THIS IS NOT A GARDENING BOOK
The Cultivation of Transdisciplinary Practices

A Work by Many

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INTRODUCTION

"Do you love your garden?" It is a question the Native American botanist and member of the Potawatomi Nation, Robin Wall Kimmerer, asks her daughter in her book *Braiding Sweetgrass*.[1] She already knows the answer, but she uses it as a segue into a riskier question. Tentatively she continues: "Do you feel that your garden loves you back?" It is a riskier question because as soon as we sit at our desks, open our laptops, browse through digital files, and check our email inboxes, questions of a "loving earth" quickly sound cringy. Sitting in university buildings and home offices, we fall prey too easily to endless intellectualization. If we are willing to entertain Kimmerer's question, we tend to look for answers "in our head."[2] But we – as researchers, educators, artists – do not have to restrain ourselves to such a dim-lit and small space. How would our responses transform if we were to explore this question in the vicinity of birdsong, buzzing insects, trees, and plants while feeling the damp earth under our feet?

       With her second question, Kimmerer proposes to change a one-way relationship into something more complex. Her second question grants agency to the earth. It *activates* the earth and all that lives on it and vitalizes the gardening tools we use to cultivate the land. The act of loving is distributed far more widely, among a more heterogeneous collection of actors (to put it in STS terms). From this perspective, the question "Do you feel that your garden loves you back?" surely goes beyond mere quirkiness; it carries a political potency. In a graduate writing workshop, Kimmerer asks the students to imagine what would happen *if* people believed that the earth loved them back. One of her students succinctly captures the

[1]   Robin Wall Kimmerer, 2013, 125.

[2]   Elsewhere, Kimmerer (2013, 295) notes that our "senses are muted within four walls" where our attention is captured by *ourselves* rather than by the more than us.

transformative power of this modality of relating: "You wouldn't harm what gives you love."[3]

With Kimmerer, we share an attentiveness to how things (are made to) relate. The notion of gardening is helpful in directing our attention to community rather than individuality, to love rather than harm. But this is, as the title clearly expresses, *not* a gardening book. Why not? Because the idea of gardening is put to work in a different domain. We associate ourselves with gardening because it proffers a productive vocabulary to *think through* and to *write up* our transdisciplinary practices. The notion of gardening inevitably grounds us in a thick multispecies web of life. Growth, death, soil, flourishing, listening, compos(t)ing, tools, seasons, patience: a constellation of concepts is opened up for us by declaring this not a gardening book. We acknowledge that for some readers and even some authors contributing to this volume, composting may first and foremost be a lived experience, a practice. Something they have been doing all their lives, turning organic material into dense and deep black humus. A fair amount of eye-rolling may be caused by the more conceptually informed usages of *composting* or *fermentation*.

But we hope those eyes return with interest to the stories we have to share. Throughout this book, we slip in and out of metaphor.[4] Sometimes we try on a term to see what it allows us to do. What becomes possible by formulating it as such? In which communities do we now gain traction? Who do we lose? These questions fill our ways of "making public" with a sense of hesitation and uncertainty. Our "impact" is not guaranteed and cannot be organized from afar[5] but emerges as a more tentative, worldly encounter. Metaphor comes from the Greek *metaphora*, meaning "to transfer" or "a carrying over," and that is what we hope to do. In this publica-

tion, we hope to carry over our thinking and doings from various particularities. But we have no illusion of controlling the reception of the transfer. That would be in bad faith with our commitment to relationality, but more so, it would suppress the surprising and innovative ways these texts may germinate at different times and places. Kimmerer[6] teaches us that when botanists go walking in the forests and fields, they say, "We are going on a *foray*." Building on that, we would like to invite you on a *metaphoray* through this book.[7]

But before we get there, first, a brief note on the design of this publication. The idea of the allotment garden played an important role in how we thought about bundling the different texts, images, and concepts in this book. We know the allotment garden as a place where many similar but different plots of land rub against each other, where tools are shared and dismissed, where boundaries are raised and knocked down, where food is grown, where projects fail, where animals are both cared for and kept out, and where there is no pristine, untouched nature but only nature-culture, written as one word. It is this place that informed our approach to weaving together the different manuscripts, images, and glossary entries making up this book.

In this publication, the plots of land you would find in a regular allotment garden make way for a variety of narrative plots. On the *metaphoray* through the plots, you are asked to take on the role of a gardener, following the tracks and trails throughout the book, which take unexpected turns and lead you to unfore-

3   Robin Wall Kimmerer, 2013, 124.

4   Donna J. Haraway (2004, 4) describes a similar sensation when reflecting on her "Otherworldly Conversations": "My situated knowledges tend to be recursively biological, and not even am I sure what is a metaphor and what is not."

5   See also how, within the same Erasmus+ project, another research team unpacked the keyword *Possibility*: www.transdisciplinarytuning.org/possibility.

6   Robin Wall Kimmerer, 2013, 46.

7   *Metaphoray* is a term coined by Robin Wall Kimmerer (2013, 46). Elsewhere in her book, Kimmerer writes: "I'm a plant scientist and I want to be clear, but I am also a poet and the world speaks to me in metaphor." If there is indeed a *but* in between that sentence, we would like to question the *but* and live with the tension it gives off.

seen destinations. Lean into it. You can observe from a distance and catch a glimpse of new ideas and practices, or you can completely immerse yourself in the book and dig your way through its layered contents. The images you will encounter throughout your journey came into being by feeding various keywords from the essays into an AI generator. Each image – being more than one, but less than many – lures you into asking more questions: What does it mean to be part of a collective? How do technologies and objects enter constitutively into our collaborations? How does the visual relate to the textual? And so on. The glossary entries are written by students from different disciplinary backgrounds, studying at different higher education institutions. The glossary offers a point of departure for conceptual explorations. It is not an attempt to establish a "common language" but rather a proposal to cultivate literacies, sensibilities, and languages in the commons.

The different elements of this publication resist being assembled into a neat coherence. They do not adhere to, for example, the "scalable" rationale of the regimes of cultivation found in greenhouses.[8] Rather, as touched upon before, their being-together resembles the rich paraphernalia of the human and more-than-human assemblages of the allotment garden. The different parts interrupt each other, draw each other in through new alliances, and gesture toward a hinterland of so *much more*. The fantasies of scalability navigate attention and efforts toward making and perceiving uniform building blocks, ready to be taken up anywhere, anytime. Both the aesthetics and politics of this book stand in opposition to the dreams of scalable precision. The attention, instead, is drawn to companionship in heterogeneity. If something

8   Anna Lowenhaupt Tsing, 2012.

"travels" to other communities of practice or "expands" its reach, then it is by virtue of its capacity to engage in new – always transformative – relationships. This is perhaps where we touch upon the meaning of moving through the book as a gardener. It is a request to wander through the collection with care and attention, on the lookout for opportunities to weave ideas, practices, and concepts into new, uncertain assemblies at different places.

The gardener we envision is not a gardener who gets to name all the beings in the garden.[9] Instead, our idea is colored by the figure of the "mad gardener," who makes a brief appearance in Donna J. Haraway's book *Staying with the Trouble*.[10] The gardener conjured up by Haraway is a chthonic gardener, chipping and digging away in a more-than-human alliance, committed to creating a compost pile for "still possible recuperating pasts, presents and futures."[11] The figure of the mad gardener captured our imagination: we empathized with its ambitions, its arduous laboring, and also its madness. The latter should be understood in the Old English (*gemædde*) sense of the word as: "out of one's mind." Mad gardeners are out of their minds: they insist on more-than-rational sensibilities when identifying and responding to the Hydra-like problematics we are faced with today.

These societal problems, oftentimes captured under terms such as *climate breakdown, soaring inequality, and pollution,* move with a dynamic disregard for our disciplinary and institutional borders. They play havoc with how we organize education and research. Our educational infrastructures, largely built upon rationalized and cognitivist modalities, creak and groan when their limits are tested. The contributors of this volume are not put off by a few

9   Naming and claiming, historically, often happened in one, violent movement. In *The Nutmeg's Curse*, Amitav Ghosh (2021) outlines how science "followed on the heels of empire builders" and readied the landscape, so to speak, for "effective extraction" (2021, 98). Kimmerer, in her article "Learning the Grammar of Animacy" (2017), juxtaposes the Potawatomi language with English. Potawatomi language vitalizes, whereas the noun-based English objectifies and silences: "When bay is a noun, it is defined by humans, trapped between its shores and contained by the word. But the verb *wiikegama* – to *be* a bay – releases the water from bondage and lets it live" (2017, 131).

10   Donna J. Haraway, 2016, 57.

11   Donna J. Haraway, 2016, 50.

cracks. Taking inspiration from the vegetation that finds its way through pavement cracks, the rifts and fissures are seized as opportunities to imagine and work toward new modes of teaching and learning. Following the figure of the mad gardener, we insist on the necessity of a richer, more-than-rational conception of knowledge. We seek to become "sensitized to our senses"[12] and allow ourselves to be "touched and affected by the issues"[13] with which we engage. In other words, without losing our heads, we get out of our heads and embark on a *metaphoray*.

12   See Irene Van Oorschot and Sophie Van Balen, this volume.
13   See Vivian Sky Rehberg et al., this volume.

SENSING CHANGE, CHANGING SENSE
Exploring Sensational Epistemologies for Transdisciplinary Practice

2.1 Taking up the Senses

In this essay, we explore the affordances of senses for Anthropocene research and teaching. Climate calamity, to the extent that it can be called an "object", consistently disrupts our habits of thought, as it exceeds disciplines, genres, and cognitive styles. In this context, both teaching and researching run up against specific *cognitivist* habits of thought. In order to craft an alternative, we wish to test the notion of the *senses* and speculate on its uses in sensitizing us to the Anthropocene, alerting us to otherwise imperceptible forms of politics, and crafting alternative futures. To what extent can the notion of the senses set our thoughts and practices in motion?

As feminist scholars active in various disciplines (philosophy, sociology, anthropology, and science and technology studies), we have come across the senses in different ways. We have learned to take the senses seriously as ways to attend to the world outside of a more dominant rationalism. The body and care – both crucial concerns for twentieth- and twenty-first-century feminism – draw our attention to bodily and sensational practices, of materially attending to others, and to affects. Sensitized, as it were, to the senses, we sought to explore climate change from this specific vantage point in a recent research project on the ways climate change is experienced and shapes everyday life in the city of Rotterdam, the Netherlands.[1] With our students and participants, we explored the questions: How does it feel to live in the Anthropocene? And how can we make our sensations public and political in order to craft livable futures?

1 This project is called *Voel je het Veranderen*, roughly translated as "Can You Feel it Change", and was funded by the Rotterdam NGO Rotterdams Weerwoord, which seeks to explore climate problems and solutions within the specific urban context of

Fig. [Anthropocene]

Fig. [Climate change]

Fig. [Sensation]

These questions strike us as acutely important, especially in light of what we consider a problematic emphasis on cognition and knowledge in the way we contemporarily frame climate change. Often, climate change is conceived as a problem *of* and *for* rational thought and knowledge. This gesture sidelines other modes of perception as well as non-scientific, non-expert practices of making and living in environments. As such, this cognitivist frame, situating knowledge in a select group of experts who are asked to enlighten the rest of us, not only is problematic in its technocratic politics but also represents a problem for transdisciplinary forms of study. Here, we are working on the basis of a conception of transdisciplinarity as a willingness to *stay with* – rather than gloss over or try to "solve" – the tensions and complexities that are part and parcel of the settings in which practitioners and learners from diverse practice communities come together. With this understanding of transdisciplinarity comes the necessity to not take scientific knowledges for granted and instead extend critical reflection to the "taken-for-granted schematics and habits of thinking, doing, and making"[2] that underlie both scientific and nonscientific modes of learning and knowing the world.

2   Tamara de Groot and Irene van Oorschot, 2020.

Worlds
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Understanding transdisciplinarity in this way, the specific problematization of climate change as a problem of and for knowledge becomes especially untenable. In part 2.2 of this piece, we explore this untenability in more detail, after which we move on to explore a series of concerns that come into view once we start taking the senses seriously: the senses as key to the production of

more-than-cognitive epistemologies of change and environments (2.3), the way sensation is distributed over human and more-than-human ecologies (2.4), and the potential publicities of such sensations (2.5). Having explored these avenues, we turn to the relevance of the senses in (re)thinking transdisciplinarity in our concluding notes (2.6).

2.2 Limits to Cognition

It is a truism by now that climate change presents us with seemingly interminable cognitive challenges. Climate change calls our attention to an entanglement of multi-scalar and multi-temporal processes involving a multiplicity of entities, from ocean currents to legal regulations, CO_2 emissions to consumer choices, vegetation patterns to human mobilities. In this sense, there is something *monstrous* about climate change, as it continually tests our capacities for knowing it, anticipating it, and perhaps finding ways to change course. Climate change seems too big to handle, too omnipresent to find an epistemic vantage point from which to witness it fully.

Yet this does not prevent us from placing inordinate levels of trust in scientific knowledges. "Trust the scientists": this slogan of liberal realism asks us to put our political faith in the methods and epistemologies of a highly select group of scientific experts. Additionally, public information campaigns seek to educate us about the costs of our actions for the planet – moves that suggest not only consumer choice but also the need for citizens to *better understand* climate change. Meanwhile, sociologists and social psychologists, reproducing this cognitivist frame, ring the alarm, noting a "gap" between climate knowledge and

Pharmakon
P. 189

Fig. [Climate change]

Fig. [Climate change]

Fig. [Sensation]

climate action that more information, more science communication, is promised to help "close."[3]

    But what if the problem is not a lack of knowledge? What if this insistence on knowledge is itself part of the problem? What if our faith in more, better knowledge actively stops us from seriously rethinking our place on Planet A? After all, the appeal to trust scientists tends to locate our salvation in their and their funders' hands: if only we keep investing in technology, we are promised, we may find ways to emit CO_2 *and* capture it, heat up *and* cool down the planet. Have our cake and eat it too. Yet this appeal to scientific knowledge directs our attention away, for instance, from those who have been living and theorizing ecological catastrophe, not least of whom are Indigenous peoples,[4] and from what we may – if we are serious about our apprenticeship – learn from them. In its technocratic impulse, the cognitivist frame also runs the risk of depoliticizing our responses to climate change and offering only capital-friendly consumer- and technology-oriented "solutions." But what if we want to invent other modes of living?

    For those interested in transdisciplinary didactics, there are additional problems with this cognitivist frame. Those working in transdisciplinary spaces know that scientific knowledge is far from monolithic. There is no single unified front of experts to turn to, not because they disagree on whether or not climate change exists[5] but because climate change *acquires differ-*

3   See e.g., Reto Knutti, 2019.

4   Elizabeth A. Povinelli, 2021; Leanne Betasamosake Simpson, 2017.

5   See John Cook et al., 2016.

ent realities depending on the disciplinary practices brought to bear on it. Climate change is, in a real sense, a different object for an oceanographer than it is for an urban sociologist; it is, to speak with Annemarie Mol, *multiple*.[6] If we conceive of transdisciplinary practice as working through the *tensions* generated by different disciplinary commitments and epistemologies,[7] the cognitivist frame of climate change falls short. All the more so if we bring in artistic practices, which offer alternative but no less urgent modes of experimenting with our existence. Again, questions multiply: How do we work with and through these multiple modes of knowing and experimenting with ourselves and the world?

    Trusting the scientists thus is not just "bad politics"– *bad* in the sense that it does not multiply our options – but also, bad didactics. It is in this specific context that we propose to think with the senses to explore how transdisciplinary practice may help us craft alternatives.

6   Annemarie Mol, 2002.

7   See e.g., Tamara de Groot and Irene van Oorschot, 2020.

Art-science
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2.3 The Sensing Body

Let us turn to you, reader. *What do you know about climate change?* There is a good chance you are inclined to answer this question by listing facts and figures encountered in newspaper articles, climate reports, or scientific studies. We would too.

    But what would happen, taking the above limits to the cognitivist frame seriously, if we changed the question – or our interpretation of it? Consider again: *What do you know about climate change?* Perhaps you have noticed that tomatoes in your city garden burned and dried out last summer due to the heat. Perhaps

you know that you couldn't swim in the city's small lake in late summer because it had become overgrown with blue-green algae. Perhaps you have not been able to sleep for several nights, as an unexpected heatwave came over your town, heating up your attic bedroom … What if, instead of asking about "knowledge" – by which we refer to the cognitive – we ask about experience, about sensation?

So, how does climate change feel? We asked this question to diverse focus groups in Rotterdam. In these conversations, we talked about urban, daily, and concrete experiences with climate change. We asked: Can you see, hear, smell, or taste the climate changing, and if so, where and how? More than once, a discussion arose on the differences between *weather* and *climate*. Were we not confusing the two? Some climate-concerned participants expressed their concern that confusing weather for climate would lead to incorrect conclusions – "when I was young, there were already a lot of storms" – and, in so doing, this thinking would narrow down climate change to only a question of immediately sensible weather. Here, we were charged with committing a category mistake: mistaking local variations in the weather for the more large-scale processes of climate change.

But how productive is this distinction between weather and climate exactly? Kath Weston,[8] in her work on the viscerality of ecological demise, suggests that it is not the confusion between weather and climate, nor the unreliability of subjective sensing, that "leads people astray." Rather, "[i]n practice and in bodily sensation, climate and weather often go hand in hand. […] [P]eople who use eyes, wrists, and perspiration to search out evidence of changing climatic conditions may not always be 'confusing' weather with climate so much as puzzling out the relationship between the two."[9]

8   Kath Weston, 2017, 122.

9   Kath Weston, 2017, 121.

Moving from an epistemology of cognition to one based in and on the human senses thus has repercussions not only for *what* is discussed but also for *who* can be approached as a knowing subject. Indeed, in asking where and how people could sense climate change, we tried to decenter the scientific experts and highlight our amateur bodies. With this conception of the sensing body, we may wonder what someone with asthma can tell us about air conditions in different seasons. Also, this conception opens up space to take amateur, embodied knowledges seriously. After all, do you know what a healthy and thriving tomato plant looks, feels, and tastes like? This emphasis on the sensing body also offers a direct way into climate affects, including anxiety and worry: What does it mean to concern oneself with the care for a newborn in a badly isolated city apartment? What parental worries bridge the intimate sphere of the household and the political?

The human senses, while always there, might need some training and attunement. *Sensibilization*, we might say. Can we find ways to mobilize our senses to notice things changing? How may we cultivate an *art of attentiveness*[10] to both other humans and the nonhumans with which we are entangled? Gardeners, for example, through working with soil, plants, and the living beings entangled with them, may seek to attune themselves to periods of drought or warming winters in order to – as one of our participants told us – time the planting out of her seedlings just right. This timing, in her experience, had become much more difficult, as she could count less and less on the predictable rhythm of the seasons. Such practices of and toward sensing climate change may require getting to know what it means to know with our senses, noticing those

10   See Thom van Dooren et al., 2016.

Rhythmanalysis
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Fig. [Climate change]

Fig. [Sensation]

Fig. [Climate change]

sensory impressions that may tell us something about the world beyond ourselves and leaning in on our bodies and the ways they are "weathering"[11] a changing urban and domestic climate.

11   See Astrid Neimanis and Rachel Loewen Walker, 2014.

2.4 From Senses to Sensation

The human body is a good place to start thinking about the senses, but the human body is never alone. It exists only in complex entanglements with other entities, both human and nonhuman. The oft-evoked *sentinel species* of the canary in the coalmine alerts us to animals, plants, and fungi that have their own, perhaps more acute, modes of sensing what we cannot. Sentinels are those who watch – who perceive, experience. If the canary in the coal mine was used specifically to keep humans from dying while digging up fossil fuels, other species alert us to the consequences of such extractions. They testify to the buildup of toxins in environments and to the pollution of habitats as well as to the exhaustion that accompanies working in speeded-up regimes of agricultural production and extraction.

Bees, in particular, are striking examples. Colony collapse disorder is an ill-understood, but increasingly frequent occurrence, in which honey bees leave their hive, queen bee, and stores behind. Meanwhile, bees kept for industrial pollination have the curious tendency to die *en masse*, exhausted by the speeded-up pollination schedules required of both them and their human handlers under conditions of agricultural competition and precarity.[12]

12   Jake Kosek, 2019.

But nonorganic materials play their part in sensing as well. It is here that we find the work of Jennifer Gabrys[13] on environmental sensing especially generative. Pointing to the fact

13   Jennifer Gabrys, 2012.

that forests, as well as animal populations, increasingly host sophisticated apparatuses of remote environmental monitoring and sensing, she argues that we need to account for the ontologically and politically productive work such sensing technologies do. These technologies are used to track a variety of objects and processes, from changes in temperature and humidity levels to migratory patterns and other animal behaviors. But in doing so, these technologies do not simply produce data; they also constitute environments and produce specific modes of experience.

Remote sensing technologies that detail canopy cover or losses in aboveground biomass, for instance, can be mobilized to account for carbon emissions as well as track down the spread of disease or practices of illegal logging.[14] As such, these technologies are instrumental in shifting and remaking the "threshold of detectability" of environments.[15] But such technologies also generate novel objects; for instance, ocean informatics has been instrumental in producing the "whole ocean" as an object of knowledge and governance.[16] Understood in this way, sensing technologies come to the fore as "generative ontologies that inform the experience and conditions that make sensation possible and changeable," and our changing environments are partially coproduced by novel information technologies.[17] It is for this reason that Gabrys notes[18] that incorporating technologies in our understanding of environments and their production must then also shift the attention away from the human senses to sensation: "Rather than studying 'the senses' as given, it may be more relevant to study experience and how distinct types of sensation be-

14   Clement Atzberger et al., 2020.

15   See Eyal Weizman, 2017.

16   Jennifer Gabrys, 2016; see Kathy S. Baker, Steven J. Jackson, and Jerome R. Wanetick, 2005.

17   Jennifer Gabrys, 2012, para. 25.
18   Jennifer Gabrys, 2012, para. 25.

come possible, and to consider further what modes of participation and relation these processes of sensation facilitate or limit."

Emerging from this understanding of sensation is also a conception of the human body as simply one specific occasion of sensation – but not necessarily a central one. Can we think of human sensations as enmeshed with, but also possibly displaced by, nonhuman sensations of environments? Can we sensitize ourselves to not only changing climates but also those modes of sensation that are not solely human but nevertheless play such defining roles in co-constituting the environments in which all of us live?

2.5 Sensation and Publics

As explored above, an epistemology of senses and sensation also raises urgent political questions. Can we find one another in shared vulnerabilities, in shared sensations? And if so, how may shared sensations, sensitivities and vulnerabilities inform action? Could the identification of shared vulnerabilities, of shared exposure, traverse the "gap" between knowledge and action referred to above?

In 2021, Dutch theater group Powerboat built a six-meter waterfall in one of the central squares in Rotterdam, viscerally demonstrating the difference between street level and sea level. Although everyone attending school in the Netherlands learns that the country lies meters under current sea levels, this knowledge has a rather abstract quality – a source of pride perhaps for the Dutch, but hardly thought-through as a reality that renders Dutch cities uniquely vulnerable to the rise of sea levels. With their installation, however, Powerboat brought this reality into everyday urban space, where it oriented people's attention toward

Eco-empathic
listening
P. 182

the heavy materiality of water and underscored the urgency of climate adaptation for this densely populated city. Here it is productive to think about such works of art along the lines set out by Noortje Marres'[19] seminal work on public formation and the role of materialities in such processes. Examining how eco-kettles are mobilized in sustainability projects, she underscores how such technologies are also active in the production of everyday environmental publics. We wonder: Is something similar at work in Powerboat's waterfall? In evoking shared vulnerability to water – and the inevitable rise of sea levels – does it not similarly contribute to public formation? Could an emphasis on sensing and sensation help us craft alternative publics, precisely when our political realities seem to become ever more fragmented?

And yet, as Timothy Choy[20] noted in relation to air quality in Hong Kong: "Breathing together rarely means breathing the same." We may share vulnerabilities, but not all vulnerabilities are shared. The "slow violence" of pollution, ecological degradation, and climate injury is unevenly distributed;[21] these human-made processes leave traces on some bodies and not others, building up in some communities and not others. This urges us to consider boundaries, but also the permeability of boundaries between bodies and environments, and between natures and cultures.[22] Increasingly, precisely these more imperceptible consequences, tracked and articulated by open-source technologies and citizen-science initiatives, are brought into

19   Noortje Marres, 2012.

20   Timothy Choy, 2016, para. 7.

21   Rob Nixon, 2011.

Boundaries
P. 176

22   Sophie Van Balen, 2021.

the political forum. The AirKit, for instance, was designed as an integrated and open-source sensing apparatus to aid citizens in tracking air quality by means of a particulate matter sensor and to foster collective action and organizing around air quality.[23] Both our bodies and technologies hence become involved in making issues public – in making publics – also and precisely where our predicaments are not shared, when exposure is unevenly distributed.

