generating creative discussions on societal-environmental issues through critical material engagement. This research also opens the doorway to envision the shift of anthropocentric thinking in future material practice, such as design and craft practice. We—designers, makers, are closely tight with the relational ecologies. It is important to consider the relationships and consequences when and while interacting with(in) this complex ecology that human and non-human are both parts of. We are liable to co-constitute reality by working with other more-than-human agents. By understanding the flux of the surrounding environment as interactive ecologies, we are moving towards a world of co-existence.

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6 Appendices: Transcripts/Notes



Sensory Workshop 1
Date: 17,12,2019
Minna Hirvikorpi, Procurement Engineer

"Describe your relationship with soil and your work?"

I have been growing up in a small village about 60 kilometres away from Espoo. We have a farm, and my brother is keeping that now. There, we are growing vegetables and all kinds of things. I have to dig into the ground. As a kid I have been in the place with lots of sand and mud, playing a lot. But now in my adulthood is a little bit far away, because we live in the city and here not so much soil that you can see. As if there is soil, there is also grass on it. [Work] Now we are doing that school there. In May 2019, when they started the construction work, I was not there at the site. But I was visiting before as I show you in the picture. And I realise that place was not so nice at all. And now when I know what kind of building there will be. I think it is better. The place will be better after that, because that place was like a junk ground.

What would soil care means to you? How could humans take better care of soils?

To me, it reminds me of my brother's farm in the countryside. When he is growing food for us, he has to think about how he contains the soil to be good year after year. Every time he takes something out, he has to think about how he can put something back also—taking care of the soil.

And for the building company, there, of course, has the responsibility to take care of the soil. That comes when we build a place where a lot of houses for people. And then we had to plan and think about how we take the yard inside that area, how we put the tree, plant, soils around the environment. Is about putting something back. As you can see now at the site, we take something out and put something concrete back, and we have to put some soil for the plants. This is how we in the construction area can think about soil. Also, when we built roads and other things, we have to take care of the area where we built are done with care. So, we don't ruin that area. Because that will be in everyone's mind, so we need to do it as how we see it the best way. Although there are always compromises needs to do all the time, our designer and the people who plan the area always need to think about: how the soil and the environment interact in good status.

"What role and meaning does soil have in your field of practice?"

In construction work, soil has many roles. In the first place, we have to know what kinds of soil there is then what types of buildings we can do and what type of construction bases we had to have that is suitable for the building. For example, in the Vuosaari site, there has this pile of soil. And if the soil is different, if it is not that clayish or there is sand, then we can do it another way. So, in the construction business, clay is not good, and the sand is more valuable. Because sand can be used when we do the filling around the building as you can also see at the Vuosaari construction site. But if there is only clay, we cannot use it.

"If you could choose one word to represent the value of soils, what would it be _____?"

The first one that came to mind is "precious". If you have not seen it, that beautiful forest and landscape then you don't know. I understand that because I have been to some huge city like China, it is different than here in Finland as we do not have such a big city.

"Is soil living?"

I think it is, some kind. But not now [when fired]. In the first touch when you take it from outside.

[Mapping relations]

Man-made structures might conflict with the cultural heritage, as you see in Kaukalati. What they found there. Because if we are building something and they found something like that there. The building will stop and that cost money. That is one conflict...Environmental interaction is, of course, in collaboration relationship. Raw material also in collaboration relationship.

[Material engagement]

This feels so nice! I will keep this edge and the texture this way. I don't know if I will do anything about this. Because did you see this is so nice looking, the surface of its nature. I don't want to draw anything because I like this natural essence of this material. So beautiful.

[Feedbacks and reflections]

I like this a lot. It is like when you start to do things; your energy calms down, I think it is almost like you go outside for a walk in the forest. And I think whenever you do with your hands the feeling is like the same with knitting. I think it is about doing and feeling at the same time. I was only thinking about how it will look like after the firing.

This was nice. Everything went smoothly and clearly. And I like to share this project with our architecture. Now you have your own hand and your feet being there and seeing the first thing, and later you will see what we have built at that place.

Sensory Workshop 2

Date: 28,12,2019

Stephan Mantel, Head of the ISRIC World Soil Museum and Curator

“Describe your relationship with soil and your work?”

