

Design Principles for Regenerative Higher Education in Times of Sustainability Transitions

Bas van den Berg



Propositions

1. Paying attention to the inner worlds of educators is key when cultivating regenerative higher education.
(this thesis).
2. The inclusion of regenerative forms of higher education as a mandatory part of education will contribute to improved resilience and well-being of the next generations.
(this thesis).
3. Educational sciences only become valuable when they lead to change(s) in practice(s).
4. The focus in the scientific system on academic journals conflicts with actively participating in societal impact.
5. In times of polycrises, all scholars have a moral duty to engage with climate activism.
6. Reflective time spent in nature daily should be obligatory across the education system.

Propositions belonging to the thesis, entitled

Design Principles for Regenerative Higher Education in Times of Sustainability Transitions

Bas van den Berg

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Design Principles for Regenerative Higher Education in Times of Sustainability Transitions

Bas van den Berg

Thesis Committee

Promotor

Prof. Dr A.E.J. Wals
Personal chair, Education and Learning Sciences Group,
Wageningen University & Research

Co-promotors

Dr K.A. Poldner
The Hague University of Applied Sciences

Dr E. Sjoer
The Hague University of Applied Sciences

Other members

Prof. Dr A. Bregt, Wageningen University & Research
Prof. Dr D. Dentoni, University of Montpellier, France
Dr M.L. Cardozo, University of Amsterdam
Dr M.E. Ormond, Wageningen University & Research

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Design Principles for Regenerative Higher Education in Times of Sustainability Transitions

Bas van den Berg

Thesis

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Preserve and cherish the pale blue dot, the only home we've ever known.

— Carl Sagan

Those who contemplate the beauty of the earth find reserves of strength
that will endure as long as life lasts.

— Rachel Carson

The Natural World

Throughout my journey towards this PhD, the natural world has been a key ally. If I could, I would add the natural world as a co-researcher and author for this thesis. Daily walks in nature have been a key component of my thinking and well-being. On each of the walks, I had the opportunity to let things fall into place, to lean into ideas and concepts, and to recover from the stresses of daily life—that is, to slow down and connect with why I engaged with the work in the first place: a moral obligation I feel towards planet Earth.

I would like to dedicate this thesis to the lesson of *caring for those you love* which my grandfather taught me, a lesson of caring that I hold deeply for Earth.

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Summary

The latest Intergovernmental Panel on Climate Change (IPCC) report (2022) shows what many already knew – human systems are on a collective collision course with the planet. According to the latest United Nations (UN) projections, it is now no longer possible to entirely avoid the impact of climate change as we march towards, and quite likely beyond, a 1.5° C increase by 2030. The literature has long proposed educational responses in order to achieve a more sustainable future. Despite this, the translation of theory into practice has been limited. This practice–action gap severely undermines the ability and potential of higher education to transform the degenerative impact of humans on the planet into a regenerative one.

The focus of this thesis is regenerative higher education (RHE), which refers to education that actively supports all humanity in learning to live within socio-ecological boundaries in dignified ways. RHE proposes that education can play a vital role in creating a safe and just space for humanity to live in (Raworth, 2017). The aims of this thesis are as follows: 1) to contribute to the further theoretical understanding of what RHE could consist of, 2) to highlight the major resistances and enablers that practitioners may face when engaging in RHE, and 3) to help make such forms of education easier to design and enact within formal higher education. The central research question is this: **How can regenerative higher education be designed and enacted and what resistances and enablers to this process must be navigated?**

The general introduction (chapter 1) of this thesis describes why regenerative education is required in the face of a world in transition. The chapter also provides the methodological commitments with which this research was conducted, including the different methods used across the studies. In addition, the introduction also discusses my positionality and provides an overview of the structure of this thesis.