2.6 Feeling One's Way through the Anthropocene

In this piece we have highlighted how the senses can be productively leveraged to underscore the more-than-cognitive registers of human knowledge practices, the situatedness of the senses in broader nonhuman ecologies, and the crucial role that sensing plays in producing publics and mobilizing contestation. An engagement with the senses distributes expertise and knowledge over various actors instead of concentrating it in scientific experts. It also shifts the way we understand climate change, as it expands its zone of detectability to include nonhuman sentinels and sensors and as such, points to alternative political forms and forums to which we can bring our claims, from transnational environmental regulating bodies to smaller scales of urban governance. Indeed, it expands our understanding of the political itself, as it centers our everyday lives and our amateur bodies in the way we find common ground with each other as well as think, analyze, and share our differential experiences of exposure to change.

       To our mind, the senses as such allow for a productive entry point into the difficult work to be done. They moreover evoke a host of possibilities for transdisciplinary didactics. If

23   Sachit Mahajan, Jennifer Gabrys, and Joanne Armitage, 2021.

climate change is weighed down by its association with expertise and its rather intangible character, the senses and sensation point us in the direction of everyday ways of inhabiting the world, the ways these worlds are mediated and coproduced by technologies and the agencies of nonhuman life forms, and our more or less shared vulnerabilities and practices of making these public. Sensitizing ourselves, participants, students, and hopefully readers and co-practitioners to sensing, furthermore, calls for a range of future, possible engagements. What if an emphasis on sensing bodies leads us to examine how people produce environments and tend to others? Is it possible to envision our political responses to climate change as not solely a matter of parliamentary politics or grassroots activism but also a matter of micropolitical forms of *atmospheric care* as, for instance, transdisciplinary artists Hanna Husberg and Agata Marzecova are currently proposing in their project *Toward Atmospheric Care?* Or, how may we draw on the ontological possibilities of sensing technologies to bring into view imperceptible patterns of (uneven) environmental exposure and extraction? Where and how are people rethinking their entanglements with their environments, and where can we detect experiments in living with others and living otherwise? Transdisciplinary practices attuned to the senses and to sensation hold the promise of crafting multiple accounts, stories, and imaginaries of where and how we are living in the ruins on this damaged planet[24] and how and where we imagine

Matter
P. 187

24   Anna Lowenhaupt Tsing, 2015.

Fig. [Anthropocene]

Fig. [Climate change]

Fig. [Publics]

Fig. [Climate change]

Fig. [Sensation]

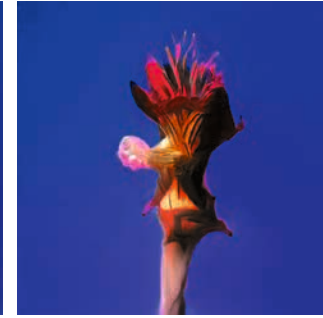and practice, if not salvation, then persistence and survivance.[25] Animated by the senses and nonhuman sensation, transdisciplinarity may well help us feel our way through the Anthropocene.
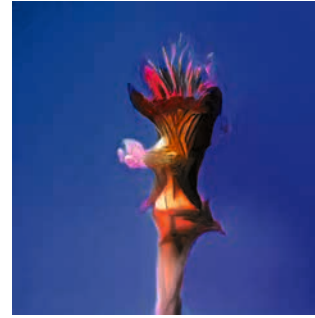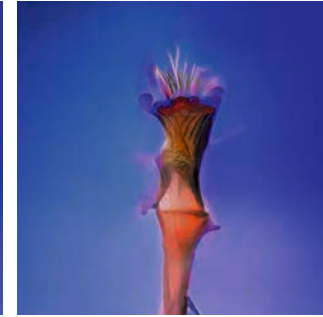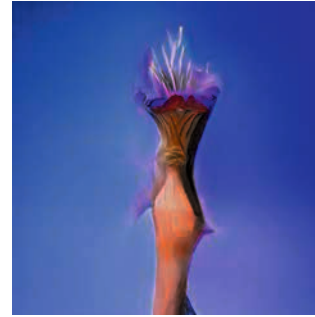
25   Elizabeth A. Povinelli, 2021.
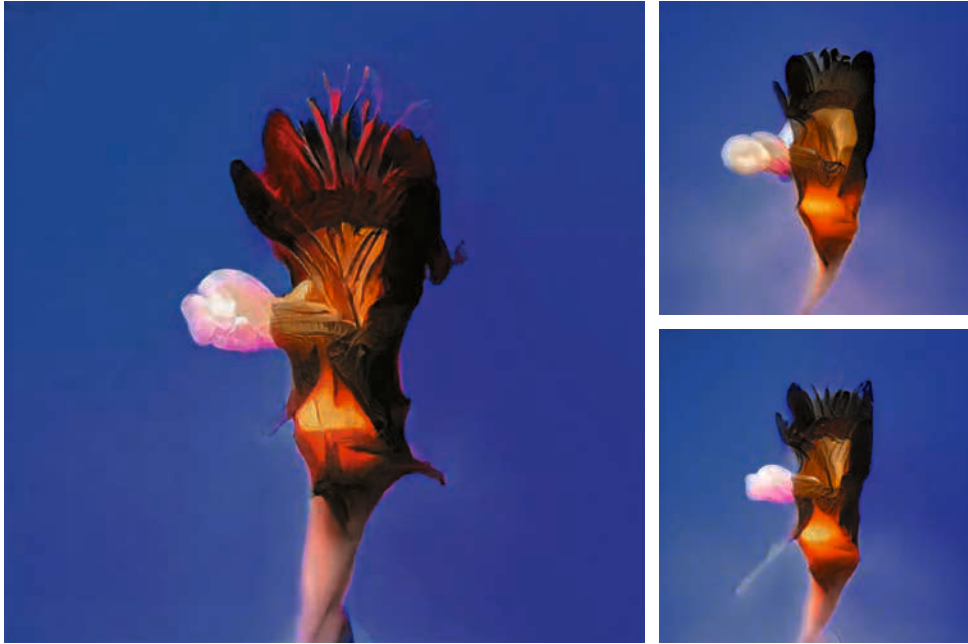

Fig. [Anthropocene]
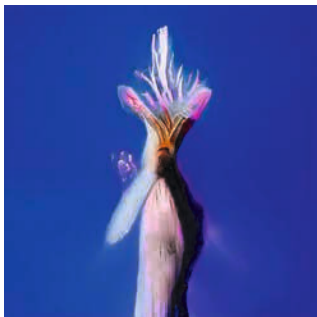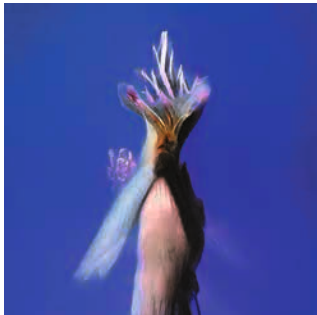
Fig. [Sensation]

Figs. [Anthropocene]
       [Climate change]
       [Publics]
       [Sensation]
       [Weathering]

(UN)TANGLING TENSIONS IN THE TRANSDISCIPLINARY CLASSROOM

Since 2019 I have been involved with developing and implementing an experimental transdisciplinary minor, *Re-Imagining Tomorrow through Arts and Sciences*, offered by the Rotterdam Arts and Sciences Lab (RASL).[1] The aim of this innovative minor is to create the conditions in which transformative learning can take place, by bringing together students and teachers from artistic and academic disciplines and collaboratively exploring new ways of "saying, doing and relating"[2] that defy and go beyond disciplinary structures. The educators with whom I have been working in creating the minor, as well as all the students I have taught so far in the minor, have expanded my thinking, teaching, and ways of doing research in such valuable ways that I could not have imagined before.

[1]   Founded in 2015, RASL is a collaboration between Erasmus University Rotterdam (EUR), Codarts University of the Arts, and Willem de Kooning Academy (WdKA) at the Rotterdam University of Applied Sciences (RUAS).

[2]   Stephen Kemmis, 2009.

At the same time, engaging with multiple modes of knowing and ways of working, as well as with myriad personalities and personal histories, can be frustrating, chaotic, and overwhelming, and navigating these (sometimes incommensurable) different frameworks takes commitment and skill. From the reflections and evaluations that followed the first edition of the minor, it became apparent that my colleagues as well as our students had had very similar experiences. It left us with the challenge of creating a coherent educational vision that would allow our differences to be generative; instead of aiming to resolve the tensions that emerged, we explored how tensions in transdisciplinary collaborations not only are unavoidable but must be considered *vital* to the transformative learning process that is required to produce new knowledge and ways of working.

Transformative learning, characterized as a rejection of old paradigms and the embrace of new perspectives and frames of reference,[3]

[3]   Jack Mezirow, 1985.

Fig. [Tension]

is inherently paradoxical: learners tend to rely on old and familiar frames and approaches when faced with the radically new and unknown, reinforcing existing structures and dynamics and limiting the possibility of change.[4] To move beyond this impasse, we have to learn how to think paradoxically: to hold and attend to the interdependency and complexity of the multiple tensions that define the transdisciplinary classroom. In the following text, I will first elaborate on how we attempted to do this in the RASL minor, by describing our pedagogical approach in more detail. I will follow up with an experimental account of a transdisciplinary collaborative project where I aim to "write paradoxically" across different zones of tension – in order to "stay with the tension" beyond the classroom and explore how we can engage in paradoxical thinking through writing.

4   Marianne W. Lewis, 2000.

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3.1 Provisional Pedagogies
in Zones of Tension

The RASL minor provides students and teachers with a space to experiment with *learning how to learn differently*. Based on the assumption that different types of knowledge have equal value, complex societal concerns are addressed through transdisciplinary collaboration, allowing for different ways of knowing (embodied, academic, experiential, artistic) to interact and combine in non-hierarchical ways. Collaboration within the team of educators (with backgrounds in the visual arts, the performing arts, and academia) closely resembles the learning trajectory of the students and is focused on creating a "third space" in the Dutch binary higher education system through

an *education-as-research* approach that re-thinks and re-makes pedagogy in a transdisciplinary educational setting.[5] In this way, "pedagogy becomes not an instrument to impart knowledge or standardized procedure that predetermines how teaching and learning take place, but rather a leading question and matter of concern."[6] By positioning education itself as the ongoing object of inquiry – before, during, and after each edition of the minor – we can continually explore and adapt our pedagogical approach, turning this inquiry into a transdisciplinary collaborative learning process that transforms pedagogy from a static and unalterable framework into *provisional* pedagogies that are multiple, situated, and temporary. This allows us to experiment, get lost, fail, and try again in iterative cycles.

5   Robin van den Akker et al., 2021.

6   Tamara de Groot and Irene van Oorschot, 2019, 4.

To resist the pressure and urge to structure and order in seemingly permanent ways and instead embrace provisionality, multiplicity, and wildness[7] in the curriculum and classroom, we must find ways to collaborate with one another without closing things down; at the same time, we must attend to the inequalities, power dynamics, and politics that come with transdisciplinary collaboration and education, especially when working with the notion of the equality of different knowledges. In re-imagining education and implementing it, the frictions, contradictions, and paradoxes that inevitably arise should not be avoided or ignored but instead be attended to carefully.[8] The second core element of our pedagogical approach is therefore the emphasis on learning in zones of tension:

7   Jack Halberstam, 2020.

8   Stephanie Springgay and Sarah E. Truman, 2018.

Fig. [Collaborative learning]

Fig. [Paradox]

Fig. [Tension]

Fig. [Tension]

Fig. [Zone]

Fig. [Zone]

"We […] work with(in) the frictions, conflicts and paradoxes inherent to transdisciplinary practice across and beyond the arts and sciences. These tensions emerge as a result of the coming together of people with different disciplinary backgrounds, ways of knowing, dispositions and practices. By doing so we aim not to gloss over such differences and tensions, but to make them productive. While there are differences between participating members in any collaborative setting, in transdisciplinary collaborations the acknowledgement of, and working with difference is essential because it makes visible disciplinary logics and paradigms. Difference in transdisciplinary collaboration manifests itself in zones of tension, where discipline-informed ways of doing clash with each other and with certain core aspects of transdisciplinary practice."[9]

The spatial metaphor of the *zone* is important here because it enables us to perceive and experience tensions as "complex interdependencies rather than competing interests,"[10] and it encourages us to map how they entangle and overlap. As subjects we are also part of the tensions we experience, and locating ourselves in zones of tension helps us immerse and situate ourselves in relation to them and other affected actors.

3.2 The Generative Potential of (Paradoxical) Tensions

While our instinct might be to avoid or resolve tension, researchers from a variety of disciplines have been focusing on the productive

9   Tamara de Groot and Irene van Oorschot, 2019, 4.

10   Paula Jarzabkowski et al., 2013, 249.

Fig. [Tension]

Fig. [Zone]

nature of tension and paradoxical thinking[11] in engendering social learning and systematic change.[12] In an educational context, we may encounter many different types of tension at different levels (institutional, interpersonal, curricular, and so on), and students and teachers experience and deal with them in various ways.[13] Paradoxical tensions offer particularly fruitful challenges because of their simultaneous contradiction and interrelatedness. We can define a paradox as a tension that is seemingly unresolvable: two irreconcilable opposites, two sides of the same coin, pulling away from each other. Taken apart, each side seems logical but when brought back together, they cancel each other out. This simultaneity (a both/and distinction) distinguishes paradoxical tensions from, for example, a dilemma (either/or choice).[14] To develop the capacity for paradoxical and complex thinking and avoid reinforcing old paradigms and frameworks, we must learn to recognize and avoid our instinctive approaches to dealing with tension. We can divide these approaches into three categories: 1) *resolving the tension* by trying to find a compromise or engaging with one side and ignoring the other, often leading to the re-emergence of the tension; 2) *rationalizing the tension* through labeling and categorization; and 3) *avoiding the tension altogether* by reverting to familiar ways of thinking and doing.[15] Instead, *staying with the tension* requires a commitment to creating space for exploring and discussing the affects and emotions accompanying the experience of tension, as well as facilitating the

11   Marianne W. Lewis, 2000.

12   Josephine M. Chambers et al., 2022.

13   David Carr, 1998.

14   Marianne W. Lewis, 2000.

15   Marianne W. Lewis, 2000.

Fig. [Paradox]

Fig. [Tension]

immersion into these zones of tension in experimental spaces and through open-ended inquiry.[16] This leads me to consider *(un)tangling tensions* as an approach to attending to the zones of tension in the classroom, which enables me to write about them in their interdependency and situatedness. Lewis and Dehler[17] point to the discrepancy between *representing* paradox in academic texts and experiencing paradoxical tensions in a specific context. In many of the available studies on paradoxical tensions, the tendency is to order and categorize them and, in more recent studies, map their connections in diagrams and other graphic representations to show their relatedness. This, however, does not capture the unsettling and confronting experience that engaging with tensions offers us in real-life experiences, and we can wonder whether this allows us to think in paradoxical ways at all. In this second part, I will therefore aim to bring up from the jumble of my teaching experiences several (paradoxical) tensions I encountered, and attempt not to resolve them but instead trace how they emerge – as they move from being latent to salient[18] – and, equally important, follow them as they disappear once again into other, entangled zones of tension. In doing so, I aim to avoid resolving the tension through simplification and ordering. Here I bring in the figure of the carrier bag as an analogy for an (un)tangling narrative strategy, proposed by science fiction author Ursula K. Le Guin[19] in her essay "The Carrier Bag Theory of Fiction." As an alternative to linear

16 Marianne W. Lewis, 2000.

17 Marianne W. Lewis and Gordon E. Dehler, 2000.

18 Wendy K. Smith and Marianne W. Lewis, 2011.

19 Ursula K. Le Guin, 1997.

narrative structures, *a carrier bag narrative* is entangled, jumbled, and messy – "full of beginnings without ends, of initiations, of losses, of transformations and translations, and far more tricks than conflicts, far fewer triumphs than snares and delusions […]."[20] In addition, to come closer to experiencing tension and paradox while writing and reading, I play with the ambiguity of language, taking inspiration from how Sarah E. Truman thinks with *Janus words* or auto-antonyms: words that are their own opposites. Truman uses the concept of the *inhuman* to trouble humanism, which can be interpreted as both not-human as well as being of the human, creating a "frictional thinking space."[21] In a similar vein, I use brackets to write oppositional meanings simultaneously and encourage paradoxical thinking.

20 Ursula K. Le Guin, 1997, 169.

21 Sarah E. Truman, 2021, 5.

3.3 (Un)tangling the Tensions of Transdisciplinary Collaborations

During the 2021 edition of the RASL minor, one of the transdisciplinary student teams started to (mal)function early in the process. Since they had difficulties planning meetings and having all members present, they could not manage to get properly started with their collaborative project, nor could they find the time and space to get to know each other and experiment. As is often the case, there were a variety of factors causing these problems, many of which could not be easily resolved. The collaboration did not work as collaborations are supposed to work, and the motivation and enthusiasm the students had upon entering the program started to vanish very quickly, especially when they compared themselves to other teams.

Fig. [Paradox]

Fig. [Tension]

Fig. [Zone]

Fig. [Paradox]

Fig. [Tension]

Fig. [Transformation]