I work for the ISRIC World Soil Information (short for the International Soil Reference Information Centre). Actually, this centre the first name of it when we are found was International Soil Museum because the museum is part of our centre. We're a data service centre for information of soils of the world, and we provide public services, open-source data and another leg of the institute is the Soil Museum. The Soil Museum is based-on the scientific collection that is collected over 50 years that also serves the scientific community and community at large. In the World Soil Museum, we teach about the soil. I am the curator of the museum, and I also organise educational activities related to this position and anything that goes on in the World Soil Museum.

I am 54 years old, I work now for 26 years at ISRIC, and I've studied Tropical Agriculture and then specialise in soil science. Soil science caught my interest because the soil is such an important natural resource on which much of the need primary activity by man is based. And then there is the science which overlaps many aspects if you think about policy lines, often the soil over met, although it has been done quickly changing with the climate change debate. But soil science is the field of science which has many different fields, specialisations and it's a complex science. I always feel I am still at the beginning of learning about soils because there is so much to learn about soils. At the same time, I am a bit more advanced in my career, I also take pleasure in simplifying things, and to have a broad overview of what's the soil you may expect in different landscapes and different parts of the world. But even within the landscape and within the field. To convey students and other peoples the basic natural resources soils, the faces it shows in the landscape, the history of soil and also the stories that are related to soil. Because of course, soil spoke specific potential and even problems for people. As we have soil in the museum, for instance, they are sometimes dramatic, sometimes interesting, sometimes just to educate the students and peoples the stories that tell about a specific site or specific soils.

“What role and meaning does soil have in your field of practice?”

Wow! For me, it is not difficult to answer. Soil is the basis of my professional work. I work in different applications of information and knowledge of soil. One is I work on projects. I studied Tropical Agriculture at first and then Soil Science. Although you can study soil at a micro level, where you studied very tiny elements, organisms. But I was often more interested in how soil affects society and people—translating soil knowledge to provide a basis for decision making, either by the farmer or the policymaker. Of course, not to do bad but to do good for society and more sustainable. So that takes shape in the project where I was involved in many projects for supporting agriculture science, improving land practice soil is degrading or maximising production or maximising sustainability, according to the region where people are, that is one thing.

The second thing is the museum-related, so I teach what I do and try to get people involved in the natural resource that is soil, so they have more curiosity for soil. People, in general, come here with no knowledge about soil sometimes, but at least they are spark when they come in, and after they go, when they read the newspaper or see a movie there will be a basis for getting more questions and ultimately more answers.

I continue with soil as imagination for me. When I did my education in university, when I was to have the defence of my MSC thesis, I came into the office, I prepared the whole night to think about what difficult questions they will ask of my thesis. And the supervisor took my thesis and put it aside and said, okay you have studied Tropical agriculture long enough, we would not talk about your thesis, now we will talk about soil science in general because you pass this task you will be going to the world as a soil scientist; there will be many questions you have to answer. So, he presented some task to me and asked me to comment on it, and after we finished, he said, okay congratulations, you pass and finish your defence, and from now you hope to become a soil scientist. I was puzzled because I thought I just became a soil scientist, but what he meant was you now have a tool to grow and become and gain your knowledge. And I still feel pretty much that I still need to learn a lot.

“What would soil care means to you? How could humans take better care of soils?”

That's a good question. Soil care for me is you do not take a perspective of single-use at this time. What you see is soil degradation, the decline of soil quality anywhere in the world. It is either because people do not have the possibility to care for the soil, soil can degrade when the people take out of the products of the soil and do not re-plant the nutrient, for instance. But they may be on the poor tropical soil and do not have the means to add nutrients because the environment is poor; they cannot add more material or have no means to buy fertiliser. The perspective of vanishing the soil rather than the crop or thinking about a single-use, what that means to you or what the benefit of using that soil means to you personally and taking a longer-term perspective. Actually, traditional people have done and even still today, if you care for the soil, and the quality remains, your children and grandchildren can also benefit from it and maintain the life as your generation or even better. And of course, there are different conditions different variety for soil quality decline; it can be climate-related or other societal or economic pressures. But for me, soil care means that you have broader perspectives and longer-term perspectives.

“Is soil living?”

Yes, I think so.

I still heard this many time that ecologists study the soils as an abiotic factor.