Chapter 2 unravels how emerging forms of regenerative higher education are already starting to be enacted. The chapter focuses on podcast conversations with educational trailblazers across the Netherlands and beyond. The resulting episodes were abductively analysed through transition mapping (Van den Berg, Wissingh & Castillo, 2021) to identify the principles, resistances, and enablers of emerging forms of RHE. The results include seven design principles that these educational trailblazers had in common as well as a range of heuristics that can be used by educational design teams to prepare their own plans for RHE.

Chapter 3 describes my design-driven autoethnography as an educator active in a university (of applied sciences) setting who himself seeks to develop and enact more regenerative forms of higher education. The study focused on the design, redesign, and teaching of two full iterations of the semester-length course Mission Impact at The Hague University of Applied Sciences [THUAS] across two-and-a-half years of study. In this study, my diagnosis with ankylosing spondylitis – a form of rheumatic arthritis – and the physical pain it caused me was used through a relational and embodied lens to help me identify personal and systemic resistances that I faced when engaging with regenerative principles in higher education (Tabor et al., 2017; Weiss, 2021). The results are presented in the form of four vignettes, each capturing the main lessons learned during a semester-length period.

Chapter 4 explores the lived experience of the students who participated in the Mission Impact course at The Hague University of Applied Sciences. The study presented in this chapter was conducted through interpretative phenomenological analysis using the arts-based reflective journal of the students. The living spiral framework, which engages with transformative experiences through the metaphorical lens of a growing tree, was used for the basis of these journals. The main results of this chapter include insights into what drives students to engage with these regenerative forms of education, how these forms of education can be designed and taught, what systemic and personal resistances students experience when designing and teaching RHE, how these are navigated, and what seeds of learning they take with them into the future.

Chapter 5 summarizes the research objectives and findings of all three studies in this thesis. These insights are discussed in relation to the literature, contemporary higher education practice, potential societal impact, and the main limitations and ethical tensions in this research. The chapter ends with potential future research opportunities, including the need for dedicated pedagogical research and longitudinal studies into how educators and educational institutions can become more regenerative.

The main conclusions of this thesis are as follows:

1. While RHE can be expressed in many ways in its educational contexts, it seems there are eight core design principles that form the basis for such regenerative education: (*tackling urgent and relevant transition challenges, cultivating personal transformations, teaching as self-actualization, nurturing supportive innovation ecosystems, embedding locally with systemic awareness, openness for emergence, shaping thriving futures & holding healing spaces*).
2. However, there are institutional resistances that make more radical regenerative forms of higher education hard to realize. The hardest difficulty to overcome may be within educators themselves, as engaging with the design principles requires considerable courage.
3. Because of the complexity and long-time scales of transition challenges, the main outcome of RHE for most higher educational contexts is likely limited to planting seeds of (systemic) change within participants and systems entangled with RHE. The focus of educators likely has to be on 'planting the seeds of change' so that students engage with regenerative work throughout their professional life.
4. When engaging with RHE, educators can take specific (pedagogical) actions to help learners navigate the difficulties associated with working on sustainability problems.

Throughout this thesis, RHE invitations are offered in the form of design questions, guides, and tools. These invitations may support practitioners in implementing their own forms of RHE.

A regenerative break . . . you can use your phone to scan the QR-code below. This will send you to one of the episodes of The Regenerative Education Podcast or another form of digital media that was created during this thesis. I warmly invite you to go for a walk to clear your mind before you continue reading. Below the QR-code you will find questions to reflect on as you are listening and walking in the hopefully warm embrace of sunlight.