What type of activities and learning are valued and which ones are not? And who gets to decide this? What space is there for non-productivity, getting lost, care work and informal learning?

```
Assessing transdisciplinary work, particularly when
the arts and sciences meet, quickly surfaces tensions
that might otherwise remain hidden. Working on the
RASL minor with my colleagues from an art academy, an
academy for performing arts, and different social sci-
ences and humanities faculties, brought out the dif-
ferences in how and what is assessed and how this
influences curriculum design and the learning process.
When the aims, criteria, and form of a collaborative
project are established in advance, anything created or
happening outside these predetermined boundaries loses
meaning in relation to the learning process. What
we assess determines what counts and what has value.
Some of the frustration of the students in the climate
change group came from the inability to start the
"real" work on their topic, as their attention was fo-
cused on their (in)ability to come together as a group
and start producing. Harney and Moten[22] use the term
study to refer to learning that takes place outside the
temporality and spatiality of formal educational insti-
tutions as a collaborative practice of unlearning
that takes place in the undercommons of the university.
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22 Stefano Harney and
Fred Moten, 2013.

The overarching complex societal concern that had brought the team members together was how to deal with the complexity of climate change. It was both the only aspect of their project they could all agree upon *and* what kept them from making any decisions: the very problem they wished to overcome (paralysis brought on by the immensity and complexity of climate change) paralyzed them in their efforts to overcome it.

　　　　　　After a few weeks of struggling and not being able to get much done, the team decided, on the advice of their tutors, to split up into smaller work groups and research particular concerns

and smaller topics with the idea that they would at one point gather and synthesize their findings. It was an attempt to compromise and find a solution that would let the students regain some of their motivation and productivity. While creating this temporary structure allowed the students to explore their individual interests for a short period of time, the same old difficulties arose the moment they (re)grouped. Agreements were not kept, students failed to attend meetings, and the incompatibility of topics and approaches worsened. The need to come together and create something (un)expected was becoming an increasingly urgent matter to those students who were present and contributed, and they felt more and more frustrated and annoyed with the other students. Those students, in turn, disengaged even more.

Matter
P. 187

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Study offers a way of holding the tension between the
dominance of standardized and formal learning and the
value and importance of unmeasurable informal learning.
Study escapes the disciplining forces of delineated
courses and programs that expect students to follow
predetermined trajectories toward carefully formulated
outcomes measured according to standardizing rubrics
and criteria. It also allows us to think about the
tension between "objective", factual knowledge and
experiential, embodied knowledge, and between the dif-
ferent modalities of knowledge transfer, while trou-
bling the distinction between what is supposed to be
thought and discussed in the classroom and what happens
outside of it.
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When do we consider a team to be (un)successful or (dys)functional? What criteria can we introduce that troubles this distinction?

As a last resort, in the week before their final presentation, we (students and teachers) gave up the illusion that we could find a silver bullet solution to their teamwork predicament and teased out how to see the tensions as something that might generate new insights. I did not know what this would mean for the project, nor did the students who were present (half of the team did not show up for this crucial meeting).

> When creating, implementing, and adapting the RASL minor, we pondered how to assess and value the complexity of learning while satisfying the examination boards of the participating institutions that require grades at the end of the program. In addition, students who want or need to maintain a high grade point average (for example, to be accepted to a Master's program) are often not willing to take risks with the process and outcome, and this can clash with students who are more used to (and/or value) experimentation and open-ended inquiry. As a first intervention, we shifted the focus from outcome-based to process-based learning. The students' final presentations, as well as the grading criteria, were focused on their process (of which their projects and any outcomes were a part), which meant that even if they had "failed" to meet any of their initial aims related to their topics, they would still be able to reflect on the ways in which they had approached their project and attempted to learn differently together.

At the final presentation, as expected, the team members present had not miraculously turned into a big happy family. However, they showed that they had made a final attempt to explore the generative potential of the tensions and differences inherent to their team; in accepting the tensions that had previously plagued them (with the added pressure of the deadline), they had been forced to find connections with each other in different ways. They presented an insight that showed learning on a deeper level: the struggles they

Fig. [Tension]

faced as a team trying to work around the concern of climate change were similar to what they saw happening at governmental and global scales in the utterly inadequate responses to climate change. It was this frustration with the inaction of those in power that had brought them together around the topic, and now they realized they were reinforcing those very same dynamics. In addition to a short film in which they presented their process and these insights, they also collaboratively created a wooden presentation tool that could capture multiple incommensurable perspectives and approaches in different modalities and allow the users to make new connections. During the presentation, the tensions between the different disciplinary approaches, skill sets, and personalities of the team members were palpable. These tensions, to some degree at least, had also been accepted by the team and became the focus of the collaborative project instead of being hidden in the basement of team failures. In their presentation, the team courageously held the tension and offered the audience the opportunity to witness and learn from the tensions they had encountered.

> While it created more flexibility for the students to venture into different paths of inquiry, the emphasis on process in the assessment had the unintended consequence of turning the process into the outcome of the learning trajectory. Instead of holding the tension between process and outcome, we tried to resolve the paradox, which led to an intensification of the outcome-side of the process instead of the outcome of the tension. In addition, because we still had to grade according to predefined criteria, students still experienced failure if they did not receive a passing grade. To return to our pedagogical approach of working in zones of tension, I therefore developed a learning trajectory around assessments for the 2021 RASL minor, in which I collaborated with the students in designing their assessments. This trajectory was framed as an open-ended inquiry into alternative

Fig. [Paradox]

Fig. [Tension]

Fig. [Zone]

ways of assessing in transdisciplinary education and
focused on increasing student agency and assessment
literacy to make visible, address, and stay with the
tensions that arise in assessment practices. Again,
we had to come to terms with not having silver bullet
solutions to our predicament and recognize that as-
sessing in new ways brings forth new zones of tension.
And so we commit to staying with the tension.

3.4 (Never) Ending

In the short (un)tangling exercise above, I ventured into the over-
lapping zones of tension of transdisciplinary teamwork and assess-
ment practices in an innovative transdisciplinary minor. I hope this
approach of writing about zones of tension draws attention to the
simultaneity as well as complexity of (paradoxical) tensions in the
transdisciplinary classroom.

Recognizing and explicating tensions are important
steps in a transdisciplinary transformative learning
process. However, it is the hard work of accepting
and staying with the tensions that arise that pro-
vides us with the opportunity to develop the capac-
ity to think paradoxically and create an experimen-
tal space where new insights and approaches can
emerge. To do so, and to avoid disciplining ourselves
according to existing structures and paradigms, we
have to keep untangling and tangling the tensions
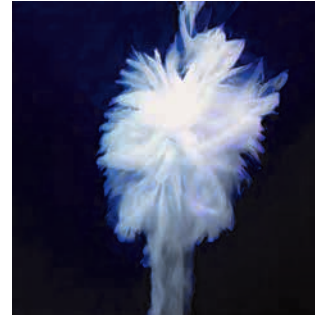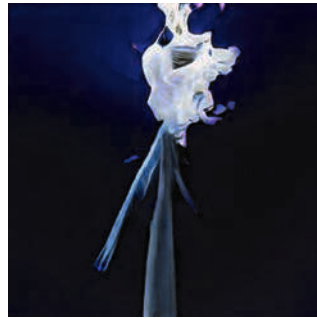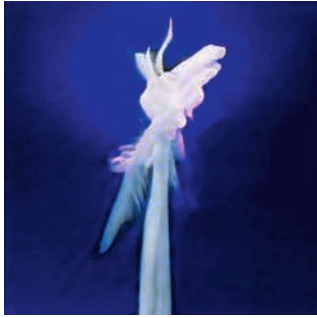in which we find ourselves.

Pharmakon
P. 189

Fig. [Tension]
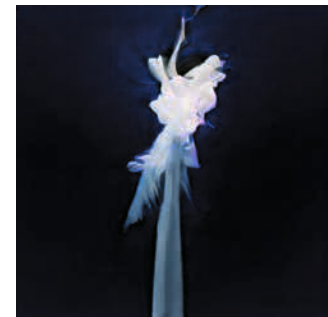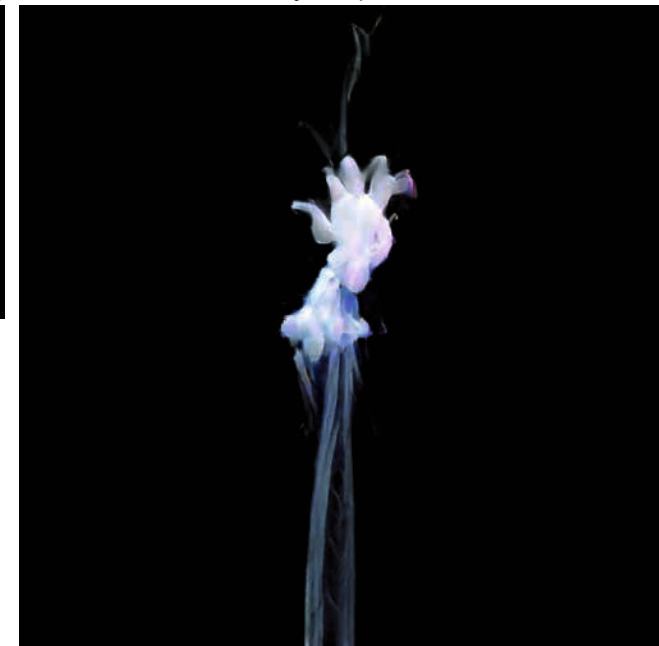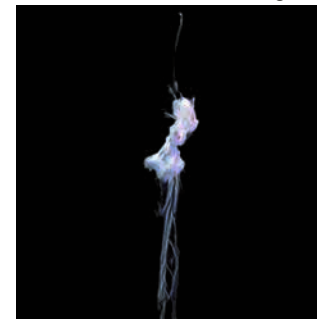
Figs. [Collaborative learning]
      [Paradox]
      [Tension]
      [Transformation]
      [Zone]

FROM CROSSING TO GRAFTING
Boundaries and Blends between Art and Science

"As a project maker, you don't plant gardens," says Alexander Kluge in a conversation with Claus Philipp. Those who do projects "investigate foreign countries, […] bring knowledge home, […] carry knowledge from the capital to a remote place where it is of some use."[1,2] Gardens, on the other hand, require the constant presence of sedentary people, the daily care of what is to grow and flourish there. Yet both – projects and gardens – are not just harmless undertakings. While project-making can be associated with the human capacity to "spread itself, as it were, infectiously over the world,"[3] the garden is, by definition, an enclosed terrain that demarcates itself as a marked possession from other territories. It is only because it is fenced in that one can be driven out of it, that access to it can be denied. So how can the garden become a model for transdisciplinary project work?

The garden is an artificial product made of natural products; it is artfully created nature. But what grows in it can hardly be completely tamed. Trees grow over the fence, weeds grow under it, shrubs throw their seeds into the air, and troublemakers find a way into the demarcated area. "It is no longer mine, […] if there is a hole in the hedge […]," writes Michel Serres[4] in *The Parasite* – and there is bound to be a hole somewhere: "The fact that there is always a hare in the garden, an insect in the vineyard, or a serpent in Eden proves that they [the systems] are open."[5] What belongs in the garden and who is one of the intruders, where it ends and where foreign terrain begins, so where

1   Unless otherwise noted, all translations are my own.
2   Christian Reder, 2006, 14.

3   Christian Reder, 2006, 16.

Eco-anarchism
P. 181

4   Michel Serres, 1982, 82.

5   Michel Serres, 1982, 84.

Fig. [Fencing]

Fig. [Growing]

it becomes a project itself, so to speak, is by no means clear. Transdisciplinary work has to deal with such borderlines, with sharply drawn as well as fuzzy ones, with their maintenance as well as their questioning.

With two characteristics of the garden and two cultural techniques of gardening, the aim is to provide an insight into the references to the sciences as we make them in teaching in the MA Transdisciplinary Studies at the Zurich University of the Arts (ZHdK).

4.1 Fencing

Students in the MA Transdisciplinarity Studies often begin their studies with the desire to transcend already experienced boundaries and limitations in their previous fields of activity and to branch out into other fields. Such desires can also be directed unspecifically towards exchange with "the sciences." In the first semester, we initially address such wishes less with the intention of paving the way towards their fulfilment. Rather, we discuss possible obstacles and challenges that can accompany the crossing of disciplinary (and other) boundaries. Our guiding assumption is that the willingness and ability for disciplinary reflection is a prior condition for acting in transdisciplinary constellations. Only the recognition of different ways of thinking, systems of rules, divisions of labour, and hierarchies opens up the possibility of changing or transcending them. So first we fence in and distinguish gardens that are separated from each other. With the focus on literature from science and technology studies, references to the sciences are part of the study programme from the very beginning. In addition to the teaching of formative definitions of transdisciplinarity stemming from the philosophy of science – for the German-speaking world, these are, for example, the works of Jürgen Mittelstrass – we deal in detail with Ludwik Fleck's *Einführung in*

Fig. [Fencing]

die Lehre vom Denkstil und Denkkollektiv.[6] Even though Fleck's main interest is directed at the disciplinary order of the sciences, his thinking about "thought collectives" repeatedly points beyond this and also includes non-disciplinary "moods communities" whose inclusive and exclusive social effects are comparable to those of scientific disciplines. This raises questions about parallels and differences between the scientific and art systems, as well as other differences that essentially structure the social. Theodor W. Adorno's[7] essay "Art and the Arts" and Pierre Bourdieu's[8] concept of the habitus have repeatedly proved productive for a deepening of these questions. They not only enable reflection on one's own socialisation and that of fellow students, as well as the negotiation of historically contingent differentiations of academic disciplines and art fields, but also raise questions about their topicality and their theoretical and thematic scope.

Interests in the philosophy of science play less of a role than the concern to meet the challenges of the present with adequate and relevant forms of knowledge and processing. With more current texts, which are often already more or less known to the students and are of declared interest to them, we explore different ways and motives of crossing disciplinary boundaries. We read authors assigned to feminist science and technology studies[9] and look at attempts at other forms of academic approaches such as Saidiya Hartman's critical and speculative fabulation or Anna Lowenhaupt Tsing's multispecies ethnography. Their methods

[6] The full title of the original German edition is *Entstehung und Entwicklung einer wissenschaftlichen Tatsache: Einführung in die Lehre vom Denkstil und Denkkollektiv*, Ludwik Fleck, 1935. The subtitle is missing from the English edition: *Genesis and Development of a Scientific Fact*, Ludwik Fleck, 1979.

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[7] Theodor W. Adorno, 2003.

[8] Pierre Bourdieu, 1996.

[9] E.g., Donna J. Haraway, Karen Barad.

are often difficult to assign to a single discipline in the humanities or the natural sciences. Nevertheless, we try to take into account and differentiate the disciplinary and discursive backgrounds and contexts on which the works are based and in which they position themselves, as well as those in which they are received. We compare them with works by authors whose backgrounds are in the arts, or with those of earlier generations that can hardly be fitted into a particular genre, and ask about the intentions that led them to move across established categories.

4.2 Let Grow

One of these older authors is the German writer, film and television maker Alexander Kluge, quoted at the beginning, whom I have allowed to appear so prominently here not only because his diverse cinematic and literary works are the subject of repeated discussion in our course but also because he uses the metaphor of the garden often and, at first glance, in a confusingly inconsistent way. At one point, he urges filmmakers to leave the garden paths and hit the bushes instead. "In the present situation," he says, "there is plenty of refined entertainment – refinement of 'serious' topics (*gepflegtes Problem*) too – as if the cinema was a stroll on the garden paths of a park."[10] Elsewhere he argues for walking on garden paths "which involves sensing, guessing, wandering, and strolling," which contrasts with the always purposeful A to B journeys on streets and highways that make every side issue disappear."[11] He therefore considers the establishment of closed gardens – *hortus conclusus* – as places that are not sub-

10   Alexander Kluge, 2012b, 34.

11   Alexander Kluge, 2019, 59.

ject to the exploitation principle of arable farming and monoculture to be necessary.[12] He compares the garden with the understanding of his authorial work, whose method is essentially montage. "The coherence of a garden, that is montage," and, according to Kluge,[13] one does montage not "out of the desire to dismember, but out of respect for the fact that something grows of itself." As an author, he describes himself as a gardener, which he categorically distinguishes from the figure of the tamer or trainer [German: *Dompteur*]. The gardener is concerned with biodiversity, with the coming together of different organisms whose stubbornness cannot simply be inserted into a superordinate context of meaning. They take shape in their own movements and reciprocal relationships. "Often they stand in neighbourhood, constellation or opposition, in repulsion or attraction to something else."[14] In his works, Kluge brings together different media, types of texts, quotations, and materials through which one is supposed to move, like through a garden, and brings into context that which has to do with one's own life.[15] "You do not have to understand it; you only need to walk through it. The garden is not there to be encompassed. Narrated differences, that is our work."[16]

Our teaching activity is thus aptly described. Narrated differences arise not only on the basis of the content and materials presented by the lecturers but also – and perhaps more importantly – on the heterogeneous backgrounds, abilities, and interests of the students and the corre-

12   Alexander Kluge, 2011.

13   Alexander Kluge, 2012a, 26.

Care I
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15   See the preface (Vorwort) in Alexander Kluge und Oskar Negt, *Geschichte und Eigensinn* (1981, 5): "Aus dem Umfang mit dem Stoff ist eine Massierung entstanden. Mehrfach haben wir überlegt, ob wir, statt *ein* Buch zu schreiben, den Stoff auf *mehrere* Bücher verteilen. Dagegen spricht das Hauptinteresse unseres Buches: Die Kategorie des Zusammenhangs. Wir vertrauen also auf eine entspannte Aufmerksamkeit des Lesers. Vom Leser wird bei diesem Buch Eigeninteresse erwartet, indem er sich die Passagen und

Kapitel heraussucht, die mit seinem Leben zu tun haben." – "The volume of material has become a mass. Several times we considered whether, instead of writing *one* book, we should spread the material over *several* books. The main interest of our book speaks against this: the category of connection. So we trust in the reader's relaxed attention. The reader is expected to be self-interested in this book by picking out the passages and chapters that have to do with his or her life." The English edition *History and Obstinacy* (2014) contains a different preface.

16   Stuart Liebman, 1988, 54.

17   In German, the word "Wissenschaften" includes both the natural sciences and the humanities. Here, both are meant.

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18   Ludwik Fleck, 1979.

spondingly different contexts in which they move. Trusting that – as in Kluge's gardens – something will grow out of it by itself and without our intervention is a fundamental attitude of the teachers in the study programme.

Letting it grow first often also applies when we work together in cooperative practical seminars with scientific[17] study programmes. The requirement is usually limited to the minimum of exchanging information about the different approaches, be it in smaller mixed teams or in fixed presentations in the plenum. What inevitably changes in the process, even when there is no closer collaboration between art and science students, is the perception of similarities and differences. It happens, that the two groups of students, who perceive each other as very different, are seen by the other as part of a social bubble with the same use of language and the same habitus. This is a valuable insight. The strangeness between different cultures of knowledge postulated in the theoretical texts read earlier, which was previously a hypothesis, possibly a mere assertion, now proves to be quite real. If cross-study-group cooperation nevertheless occurs, it is usually based less on a common interest in a particular topic than on mutual sympathy or, as Ludwik Fleck[18] puts it, on a perceived "mood fellowship," which can also be based on shared lifeworlds and interests outside the academic field. Time and space for informal exchange between those involved in a cooperation project, therefore, favour the formation of interdisciplinary teams. The extent to which such

Fig. [Growing]

extra-professional fellowship can sustain the joint development of a work project can only be seen in its practical testing.

4.3 Crossing

While in some definitions, interdisciplinarity is understood as the investigation of an object with the methods and questions of the disciplines involved, in transdisciplinary research projects, it is about the joint development of new methods based on an equal exchange between all participants, among whom stakeholders from the non-academic sector can also be present. In the process, a third thing emerges that cannot be clearly assigned to any of the participating fields of interest and expertise. Often – even when it is a matter of bringing together art and science – one speaks of *hybrids* or *hybrid art*. Since the term hybrid is used in a wide variety of contexts today, it is no longer necessarily associated with its origins in biology. As a crossing of different species, hybridisation is a cultural technique used in agriculture and horticulture. However, working out such a "third" in a figurative sense takes time, which is hardly sufficient in one-semester teaching formats. In cooperation projects with scientists, however, we try to create a space to explore the possibilities and obstacles of such hybridisation processes.

We recently conducted a practical module with students and lecturers of agricultural and environmental sciences at the Swiss Federal Institute of Technology (ETH), in which we looked at the Entlebuch, a UNESCO biosphere reserve located in central Switzerland. Biosphere reserves are considered model regions committed to sustainable action in the areas of the environment, economy, and society. The students familiarised themselves with the region and its development goals through research and a series of presentations by local actors, and then developed their own work topics in teams or on their own. The ETH students were given a set of guidelines to

Fig. [Hybridisation]

follow when developing a research plan, which we also handed out to our students. They were required to formulate a problem definition, research questions, methods for data collection, and an evaluation. Contrary to expectations, all the ZHdK students involved wrote a research plan without any objections. Usually, the "problem-orientation" of transdisciplinary research activity postulated in many definitions already gives rise to the discussion: Artists would not necessarily work on problems, certainly not with the intention of solving them. And even the mention of "research questions" is usually met with resistance by the students. Their works are rather about practices, affinities, and tentative search processes that cannot be translated into questions to which answers can be given after a work has been completed. The fact that the art students made an effort to submit a research plan this time may have to do with the mood fellowship that formed between them and the ETH students during a two-day stay in Entlebuch at the beginning of the project.

The work projects of the two student groups showed similarities in some aspects but differed markedly in others. An ETH and a ZHdK team dealt with the almost identical topic of the values of the landscape for locals. Both teams investigated which specific places in the region are considered by the locals to be particularly worthy of protection and of particular value from a subjective point of view. Emotional and aesthetic criteria therefore played a decisive role. The ETH students worked with a standardised online questionnaire, which they asked the residents to answer by means of a postal mailing and flyers. They thus tended towards a quantitative survey, the results of which were presented in an overview map in which the named places were entered according to their frequency. The ZHdK students met with selected residents. The participants took the students on extended walks and guided them to their favourite places. The ETH students were interested in ascertaining any changes in the perception of the landscape due

to the measures associated with the mandate for a biosphere region. The ZHdK students wanted to check whether the ecological aesthetics developed by Gernot Böhme[19] could expand the sustainability discourse and to what extent the category of the atmospheric, in which a unidirectional relationship between subject and object is cancelled out in favour of an in-between, implicitly plays a role with their interview partners. This team also produced a map in which the locations were recorded. Instead of generalisations, however, they retained the particularity of the individual relationships between people and places by condensing the contents of the conversations into poetic texts.

19 Gernot Böhme, 1995.

Another ETH team investigated farmers' understanding of and relationship to the soil they farm, using a process we would call *aesthetic strategy*. Using a bioacoustic instrument, they collected the subterranean soundscapes of different soil types, listened to them with the interviewed farmers, and had the farmers compare the sound of their soil with the sounds of the others. This sensory approach served mainly as a medium for entering into qualitative interviews intended to shed light on the farmers' different, even non-rational, relationships to their land. As a research outcome, the team presented the results of a qualitative content analysis of the interviews. It led to a limited number of differentiated types of relationships to the soil, which also provided information about different understandings of the profession as a farmer. The intrinsic aesthetic value of the sound files was hardly given any importance in the results. This is where scientific approaches differ from artistic ones. In the latter, the applied procedures themselves often form the centre of the work, without a specific insight being gained and explicated from them.
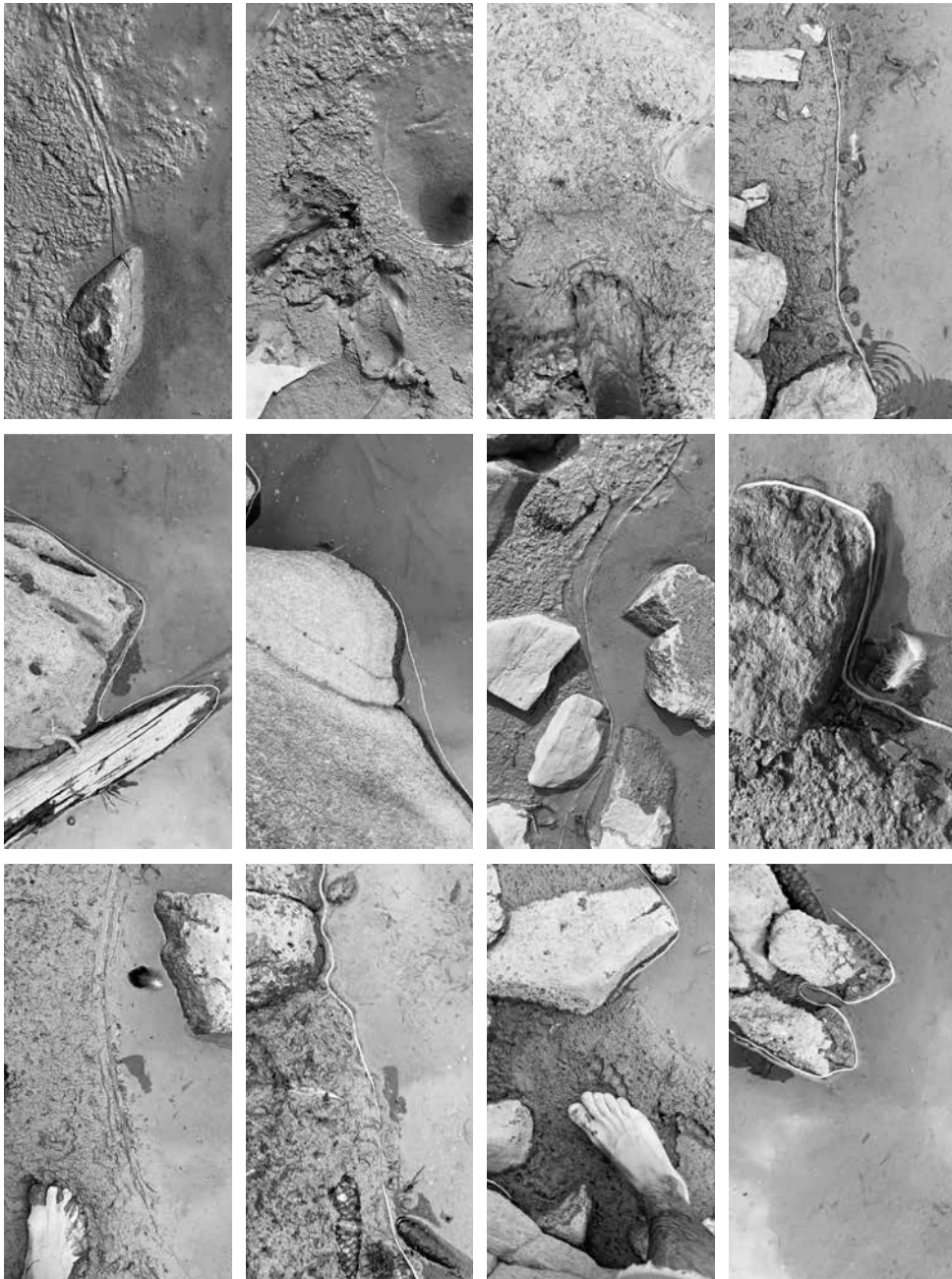
Figs. [1–12] Film Stills from *Poetic Cartography*, Video, 0:20:47, Adrián Bracho, Jehisson Santacruz, 2022

An example of such an approach is the work of two ZHdK students who dealt with the only natural lake in the region, which is only marginally mentioned in the communication media of the biosphere. Their project was based less on a question than on the intention to explore the lake, to experience it physically, and thus to give it a new value. The two students hiked to the higher lake several times, collected materials, and made written, photographic, and film records until they decided to measure the outline of the water body with a string. The fact that this took them many hours was not so much due to the size of the lake, with a circumference of about 230 metres, but rather to the decisions that had to be made continuously about where its contours ran. The muddy shore, where water and land merge without clear boundaries, required them to determine the course of the shoreline at every bend and stone on the bank. Finally, the two circumnavigated the lake with their smartphones and recorded the laid-out string.

The result was a twenty-minute video with a single shot.^Figs. [1–12] Afterwards, they reeled the string back up and brought it down to the valley, where it was unwound on the occasion of the presentation. The work undoubtedly has to do with a critique of representation. It raises questions about what remains of the original in media transmissions and cartographic or other surveys. By laying out the string elsewhere, it is impossible to reproduce the outline of the lake with its countless curves and bends. But the musty smell of the string, which had lain in the damp for hours, put the audience in sensual proximity to the body of water.

4.4 Grafting

These works are not hybrids between art and science. Nevertheless, elements can be found in them that could also be assigned to the respective other field. This leads to the question of whether another

Fig. [Grafting]

cultural technique of gardening, *grafting*, might not be better suited as a metaphor for possible results of cooperation between the sciences and the arts. Uwe Wirth, who has studied the two terms hybridity and grafting as "catalysts of theory-building processes through which both subject areas and approaches (and associated: questions) are modelled,"[20] distinguishes between two different logics of the two terms. While the formula for hybridisation processes is "from two make three," the formula for grafts is "from two make one." In crosses between two different species, there is a mixing of genes, which is not the case in grafting. In grafting, two independent organisms are joined together in such a way that they form a functional unit. Essential here is the interface, "the need to organise an 'in-between'" and "to create transitions to enable the circulation of juices and forces."[21] Figuratively, it is the rupture, the breaking out of elements from one context and their insertion into another, that changes their function. Grafting remains something assembled – a montage. The trunk rooted in the ground is, as it were, the host for what is grafted onto it. A hybridisation of art and science is perhaps not what we should strive for. A mutual grafting, however, could increase the biodiversity of both fields.
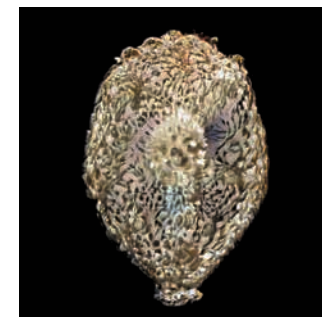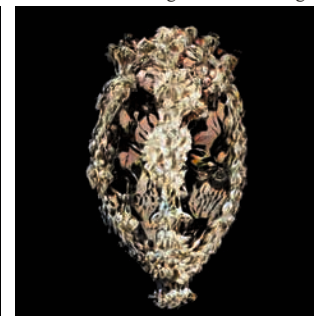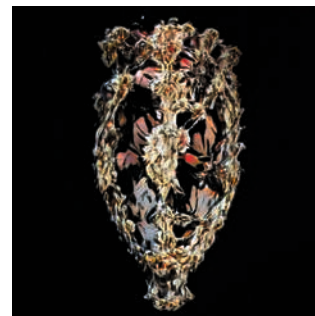
20   Uwe Wirth, 2011a, 151.

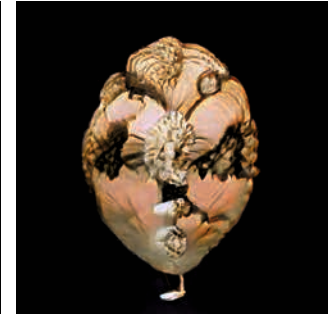1/3 Cormus
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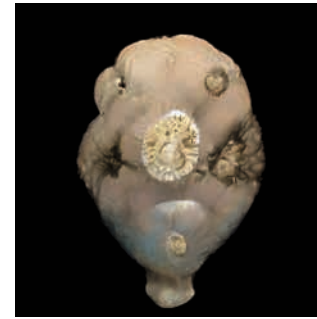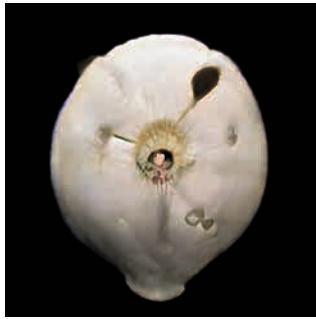21   Uwe Wirth, 2011b, 11.

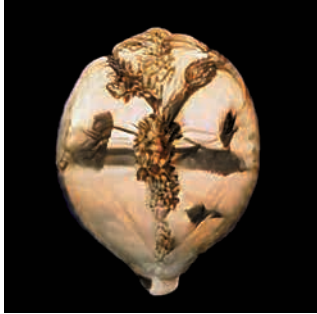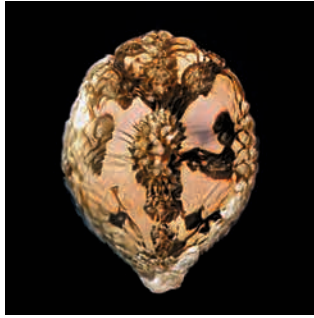Fig. [Grafting]

Fig. [Hybridisation]

Fig. [Montage]

Figs. [Fencing]
      [Grafting]
      [Growing]
      [Hybridisation]
      [Montage]

REFLECTIONS ON TRANSDISCIPLI-NARITY
Between and beyond Theory and Practice

"Someone who does not see a pane of glass does not
know that he does not see it. Someone who,
being placed differently, does see it, does not know
the other does not see it."

Simone Weil

Contemplating the implications of transdisciplinarity, not only as a theoretical object of study but also as a practice, discloses several obstacles to its substantially informed usage as a term. In the absence of a settled corpus of research regarding the concept, and its wide use in today's world of arts, academia, policymaking, and so on, I will attempt here to engage with transdisciplinarity by investigating the term through a variety of scholarly approaches. Furthermore, I will be examining shortly what philosophy can contribute to the project of transdisciplinarity and provide an understanding through which the concept is most likely to be effectuated sustainably in and outside the traditional sciences.

The first emergence of transdisciplinarity as a concept took place in 1970 when the Organisation for Economic Co-operation and Development (OECD) and the French Ministry of Education jointly facilitated the first conference on transdisciplinarity held at the University of Nice.[1] Here, psychologist Jean Piaget is often credited as having coined the concept, describing it as a "stage succeeding the stage of interdisciplinary relationships […] which would not only cover interactions or reciprocities between specialised research projects, but would place these relationships within a total system without any firm boundaries between disciplines."[2] However, differing conceptions of this new concept already start to compete with

1   Jay Hillel Bernstein, 2015, 2–3.

2   Jean Piaget, 1970, 135.

Fig. [Philosophy]

Fig. [Theoretical]

Fig. [Transdisciplinarity]

each other during this first conference. The engineer Erich Jantsch and mathematician André Lichnerowicz both take transdisciplinarity to be an all-encompassing discipline of its own.[3] Advocating for Piaget, theoretical physicist Basarab Nicolescu takes issue with the latter approach for its being prone to becoming a "hyperdiscipline" among the many existing disciplines. Contemplating the development of disciplinary approaches in the sciences, Nicolescu describes his conception of transdisciplinarity as stemming from the fading boundaries between disciplines.[4]

In the decades after the initial contributions by Piaget, Jantsch, and Lichnerowicz, Nicolescu remains one of the most prominent advocates of transdisciplinarity studies to this day. However, and this indicates the far from established field of transdisciplinarity theory, he is often left out by scholars following another, more pragmatic conception of the term. Considering this, the literature on transdisciplinarity seems to reflect a distinction between scholars who are working solely on the theorisation of the concept on the one hand, such as Nicolescu, Jantsch, and Max Neef, and scholars approaching the subject in a problem-oriented fashion on the other hand.[5] As opposed to the distinct projects of the transdisciplinarity theoreticians commonly looking for an ideal form of unity in knowledge, problem-based approaches instead derive the conception of transdisciplinarity from its purpose in application. According to philosopher Jürgen Mittelstraß, transdisciplinar-

3   Basarab Nicolescu, 2010, 19–20.

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4   Basarab Nicolescu, 2014, 189–90.

5   Basarab Nicolescu, 2014; Erich Jantsch, 1970; Max Neef, 2005.

ity therefore continues to be more a principle of research, and thus a practice-oriented phenomenon rather than a principle of theory.[6] This development of the vast and expanding application of transdisciplinary methods to a variety of research areas is, for example, simultaneously seen in social (specifically urban) studies, cultural narrative studies, and sustainability studies.[7]

However, concerning these specific examples, it is only apt to refer to the correlation between the – historically speaking – relative newness of these specific scientific disciplines and their usage of transdisciplinarity as a tool for research. It seems that the appeal of transdisciplinarity comes with both the normative turn to solving "real world problems" as a newly underlined aim for the sciences and the emergence of less traditional scientific fields of research. In another influential conference on the promotion of transdisciplinarity in 2000, the prominence of "joint problem solving among science, technology, and society" is its central theme.[8] From here on, the project of transdisciplinarity starts to appeal to a broader audience, including those in the arts, policymaking, and research institutions outside of traditional academia. After being a theoretical endeavour breaching the boundaries of traditional scientific disciplines, it seems that a second branch of transdisciplinary thinking has emerged in the mere formation of an inclusive and flexible research practice that is gentle to multiple (non-academic) stakeholders in the production of

6   Jürgen Mittelstraß, 2005.

7   Thierry Ramadier, 2004; Richard Johnson, 2001; Florin Popa, Mathieu Guillermin, and Tom De Deurwaerdere, 2015.

8   Julie Thompson Klein et al., 2001.

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knowledge standing in for a new undercurrent in academic thinking. This undercurrent is commonly described with slogans such as the project of the "integration and implementation sciences" and "science in action" and ultimately sets up the dichotomy between theoretical and practical modes of transdisciplinarity.

However, this dichotomy is problematic for both understandings of transdisciplinarity. According to Roland Scholz and Gerald Steiner, both the real and ideal type of transdisciplinarity face a long list of obstacles regarding issues of expertise, politics, universality, and organisation, which are tied together with the interaction between theorists and practitioners working on the same problem.[9] It seems that both types of transdisciplinary thinking are occupied with their appearance. Not to say that transdisciplinarity is just another buzzword, as has been refuted by Jochen Jaeger. Rather, it may be said that the field is both popular and consistently in question of legitimating itself.[10] In this respect, both approaches can be characterised as procedural, and even more so, as technical evaluations of the potential of transdisciplinarity. Whereas the theoretical approach to transdisciplinarity primarily focuses on the top-down systematisation, or disciplining, of the field, its counterpart in the form of the practical approach aims to establish the necessary steps for a bottom-up description of transdisciplinarity. However, although this opposition might be worthwhile in its own respect, it fails to see its own shortcomings. In fact, the purely theoretical approach merely aims to supersede the other disciplines with an even more encompassing

9   Roland W. Scholz and Gerald Steiner, 2015, 5–8.

10   Jochen Jaeger, 2001, 259–62.

Fig. [Practical]

Fig. [Theoretical]

Fig. [Transdisciplinarity]

one, whereas the practical one brings the perspectives of numerous disciplines together in a way that is problem-oriented and yet does not take issue with the decision-making process through which one of the perspectives is granted dominance.

In an attempt to reframe the current debate between the theoretical and practical positions on transdisciplinarity, Cyrille Rigolot refers to the life and career of philosopher Edgar Morin as an example of transdisciplinarity as a "way of being."[11] Although a co-signer of the "charter of transdisciplinarity," together with authors such as Nicolescu, Morin does not engage in any of the debates, promotion, or definition enterprises regarding transdisciplinarity. Rather, Morin is said to be concerned with the elaboration of complex thought, not just as a solution to a problem, but as a result of the quest to derive meaning from personal experience.[12] According to Rigolot, Morin "became aware (and then theorised) that every form of knowledge is a construction resulting from specific sources and choices that themselves depend on historical contingencies and personal preferences."[13] Taking distance from the formalised positioning of transdisciplinarity in both its practical application and its theoretical nature, Morin sets the example for a transdisciplinary attitude that can be incorporated into any discipline or project of study without bothering the conceptually defined implications that are attached to it. Instead of building a project, a "new thing," Morin showed the way in which scientific literacy and problem-oriented research can meet one another at the same time.

11   Cyrille Rigolot, 2020, 2.

12   Alfonso Montuori, 2013, 6.

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13   Cyrille Rigolot, 2020, 3.

Fig. [Practical]

Fig. [Theoretical]

Fig. [Transdisciplinarity]

At this point, I would like to draw an understanding of transdisciplinarity that is less informed by its tradition and instead takes flight from the constituents of the term itself. In describing Morin's attitude as an incentive to strip off from transdisciplinarity its attachments to the systematic approach of the scientific method, which is concerned with disciplines, categories, and definitions, the way is opened up to conceive of the term in a more unrestricted fashion. Elaborating on the connection between transdisciplinarity and philosophy, Morin's approach shows knowledge production as inextricably attached to the constant expansion of personal reference frameworks. When taking *disciplinarity* in the Foucauldian perception of the term, a similar finding arises. Instead of discipline referring solely to the categorisation of academic thought and practices into separate faculties of academic tradition, a certain prescribed category of doing science also maintains the structural production of discourse that limits thinking to the extent of that exact category.[14] Besides not having the tools or the scope to conceive of a problem or to study occurring phenomena, as original transdisciplinarity argues, it is even more likely that thinking only by means of constructed (trans)disciplines produces the very issues that are at stake in research. Therefore, thinking about transdisciplinarity as an established category of knowledge limits its potential and requires a similar legitimation as any other discipline in science. Instead, by going between and beyond the differ-

14   Michel Foucault, 1995, 200.

Fig. [Philosophy]

ent ways one can be disciplined by education or professional experience, one is able to identify the disciplinary effects on one's own thinking, making one more open to the possibilities outside the familiar frame of reference.

State of the gARTen
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Combining this latter insight with a dialectical interpretation of the prefix *trans* as being not primarily above disciplines but also in between, it becomes clear that transdisciplinarity creates a framework of several competing perceptions of knowledge. Whereas only in relation to other discourses can a discourse really show itself, the transdisciplinary attitude carries the critical potential to challenge disciplines and concentrate on their benefits and deficiencies. As such, transdisciplinarity is both between and beyond the distinction between theory and practice. In this regard, transdisciplinarity does not require a theoretical framework as it did for Nicolescu and Neef, for example, nor does it have to be implemented in every research practice through problem-orientation. Rather, transdisciplinarity is to be developed within the thinking of the researchers and policymakers themselves. Only through questioning their own discipline and studying those of others can they attempt to grasp what they cannot see in their own field and what they can see in the field of the other that the others cannot see themselves. Because transdisciplinarity is valuable precisely as a contestation of the scientific methods involved in traditional academic disciplines, it does not have to be structurally implemented. A structural implementation of some sort would even defeat the purpose of challenging existing categories, ultimately leading to the disciplining influence of transdisciplinarity itself.

Given the above, my analysis of transdisciplinarity critiques the project of systematic implementation through either the modes of theory or practice. Because transdisciplinarity would otherwise collapse under the weight of its own premises, I have ar-

Fig. [Theoretical]

gued for a less structural view on the effectuation of transdisciplinarity in reference to Rigolot's notion of the "way of being." Although this notion opens the way for reasoning about transdisciplinarity in a freer respect to the concept, which I have used to expand its relevance to the capacity of Foucauldian dialectics, I am well aware of the little academic substance this view implies. As the same can be said about Rigolot's description, transdisciplinarity as a mere attitude of contestation does not involve a rigorous change in the sciences. However, this is exactly how transdisciplinarity might be able to be applied widely, without the need to be more than a philosophical concept to inform the current sciences. Hence, it might be the philosopher's task to usher the sciences into the values of transdisciplinarity, not to mould them by it.

Fig. [Transdisciplinarity]

Figs. [Philosophy]
[Practical]
[Theoretical]
[Transdisciplinarity]
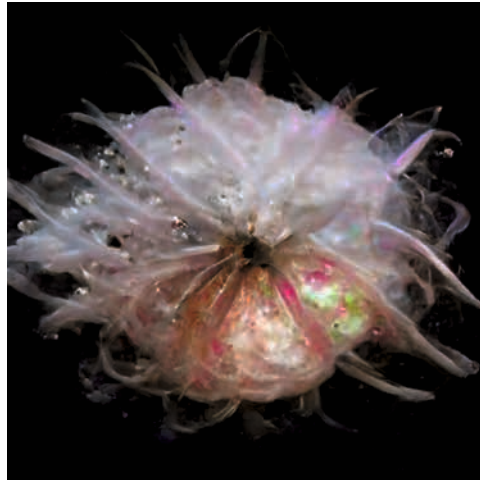
LIVED CITYSCAPES
Studying Lived Experiences of Smart Urban Safety

"The city comes alive through movement and its rhyth-
   mic structure. The elements are no longer merely
 inanimate. They play a vital role, they become modula-
    tors of activity and are seen in juxtaposition
with other moving objects. Within the spaces, movement
   flows, the paving and ramps become platforms for
action, the street furniture is used ... And the whole
   city landscape comes alive through movement as a
total environment for the creative process of living."

Lawrence Halprin, 1972, 9.   Rhythmanalysis
                                                   P. 191

Smart cities are understood as places where information and communication technologies (ICTs) are leveraged as a "smarter" way of managing urban challenges, including public safety. Although recent debates about the implementation of these technologies emphasize the necessity for citizen involvement, a lack of awareness and transparency of smart urban safety makes it challenging to facilitate productive civic engagement.^{Fig. [1]}
          The use of technology to tackle safety challenges is particularly complex since it involves a variety of actors, each driven by specific interests and engaged with issues related to public safety in urban space from different perspectives. In the case of citizens, they not only passively receive smart urban safety policies and technologies but also actively and strategically engage with ICTs and digital data in the realm of urban safety in various ways. While the involvement of civic actors alongside governmental actors is recognized as a key characteristic of urban safety management,[1] the implications of the *smartification* or *technologization* of urban safety management for such multi-actor involvement are unclear. Moreover, as

1   Tom de Leeuw, 2018.

the smartification of urban safety becomes more prevalent, so do questions about, for instance, surveillance, privacy, social justice, inclusivity, and technological control.[2]

To propose new approaches combining different viewpoints and methods, a transdisciplinary research team collaborated on the project *Smart Urban Safety Views (SUSViews)*[3] with the aim of engaging the public with the phenomenon of *smart urban safety* and bringing into view a diversity of perspectives on the use of and experimentation with technologies for purposes of public safety in Rotterdam, the Netherlands.

This text describes the composition and performance of the piece *Lived Cityscapes*[4] developed as part of the *SUSViews project*. A scholarly publication of the project can be found in a forthcoming article entitled *Making Smart Things Strange Again: Using Walking as a Method for Studying Subjective Experiences of Smart City Surveillance*.[5] Both texts are complementary, and it is recommended to read both of them to have a broader view of the *SUSViews project*.

6.1 Performing Urban Space

Liesbet van Zoonen[6] argues that artistic works or public interventions that aim to raise awareness of surveillance in smart cities fall short in producing a more substantial effect if their design is only based on artistic value and does not invite public talk, reflection, or other forms of participation.

2   Rob Kitchin, 2014.

3   www.susviews.nl.

4   The title *Lived Cityscapes* is inspired by the term lived landscapes, coined by Seyer-Ochi in 2006 to refer to the ways in which people "make sense of the built and historical layers in relation to the natural landscape and the lives that are made possible by such a landscape" (Kimberly Powell 2010, 540). In this piece, this concept is adapted to the urban environment and the connection that residents of the city have with it.

5   Vivien Butot et al., forthcoming.

6   Liesbet van Zoonen, 2021.

Fig. [Lived Cityscapes]

Fig. [Performance]

Fig. [Rotterdam]

Fig. [Surveillance]

To respond to this issue, the aforementioned research team proposes a methodology informed by diverse artistic and scholarly practices that, through an embodied and performative approach, aim to stimulate a range of sensorial experiences to elicit responses and discussion from the participants concerning surveillance in smart cities. This methodology, which is framed as an artistic work, is conceived to be performed in urban space. Since the piece relies on performance, its structure is devised not as an object but as a process that enables a progressive transformation in the sensorial perception of participants when the piece is performed. For the realization of *Lived Cityscapes*, participants are encouraged to re-explore the city they live in, walking through the streets while experimenting with social life and the social situations they may encounter during their expedition concerning public safety and surveillance infrastructures. This approach is based on the idea that social life, defined as the activities that take place within a society and that constitute that society, are not simply *given*. These activities do not just exist independently of human intervention but are *made* or *performed* through improvisation.[7] There is reciprocity between the social self and social life displayed in the city; the social self cannot be divorced from the urban environment. While walking through the streets, uncovering the details in territories of urban experience, participants themselves constitute this same space by creating it through performance.

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7   Noortje Marres et al., 2018.

Fig. [Lived Cityscapes]

Fig. [Performance]

Fig. [Surveillance]

They then become part of the environment that is being explored. *Lived Cityscapes* aims to bring residents' personal connections with the urban environment into the performance.^{Fig. [2]}

    Lived Cityscapes is performed by walking through the city. Walking is a way of knowing through the body that relates to spatial exploration and the role of place. It can be seen simultaneously as a performative action and an empirical method that emphasizes the intimacy of relationships between participants and their surroundings. While walking, participants simultaneously become performers and observers. They explore a given area, paying attention to the different elements and ambiances that usually go unnoticed.[8] In the context of this project, through performance and observation, participants discover surveillance in urban space and reflect on the personal, social, and political implications involved in the environment known as the *smart city*.

    The composition of *Lived Cityscapes* is informed by a variety of practices and discourses, including the Situationist theory of the *dérive*, which politicized walking through the method of drifting and is defined as "a technique of rapid passage through varied ambiances that involve playful-constructive behavior and awareness of psychogeographical effects."[9] Through the dérive, the performer experiences a free association of place and space and an embodied engagement with the environment. A similar approach is the one by architect Lawrence Halprin, who used ritualistic and choreographic concepts to stimulate participatory responses that involve human interaction and

8   David Paquette and Andra Andra McCartney, 2012.

9   Guy Debord, 2015, 175.

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enhance public life in cities.[10] Walking as a method has been used previously in the context of smart cities through the form of "data walking" and "data walkshops," which usually involve walking through urban spaces with an attentiveness to material manifestations of data infrastructures.^{11, Fig. [3]}

10   Alison Bick Hirsch, 2014.

11   Liesbet van Zoonen et al., 2019.

6.2 Rituals

"Ritual is performance. If there is no performance there is no ritual." "In ritual performance transmitters are always among the most important receivers of their own messages."

Roy A. Rappaport, 1992, 249, 252.

Performing social life can be accomplished through *rituals*, understood as the conscious bodily experience of enacting everyday activities with deeper perceptual awareness. In the words of dancer and choreographer Anna Halprin: "A way to create rituals is to invest the objects of our daily lives with new significance. Ritual and ceremony can happen anywhere at any time."[12] By elevating habitual action to ritual, it is possible to enable a deeper and multidimensional state of consciousness. The practice of rituals entails a performative action in which the *performer* constitutes simultaneously the *performance* and the *audience*.[13] We can think, for example, of the piece *Street Artist*, which is part of *Lived Cityscapes*. In this work, performers are asked to "observe all the activities taking place at a given location for five minutes and make a drawing representing those observations." The title suggests im-

12   Anna Halprin, 1995, 37.

13   Roy A. Rappaport, 1992.

Fig. [Lived Cityscapes]

Fig. [Performance]

Fig. [Surveillance]

Fig. [Lived Cityscapes]

Fig. [Performance]

Fig. [Ritual]

personating street artists, those who observe with a creative lens and document the environment of which they are a part. By observing attentively, the performer becomes part of the audience and by documenting those observations, constitutes the artwork as well.[Fig. [4]]

When a series of rituals are performed simultaneously by a group of participants, they require being arranged within a structural framework that delineates the narrative and the development of the actions that will be performed collectively. In *Lived Cityscapes*, this framework is *composed* or *choreographed* through the design of performance *scores*.

6.3 Scores