In fact, I think that is contradicted to the most definition of the soil. Of course, there are soils where you hardly see any life there. There are a lot of different microorganisms and worms in the soil. One of the soil formations is organisms, also that part of the earth's crust which starts by climate, by the hydrology of life. So is the interface where life is and the deeper layer of the earth's crust.

I think soil is a living organism, maybe not just confined to this part of what does the soil is. As I said, there are the fresh elements which on consent soil that may not have much life in, but if you look at if there will be very tiny organisms which you cannot see by the eyes.

Soil as the natural body is the home of life and is also the source of life, where cannot be really separated.

Look, if you take the skin, it's part of your whole being.

And soils are incredibly biodiverse, even biodiverse than what is above the soil. But there is also the problem of the soil definition, because soil scientists do not agree about any standard of soil, for instance, we do not agree where the above dimension of the definition of the soil is. And there is no international agreement, and clear definition to where the soils start and where the soils end where the varied is by different disciplines and from different definition within discipline makes it complex.

“If you could choose one word to represent the value of soils, what would it be _____?”

Inspiration! I can tell you how I came to interest in soil science.

My mother was born in Spain, so I have Spanish relations. The place where my family was and will go on holidays from my first year was 2600 kilometre from my home in Netherland. We drive by car every summer to the south of Spain and drive back every year, every summer. I was always on the backbench of the car, looking outside travelling by days, crossing mountains, going to desert plains, going to a different climate. I was always travelling through the environmental radiant, of climate, of land-use, but also of rocks and soils. When I was small, I am wondering because I saw different types of rocks and minerals in the field which we don't have in Netherland. So, it started sparking my imagination. Why do you have this big rock here, and why do you have this rock here and this rock there, and there's no rock in Netherland. And when I have to do a presentation in primary school, I choose to do with about Spain; I bought a bit red soil from Spain to show them “look, there has red soil in Spain that we don't have in Netherland”. So that sparked my thinking about why do we have different environments, and what does it mean?

And when I was in primary school, I want to be a geologist, because it was related stones, and ultimately later in my study that translates to be a soil scientist, which in former times was called echelon geology, it's the sub-discipline of soil. So, I have from small already interest in nature. I start to have collections, even have my small museum when I was in the primary school of stones and shells. I actually invite the whole neighborhoods to come to see my collections. But soil continues to inspire me. You can see so many societal issues, even climate change, and talk about climate change, there is one particular topic which soil play a role in these whole complex issues. There is almost no each these big societal issues which ultimately soil is not related. But if you look purely at soils, a bit loose from society still this just such a complex world, so many processes and so much history.

So, this continuously for me a topic or I couldn't have worked for 25 years. Because at a certain moment you know, even you have done most of the things and you have understood, and you would like to move on to something else. But soil science still so much to learn and see. Every time I go to the field, I prepared myself to what soil can be expected, but always different, and then you try to understand again. What do I find here? There is still so much to learn.

[Mapping relations]

For me, I teach about these. Therefore, I try to make people aware of all these functions.

There are many soil functions, and I think they are good ways to communicate and structuring knowledge. Because there are so many specific names and term to soil science, and sometimes that makes it difficult to speak to a policymaker, farmer and general public. And these soil functions groups the knowledge in a different way that makes it more societal relevant. So, I think the framework of these functions is really useful, and they also appreciate the different value of the soil. For example, the cultural value, some people have spiritual value and custom value for soil, or the historical value that hidden in the soils. To think and respect the values of soil and evaluate before decision making.

[Material engagement]

I just let my imagination go; this is also my career itself. It looks a bit like a mountain range, where soils they formed in landscape and often on material that is positive on the landscape. From higher part to the lower part, the landscape is important to soil formation, that's why I made this like geography.

[Feedbacks and reflections]

I like this, by the way, is very nicely done.

You really surprise me with this activity.

It's nice how you try to connect people to soils with these primary properties of soil, the sounds and the colour and the shape. I like it. Sensory is one of the things that surprise people. Visual and Sound and feeling.

Sensory Workshop 3
Date: 27,01,2020
Catharina Kajander, Ceramic Artist

"Describe your relationship with soil and your work?"