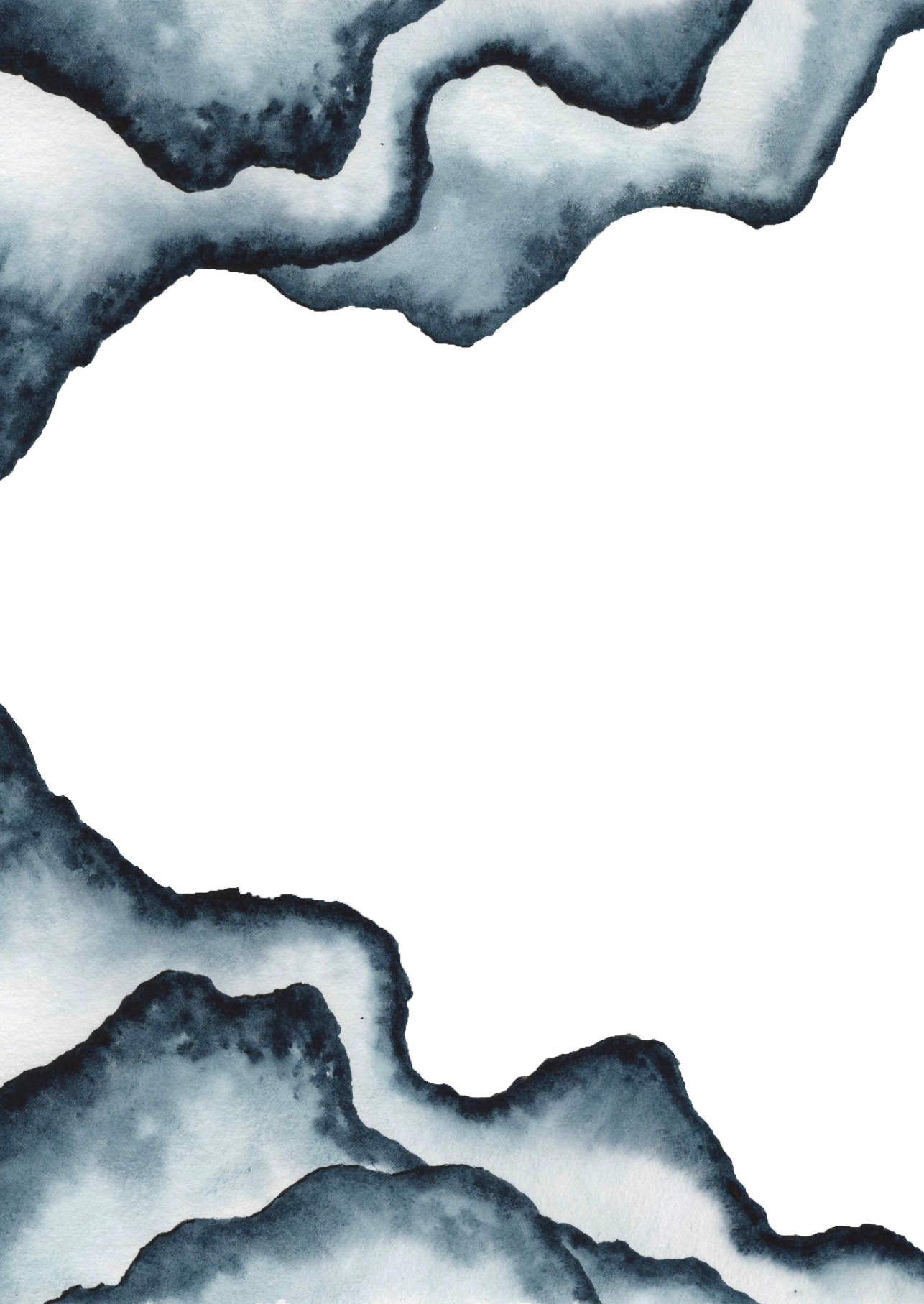
Designing Regenerative Education
With Dr Daniel Christian Wahl



SUMMARY

Reflective Questions:

- *What would your regenerative education be like if you placed community at its core?*
- *What would your education be like if it focussed on finding better questions to ask instead (collectively) of answers?*





1

GENERAL INTRODUCTION

Chapter 1. General Introduction

This chapter frames the context of and outlines the research presented in this thesis.