```
Use your smartphone to record audio notes indicating:
1.) All the data that YOU THINK the municipality of
    Rotterdam knows about you
2.) All the data that YOU THINK companies or businesses
    know about you
3.) All the data that YOU COLLECT from other citizens
4.) All the data that YOU THINK was collected from
    you during this performance by the municipality,
    businesses, and/or other citizens
Send your recordings to _____
```

The score of the piece Open Mic, which is
part of *Lived Cityscapes*, 2021.

A score is a document containing instructions notated using a specialized system of symbols to describe a process performed over time. The use of scores is mostly related to performing arts such as music and dance. However, scores can also be found in other areas of human activities, such as in manuals and recipes. In this project, the focus is on the use of verbal notation to compose what is referred to as *text, word, action,* or *event scores*. This type of artwork emerged in the United States in the 1950s as the result of artistic experimental approaches developed by some of the members of the *Fluxus* collective. These types

Fig. [Lived Cityscapes]

Fig. [Performance]

Fig. [Ritual]

Fig. [Rotterdam]

Fig. [Score]

of scores were later adopted and developed in experimental music and areas of contemporary art involving performance and object making.[14] This form of notation is advantageous and effective since written words are accessible to a wide range of people and can express ideas and concepts clearly and in a progressive order without needing specialized knowledge for interpretation or composition. Scores are informed by notions of indeterminacy and can be used to describe or initiate open-ended processes. Their construction is process-oriented rather than result-oriented since their focus is not necessarily on generating outcomes with a high degree of reproducibility but on processes that produce potentially different results each time they are realized.[15]

An example of a score that operates in this logic is the piece *Composition 1960 #10* by La Monte Young,[Fig. [5]] in which the *scorer*[16] indicates to "Draw a straight line and follow it." In the first part of the piece, the performer conceives, plans, and projects what could be understood as a *straight line*, a perfect line with constant direction that displays the shortest length between two points. In the second part, the performer executes the task of *following* this straight line. The piece, in its unsophisticated structure, asks for the conception and execution of a perfect plan, for it is impossible to properly realize the score as it is written. As a consequence, performances of the piece can trigger reflections on notions of *perfection, failure,* and *representation*. The realization of pieces of this type requires a creative approach in which

14   Liz Kotz, 2001.

15   John Lely and James Saunders, 2012.

16   The term *scorer* was coined by landscape architect Lawrence Halprin (1970) to refer to the one who creates a score, implying that anyone who can use written language can compose a score regardless of discipline or expertise. We could argue then that the action of composing a score can also be considered a ritual, as long as this action is performed with great attentiveness.

Fig. [Performance]

Fig. [Score]

Fig. [1] Participant performing *Lived Cityscapes* in the city center of Rotterdam.

Fig. [2] Participant recording audio notes as part of the performance of the score.

Fig. [3] Participant photographing a camera during the performance.

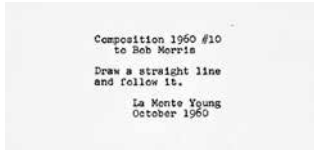Fig. [4] Participant writing notes during the performance.

Fig. [5] Score of *Composition 1960 #10* by La Monte Young.

Fig. [6] A notated map from the score performance used by a participant.

Fig. [7] Researcher explaining *Lived Cityscapes* to a group of performers.

Fig. [8] Participants completing one of the scores.

Fig. [9] Participants exchanging perspectives at the end of the performance.

the performer is no longer a *reproducer* of another author's work but a co-creator. The performer takes agency over the piece and *co-creates* it by defining parameters not established within the score. In *Lived Cityscapes*, this concept is envisioned as active participation, collective design, and creative thinking from the performers.

The scores that form *Lived Cityscapes* follow the same rationale described above, their composition focusing instead on investigating the perception that participants have of smart urban safety infrastructures and the way they interact with these technologies. As in *Composition 1960 #10, Lived Cityscapes* scores are notated as straightforward indications describing a process to be executed over time while eliciting embodied and experiential knowledge in its performance. Whether stated explicitly in the score or not, a form of reflection is expected to result from its performance. In artistic works of this nature, the entirety of the piece involves the composition of the score, its realization, and the possible insights and reflections that emerge from its interpretation and performance.

For example, in the piece *Open Mic*, which is included in *Lived Cityscapes*, performers are asked to react to the questions notated in the score and record their answers using their mobile phones. The title *Open Mic* suggests the idea of an impromptu performance and a space for bold expression. *Open Mic* is performed using spoken language in an improvised manner and documented as an audio file. The concept of improvisation is used here to refer to the creative process that results in the execution of an action conceived consciously and performed spontaneously. In this sense, performers reflect on their possible answers while recording them, building their narrative on the spot by combining their own lived experiences with speculation. There is an inherent reflective process that progresses gradually during the performance and covers general and intimate notions of data collection and privacy issues. During the piece, the positions of the *surveilling* actor and the *sur-*

Fig. [Lived Cityscapes]

Fig. [Performance]

Fig. [Score]

veilled actors change, opening up the possibility of observing the issue from a variety of perspectives. In the first section of *Open Mic (All the data that YOU THINK the municipality …),* the performers' position is passive since they perceive themselves as the surveilled actor. Their answers denote previous experiences as well as concepts derived from speculation. In the second section *(All the data that YOU THINK companies or businesses …)*, performers pay attention to the physical and virtual environment and their position in it. This question touches upon aspects related to social life and lived experiences. The performers' role is still passive, but their position as surveilled actors is modified by their personal involvement. While in the first section the surveillance actions seem to be unavoidable, in the second, performers' compliance plays an important role. In the third section *(All the data that YOU COLLECT …)*, the position of the performers has changed once more. Their role is active since they have become surveilling actors. The last section *(All the data that YOU THINK was collected from you during this performance)* summarizes the entire piece and creates room for deeper reflection.

6.4 Lived Cityscapes

Lived Cityscapes evokes lived experiences of surveillance infrastructures in urban space, which are related to personal, social, cultural, and political issues related to place. In this way, the piece aims to visualize relationships between surveillance, technology, place, and community by emphasizing an interpersonal and collective sense of place.Fig. [6] It works as a methodology that generates qualitative data for surveillance studies research and as an artistic work that actively engages with social settings and actors. As such, the piece aims to provoke situations that may generate performative encounters and articulations of social reality. In order to foster civic participation, *Lived Cityscapes* makes visible concerns related to, amongst others,

Fig. [Lived Cityscapes]

Fig. [Surveillance]

safety, technology, privacy, and social and political justice. The urban environment is approached in this project as a territory that comes alive through movement and as a space that fosters creativity expressed through performance.[17] In *Lived Cityscapes*, performers engage with what is already ongoing, already happening, in the urban environment, approaching its composition in a performative manner, as a "creative process of living."[18]

> 17 Alison Bick Hirsch, 2014.

> 18 Lawrence Halprin, 1980.

The piece functions as a framework for participants to explore and rediscover the urban environment and reflect on their experiences. The scores included in *Lived Cityscapes* are approached as a communication tool that ties together different disciplines and themes – performing arts, urban studies, surveillance, and public engagement.Fig. [7]

Lived Cityscapes was performed on 25th September 2021 in Rotterdam with the participation of a diverse group of residents from the city. *Lived Cityscapes* included seven scores, six of which should be performed at specific locations, while the *Main Score* should be performed in between *stops*. As part of the Main Score, participants were asked to identify and take pictures of *data points*[19] with a potential safety application that they may discover in the urban space during the performance. The pictures should include either a short text or an audio note, in which performers describe either their reactions towards the data point or the data point itself in terms of, for example, ownership, usage, or appearance. These were sent in real-time to the research team through messaging apps (WhatsApp or Signal).

> 19 Data points are defined as devices and technologies that collect data in urban space for safety purposes.

Fig. [Lived Cityscapes]

Fig. [Performance]

Fig. [Rotterdam]

Fig. [Score]

Fig. [Surveillance]

The scores of *Lived Cityscapes* were printed together with a map that indicated the locations or stops where each score should be performed and the type of documentation that should be produced. The precise routes were not defined, and this decision was left to the performers. The participants were divided into four sub-groups, each performing a different combination of stops. The performance started at two locations, the city hall of *Rotterdam* (labeled as SH) and the *Heenmraadspark* (labeled as HS).[Fig. [8]]

The last stop of the performance took place at the LeesZaal[20] where participants exchanged perspectives and reflections derived from the realization of *Lived Cityscapes* as well as from lived experiences around topics concerning urban safety, personal visibilities and vulnerabilities, and technological control. The performance and reflections yielded a rich body of data that included visual, textual, and auditive material documenting performers' observations of smart urban safety and their experiences of it.

In the eventual analysis of all empirical material, including audio recordings and transcriptions of the group reflections, four overarching themes emerged, which were interpreted as a generalized process of *observing surveillance, reflecting on personal exposures to surveillance, considerations of agency,* and *evaluations of implications for urban safety*.[21, Fig. [9]]

6.5 Conclusions

Lived Cityscapes investigates lived realities of subjective encounters with surveillance in everyday urban living environments in the "smart" city of Rotterdam. In this project, walking was approached

20   www.leeszaalrotterdam-west.nl. LeesZaal is a residents' initiative that operates as a social and cultural center in the Oude Westen neighborhood in Rotterdam. LeesZaal was used as the final destination in reference to existing platforms for resident participation in the city.

21   An elaborate description of these findings can be found in Butot et al., forthcoming.

as a research method with performative components that relate to diverse artistic and scholarly practices. The complex composition of *Lived Cityscapes* was structured as a series of scores that frame the specific topics investigated in this research through urban explorations. This project aimed to incentivize residents to explore their own living environments and become interested in the development and design of their city in terms of public safety and technologically-mediated surveillance.

The results of this research are more specifically tied to lived experiences and sense of place in the smart city than the more generalized types of reactions elicited in prior smart city subjectivity research.[22] While moving through the city, participants gradually became more aware of surveillance over time. As the performance unfolded, they started looking for surveillance where they would not look out for it otherwise. This process had the effect of making the opacity of smart city surveillance physically noticeable. In their reflections, participants often indicated that they discovered more surveillance in the city than they had expected and that the performance made them aware of ordinary encounters with surveillance in the city, which they usually do not pay much attention to in everyday life. Moreover, participants reinterpreted the omnipresence of smart city surveillance as a process driven by technological ingenuity and political-economic relations often dominated by private interests of corporations selling surveillance technologies and expertise. Conclusively, differentiations between private and commercial purposes and purposes of public

22   Vivien Butot et al., forthcoming.

Fig. [Lived Cityscapes]

Fig. [Performance]

Fig. [Rotterdam]

Fig. [Score]

Fig. [Surveillance]

Fig. [Lived Cityscapes]

Fig. [Performance]
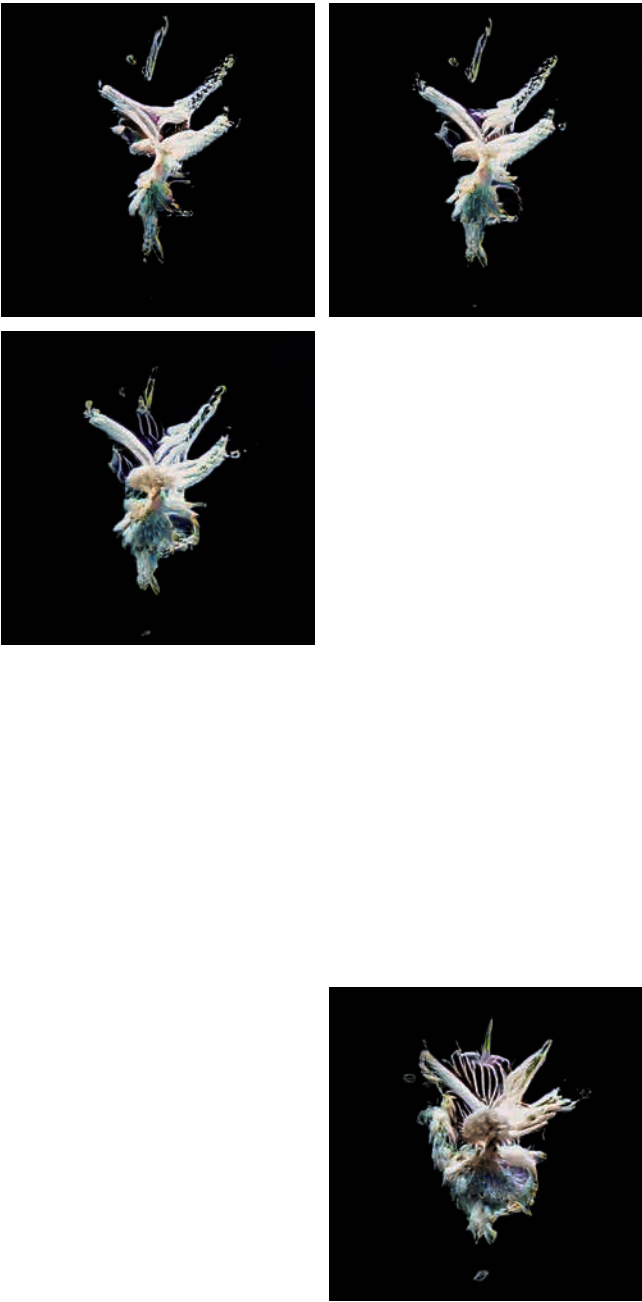
Fig. [Score]

Fig. [Surveillance]

safety became blurred, which contributed to a sense of ambiguity about whose interests are truly served by smart city surveillance practices ostensibly meant for public safety purposes.

We believe that our transdisciplinary approach, which aims to provoke embodied and situated experiences, resulted in a productive way to evoke lived experiences of citizens inhabiting existing smart city environments, and that urban explorations guided through performative rituals and scores are an effective way to raise awareness of urban safety among residents and stimulate civic engagement. We, therefore, advocate further explorations of performative methodologies in surveillance studies, both as an empirical research method and as a means for the political projects of fostering public awareness, engagement, and critical reflection.
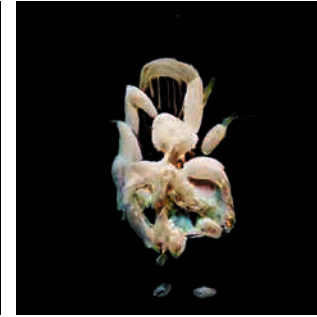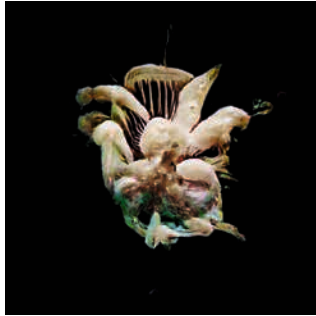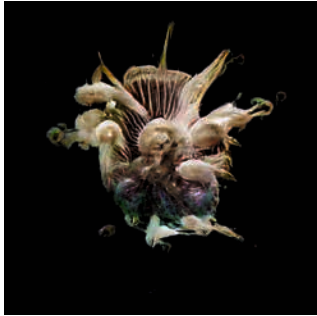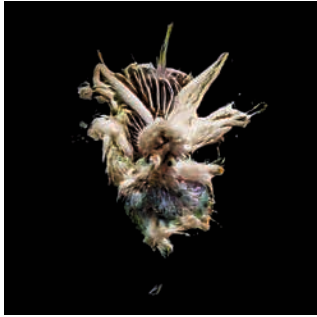
Fig. [Ritual]

Fig. [Score]

Fig. [Surveillance]

Figs. [Lived Cityscapes]
[Performance]
[Ritual]
[Rotterdam]
[Score]
[Surveillance]

SPENDING TIME TRAVELING WITH A BIRD

Percussive ticking meets the silence in the room, weaving a pattern of pauses and accelerations. My thoughts become audible, spaced out in rubato[1] that ultimately decides the sketch of my words. The writing adjusts to the rhythm of my fingers navigating over the keyboard in search of keys. They form a somewhat hesitant composition of scattered knowings and unfinished understandings, balancing between lived experiences and wisdom of old – finding its way through the undergrowth towards the light.

[1]   Rubato refers to notes arbitrarily lengthened or shortened, intentionally and temporarily deviating from a strict tempo for the purpose of musical or lyrical direction, bringing life and meaning into the performance.

Even though we, musicians, set out to celebrate compositions in their full, intended glory, we face a bumpy road ahead in exploring the manner in which we can address our instruments. Ideally, sound travels through the mechanical body before entering outward. It is, I believe, eventually – and after what seems a lifetime of crafting technique, mechanics, style and interpretation – the intertwined miracle of our imagination and touch that revitalizes the score and designs the unmistakable fingerprint of the musician, carrying the ability to awaken the unique connection between container and player, finding what lies dormant within both. It fills my everyday with wonder, over and over again, in improvised repetition of marvel.

7.1 Beginnings

Sunday morning 08:15h. I am on dog duty. The small world around us is quiet until we step into the park by the river and suddenly find ourselves embraced by sound. Birdsong in infinite possibilities, singing in multiple octaves, short, long, with complex trills and ornaments in endless repetition. The steady rhythm of the woodpecker, the seductive song of the blackbird, the wing beat of the geese, those I recognize. They sound like themselves and fill my step with bounce.

Fig. [Composition]

Fig. [Dog]

Fig. [Instrument]

Fig. [Song]

How many years does it take us, singers and instrumentalists, to find our most honest sound, to unlearn and discover how to build our instruments to create our own physical realization of a composition? How long does it take us to let go of the outcome by accepting the risks of creation? This is how I work: flying along for a while in shadow-formation, searching, closing in on body-time, learning to listen and see, locating, and following the transformation of externally driven efforts, techniques, and expectations, becoming the vessel for sound and reciprocity to reveal the possibilities we carry within. I read once that some baby songbirds learn the songs of their parents during their sleep. From the very beginning, waiting to be sung. Baritone Thomas Hampson words it like this: "The word is re-sonate, re-sound. The sound, the music is already there. And we are the one who call it into being."[2]

I choose a multi-sensory approach which enables the musicians to realize what impact they have within different contexts. In an effort to close the gap between potential and the current state – no shortcuts – I search and work from outside inward, analyzing and selecting what I see and hear in physical behavior, understanding what the person in front of me thinks, feels, and wants, and I work from thereon out. I rely heavily on my senses to find the details and understand the subtext. As such, I am the mirror but also a student, the river and the sky, reflecting each other, always slowly moving towards the delta of possibilities.

Listening
P. 186

2   Thomas Hampson in Eric Schoones, 2017, 305.

Fig. [Composition]

Fig. [Instrument]

Fig. [Music]

Fig. [Song]

7.2 Words

Writing in a third language – meaning to connect us – I am always aware of the limitations of my vocabulary. I prefer speaking from the piano, singing through my voice, a song, so you can listen to what I mean.

Words fall short. The words we choose should be precise. They have to compete with feelings and sensations in our bodies and the thoughts in our minds. In finding the words to describe these sensations or give instructions in the process of becoming a musician, we often look for metaphors from the worlds of visual and fine arts and, of course, from nature. Off-course: formed by or according to nature; going off track; taking the natural route.

A composition challenges our abilities and understanding on so many levels. I choose to break away from theoretical models, the *one size fits all* we can so easily hide behind. I return to the beginning. It is all about the beginning.

How can I hear and see my music students in such a way that they appear, show themselves? What words do I have to build the relationship between the performed, the performer, and the world? Neither artists or teachers must place themselves in between the work of art and the audience. The work itself convinces. Sound, music, needs transparency, thus building the bridge between the earthly doing and the heavenly experience. This way, musicians make their professional mark, show the responsibility of all their work and

Harmony
P. 185

Performance
P. 188

Fig. [Composition]

Fig. [Music]

Fig. [Song]

dedication, and with this, they themselves make the difference. What we have to say resides in how we play. Between performing and the world, the artist shows up – credible, honest and empathic. All art takes place between people of flesh and blood.

7.3 Promise

Can we see or hear beauty in what at first does not seem that beautiful? Do we have the courage to cut into the beauty of it? Influential Dutch landscape designer Piet Oudolf[3] poses these questions which, to me, are of equal importance to us musicians as they are to the natural world. He refers to a garden as a promise; it does not have to be there straight away. It cannot be there straight away.

Landing in one's own voice is a life-changing experience both a fight and an essential inner dialogue. When I put myself on the wavelength of the student next to me, I can see so much more. It makes me think of the eloquent words of Robin Wall Kimmerer in her book *Gathering Moss* on the interface between atmosphere and earth: "Every surface [...] possesses a boundary layer. When you lie on the ground on a sunny summer afternoon to look up and watch the clouds go by, you place yourself in the boundary layer of the Earth's surface."[4] Teaching involves moving to the other person's point of vision, meeting them there, and walking a stretch of the path together. At that particular moment, it is not the method that makes the difference; it is us.

3   As seen in the documentary *Five Seasons: The Gardens of Piet Oudolf* by Tom Piper, produced in 2017.

4   Robin Wall Kimmerer, 2003, 16.

7.4 Recognize

Sound is a gift. It begins with recognizing the musician and encouraging them to reach in. To go beyond the borders of self-expression, renewing the physical contact with the instrument, and discover the self as the actual instrument. Instrument and musician need to meet on the cutting edge of their alliance. This intimate contact opens the receptor and awakens the physique and creative imagery of the player. Work sessions are meetings of minds in the raw form; we share the individual process, entering the space where limitations are hiding and beauty lies dormant.

In doing, we touch upon the seemingly impossible. It shows us how to *re-search* flexibility, to genuinely care and understand that the obstacles we encounter while playing or singing are simply invitations that challenge our habits and settings. Are we prepared to sacrifice what does not serve us anymore to respond to the signals, to redefine our options and actions?

This space we create provides the risk of knowing what can happen. Measuring between goal, time, and actions, it teaches us to change, to adjust, to improvise. The average represents nobody, nothing. At best, musicians read their surroundings carefully, placing their art in the given performance context, changing it, rediscovering their material through the eyes and ears of their audiences and the shapes surrounding them: disrupting, prolonging, comforting, making change happen. Playing is learning how to apply the rules and when to avoid, ignore, or adjust them.

7.5 Imagine

A garden never dies, it only changes. It is, in essence, a strategic, artificial way of creating that only reminds us of nature. Through our

Fig. [Garden]

Fig. [Garden]

Fig. [Instrument]

individual responses, it becomes personal and communicates. What I already knew in music was again brutally brought to my attention by my withering garden: the pillars of transformation need to be cared for. At all times.

State of the gARTen
P. 194