My first contact with soil was when I was five years old's and sent to the countryside in the summer times because my parents were working all the time. And I was in a small village where there was a small river which we were always bathing; it was really clay. And while all the children there, the water becomes very clay- mud-like, and we are using those clay for making things. Also, I saw in the field nearby; there was a man who was building a factory from the clay in the soil, I saw he was making the brick, and loading the brick into the kiln. He had been doing it in 3rd generation. After the war in the '50s, his main product was going to be drain pipe, which you put in the earth for draining the fields. But at that time, I never thought to be myself making anything for my profession from clay. But this was influencing me subconsciously. And then I was accepted and studied in the art school back to 1966 (Now Aalto University), my interest was to make sculpture. There used to be a decorative sculpture programme for architecture, but in my year, it was closed. That's how I ended up studying in the ceramic department because I want to do modelling. Then I was reminded of this factory in my childhood where I used to go every year before. So, I went back to this small village, talked to the owner of my childhood memories, and he became very enthusiastic and said, "Yes, come here! You can stay on the third floor and do whatever you like". So, I started to go to this factory, and he employed me to make the joint point of the drainpipe, I earned some money so that I can pay for the firing and clay. So, I started to use Finnish earthenware and then I started to become interested in this tradition. So, I interviewed him and made the decision to take on a project, applying for a scholarship for travel and visiting all the living potters in Finland, that was the 1970's. With my backpack, I was on my way, but it was not easy to find and interview them as nobody knows who was where, after my six-week travel and interview, I become very conscious about the ecological way of thinking. At that time everybody at art school just wanted to make stoneware. I thought it was a pity because we have this nice clay and history in earthenware.

"What role and meaning does soil have in your field of practice?"

I still like to use earthenware. I preferred to use that. And I also want to influence the thinking about using local material.

"What would soil care means to you? How could humans take better care of soils?"

Of course, it means not only clay but also agriculture. From my experience, I know here in Finland, we have coastline clay soil, and they now become sandier. So, there is always a balance we need to consider in which kinds of soil for cultivation. For me, it is very important that we don't pollute the water and don't pollute the soil.

"If you could choose one word to represent the value of soils, what would it be _____?"

Oldest profession. Because when humans discover that they can use the soil, that's fantastic! Also on the basis of human life, in which the four elements. [earth, water, air, and fire] When people discover fire, they could fire the clay. And clay needs water, and the wind is also required to blow the fire away. This is completely balanced with nature.

"Is soil living?"

Yes, of course, it is living. Just imagine the history of the Ice Age, the clay here is from that period. I think the change in climate is influencing our living environment.

[Feedbacks and reflections]

I think you have a very nice approach—also a very nice way of presenting the project.

Sensory Workshop 4
Date: 29,1,2020
Jan Fast, Archaeologist

"Describe your relationship with soil and your work?"

Soil is essential to my work as an archaeologist. Because the archives I dig into are in the soil, they are covered by different layers of soil. Still, soil is also present in the artefacts, especially in the pottery of the site. Through that, I am interested in the soils as a way of understanding Stone Age technology pottery making. Soil as part of the landscape is also very important, especially sandy soil, when it comes to Stone Age habitation in South Finland. That was usually the settlement where the beach, sandy beach, like the place in Kauklahti, a very typical Stone Age site.

"What would soil care means to you? How could humans take better care of soils?"

The concept of soil care is, of course, not very familiar to me. I understood that it is a large concept and very important evenly to nationally. But first I think like a normal human being, I think of soil probably the most concrete thing after the air that you encounter every day in your life, from childhood to the end you are buried in, so why not take care of it. But generally speaking, I don't think people are so aware of soil as a material to take care of, I think people think more about air. Soil is in constant change, is not a steady thing. It was accumulated in Finland during the Iron Age, where older layers of soils vanished. Such is the oldest possible remains include the bedrock of Finnish habitat, so why not take care of the soil in understanding their real meaning as part of the history and the geology of this country. Especially in Finland, where the situation of building and construction is quite good because we have a large area, is well-preserved, I think. It should be maybe a question about how we have time to really start thinking about which areas and which kinds of soils, and where that we should bring forth the idea of taking care of them. So, soil care is a huge concept, but I think already informing people about the need to take care of soil is not like automatically preserving them. I think to raise the general awareness of the soil that will probably help better to take care of them in future. And I think this is not something I just imagine here, is something I have to think about in my work when I see constant change. Of course, change can be stopped, it is important not to overemphasise the Ice Age or old stuff, but you should also remember the new situation and try to adapt to them. That's why I am aware that seeing those changing in my work, areas disappearing or vanishing in days or hours, so it's an important topic for me.