1.1 The Challenge – A Planet in Crisis

The planet is in a state of crisis, and universities must connect with local sustainability transitions to help transform human society into one that respects and thrives within planetary boundaries (Raworth, 2017; Rockström, 2009; Wittmayer, 2021). This thesis explores regenerative higher education (RHE) as a promising collection of educational practices to support these sustainability transitions (STs). In this thesis, I argue that RHE provides richer forms of societal learning-based change than those currently in place, and I explore how RHE can be designed and enacted.

In this chapter, I describe why the state of the planet calls for a change in higher education (HE), and I argue for an educational response to times of climate and ecological crisis (section 1.2). I further discuss the emergence of RHE as a possible response to such transitions (section 1.3). Subsequently, I identify the gaps in the literature (section 1.4) that led to the research questions and design of this study (section 1.5). Next, the structure of this thesis – as well as potential routes to read it – are highlighted (section 1.6).

1.2 Higher Education in Times of Climate and Ecological Crisis

Today humanity¹ faces a wide range of challenges, including wars, pandemics, social unrest, and dire climate predictions (IPCC, 2022). Indeed, the Secretary-General António Guterres of the United Nations (UN) said at the 77th General Assembly of the UN that ‘our world is in peril and paralyzed. . . . we cannot go on like this’. We are, collectively, transgressing the social and ecological foundations that allow for a healthy planetary existence for humanity (Guzman, 2021; Raworth, 2017; Rockström, 2009). The calls have been growing for an educational response to these interconnected crises (Barnett & Jackson, 2019; Holmberg & Larsson, 2017; Orr, 2002; Sanchez-Carrilo et al., 2021; e.g. Biesta, 2021). The state of the world requires an educational response that restores the caring capacity individuals and societies for the Earth. The sustainability crisis poses a severe long-term threat to the stability of eco-social systems, with potentially catastrophic impacts to Earth’s ability to sustain life (IPCC, 2022, 2021; Gardner et al., 2021; Bradshaw et al., 2020). To prevent systemic failure, humans must transition towards more sustainability-oriented futures, in which eco-social systems are designed to balance human activity and the integrity of natural ecosystems (Raworth, 2017; Wahl, 2016). However, because people around the globe have different pre-dispositions and conditions in relation to sustainability – such as levels of wealth, (dis)ability, lifestyles and diets, different people hold different responsibilities related to the challenges we collectively face. Nevertheless, humanity must collectively move towards more sustainable realities.

It has been argued that HE has the potential to act as catalyst for these complex transition processes by transforming educational praxis to allow students and other stakeholders to co-create these sustainable futures (Biesta, 2021; Poldner, 2020; Wals, 2019a; Barnett, 2017). Because education is inevitably linked to all issues present in the UN’s Sustainable Development Goals (SDGs) (UNESCO, 2021; TESF, 2021; Tafuni & Heß, 2019), education should be reoriented towards sustainability by using it to connect to and co-create sustainability transitions (STs). Such a change could allow HE to contribute more meaningfully to the public good (Wals, 2019a). In this context, STs can be conceptualized as processes of (radical) change across and between the levels of our socio-ecological systems; these changes may result in increased respect for societal and ecological boundaries (Holmén, 2020).

¹ It is important to acknowledge that non-human life is also severely impacted by our predicament.