```
One day, our early May garden showed the old dream of
a green, fragrance-full wee plot of land behind our
house. Mostly it exposed my lack of patience and con-
tinuous care. That particular summer, all we were
left with was bone-dry earth, massive bushes of ivy and
wisteria, and a few feature trees keeping up the pre-
tense of the once imagined lushness.
```

Pharmakon
P. 191

```
I started all over with a plan this time: omitting
adds value. Healthy plants were left alone, others were
carefully relocated to better spots. With pain in my
heart, I removed green memories of previous lives that
I kept close for too long. I refreshed the soil,
created paths and shapes, checked the sun and shade
instructions for the new seedlings, and planted 350
organic bulbs. And then I waited.
```

Flourishing
P. 183

Opening a score or hearing music for the first time, I see no vertical notes or harmonies but suggestions of pulse and tempo, moving shapes, and variations of light. I need to go back upstream to see where it all originates and how to make sense of it all. Simultaneously cursed and blessed with intense cross-sense impressions of synaesthesia, making sense of the confusion of my students becomes the part of me in which I feel grounded and shamelessly free in finding the right words to support that so desired transformation. It takes the time it takes to develop and to come close. Eventually, we strive to become masters of suggestion.

I am setting sail to rebalance musician and instrument to the best of their abilities at that specific moment in their

Fig. [Garden]

Fig. [Instrument]

Fig. [Music]

---

personal development, by questioning and redefining. The goal is to return to an informed, skilfully refined, meaningful way of playing finally communicated through a spontaneous yet always guided, tasteful expression, in a way that others can understand us, feel it.

7.6 Wayfinding

```
She knows her way home. Her nose to the ground, she
sniffs out the road of previous outcomes. When I sug-
gest the shorter way home, she puts the brakes on
all fours. Pulling the leash has no effect whatsoever.
I talk to her: "Going left is better, shorter, look!"
I draw windy paths in the air and point to the trees
behind where the house is hiding. She stares at my fin-
ger and doesn't see the promise of home I point to-
wards. So, we walk the long route together, exploring,
pointing out the obstacles and beauty along the path
to each other. We come home, arriving where we started,
a happy dog, my arms filled with wildflowers.
```

7.7 Water

```
A vivid memory: there was this older and far more ad-
vanced student whose singing and timbre of voice over-
whelmed me. I wished to have, or better even, to be
her sound.
```