"Is soil living?"

Kind of. I think soil is in constant changing and is moving, and is smelling, according to many conditions like every living thing, is part of life. When I first saw these ceramic soil samples, I immediately noticed a lot of differences in these soils, every sample is different, and the ending of every agent is different. So, it is very shocking of these living things.

"What role and meaning does soil have in your field of practice?"

Soil is everywhere and in everything of my practice. Soil is in my clothes, in my pocket, in my eyes and under my fingernails. And it's interesting that as part of the archaeological profession, we try to get rid of the soil that covers the objects, even to a degree that the object itself most appeal when it is clean to the core. I thought that we should leave some of the dirt on the items, just to let them show what they actually were. attractive

"If you could choose one word to represent the value of soils, what would it be _____?"

First/Birth/Common heritage/Beginning of everything. And is also the end. Eventually, we are all soil.

[Mapping relations]

Soil also works negatively in my profession because it eats up the human remains and artefacts because the Finnish soil is acidic. So, it's at the same time disruptive and protective elements.

[Material engagement]

I didn't think about this beforehand.

I had been experimenting making clay pots and a few items when I was young because as an archaeologist, I still don't know how things were made, it was complicated and difficult for us to think Stone Age people's minds. I am not trying to replicate the Stone Age in this making, but I would love to bring some. Fingerprints are very common in the clay, in Stone Age people's work. It shows clearly in the pottery items. And regarding the decoration, when Stone Age people "decorated", that's also our perception of it. When they decorate it is also functional to break up the surface of clay for moisture to get out for firing when doing so, why not also trying to make something look good. So is a combination of ornamentation, decoration and personal cultural type of thing that you are related to which group you belong to. The ornament now I am overlapping might be a nightmare for an archaeologist. We will think, so which was made first, which is second...[Making Human features] This is closely related to one of the items I found. Here I try to show how Stone Age people use their fingers to form the human features. This is my interpretation of what might happen in the Stone Age. These kinds of figures are probably used several times they might be covered in different materials, soil and blood. But people can use their imagination to interpret.

[Feedbacks and reflections]

This is like excavation. And I like to feel how good these clay and soil are!

I think this mix our background of learning, reflect on my work and this topic.

It presents the opportunity for me to look and reflect on my work in a different way.

Visually appealing, and it also creates sounds, very interesting.

Sensory Workshop 5
Date: 31,01,2020
Atte Hermansson, Farmer

"Describe your relationship with soil and your work?"

I work a lot with the soil most of the year, in fact, the whole year almost. If I don't work with soil, then I think about soil. So, I have an important relationship with soil.

"What would soil care means to you? How could humans take better care of soils?"

To me, it means a lot; it is the fundamental of my work to take care of the soil. As a human, I give back organic material, compost, and I give my care. I plant the soil. It is also the work of art, something we built up the good soil, and that is something I always try to take care of. Humans should see the value of the soil, and it is important to realise that it is not only something you can take from, you also need to give something to the soil, otherwise, but we would also be in trouble in a moment.

"What role and meaning does soil have in your field of practice?"

It is the most important thing we have, the medium where the plants grow; it is the central part of this farm. Biodynamic farming is trying to have a cycle of nutrients, cycles of organic matter. When you take something from the soil, you need to put something back to the soil, that is the fundamental part of biodynamic farming.

"If you could choose one word to represent the value of soils, what would it be _____?"

It is out of value, and it is invaluable. Because it is from the soil, we all live. Without the soil, there is no life.

"Is soil living?"

Soil is living. There is a lot of life in soil which we don't know very much about yet. Especially in the topsoil, when there are microbial activity and more organic material. But there is also life in the deeper soil, in the mineral soil.

[Mapping relations]

Collaborative with cultural heritage, because the seeds that I use in this farm are very old seeds, the food production of the farm is strongly related to cultural heritage.

[Feedbacks and reflections]

I like this process as it is, and I think this is very interesting to me.