```
During one of my first lessons as a student myself, my
life-long teacher said to me: "What we hear is not what
we do." This might need some explanation: the human
voice has an exceptional place in the group of instru-
ments because the singer is the player, the mechanical
instrument and the resonator in one; the singer dis-
covers and builds the physical instrument while simul-
taneously using it. And although I was considered
to be gifted, I had no idea what she was trying to
teach me with those words. The journey along the moun-
tain path had begun.
```

Fig. [Dog]

Fig. [Instrument]

Working for many years with countless young music students, specifically singers, I see that same confusion I experience(d) over and over again: what we do is not at all what we hoped to hear. And worse, what we hear up close is not what we want our audiences to hear. In the beginning at least. The sound itself is not the instrument, we are. We are the changelings in the room. Sound, like water, forms itself to the shape of the container. A well-balanced physical resistance is needed for a steady flow. The behavior of water, sound, air is highly dependent on the shape and quality of the embracing body – the riverbed – providing a vortex of energy. Sound – acoustic sound, I mean – never lies. It contains so much information: it reveals, makes visible, audible, vulnerable, and by doing so, it teaches us and closes the loop, eventually becoming unmistakable ours. The water bottle on my piano serves more than one purpose.

7.8 Touch

Eco-empathic
listening
P. 182

The unnatural separation of ear and eye, of physical and emotional feeling, is an essential part of the process. The ear trains the body. The body, in time, learns to map and direct its sensations, accept tensions, counter-tensions, and muscular and multi-sensory feedback. We spend a lifetime learning to rely on and respond in real-time with minute adjustments of movement and attention. It is exactly this step-by-step noticing and organizing of our craft during the playing itself that gives us the most pleasure. We are where we are.
      The ballerina dancing the expressive pas seul "The Dying Swan" in Saint-Saens' composition "Le Cygne" is not dying; she dances her body with her mind. It is because of being in

Fig. [Composition]

Fig. [Instrument]

Fig. [Music]

bodytime that we eventually know and dare to trust what we do. All music starts and ends with bodies. It is that close.
      Becoming a truly free and spontaneous musician/performer involves becoming the master of one's actions and thoughts, building trust in the two instruments: the body-mind instrument and the external instrument (or an inverted one, in the case of the human voice). Each instrument has a "keyboard" – almost literally – a place of touch where the two separate "bodies" meet and from which place the music becomes airborne. This contact overarches the two-fold connection. The composition brings the two halves together in a guided musical conversation challenged by ever-changing performance situations.

7.9 Breathe

Music is breath. A concert or performance is breathing together, following the guidance of the script. We don't make it up; it only seems that way.
      We are not educated to breathe – our minds are often like cloth in the wind. I see breath as a way to reach in, get access, and allow change from within, becoming aware of awareness – aware of the close and the seemingly ordinary. By addressing the stored experiences in our tissues, we allow growth – breath as a chance, a new opportunity. The air we breathe interacts with everything it touches. It flows along the resisting contours of our bodies, intentions, languages. I recognize great relevance in Kimmerer's thoughts on air and interaction: "The surface changes the behavior of the air."[5] The deliberate act of imploding – placing resistance on vowel shapes and consonants, strings,

5   Robin Wall Kimmerer, 2003, 16.

Fig. [Breath]

Fig. [Composition]

Fig. [Instrument]

Fig. [Music]

valves, mouthpiece, reed or keys transforms our inspiration from vibrations to defined sound with meaning. Pulse, rhythm, timing, and shape are all intertwined in the gameplay of the dynamic coloring process conveying the storyline hidden inside the many dialects of music, languages, and music notation. They are codes waiting to be deciphered and heard.

Inhalation is not just for air – what is to come is already present in the breath. The music hovers on the thermic of the inspired breath, becoming the reflection of us. This way, the musician is present and communicates transparently.

Breath is directly connected to quality of sound and the infinite nuances of expression. Italian composer Luciano Berio composed 14 Sequenze for various instruments, a collection of virtuoso pieces exploring the capabilities of a solo instrument and its player, making extreme technical demands on the performer and simultaneously developing the musical vocabulary of the instrument while challenging the aesthetics and richness of expression.

His notes – or instructions as you will – for "Sequenza III for Female Voice"[6] are, in my experience, an inspiration not only to the singer: "The voice carries an excess of connotations, voice always means something, always refers beyond itself and creates a huge range of associations. The composition emphasizes sound symbolism of vocal and sometimes facial gestures and their shadows of meaning, while the deliberately devastated text can be seen as a dramatic essay, the story of the relationship between the soloist and her own voice."[7]

6   Sequenza III, written in 1965 for soprano Cathy Beberian on a modular text of Markus Kutter: youtu.be/1hxjCIANddU Recording with score: youtu.be/DGovCafPQAE.

7   Berio, as stated in his Sequenza III from 1965 as an author's note in the complete score.

Anxious, apprehensive, bewildered, calm, coy, distant, distant and dreamy, dreamy and tense, echoing, esthetic, extremely intense, extremely tense, fading,

Fig. [Breath]

Fig. [Composition]

Fig. [Instrument]

Fig. [Music]

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faintly, frantic, frantic with laughter, gasping, giddy, impassive, increasingly desperate, intense, joyful, languorous, muttering, nervous, nervous with laughter, noble, open with laughter, relieved, serene, subsiding, tender, tense, tense with laughter, urgent, very excited and frantic, whimpering, whining, wistful, witty.

"Nuances for interpretation" for Sequenza III, Luciano Berio, as stated in his Sequenza III from 1965 as an author's note in the complete score.

Imagining precedes perception and action, ultimately connecting the dots and building the bridge between roots and expression. We turn our attention inward, watching the shifts and changes with the underlying intention to become familiar with recognizing aspects of consciousness. I believe understanding and practicing the connection between touch, breath, and movement and its transformative impact on becoming self-aware is of crucial importance. Technique equals understanding and serves the purpose of expressing freely from a deeper connection. The purpose of technique is to control the madness.

We search for a neutral mode that maintains its self-reflectiveness even in the midst of turmoil. Breath in music education gives us an understanding of our motivations, desires, and ethics and the ability to express them. All beings have a voice that is uniquely their own. I want to break down barriers by highlighting this beauty in all its manifestations.

7.10 Translate

Because the process of change takes place in the head and hands of the musician, music-sound – is the result of a series of choices based on more or less existing ideas, skills, and expectations on various levels. Building blocks towards sounds expression – specific skills,

Fig. [Breath]

Fig. [Music]

competencies and characteristics musicians possess, develop, and conquer – are all for the purpose of transforming their thinking and imagination into the music the listeners hear and moves them one way or another.

I was taught not to add layer upon layer but to clean the canvas, to see what is hiding underneath old layers of desires, information, and habitual behavior. I, in my turn, now ask of my students to unlearn, to simply first discover what is already there. It is an invitation for self-tracking in real-time, to train the brain, train the body, learn the musical language, research all of that and more in order to make choices, develop taste, come to steered behavior, and finally, embrace our sound as the result of all of that: a gift, free-flowing and present.

Gardens that look and feel like real nature are compositions designed in thoughtful patterns of colors and shapes of undergrowth and features, of colorful rhythms of repetition and movement. They are carefully positioned to survive and highlight seasonal exposure to beauty. The rhythm communicates and therefore begins a dialogue with its surroundings.

It is an uphill exercise where we practice the courage to defy the expected, and it takes courage to work and express and show ourselves and our art in such a way that others can understand us.

Rhythm, time, space, and melodic and harmonic structures, but also listening, somatic aspects, and awareness of function, make it possible to play what the composer intended. The list grows organically with the level of the musician. The combined imagination of both performer and audience makes the difference between expectation and a new and fulfilling lived experience that resonates with the context of the moment. Outside becomes inside.

7.12 Fly

We go kite flying on the beach. Not the kiddy kites with beaded tails, but sports-kites in all sizes. Putting the kite together the right way is our first challenge. Fabric and wooden sticks, ropes and handlebars, all in their proper place. Oh yes, and we must also learn to read the wind and make sure there is a safe, wide open space to fly. But we have no time or interest in that. We want to enjoy and have fun, and perhaps even show off a bit.

7.11 Reclaim

We start running, dragging the long ropes and the kite behind us like a giant imaginary alien squid. It reminds me of a movie scene. The image sparks my imagination, directly followed by the desire to talk about legato.

The new grows in the dark, on seemingly fallow ground. In music, we cannot hasten the process of growth. New ways must replace old habits, and old habits die hard.

Nothing happens. Again. We throw the kite in the air, we raise and spread our arms, tugging the handlebars in every possible direction, even shouting instructions to the sky. The kite crashes hard.

The singing and playing body searches for a place to root from which it can lift itself in an inner circulation, thus connecting earth to heaven. Our beliefs, feelings, and perceptions co-determine the way we see the world and how we respond to it.

Care II
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Harmony
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Fig. [Composition]

Fig. [Garden]

Fig. [Music]

When it comes to kite flying, we learn from our
pianist-kite instructor, it is like playing an instru-
ment: the slightest movement has an impact. One must
keep calm in high status, handlebars close to the
body in a relaxed manner, mindfully reading wind and
direction to match the hands in coordinating the
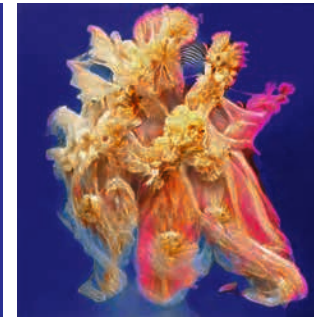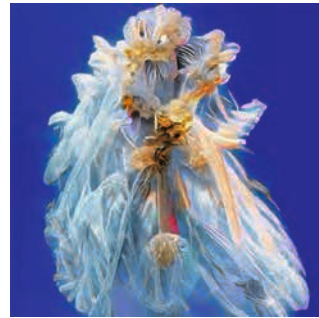quality we are after.

On which note, he calmly lands his kite vertically on
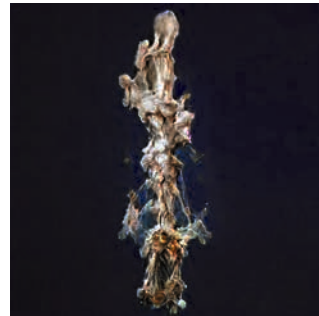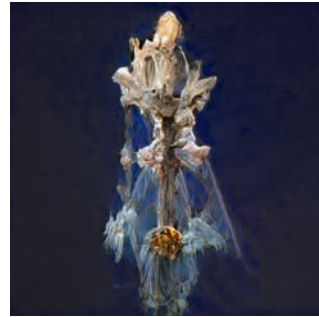its tip on the surface of the sea.

Fig. [Instrument]
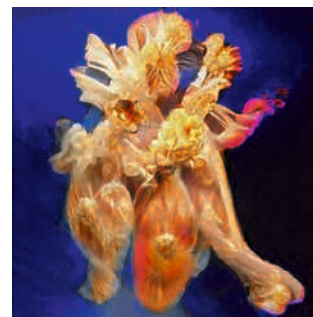
Figs. [Breath]
      [Composition]
      [Dog]
      [Garden]
      [Instrument]
      [Music]
      [Song]
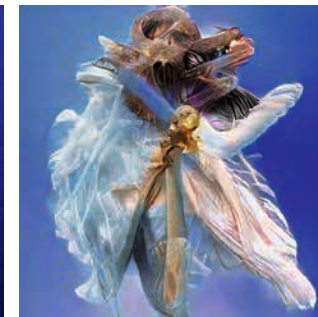
FROM FENCING TO COMPOSTING
Evaluation Processes in Transdisciplinary Education

This program is not a paradise. It is not a "walled enclosure," as the Persian etymology of the term would suggest, from *pairi* (around) and *daeza* (wall). It might be neither a garden nor a yard in its literal meanings, taking their roots from the Gothic *gardo*: "enclose," "fencing-in." Nevertheless, the metaphor of the garden – besides the one of the journey, the educational path – seems perennial when it comes to education: seed and growth, the bud which frees itself to the flower, cultivation, and co-creation are just a few of the terms, as relevant or kitschy they might be, that come into play. If we take the metaphor seriously for a moment, what, then, do we "carry" (from the Greek *pherō*) "over" (from meta) the fence or wall?

Questions of demarcation were indeed an issue when the Master of Arts in Transdisciplinary Studies in the Arts programme, as its full title reads a bit tautologically, was introduced in 2008. It grew out of an institutional logic given by the merger of two art schools, one with a performative background (music, theatre, dance) and one from the visual arts (fine arts, film, design, art education), into the Zurich University of the Arts (ZHdK). *Transdisciplinarity*, as a term and concept, was the hot topic of the time, promoted even further by the perspective of a move to a shared campus in Zurich's newly developed Western district, a former industrial area, which was realized in 2014. Many gardens and gardeners with their own histories and identities, scattered in a good thirty buildings in Zurich and its neighbouring city Winterthur, were assembled in a giant concrete building. The so-called "Toni-Areal" wanted to be more than just a series of allotment gardens: it wanted to be a city of its own ("a small

city in the city" served as a guiding metaphor for the campus' architectural concept).

The motivation for the novel master's program was, on the one hand, based on the desire to map this coming together in a specific format and to excavate the potentials of the institutional processes involved. Transdisciplinarity, used as a fuzzy concept as in many other contexts, had therefore a strong strategic, top-down dimension. It was at the same time a call to other programs at ZHdK with a more disciplinary orientation to open up to their neighbours, to transform their demarcating walls at least to fences with a more porous relating. On the other hand, the program's design was a reaction to observations in the art field, continuously extending its boundaries between the art forms themselves as well as towards other societal contexts, bringing artistic or aesthetic strategies into situated worldings. Compared to the idea of opening up programs with a disciplinary background as a starting point towards other fields, this bottom-up understanding of transdisciplinarity had the desire to put the processes, practices, and dynamics of this expanding field centre stage.[1]

Study programs usually develop their focus by fencing in their field. They do this by defining criteria that meet the state of the art of their disciplinary garden or professional field for which they cultivate their students. The latter applies even more to art schools (compared to, for example, the humanities at universities) with their strong roots in the tradition of conservatories and

1   Irit Rogoff, 2013.

Worlds
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design schools and their historical orientation towards crafts and professional training. Music, theatre, visual arts, and design have well-defined standards and fields of reference; they often also have clear-cut fields of action with job opportunities and career perspectives. These can serve as foundational roots even in educational approaches where the involved demarcation lines are partly put into question (which is, it goes without saying, an inherent topic of artistic practices anyway).

In this regard, everything is changed by the prefix *trans* given to the root term *disciplinarity*. *Transdisciplinarity* is not the new discipline, at least if it does not want to sideline its potentials. It also has no predefined professional field. In terms of content, it is somehow empty. What comes to the fore, then, is instead a method, ingrained in the prefix *trans*, at least, again, in its literal meaning: a "path" (from the Greek *hodós*) "over" (from *meta*). It has no given fence or wall, but it deals with boundary-making practices itself and asks why such demarcations matter and for whom.[2] This garden, therefore, stands on shaky grounds. Or to put it differently: it does not so much focus on production but rather on growth.[3] But then, how to draw the lines which demarcate a study program from others with the need to formulate learning outcomes, criteria, and measures for communication? How to deal with the logic paradox of defining boundaries, walls, fences, when these themselves are up for disposal? Or is this all just about compost?[4]

In this short paper, I would like to draw the reader's attention to two main aspects of our experience: First, the framing

Boundaries
P. 176

2   Karen Barad, 2007.

3   Tim Ingold, 2021.

4   Donna J. Haraway, 2016.

Fig. [Compost]

Fig. [Demarcation]

of the notion of transdisciplinarity evolved towards a strong commitment to aspects of reflexivity. On centre stage are not so much the boundaries themselves and the ambition to transgress them but rather the observation, including the involved practices, of how boundaries are made, what effects they have, and how it is possible to work with them proactively. Second, as there seem to be no sets of criteria nor frames of reference given by predefined disciplinary contexts, we decided to increasingly delegate the elaboration and application of relevant criteria to the students themselves and their individual and situated practices – without, hopefully, giving up responsibility towards their educational journey.

8.1 Criteria I: Reflexivity

In the spring of the program's development, a specific framing of the term transdisciplinarity was chosen, which entailed four overarching "criteria" that should give discursive and reflective perspectives on the student's master's projects as a key element of the program. (The students propose a project idea or a thematic outline already in the application process, and they start to work on it from the very beginning of the program, although it might change considerably during the course of their studies.) The notion of "interdisciplinarity"(1) served to observe how "at least two disciplinary paradigms" were brought together, where discipline was understood in a very broad perspective (we often substituted the term with the more open and less academically connoted notion of "thought style," coined by the philosopher of science Ludwik Fleck[5]). These paradigms should meet "on equal

5   Ludwik Fleck, 1935.

Fig. [Delegation]

footing"(2) as an important aspect of transdisciplinarity and also as a delineation from practices where different media come together in pre-given structures (as in theatre, film, etc.). This should also involve a critical questioning of conventional hierarchies and division of labour. "The Third"(3) highlighted aspects of productive friction between the disciplinary paradigms or thought styles involved and the ambition to find new, hybrid forms when addressing or producing a public. Finally, the criteria "lifeworld reference"(4) addressed the societal relevance of the project and the involvement of stakeholders from outside the academic world, from everyday contexts – there might even be gardeners.

       The fourth criteria might show most obviously on which branch it was grafted: it hints at the field of "transdisciplinary research" being formed mainly in environmental and sustainability studies, and the idea of mode-2 knowledge production where multidisciplinary teams are brought together to work on specific problems in and from the real world (compared to knowledge production in mode-1, motivated mainly by knowledge of academia alone). More concretely, the criteria were derived from a mapping of notions of transdisciplinarity by Christian Pohl and Gertrude Hirsch Hadorn,[6] and although their mapping criteria have slightly different wording, our approach was similar in one important aspect: it was not about defining transdisciplinarity but about having a map to help with orientation. Or to put it differently: it was not so much about fencing in a territory but more about signposts that would allow for observing how people, practices, or concerns relate to one another.

6   Christian Pohl and Gertrude Hirsch Hadorn, 2006.

Care I
P. 177

It is not the place here to dive into the paradoxes that this transfer from scientific reasoning to the art and design field entailed – but to name only a few: for transdisciplinary research in the academic sense, the arts are not part of academia but of the real world, and they are not disciplines but rather practices of the everyday – a basic structure which has to be reflected when it comes to collaboration with representatives of these domains. Moreover, the orientation towards problems (that have to be solved) or the notion of "knowledge production" itself might involve some difficulties when transferring them to the art field. But that is not the main point here. What actually happened was that these criteria risked being read in a normative sense instead of with a reflexive understanding, in the literal sense of the "judge" (from the Greek *kritēs*) instead of its more critical potential. The map became the territory: the more disciplinary paradigms involved (1), the more equal (2), the more frictions (3), the more relevant in a societal context (4) – the more transdisciplinary. The misuse of the criteria as a quantitative (and qualitative) norm was, of course, not intended, but the luring character of seemingly hard criteria nonetheless did their job. As anecdotal proof: when the students introduced their projects to a jury in mid-term presentations, they began to use the first characters of the four criteria (in German: *Interdisziplinarität* [1], *Auf Augenhöhe* [2], *Das Dritte* [3], *Lebensweltlicher Bezug* [4]) to proudly (but also ironically) say, when passed: "Now, we are IADLed." (This, by the way, sounds a bit similar to the German word *geadelt* ["ennobled"]).

It might, in the present context of this publication, be worth noting that the four criteria mentioned seem to resonate quite synchronously with the four "zones of tension" that Tamara de Groot[7] has formulated as a conceptional baseline in the educational formats developed in the framework

7   Tamara de Groot, 2020.

of the Rotterdam Arts and Science Lab: "collaboration across and beyond disciplines"(1), "equality of knowledge"(2), "making public(s)"(3), and "engagement"(4) can be easily – albeit not without remainder – translated into the above-mentioned criteria. Of course, it is crucial that these elements are described as "zones of tension" and not so much as defining, normative terms. It is also crucial that these zones be read in the frame of reference of a "strong transdisciplinarity"; compared to a "weak transdisciplinarity," which focuses on problem-solving in a more pragmatic, additive approach, similar to mode 2-knowledge production, this strong transdisciplinarity is interested in rearticulating societal issues. Talking with Irit Rogoff,[8] one could also say that it is less about working from inherited knowledge but working from conditions. In such reasoning, the most important part of the transdisciplinary garden is not so much the clear-cut bed, nor the fences, but the compost heap: it is the place where fermentation takes place among fragments of things, materials, histories, and practices – in short: of relatings, and where growth gets possible.

In the master's program, we have sometimes noted that its title could as well read "Master in Disciplinary Studies" (instead of "Transdisciplinary Studies"). This has to do with the fact that it seems almost unavoidable that students start to question their own practice and knowledge as soon as they place their work at the fringe or even outside the contexts they are used to. They start reflecting on the genealogy of their knowledge, on the situatedness of their own practice, and on the habits and paradigms they

8   Irit Rogoff, 2018.

Harmony
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Fig. [Compost]

Fig. [Situatedness]

think and work in and with. They start to understand how much they are disciplined (in the now wider understanding of the term) and how much this entails potentials of differentiation and quality as well as limitations. Instead of trying to normatively define "transdisciplinarity" and derive respective criteria, we therefore decided to place these reflexive components that occur in transdisciplinary constellations at the very centre. Criteria were reformulated (see textbox), the former ones filed in the archive, and what we ask for is that students name their *motivations* for transdisciplinary projects (but also for being and becoming in the world), that they are able to conduct a *reflection* on the frames of reference in which they are thinking and practising, and that they have a precise understanding of their mode of *production*. Although the three terms seem to be in a temporal sequence, this does not have to be the case in an individual study path: students might start with material experiments and a body of work – from production and from there tackling their motivating agencies. Or, to begin with, they might use elements of theory to critically reflect on their situatedness, from where they are better able to identify the preconditions of their formal or media procedures as well as their motivations. As in a garden and for a gardener, the structures of growth have a cyclical character: there might be beginnings (and endings) in autumn and in spring, and the rhythms do not come to an end without starting anew.

Rhythmanalysis
P. 191

8.2 Criteria II: Delegation

The listed criteria might seem quite general, but they have the great advantage of acting as dynamic agents, as catalysts, instead of measuring devices. The criteria with their reflexive character are not judges but rather companions in individual search motions, and through this, a strong social component is involved: fellow students, as well as the faculty, are drawn into these movements, with affection and curiosity, with critical inquiries, and sometimes with astonishment towards other ways of practising and thinking.

Nevertheless, when it comes to evaluating the master's projects, there is, besides the mentioned set of criteria, another layer that comes to the fore. We would call these criteria field-specific: depending on the field(s) in which the work, the practice, the project is placed, specific criteria of quality, attitudes, and formal requirements are obviously of high importance. The same work can be evaluated quite differently when placed in different fields. Whether you plant fennel in a vegetable garden or a flower garden plays a role. While the overarching set of criteria – motivation, reflection, production – frames notions of transdisciplinarity, takes a meta-perspective, and brokers procedures of working and living in the (professional) world, these other, field-specific criteria are highly situated. Given the heterogeneity of the students' backgrounds, their ways of working, their intrinsic concerns and their findings and products: how to deal with these?

The heterogeneity of criteria and the awareness of their situatedness is deeply ingrained in the DNA of the study program: seminars, labs, or project weeks are generally taught in team-teaching formats so that students are faced with heterogeneous frames of reference and practices (which also refer to the faculty itself). Besides a given supervisor from the program's core team,

Fig. [Delegation]

Fig. [Situatedness]

Fig. [Situatedness]

students can freely choose mentors – from inside or outside the university – as appropriate to the course of their projects. They can choose to attend courses from other programs at ZHdK if they relate to the aims of their studies. The collaboration with programs from other types of universities – from, for example, the humanities, the social or the natural sciences – allows them to place or review their concerns in different contexts, beyond the art field in the strict sense. In colloquia formats, where the students present findings of their studies and the state of their master's work, we invite external juries for feedback and support. These juries are purposely heterogeneously composed, and disciplinary backgrounds, practice-theory colourings, and diversity aspects are taken into account. The core faculty team itself brings together people from design, the humanities, and the visual and performative arts. And last but not at all least, the group of students in the program is a richly reverberating and multi-voiced resonance chamber, or rather a fertile ground which might have significant effects on individual study paths.

This multiplicity, this garden of forking paths, makes clear that there is no pre-given authority prescribing criteria from an absolute heaven of secured knowledge. At the same time, it is not about the celebration of such multiplicity. Rather, the students experience specific criteria as highly situated (in the best case) or as having aspects of contingency (which is also a reality to face). And they learn that it is exactly their own practice, their decisions in which field(s) to consciously place their work, and their way of becoming that will determine the frames of reference and the criteria from

Fig. [Authority]

which their work is perceived – and evaluated. This intra-active structure is crucial for the evaluation of the master's project from the perspective of the program.

One semester (or in some cases, two semesters) before graduation, the students pass through a format which we call "admission to diploma." This consists of a text report describing the motivation of the master's project, the topics dealt with, the methodological decisions, the choice of media and formats, and the fields in which the work is placed or to which it connects. It serves as a sort of treaty, a shared understanding of the character and scope of the master's project (which might include parts that have already come into existence at this point in time) – which is crucial insofar as it is not possible, regarding the multifarious practices and concerns that come together in the program, to have predefined formats that have to be fulfilled. At the same time, it is of the highest importance in such educational contexts that there is a shared understanding and a liability towards the scope and aims of the studies. Through these procedures, the choice of criteria that apply to the final evaluation is partly delegated to the students. It is a sort of response-ability, a dialogic process in which liable relations are built or confirmed.

In the framework of the "admission to diploma," the students are invited to discuss their projects, concerns, aims, and planned outcomes not only with fellow students and faculty but also with an external jury in the format of a one-hour colloquium. And in the process towards graduation, the students also have to propose a field from which the first reviewer has to be chosen for the final evaluation of their master's project. Thus, a conscious choice has to be made about the perspective from which experts will look at their projects – and which criteria are involved. If a project takes place with communities in the urban fabric – to take an arbitrary example – it makes a difference whether it is evaluated

from the perspective of a representative from urban planning, or public art, or sociology, or cultural studies. Whether the students choose a field close to their own discipline of origin or whether they use the mechanism to take a more risky choice and select a field to which they have only recently connected, in both cases, the choice is theirs, and they are aware that this choice also implies a specific set of criteria. Through such mechanisms, the decision on the relevance of criteria is partly decided by and thus delegated to the students themselves.

    The written expertise of the field-specific first re-viewer is joined by another expertise from the program's core team, weighing more centrally aspects of transdisciplinarity as well as the process of the studies. For the last time, the students present and discuss relevant aspects of their master's project in a diploma colloquium with a jury of usually three external experts, and their feedback is summarized in written form. Finally, the core team evaluates how the project makes its own public(s), how it connects to stakeholders of their relevant fields, and how the students participated in publication formats of the program (collaborative yearbook and diploma exhibition). The students, therefore, get a stack of paper with multi-perspective feedback from field experts, external peers, and internal confidential contacts, and they have participated in building these perspectives.

Eco-anarchism
P. 181

    Therefore, when it comes to evaluation, the Master in Transdisciplinary Studies program is less a garden with clear-cut beds and fences but rather a sort of ecosystem, where intra-active, sympoietic processes take place and are observed, and where the roles of gardeners, visitors, consumers, and offspring are constantly in motion. Just another garden then, a bit chaotic at times but always surprising.

Overarching Criteria for the Evaluation of Master's Projects

Motivation: Transdisciplinary projects derive their motivation either from a question that cannot be adequately dealt with in a single discipline or subject, or from starting with a critical positioning towards a given field and the conventional structures of thinking and working in that field. Students must explain how their motivation is reflected in their choice of role models, pre-defined hierarchies, working methods, topics, formal decisions, positions, and media, as well as how issues of labour and production are addressed. The motivation can be named and put up for discussion.
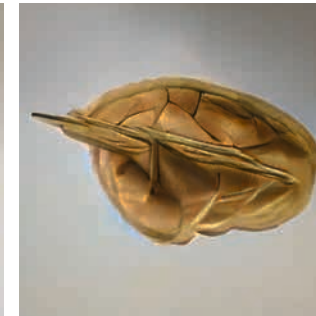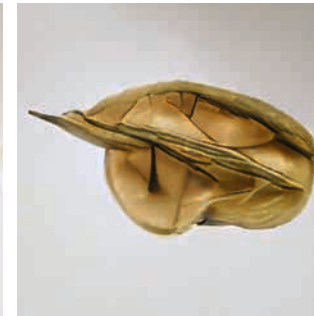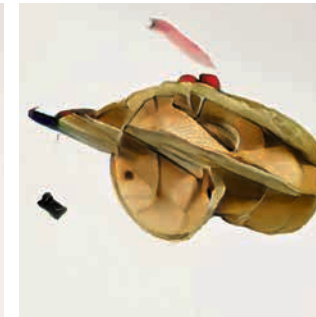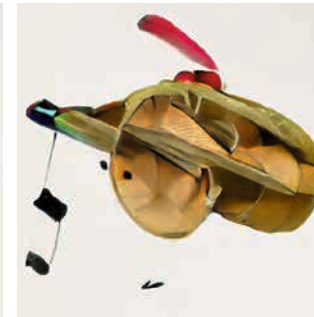
Reflection: On the one hand, this means exercising a critical distance and reflexivity to one's own discipline – especially against dominant belief systems, ideologies, and habitual procedures. On the other hand, it refers to the ability to bring these distinct phenomena into conversation, making them sensible for specialists of other disciplines. The student outlines the limits of technical criteria, the discourses, ways of thinking, forms of knowledge, formats, procedural/methodological ideals relevant to their question or critical approach, and how these are recognised, questioned, and communicated.
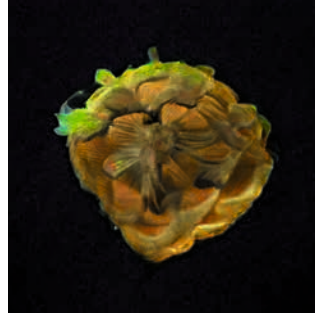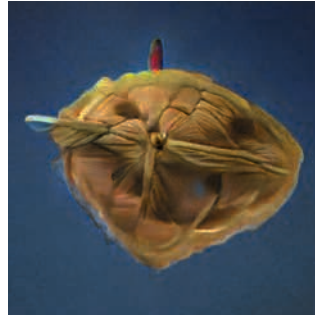
Production: Transdisciplinary ways of working are characterised by their readiness for productive border-crossing between disciplinary or professional paradigms. They are also characterised by the fluid exchange of objects, questions, procedures, methods, ways of knowing, modes of representation and/or institutional framings, and public spheres attributed to those paradigms. They take the risk of challenging, renewing, or expanding their own field of activity or topic and their own ways of thinking and working. They generate connections to working methods, media, formats,

or topics beyond their own discipline. In experimen-
tal, explorative, or conceptual practices, the proce-
dures, media, and formats of one's motivation are
identified and reflected upon accordingly. The results
show this in constellations and formats that tran-
scend, extend, or widen the disciplines involved. At
the same time, they position themselves in the fields
of work involved.

Figs. [Authority]
      [Compost]
      [Delegation]
      [Demarcation]
      [Situatedness]

9.0 Vivian Sky Rehberg, Wander M. van Baalen,
Robin van den Akker, Arlon Luijten,
Liesbeth Noordegraaf-Eelens

DELTA STUDIES IN PRACTICE
Rolling in the Deep

This article is an exercise in thinking and writing together. It is the creative result of a series of conversations conducted in the second semester of the 2021–22 academic year. We – educators, scholars, artists, students, and policy advisors belonging to the RASL network – came together to discuss and explore how the following seven propositions of Delta Studies[1] can be taken up in educational contexts. Our conversations sprang from a collective interest in working towards modalities of learning and teaching better equipped to engage with the complex concerns of our times, to make possible more livable presents and futures. We invite you to think along and share our provisional writing in the spirit of Deborah Bird Rose's efforts to keep "the wisdom rolling, allowing it to accumulate, and refraining from declaring final meanings."[2]

1   Robin van den Akker et al., 2021.

2   Deborah Bird Rose, 2011, 15.

9.1 On Situatedness

RASL Delta Studies programs are not only geographically located in the Rotterdam Delta, they are *situated as* a Delta within which we – a changing collective of students, staff, faculty, and societal partners – are equally called to locate ourselves, concretely and metaphorically. Situatedness is thus the first educational principle of the Delta Studies education and research framework.

Situating within Delta Studies means attending to and orienting through the dynamically constructed education and research context within which we are embedded and cooperate. It also means learning how that context is implicated in and relates to wider, transhistorical, cultural, and social networks. Situating within Delta Studies entails negotiating one's position and priorities

Fig. [Delta]

Fig. [Education]

for engaging with these networks, and for living "amidst land, water, and air," and amongst "entanglements between human and non-human creatures, subjects and objects, techniques and technologies, infrastructures and circulations across various scales."[3]

Situatedness relates to how we establish, understand, and embody our agency (and our power). A Delta Studies project can only really commence once the situatedness of our own experiences, assumptions, practices, and preferences is acknowledged in relation to the project. From the perspective of being situated, one can imagine and invent multiple approaches and rely on different methods for undertaking and resourcing a project, but these will also be dependent on the project's partners, focus, scale, and intended audience and reach. Getting situated is essential for students and faculty to determine where and how to intervene (or make a "cut") and how to navigate the complex layout of a terrain of intervention. This applies as much to research and practice (for example, deciding to zoom in on a specific playing field after researching a larger neighborhood from a wider lens) as it does to how we relate to and facilitate each other in teaching and learning (primarily through dialogue and embodied co-creation and collaboration).

9.2 On Complexity

Getting situated enables us to engage with and understand complexity. Cultural strategist and facilitator Sage Crump asserts that "the ability to engage with complexity is directly tied to our ability to imagine."[4] In re-imagining the future, Delta Studies engages with the past and the present to recast societal issues as complex matters of shared

3   Robin van den Akker et al., 2021, 2.

4   Sage Crump, 2021, 45.

Fig. [Complexity]

Fig. [Delta]

concern. A complex concern can only be addressed by assembling "coalitions with relevant knowledge, imagination, expertise, and skills."[5] Science and technology scholar Donna J. Haraway underscores the complexity of material and immaterial objects in her analytic method of implosion.[6,7] This involves unraveling their histories, infrastructures, economies, symbolisms, physical properties, and epistemologies, as well as the processes by which objects acquire these dimensions. A methodological ambition of Delta Studies would be to implode and account for the complexity of concerns, relations, and objects we engage with in our research and practices, as well as the concerns, relations, and objects we produce.

Implosion shows how complexity operates across different scales and spectrums, including with respect to time: the timeline of a shared concern has no definitive origin and end-point; it mobilizes our imaginations and involves us in a process that is not necessarily solution-in-a-final-product-oriented. This principle has as much impact on the Delta Studies approach to research, education, and evaluation as it does on the relationships we shape with each other and our societal partners. Centering complexity implies that our intentions and expectations for solutions to concerns and finished final products, as well as those of our societal partners, must be managed from the outset. To facilitate engagement with complexity, collective agreements and ideas of success must be negotiated and re-negotiated throughout the process of a Delta Studies education and in Delta Studies projects. Developing equitable processes that are constructively aligned with the situatedness of our students and partners departs from the mutual recognition of the equality of knowledges.

5   Robin van den Akker et al., 2021, 3.

6   Here is Haraway doing implosion (starts at 1:17): youtu.be/eLN2ToEIlwM?t=77.

7   Joseph Dumit, 2014.

Fig. [Complexity]

Fig. [Delta]

Fig. [Education]

Fig. [Equality]

9.3 On the Equality of Knowledges

As Delta Studies engages differently-situated artists, designers, scholars, scientists, and societal partners with complexity, it is difficult, and also not desirable, to be able to predict and measure what will happen in terms of fixed outcomes. This education and research framework does involve scaffolding, or incrementally building on experience, knowledge, and skills, but it cannot prescribe the kind of interdisciplinary knowledge students, staff, faculty, and societal partners might produce, nor how they might be transformed by their experiences with Delta Studies. What it can do is create a culture that analyzes and deconstructs perceived hierarchies between disciplines, and in which we develop a multi-sensory praxis of questioning and intervening in the status quo.[8]

8   Kevin M. Gannon, 2020.

From the premise of the equality of knowledges, we can frame and co-create our expectations in such a way that we all take responsibility for them, thus shifting power imbalances between students, teachers, and societal partners. Wherever these imbalances hold, tensions will arise. Therefore, such a premise must be continuously re-activated through playful experimentation: boundary work, cross-disciplinary collaboration, learning how to let go of disciplinary biases and how to negotiate consensus. Playful experimentation, just like serious research and creation, requires collegial spaces within which we all have the equitable opportunity to seek and share knowledge outside our expertise and to learn, especially from each other.

Fig. [Complexity]

Fig. [Delta]

Fig. [Education]

Fig. [Equality]

One of the most significant ways to foreground the equality of knowledges is by meaningfully involving students in the co-creation of Delta Studies policies, such as module learning outcomes and assessment protocols based on equity and inclusivity. Whereas complexity is key in some aspects of Delta Studies research and education, the aim of facilitating conversations around individual learning trajectories, and collective and coherent sets of measurements and benchmarks, is clarity, transparency, and simplification. One option is to develop authentic assessment protocols that express Delta Studies values. Education and social justice researcher Jan McArthur shifts the traditional understanding of authentic assessment away from the act of measuring gained skills and knowledge in different contexts outside of the educational framework. Due to its "real-world" focus, authentic assessment makes sense when involving societal partners. However, in McArthur's[9] practice, "the concept of authentic assessment becomes not one of joining an existing world *out there* but of being part of the transformation of that world, in all its manifestations within and beyond higher education. Authentic assessment is not assessment that mirrors the world as it is, but that which pushes the possibilities of what the world could be."

9   Jan McArthur, 2022.

9.4 On Compos(t)ing

Composing is a method used by artists, designers, scholars, scientists, and societal partners to formalize research and practice. Composition

Fig. [Complexity]

Fig. [Delta]

Fig. [Education]

Fig. [Equality]

Fig. [Transformation]

is essential to the work of visual and performing artists and designers; research trajectories are composed into texts; experiments are composed out of data; societal partners compose affiliations between representatives of social groups, governance bodies, and policymakers. In composing its educational framework from this basis, Delta Studies is influenced by philosopher and social scientist Bruno Latour, for whom the word composition "underlines that things have to be put together (Latin *componere*) while retaining their heterogeneity."[10] The emphasis on heterogeneity maintains complexity. Latour proposes composition as an alternative to critique, which through negation "creates a massive gap between what is felt and real."[11]

10   Bruno Latour, 2010, 473–4.

11   Bruno Latour, 2010, 475.

Composition involves conscious decision-making and structuring; it brings certain elements into focus and shapes an interdependent field of attention for a working group, an educational community, a listener, a reader, a perceiver who brings their own interpretation to that field. With the addition of the letter "t", composing becomes "composting", a method of putting together components and elements in order to transform them into fertile materials with which we facilitate growth and flourishing. When we compose and compost, we are not only questioning what is valued and what deserves to be valued but also acknowledging the vital importance of waste, of what we discard when we select or when we intervene in the process of working on a project. Composting identifies and provides resources: by working with what is ready to hand – the existing experiences, knowledge, skills, and practices – and sharing the leftovers, we can generate surplus that can be reintegrated into other projects. Composting also requires abundant time for its transformations to emerge and be fruitful.

Fig. [Complexity]

Fig. [Delta]

Fig. [Transformation]

9.5 On Transformation

In 1979, American activists Grace Lee and James Boggs published their pamphlet *Change Yourself to Change the World*, in which they assert that "[c]hanging society means changing people, starting with ourselves."[12] Delta Studies insists on the transformative capacities of an education that composes with situatedness/complexity/equality and that composts (or transforms and alters our perspectives) our materials and methods. Delta Studies is not just concerned with education as the reproduction of pre-defined subjectivities, in which students are changed into professionals. Through composing and composting, through changing ourselves via education and research, we aim toward the emergence of a new set of transformative practices, ways of doing, making, and, very importantly, transformative ways of sensing. The transformation of such faculties goes hand in hand with a transformation of sensibilities, our capacity to receive and respond in ways that are not instrumental and transactional.

12   See www.boggscenter.org.

9.6 On the Indivisibility of Education, Research, and Creation

Delta Studies operates from the principle that education, research, and creation are interdependent rather than distinct activities. Delta Studies students, staff, and faculty come from different educational backgrounds and have been exposed to different administrative cultures, different teaching and research methods, and different expec-

Fig. [Complexity]

Fig. [Delta]

Fig. [Education]

Fig. [Equality]

Fig. [Transformation]

tations and protocols for evaluation. We need to compose, equitably, from the basis of this complexity. By doing so, Delta Studies takes a risk and embraces the opportunity to re-shape institutional and societal understandings of "legitimate" research (that merits funding), quality assessments (that impact how education and research are resourced), and the criteria with which we value scholarly, artistic, and professional accomplishments.

Artist and curator Nathalie Loveless might liken Delta Studies' proposed repertoire of doing, sensing, thinking to a provocation. She would mean this positively. Loveless insists that one's pedagogical approach in a specific field "impacts what *can* and *is* done in that field."[13] What happens, as it would in Delta Studies, when the field is composed of multiple fields (or "situations") that do not necessarily cohere (into pre-existing notions of interdisciplinarity or transdisciplinarity)? Loveless writes: "How we train our students to think about their practices impacts how and where, and why they move forward toward the futures they are developing. Learning environments impact the kinds of questions that can be asked, and the ways in which students are supported in asking them."[14]

13   Nathalie Loveless, 2019, 13.

14   Nathalie Loveless, 2019, 13.

One of the many benefits of a Delta Studies mode of working with societal partners is that we can start a mutually productive conversation around how we work together, not simply what we should accomplish while working together.

9.7 On Making Public(s)

Delta Studies reimagines *making public(s)*. Oftentimes making public is something envisioned taking place at the end of a process.

Fig. [Complexity]

Fig. [Delta]

Fig. [Education]

Fig. [Public]

Among other things, it may involve presenting results, engaging with audiences, and exposing processes. We seek to expand that understanding by approaching *making public* as something embedded in our modes of doing education and research. It is part and parcel of the ways we strive to communicate and co-create with each other and societal partners.

Making public already happens in the act of situating oneself. In becoming attentive to the thick network of associations in which we find ourselves, the once seemingly stark boundaries between education, science, art, and "the public" cannot hold. As a result, the public no longer appears as a clear, circumscribed category but rather as a distributed achievement of human and more-than-human actors. In centering complexity, we must scrutinize and care for our individual and associated ambitions and expectations. Each issue we engage with implicates and assembles different human and more-than-human actors constitutive of the situated knowledge gathered around complex concerns of our time. Together we may ask: Who is *dependent on, committed to, endangered by*, or *passionate about* this concern? In other words, what are the composed and affected relations?[15]

Making public now becomes a risky operation. It is risky because success is by no means guaranteed, and failure is a real possibility. It is an operation because, as the Latin verb *operari* reminds us, we have to "expend labor on" this process: it is work. Having parted ways with the crutch

15   Although "being affected" is not always a given. In the process, we may learn to become affected. Or we become affected in new ways. For a more elaborate discussion, see Noortje Marres' PhD dissertation (2005, 62).

Fig. [Complexity]

Fig. [Education]

Fig. [Public]

of a public out-there, we now step into the muddy waters of "publics-in-the-making," to speak with Noortje Marres.[16] If, for example, we are interested in concerning ourselves with the water quality in a nearby park, there is no use in searching for "the public." The public, as a mysterious collective agency, will constantly evade us. But we can try to get in touch with the local rowing club (or not), with the water management office of our municipality (or not), and we can try to find out more about the animals and plants whose livelihoods are dependent on the vitality of the pond. The public then becomes a "living and breathing creature,"[17] *made up* of real people, technologies, and objects. It is a process full of difference, confusion, joy, friction, and learning together. Throughout this journey, the dynamics of inclusion, exclusion, and accessibility deserve our continuous attention. Making public, in this sense, is a positive intervention, or to formulate it more tentatively, a positive attempt.

The assembly we gather around an issue, *touches* the issue. It is pushed and pulled in different directions. Possibilities alter, topologies morph, and the subject – all the subjects – are changed in surprising ways.[18] It is the making of this public space (quite different from what is usually recognized under that label) that we hope to *achieve* together[19] when we say that our "making public makes publics."[20]

16   Noortje Marres, 2005, 61.

17   Noortje Marres, 2005, 63.

18   To echo Donna J. Haraway's writing on "contact zones" (2008, 219).
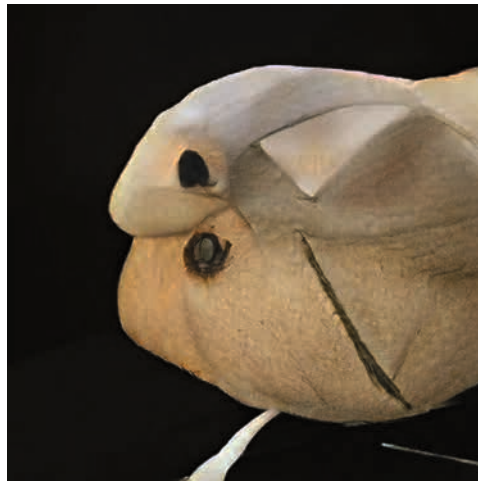
Space
P. 193

19   Noortje Marres, 2007, 771.
20   Robin van den Akker et al., 2021, 5.

Fig. [Public]

Figs. [Complexity]
    [Delta]
    [Education]
    [Equality]
    [Public]
    [Transformation]

Art-science   What is the relationship of
P. 25, 68, 83, 160   Art-science in way
                               of acquiring knowledge(s)?

What is art-science even? Since I am from another planet, I am really interested in what homo sapiens have been doing for their entire existence.

I would say that they have been constantly producing, making, reflecting, and dreaming of dreams that become reality. They are hoping for a magical moment to bring themselves together by making sense of everything around them. Interesting creatures. Through trial and error, built on someone else's idea to create more and more, they have come to repeat themselves or others, digging deeper and deeper to get to the meaning of things and then they try to bring it to the surface again to communicate it to others. I actually have no clue what these homo sapiens are doing, but they seem to need it in order to live and go on with their lives. They tell stories, show concepts, perform emotions, express in movement, and create an abstract reality with one another. This reality that has the potential to become real if they can imagine it (together).

("Humanification" of alien)

Through the divergence of concepts, we are exploring perceived abstract reality: the transformation of art and science. This transmission of knowledges is delineated in exhibitions through the freedom of storytelling, embracing the fluidity of boundaries within the movement of practicing art-science much like the conversion of potential energy into kinetic energy.

("Alienification" of human)

When you speak of this phenomenon, it seems that the subject is slipping through your fingers and doesn't want to be captured. Trying to make sense of something unattainable might help you discover the significance of what the "subject" means to you as an individual. Try to accept the differences in perspective, because that's what it asks for, so, continue ...

(Void)

Stevie Catalina
Pragya Jain

Boundaries
P. 31, 82, 139

The Boundaries

The arbitrariness of the boundary
*Boundaries as the scaling
of binaries*

Boundaries are personal, as in, different per person;

Boundaries can inhibit, confine, and make you feel bound.

Boundaries of any situation can give you a framework.

Boundaries can also give you the opportunity to grow, and to give.

Boundaries can be relational: to yourself, to your surroundings, on a small scale or a big scale.

There are healthy and unhealthy boundaries.

From the person who never stops giving to the exploitative systems that never stop taking.

Boundaries are there to be respected. They are the last point one can extend oneself to: when stepping over the boundary you are being disrespectful and need to make amends, whether in relation to an individual, to work, a construct, a concept, nature or ...

There seems to be a boundary to everything. As our mind wanders, we encounter boundaries; as we physically wander around the world, we encounter boundaries. As we try to define words, we encounter boundaries. Same for defining the "boundary" itself. There is an inside and outside of the boundary, a binary division between this inside and outside which is the boundary, and thus the binary as the boundary itself.

When we think about boundaries, there are several things that come to mind and which reflect either small-scale or large-scale boundaries. But as this divide itself already shows, it depends on the scope whether something is considered to be small scale or large scale. The boundary between those two depends on what is considered. Look at the human body, and the small scale is the cell, the large scale the human body. Look at the world, and the small scale is the human body, the large scale the ecosystem. Look at the universe, and the small scale is the ecosystem, the large scale the planetary systems.

Considering the definition of the word "boundary" we are "bound" to the definition of the "bound": "the limit or furthest point of extension of any one thing." But as we have just seen, this limit or furthest point of extension is not fixed, but is arbitrary. The scale of the binaries is arbitrary and, thus, the boundary is arbitrary.

Merel Michels
Marjolein Salemink

Care I
P. 67, 141

"What use is it that the love of truth, of the good and of all that is attainable is implanted in all by nature, if the truly proper, diligent and persistent care of human beings is lacking?" Johann Amos Comenius, 1656.

Freely adapted from Johann Amos Comenius, tending a garden (what Comenius calls "caring for a garden") means devoted attention, assuming responsibility for the tended to enable its perfectioning.(1)

While tending sometimes requires manifest action, it always involves latent attention. When I leave the garden, my thoughts remain in the garden and the garden remains in my thoughts. Tending is a kind of leaving-while-staying and staying-while-leaving. Tending a garden involves much work. Tending a garden never consists exclusively of work.
The garden has its own time. In a garden, time has no end. Can working in a garden have an end? Perhaps tending a garden also digs up the work in some places. Perhaps something could grow from the dug-up work. If good care is taken.

Sometimes tending means waiting. Sometimes it is not quite clear for what. Sometimes the unexpected happens. Quite often, in fact, if I consider matters. Those who tend, interfere. My hands interfere with the soil. My feet interfere with the grass. My voice interferes with the humming of insects. I hum along.

Sometimes tending is also a kind of breeding of sorts. I grow something, I pull at something. Something gets drawn, pulled at. Whenever I grasp, I intervene. Sometimes the tending hand pulls something out. A shoot. A hair. A thought. Sometimes it cuts something off. A rose. A dead branch. A path. How can I know if a branch is really dead? (See Figs. [1-6])

Those who tend also assess. Those who tend also judge. Sometimes those who tend achieve something. Sometimes those who tend straighten something or someone up.(2) Must one, in order to judge, also punish? A stick can punish. A stick can mark a boundary. The stick can be made of wood, of words or of values. A stick can be stuck into the ground. Instead of pointing the way, it points out into the open. A young shoot can wind its way up a stick, an old one can lean on a stick. Sometimes a stick that is stuck into the ground grows shoots itself.

Sometimes, those who tend take something (down). A tree. A decision. Sometimes those who tend decide to move something. When they do, they move themselves. Into something. Or someone. I place. I surmise. A sentence. A treasure. My stake. Sometimes I misjudge.

Those who tend also err. That must be said. Sometimes they stray around, a little lost. Sometimes a detour is more direct than a direct path. Then straying does not impede attaining the goal, but is itself the path. Sometimes straying itself is the goal. Is every garden also a maze? Sometimes I look for something in the garden. A place. A path. Something I think I have lost. Something I think I have forgotten. What was it?

Sometimes I collect something. Berries. Shards. Snails. And then, indeed, what then? Well, I hold them in my hand. The berries. The shards. The snails. A destiny.

Everything in a garden has a place. Does everything have a place in a garden?
Sometimes tending a garden requires erecting a wall.(3) Sometimes tending a garden requires erecting a fence. Plants wind around fences, yet care little about them. Animals care little about fences. Children care little about fences, as long as they are not too tall. The fences. The children. Someone or something can peek or climb or reach through and over a fence. Something or someone can be passed through and over a fence. A rake. A hand. What would a garden be without a fence? A limitless garden or ... no garden at all?

Hannah L. M. Eßler
From German by Mark Kyburz

Figs. [1-6] Film stills from *On writing a gloss, or: on pulling out a carrot*, 2:09 Min.,
Nora Longatti & Hannah L.M. Eßler, 2022.

1 Perfectioning as perfectness, completion, perfection? No. Perfectioning as a process of the fullest possible unfolding of all living creatures. All living things strive. At the end of all striving stands death. And yet, death is not the goal, but the opposite of life. Thus perfection would not be the goal so much as the end or opposite of perfectioning. Wouldn't it?

2 Translator's note: The German plays on four meanings of the verb *richten*: *richten* (assess, evaluate in a broad sense); *richten* (judge, adjudicate in a narrower, legal sense); *ausrichten* (achieve or, in a second meaning, convey a message); and *aufrichten* (straighten or prop up). This semantic richness is difficult to replicate in English.

3 Examples are important: lively walls. Overgrown walls. Crumbling walls. Walls with fugues, which can become refuges. Walls which do not delimit spaces, but are themselves spaces. If a wall becomes a garden, can there be a wall around that wall? Here, we lose ourselves in the undergrowth of details.

Care II
P. 126

Care, in many ways, is the act or idea of something occupying a great deal of space in one's mind, heart, or soul. This occupancy exists on multiple scales, but for the purpose of this entry we differentiate between a large and small scale. Caring is not just a "human" action or quality, but this exploration will focus on caring within a human context.

The Large Scale pertains to institutions, governments, collections, and organisations. Care on this level is structured, (sometimes) efficient, and it is manufactured. In more sinister cases, it is artificial. Examples of Large-Scale Caring can be found in hospitals. On this scale, care is a product. With the help of organised structure, care can be distributed much faster and more efficiently. However, large-scale caring creates issues such as bureaucracy. It involves politics into the human notion of caring. Suddenly, now that care is a product, it can also be withheld, it can be priced, it can be gatekept.
Another aspect of Large-Scale Care is its manufacture. In a globalised world with an archive of almost all the world's current and past problems, the space of relevant information is too vast for people to "care" about. So, we rely on agencies and institutions to tell us what is "worth" caring for. Social media, news, governments, celebrities: they project "currently relevant" social and political issues. We do have social hierarchies that can produce positive care systems like social welfare, charitable groups, and organised care structures (like education and healthcare). But social hierarchy also leads to the hoarding of wealth and therefore care. It can lead to an imbalance of both what issues are deemed important or "carable" and also who gets to make these classifications about care.

The Small Scale relates to the aspects of care we find in our personal lives. These are the things like our passions, our concerns, our relationships and vulnerabilities. It also relates to ourselves; self-care and the act of mindfulness are becoming more commonplace and important every year.
On this scale we see the act of "facilitating". That can be through a friend who enables and encourages those around them. Or perhaps a parent who tends to their child through the unconditional, selfless acts of nurturing, protecting, and teaching. We see the care workers, facilitating the lives of people who are in need or disabled, the sacrifices they make for them, and the vulnerable position they put themselves in in order to open themselves to the potential losses of these people.
We also see the notion of our personal interests and passions. On this level, we have what we personally care about, and deal with the conflicts that may arise with what we're "supposed" to care about. We try to impress those around us by "caring" about certain political issues, hobbies or media, books or movies. We also manufacture care on this scale, whether to be a more positive agent in our own or in others' lives, or, more perversely, to convince our peers of a semi-fictitious character we want to portray.

Care is clearly a multi-faceted concept, with many different connotations and perspectives. Today, it can be hard to identify what direction we are heading in regarding care. Are we becoming a more or less caring society?
On one hand, the number of caring structures is increasing, and the ability to care medically, emotionally, and psychologically is growing. This should make it easier to care, making care more prominent. However, social media continue to commodify care and shift the frame of importance to the individual rather than to others. Also, the internet facilitates a selfish lifestyle. The access to (mis)-information enables people to bend facts for their benefit, allowing for "conspiracy-theory culture" and the ability to fabricate reasons for actions, whether they be good or bad.
Care is something that has existed within humanity for hundreds of thousands of years, with evidence suggesting that groups of early proto-humans cared for the disabled and elderly. Today this type of care is still around, but whether or not this culture or behavior will continue can be called into question.

Joseph Catlett
Nando de Groot

1/3 Cormus
P. 74

Roots in flux. Flowing roots. Sometimes grafted, sometimes snapped off. If that occurs, then roots, commuting with everything biotic and abiotic, are altered. And yet, as a rule they find a way to preserve something ancestral, a part of the primordial cell.

Roots are fundamental and sustain living things. They interact with dead or quasi-dead material or with the never-lived. What does never-lived mean? Roots are able to reproduce life from dead matter, contributing to the cycle with miniscule, fertilising particles. Roots touch and weave. They spin webs of communication, nutrients and memories around themselves. They are in contact with microbes, with the crowns of giant sequoias, with heartache and with fungi. They are often covered by a warming, nurturing and cushioning layer. When they have fought their way to the surface, they turn to wood and harden, thus protecting themselves from harm.

Roots pave ways, convey water and sugar, make flowers bloom in spring and leaves fall in autumn. They store the colour-giving components of summer such that eerie beauties can be discovered in the winter forest.

Roots inspire us to walk, to search, to return and to contemplate.

(Cormus: Architecturally, plants can be divided into three basic organs: stems, roots, leaves.)

Roxani Marty Pavlaki
From German by Mark Kyburz

Eco-anarchism
P. 63, 148

There is no domination in nature; instead, creatures feed each other. Humans are also a part of nature and have no right to dominate it. Eco-anarchism rejects domination between living beings. A symbiotic relationship is one in which organisms, people or things live together in a way that benefits them all.

Imagine what mice would do to the world if there were no cats.

I learned traditional harvesting methods from my grandmother in our family garden in Kurdistan. Based on everyday experience, this knowledge has evolved and been passed on for generations. Many Kurdish farmers also use traditional harvesting methods. Both cultivated and wild cereals have long populated this landscape; wheat, barley and lentils were first grown here around 8000 BCE.

Consider what flies would do to the world if there were no frogs.

I well remember my grandmother's pharmacological knowledge. Since ancient times, local herbalists have prescribed the abundant, edible milk thistle (Silybum marianum) for many ailments. Kurdish pharmacology extends traditional applications and uses it as an effective treatment for liver diseases. Long before the word "pharma" (medicine), people used herbs to heal their wounds. My grandmother's medical knowledge was important for my family.

Looking at the roses in my garden, I think of the defence strategies of living creatures. Roses protect themselves with their thorns.

The garden is a sphere where creatures live together and feed each other. The garden is a sphere where care is taken, where learning takes place and where, beyond marketing, crops are harvested for personal use. The garden is a sphere where collective experiences, personal memories and diverse forms of knowledge come together. This is what I learned from my grandmother's garden in Kurdistan.

Nistiman Erdede
From German by Mark Kyburz

Eco-empathic listening is an embodied listening position which comes
back to a haptic relation, activating the hidden sonic parts of
landscapes through touch: the rustling sounds of leaves, the plant-
ing of seeds. "Eco" comes from the ancient Greek word oikos
("house"). Using "eco" in relation to empathic listening may be a
starting point of expanding our listening state to others, already
in our close habitat. Using little microphones on the fingers,
and listening through headphones, the listeners perform slow ges-
tures of care, trying to give attention to the inaudible part
of the landscape by amplifying the smallest details of the surfaces.
The hands become the ears, holding and stroking the lichens, soils
and barks we encounter with tenderness. Through eco-empathetic
listening, we seek to extend emotional connections beyond those
between human entities, addressing the responsibility of humans re-
garding their environment and reshaping ways of relating to others.
There is an immediate intimacy between the listener and the
subject being touched, as if we had access to another possible
dimension of encounter.

Within the prism of psychology, thinking about human and non-human
relations in the context of ecological crisis led to the development
of contemporary concepts in order to face our inner feelings about
the destruction of our planet. When our ears actively receive
the incoming sounds, touch gives motion to another secret relation,
allowing gestures of care between humans and non-humans, allowing us
to feel the otherness, touching and being touched. These rela-
tional connections are sounded in order to inspire a global ecologi-
cal change, allowing us to listen with eco-empathy, as a possi-
bility of engaging with a troubled future.

Mélia Roger

For us, to flourish is to be worry-free.
To be comfortable.
It is momentum; it happens from time to time.
To explain the concept of flourishing, we compare it to a sunflower.

A sunflower can only grow under the right conditions. Good soil,
fresh water and enough sunlight. Once these are correct, in
balance, the sunflower will start to grow, maybe without it even
noticing. A sunflower is subtle but powerful, and in that it is
vulnerable. A sunflower must do more than survive, it has to thrive.
To be a sunflower is to be worry-free, facing the sun.

We can only flourish under the right conditions. Good company, fresh
water and enough care. Once these are correct, in balance, you will
start to flourish, maybe without you even noticing. We are sub-
tle but powerful, and in that we are vulnerable. In order to thrive,
we have to flourish ourselves. To flourish is to be worry-free,
facing the sun.

Juwe van Vliet
Ella Wijnen

Glossary
P. 15

Any glossary should be generous enough to contain itself. A glossa-
ry, in the singular, does not exist. Annemarie Mol(4) inspires
us to regard the glossary as always already multiple. Let us there-
fore write that *this* glossary brings together a constellation
of concepts that the authors have deemed important in their trans-
disciplinary practices. Patterned after the *New Materialism Almanac*,
the entries in this glossary vary from authoritative introduc-
tions to key terms to much more intimate, situated and sometimes
poetic texts. Rather than delineating and policing usage, these are
efforts to multiply meaning and widen the number of actors allowed
to produce and share meanings. The entries were written during
a *Glossary Workshop* organized at different higher education institu-
tions during the 2021–22 academic year. The authors are students
from a range of artistic and academic traditions. By publishing the
affiliations of the authors, we aim to underscore the contin-
gent nature of the texts, situating them in time and space, while
also proposing the glossary as an exercise in "being together
across difference". During the editing process, we have sought to
respect and maintain the original voice and style of the texts.
In so doing, we hope that our differences may be generative (to echo
Tamara de Groot, this volume, chapter 3.0), not only for us, but
also for you: the reader. It is our hope that these entries be taken
up by different actors, at different times and places, and that
they may surprise, stimulate, anger, or be *put to work* in endlessly
interesting ways.

Wander M. van Baalen
Glenn Loughran

Harmony
P. 117, 126, 143

Harmony is a complex and broad term. It is hard to see it as only
one thing. Since it can be applied in different fields, in this
entry we will offer two different perspectives on this word.

In musical terms, harmony refers to a way of shaping colours through
a series of logical and well-combined chord movements, something
that gives each piece infinite possibilities of feelings and moods.

From a more general perspective, which could be applied to arts,
mathematics, science and even life itself, we could define harmony
as the order, relationship or interaction between different co-
existing elements.

Are these two perspectives related? What are the similarities and
the differences between these two points of view? Does one ex-
clude the other? Does one help the other towards a better under-
standing of the word? That is up to you.

Vicente Santiago
Ioannis Mitsios

Listening
P. 44, 65, 116

Describing listening was a struggle.

I would explain it as a personal sensation, a personal understand-
ing of a situation. Listening is for me an interpretation of
what I hear; I can listen carefully or listen without paying much
attention. The degree to which I listen depends on my interest,
my mood, the atmosphere, or the space I am in.

At the same time, I wonder if listening could be deeper than that,
than paying attention to what you consider important or what
the situation is obviously telling you. I wonder if we can acknowl-
edge what we do in order to pay attention. We filter out so many
sounds, so much of our environment. What would happen if we
decide to listen more, to pay more attention?

This different degree of attention makes us aware of the depth of
certain musics. Indeed, you can listen a thousand times to the same
symphony, and discover a new layer each time: a new interest, a
new sound, a new color, a new texture. Listening is also opening
a door between reality and imagination and feelings.

Otherwise why would listening to _____ give me the chills?
Or why would the sound of _____ make me feel disgusted?

As musicians, listening is the only way to bring our sounds, our
different instruments, our different characters together and form a
harmonious ensemble. Is listening not always a relational activity?

Norma Rouseau
Anabel Avendaño

Matter
P. 33, 51, 85

"Practices of knowing and being are not isolable; they are mutually
implicated [...] we know because we are of the world. We are part of
the world in its differential becoming." Karen Barad, 2007

Humans are not exceptional species. We come into existence closely
entangled with *matters of the Earth*.

Matters of the Earth: Human and non-human bodies, critters, plane-
tary organisms, multispecies environment, kin.

We co-become with all kinds of non-human *matter* – things, technology
and tools – with a *place*, as well as with our more-than-human
companions.

Matter: Trouble, to stay with something, something significant,
sound is matter too, hand labor, needle work, the tactility of
materials and textures, touch.

Place: Becoming indigenous to a place, to be grounded, to learn with
a place, to listen to what a site can tell us, making place.

In this entanglement, learning and *knowing* are material processes:
we learn with matter; our minds and bodies are matter.

Knowing: Knowledge in the making, incomplete, sense-making of the
world, feeling-thinking, experiential, relational.

The *space* that holds us matters. All matter has a duration, its own
*time*line.

Space: Where matters come to matter, where things are made situa-
tional, holding space for others.

Time: Non-linear time, deep time of the earth, many timelines at the
same time bringing the past and the future into the present,
community memory, time can be a space, slowing down, free time.

Maaike van Papeveld
Jesse van Oosten

Performance
P. 71, 97, 117, 165

Act of sharing. Act of communicating.

Does not exist without the audience – those who watch, listen or experience the performance.

You can wonder if only artists can perform. Or if anyone can have a performance. How intimate can it be? Does it have to be an event? Or if a child is singing a song to their parents that they learned in kindergarten, can it be considered as a performance? How deep is the definition of performance?

Performance has been a big part of human life, both for the artists and the audience. For us, it is very intimate and something we hold very dearly in life. We can tell stories through art itself to reach the audience. Nowadays, the portrayal of the audience could be both direct and indirect.

Why did we say both direct and indirect? Because right now, we are adapting to changes because of the pandemic. Today, we live in a slight absence of audience. We perform, intending the others to hear us, but many times we don't get that far. We aren't motivated. And yet, we don't stop trying.

Adapting to changes as mentioned above, is not a new thing for people who perform. During the preparation for a performance, we will always come to a phase where we must deal with changes. Through these changes, we learn about many things, and because of this we can somehow have interesting perspectives and stories about our performances.

By gaining different perspectives, performance can become our voice to share concepts or ideas which we believe in. It can have a different purpose than just entertainment – it can become a tool to convey a message about any topic.

Weronika Ast
Nadia Tumiwa

Pharmakon
P. 23, 54, 120

A paradoxical word in Ancient Greek, translated as "drug" but meaning both medicine and poison. Depending on the context, the word could mean one or the other, which implies a certain skill or knowledgeability in relation to its alternating uses, even elements of insightful sorcery or inventive contextualisation.

Jacques Derrida explored the various meanings associated with "pharmakon" in *Plato's Pharmacy* and noted: "This pharmakon, this "medicine", this philter, which acts as both remedy and poison, already introduces itself into the body of the discourse with all its ambivalence. This charm, this spellbinding virtue, this power of fascination, can be – alternately or simultaneously – beneficent or maleficent."(5)

The contemporary notion of "pharmakon" as devised by Bernard Stiegler,(6) suggests a great need for pharmacology in todays capitalist society, where the fabric of human culture demands urgent re-evaluation to counteract the poison of economic, cultural and ethical misery. Focussing on digital technologies and their simultaneous role as trigger and indicator of rapid shifts in every aspect of the anthropocene, Stiegler posits that artists, thinkers and citizens alike, through inventive contextualisation of their work and everyday habits, must endeavour to drive social agency and highlight the anthropogenic impact of humankind's technologies in a bid to transform society from poison to cure.

Katie Nolan

5 Jacques Derrida, 1981.
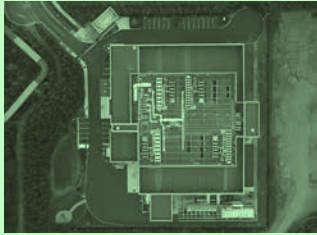6 Bernard Stiegler, 2010.

Fig. [7] *Digital Culture – Poison and Cure,* Katie Nolan, 2021. Still from drone footage recorded at the Digital Realty Data Centre at Grangecastle Business Park, Dublin, Ireland.

Fig. [8] *Trespass*, Katie Nolan, 2022. Still from video footage recorded at Costin's family run organic orchard, Affane, Co Waterford, Ireland.

Fig. [9] *Trespass,* Katie Nolan, 2022. Gallery View, drone, micro projector, video.

Note:

My artwork *Trespass* examines our digital culture as pharmakon and Ireland's role in the Cloud Storage Industry. Dublin, known as "The Cloud Capital of Europe", is host to 25% of all Data Centres in the EU. Constructed on sites that were formerly orchards, farmland, forestry, protected habitats, these ravenous beasts consumed 265% more energy in 2021 than in 2015. It is estimated that by 2028 data centres will consume 34% of Ireland's electricity, seriously complicating our nation's ability to respond to the climate crisis.

A misconception exists where the digital is somehow separate from the real. But digital is physical and digital costs the earth. We collect. We create. And then we don't use. While digital is critical to everyday life and connectivity, up to 90% of digital data is not re-used. Words, music, images, films, videos, software ... they all end up in *the cloud.* Most data is like single use, throwaway plastic. So why does our nation facilitate 90% digital waste? And why is our land, public infrastructure and national grid devoted to multinational digital corporations to make multi-millions of dollars while they offshore their energy consumption and carbon emissions on our island?

Filmed secretly at the Digital Realty Data Centre in Grange Castle Business Park, Dublin (see Fig. [7]) and at an organic fruit farm in Co Waterford (see Fig. [8]) the work points to the history of an orchard that once existed where this data centre now stands. Aiming to challenge our ideas of digital location and the norms of physical invasion of space, a drone adapted to carry a micro projector, transitions from passive recording device to active participant and "trespasses", projecting the film onto the exterior wall of the data centre.

The drone, its shiny exterior stripped away revealing its interior components, sits on a plinth reviewing its own contribution to the production, manipulation and storage of the information that created the artwork. (see Fig. [9])

Rhythmanalysis
P. 27, 95, 144

"Lost again. Where was I? Where am I? Mud road. Stopped car. Time is rhythm: the insect rhythm of a warm humid night, brain ripple, breathing, the drum in my temple – these are our faithful timekeepers; and reason corrects the feverish beat." Vladimir Nabokov, 1969.

Rhythmanalysis can be defined as an exploration of social life through the lens of rhythm. It is the system of revealing relationships pertaining to space or territories; how they are inhabited, remembered, imagined and how they shape the experience of everyday life. Rhythmanalysis has become an acknowledged method of inquiry and is the term coined by Marxist sociologist Henri Leebvre. Many iterations of this research have been produced, including references by French philosophers Deleuze and Guattari in their work *A Thousand Plateaus* (1980).

How is rhythm used then, as a tool of analysis? Rhythm is defined in the *Oxford English Dictionary* as a "regularly occurring sequence of events or processes." Within music it describes repeated patterns, which can be visually described in graphic scores such as those of Cornelius Cardew or John Cage.

In a more diverse setting, French educator and pedagogue Fernand Deligny created a rhythmanalysis based on the lives of ten nonverbal autistic children who were released from an institution in the 1970s to live a more self-directed country existence. He created cartographic tracings of their repetitive movements: washing, walking, building of shelters, listening to birds, and when they simply stopped to self-regulate. In this glossary I have included an image of a baking day at Monoblet (see Fig. [10]). This image depicts three children as bread is being baked. "The eyes" denote the positions of the children around the table and "the hands" are similarly to be seen, as are the strings of saliva denoted as "wavelets". The lines are the connections between places; the dots and points are the players in the artwork.

As part of my current investigations, I use this framework to harness sounds and visual cartography within an augmented reality environment. Four interviews with island inhabitants provided an in-depth unpacking of their sensory experiences during the first Covid-19 lockdown. They recounted journeys, spoke about colours, sounds, salt-filled rushes of wind, puddles and the smell of horse urine. Drawings were created, sound files added, and a graphic score was created. As part of the process this was then re-drawn in a virtual space (see Fig. [11]). This methodology has enabled the visualisation of the work, lending a powerful framework to scaffold the final piece. I have interpreted this as the interrogation of a landscape or island in this case, through the investigation of cultural stories, patterns, journeys, topography and sensory information. It is a research technique employed across the social and spatial sciences, and many books have been written that look beyond Lefebvre. In *What is Rhythmanalysis?* by Dawn Lyon, she states that it continues to be an "explorative study of economic cycles, digital interaction and the constant co-existing rhythms of everyday life" and will continue to do so as our lives evolve through our unending patterns.
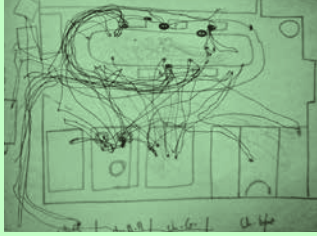
Ann Burns

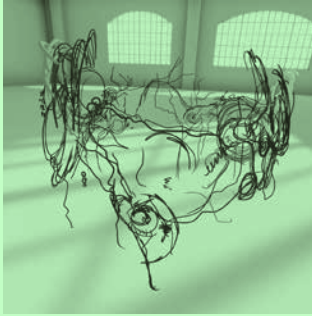Fig. [10] *Monoblet*, Fernand Deligny, 1970.

Fig. [11] *Geo-scape, Gravity Sketch/Oculus*, Ann Burns, 2021.

Space
P. 98, 166

Space is a *container* (a carrier bag, an archive, a vessel that holds matters, lives, stories)
It can exist physically, but also mentally or digitally
It is a room, a place, a location, an environment
An area that can be *occupied* (held, taken control of; spaces are always occupied by more-than-human entities)

But space is also a stretch of *time* (a duration, temporal space to be made, spent, wasted, cherished, or invested)
And a closeness: a gap, a suspense, an in-between, a negative space
Needing more space typically implies a combination of place, time and closeness that allows us to reflect

To hold or make space means to create time and place for someone or something to be or become
Holding space is a mattering practice, like *composting* (composing, putting together on a pile leaving things to decompose and mingle creating a fertile ground)

Space is conditioned by climatological, social, and political forces
But it can also be conditioning, as environmental aspects influence the way we feel, move, interact, and *learn* (the situated act of acquiring new understanding, knowledge, skills, values, attitudes, and preferences)
We perceive space differently, depending on our species, our social and cultural identity, our worldview, and our disciplinary background

Maaike van Papeveld
Jesse van Oosten

State of the gARTen
P. 87, 120, 137

State of the gARTen describes the state of the garden at the time
of engagement. State of the gARTen matters to such an extent that it
seems relevant for fruitful further engagement with the garden.
State of the gARTen extends "state of the art" for use in transdis-
ciplinary contexts (and gardens).

1. Gardeners
Gardens by definition know gardeners. There are many understandings
of gardening. Some welcome not only professional gardeners of
various specializations into collaboration, but other critter too,
that would not have a say in the disciplined fields of (academic)
monocultures. Human or non-human: who can be seen, who can be heard,
depends on your set of instruments, your sensibilities and sense-
making habits. For this short text, we will narrow down the communi-
ty of gardeners to those who follow the growth of others with a
certain self-interest or metabolic engagement.
No gardener you or I can talk to would ever state that the state of
the garden is negligible. On the contrary, most will agree that this
assessment is of utmost importance for one's success and the
survival of others. Yet, the question of how to capture or define
this state is anything but trivial. This is even more true when
several gardeners come together in one garden. At least, a certain
overlapping of understandings of what the state of the garden
is becomes crucial for further growth. Expectations, however, that
these conceptions would coincide, may lead to great frustration and
unwanted death. In the shared garden – and which garden is not
shared? – down-to-earth weed pullers meet measurement technicians
of relevant chemical compounding, and permaculture laissez-faire
(laisser-envahir) must grapple with garden-rope-geometric passions.
Concerning the state of the garden, various perspectives are
valid and may deliver insights, and none can claim to replace
all others.

2. Topology
A Garden is a bounded place, yet its limits are not definitely de-
terminable. Its very substances defy limits. Water, microbial
life, insects, knowledge, pollen and pollution all circulate freely
across garden boundaries and make it a matter of decision where
the state of the garden begins or ends. For this and many other
reasons, it is impossible to define the right way to enter a garden.
Depending on which gate we enter, we find a different garden.

3. Accepting the thicket
The state of the garden is a material-semiotic ensemble. It is both
the actual state of all the entities in the lot, including their
interrelations, and our knowledge of these things. Because the two
generate each other, the state of gardening is not independent
of the state of the garden and vice versa.
Even a very tidy garden is thick and deep; it is able to give
birth to sympoietic novelty, and we always already think of it from
within.
While it is a valuable (dialogic, ethical) skill not to confuse
one's knowledge of an entity with the entity itself, encountering it
the state of the garden as a whole undercuts this distinction.
If my gardening is not mere theory, it will present me with a coun-
terpart that is not transparent, but thick and deep and potentially
engulfing and such is its state. Every garden is a thicket if
one is attentive. No matter my choice of gardening tools and my ex-
perience, my understanding of the state of the garden can only be
partial. It is more obstructive for a gardener to think they know it
all, then to miss some hidden references. This goes also for this
text, a thicket on its own. Not losing oneself completely may depend
on developing a sense of location that has no grid on which to
depend. Instead one needs to read one another's ephemeral tracks in
the mud, to follow winding lateral roots and to understand the
patterns of shadow and sunlight that emerge.

4. Uncreative practice
Gardens are not created. One does not enter them as creator. Cre-
ators, be they godly or the white and manly subjects of enlighten-
ment, are not needed in order to tell the stories of the garden.
Eternally self-cloning alpine shrubs and odd fungi hold godparent-
ship and bear testimony (thicket!) for queer genealogies that
go further back in time then the most canonical Californian Redwood
tree. Gardeners do collect and rearrange, refine and tend to;
they listen to Compositae speaking to compost (so to speak) and
allow encounters to find them.

Thus, the state of the garden cannot be genealogized into a history
of creations or works. Neither can it be understood as a notion
of absolute progress. It lives in a present indefinitely oversatu-
rated with stories. Enduring garden-knowledge may accumulate around
the dew-soaked feet of those who've come to question and stay
to listen.

Emanuel Haab

Worlds
P. 22, 88, 138, 161

Sitting behind the kitchen window, my mother and I watch the birds in the garden through our binoculars. Lying beside us on the window sill is a thin booklet, a bird identification guide. High up in the sky flies a red kite, which we recognise by its slightly v-shaped tail feathers and the markings on its belly and wings. Perched on the moss-covered tool shed, a crow is tampering with the water bowl. It seems to be drinking and then wiping its beak on the moss. We go out into the garden and my mother tells me about the birds she has already observed in the garden. In the pond, at the very back of the garden, a solitary fish has been living for several years. Recently, a heron came to visit. Since its appearance, my parents have not seen the fish again. I go to the pond looking for it. Apart from a few water skimmers, underwater snails, algae and withered lily pads, I can see nothing in the murky water. Behind a stone, at the edge of the pond, a slow worm rustles in the leaves. I forget the heron and the fish and admire the reptile's shimmering skin. I vaguely remember an illustration of one in a young person's "What is What" book.

The garden fence begins further back. It separates the surrounding gardens from each other. A neighbour's cat jumps over the fence and comes to me. As it brushes between my legs, I share my thoughts: "Jaru, yours is a good life, you don't let any fence stop you. You move across the land as if there were no obstacles. You experience gardens as little worlds designed by humans and jump from one to the other as you please. I wonder why we like to separate things so much from each other, to detach them, to rearrange and order them according to our own logic. As if we are seeking to create our own little world. I would be interested to know how you perceive your world, Jaru." Curiously, I look into the neighbour's garden. The neighbour is coming around the house pushing a wheelbarrow full of firewood. With a loud crash she dumps the logs next to the patch housing the kitchen herbs and the large lavender bush. She begins stacking the logs, one by one, to form a wooden beehive. Fascinated, I watch how she places the logs according to their shape, similar to "Tetris," the computer game. From an indescribably complex form of a tree, a living being, cut into manageable pieces, emerges a dense wooden wall subject to a new order and structure. Jaru disappears behind a blackcurrant bush. I return to the house and draw a map of the garden in my mind. I quickly realise that rather than ending at the fence my mental map extends far beyond the neighbourhood. Some places seem to be hidden in the mist, while others are elaborated in detail. Like a kite in the air, I fly over the map, trying to glimpse the diffuse spaces in between.

Oliver Brunko
From German by Mark Kyburz

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