We know from transition studies that STs require fundamental changes to complex, adaptive systems (e.g. changing from fossil fuels to smart renewable energy systems). Such changes cannot be controlled by traditional top-down or bottom-up approaches. Instead, STs can be facilitated through deep-learning-based processes that affect all systemic levels involved, from nano to meta (Ives et al., 2019; Lotz-Sisitka, 2015; 2016).² Therefore, the importance of learning as a basis for STs has frequently been mentioned in the literature (e.g. Geels, 2018; e.g. Van den Berg, et al., 2021a). Furthermore, the discourse on learning-based STs – sometimes referred to as learning ecologies for sustainable transformations (Barnett & Jackson, 2019) – has acknowledged the highly contextualized and location-based aspects of STs (Biesta, 2021; Pisters et al., 2020). These ecologies of learning could be described as the totality of dynamic interrelations between people, things, places, and times, through which change, alternative futures, and learning emerges (Van den Berg, et al., 2021a). This ecological perspective sees learning as an emergent property of complex eco-social systems and as the result of the different evolutionary relationships of human interaction with and within these systems to create change (Wals, 2019a). Indeed, I argue that this is an area where the fields of sustainability sciences, transition studies, and education have considerable conceptual overlap. However, translating these conceptual and philosophical ideas into real-world practice have thus far remained largely outside of formal HE practices (Barnett & Jackson, 2019; Wals, 2019b).

Ecologically informed educationalists and transition scholars – like Barnett and Jackson (2019) – argue that the purpose of HE is to design educational processes, structures, and cultures that connect to STs in healing or regenerative ways (Van den Berg, et al., 2021a; 2020; Wals, 2019b; Wahl, 2016). That is, to actively disrupt the trajectories of systems like the energy system in Europe and move them towards more life-affirming trajectories. For example, HE could drive the learning required to move from fossil fuels to a smart renewable energy grid. In the regenerative sustainability³ discourse, this regenerative healing is seen as an educational commitment ‘to positively

2 I follow Schlaile et al. (2021) in their conceptualization of multi-level perspectives that include the nano (individuals), micro (communities), meso (regions), macro (beyond regions), and meta (worldviews, narratives, values) levels. Their conceptualization places all these levels within the biophysical environment of Earth (i.e. links them directly to a material reality).

3 Within this discourse, there is a tendency to separate sustainability and regeneration as two separate concepts (e.g. Wahl, 2016). In the context of this thesis, when I refer to regenerative sustainability, I mean ‘regeneration’. It is not about making less bad systems but about making better systems.

contribute to the creation of systemic health across the scales of individual, community, ecosystems and ultimately the biosphere' (Wahl, 2006; xii). This conceptualization of regeneration links strongly to an ecological understanding of education (Barnett, 2017; Barnett & Jackson, 2019) that seeks to balance ecological and social well-being.

Based on this ecological understanding of education, learning-based change towards more sustainability-oriented futures is seen as an emergent property of the interrelations between people, places, and educational praxis.⁴ This ecological perspective of HE is co-designed to actively participate in moving socio-ecological systems (e.g. the energy system or circular economy) towards a future that provides a safe, just, and equitable space for humanity. This perspective has slowly started to move from the field of regenerative design into education through RHE, which is, thus, a direct response to the climate crisis. RHE connects universities with some of the grand challenges we collectively face (IPCC, 2022).

1.3 The Emerging Practice of Regenerative Higher Education

In response to those crises facing humanity, the emerging field of RHE contributes to the regeneration of personal and planetary health within the 'safe and just equitable space for humanity'. In other words, it provides an educational response to a world that is in social and ecological distress. In doing so, RHE draws on a history of regenerative design scholarship (e.g. Lyle, 1994; e.g. Reed, 2007). This type of sustainability discourse argues for a process-driven, whole-living-system approach to disrupt and heal damaged relationships that threaten ecosystemic health (see also Wahl, 2016; pp 43–45). Following Wahl's (2016) perspective that regenerative action is a form of intentional engagement with challenges, RHE recognizes that hope for more regenerative futures is essential (e.g. Kambo et al., 2016). If one assumes that change towards a more ecological and regenerative future is possible that hope (and imperative for action) extends to education. Often, as De Baro and Macedo (2020) state, this regenerative work is place-focused (e.g. within a city or borough), but it also remains aware of the systemic nestedness of these places (e.g. Geels, 2002; Schlaile et al., 2021). To do this,

⁴ In this sense, ecological HE can act as 'innovation ecotones' or learning-based liminal spaces for a dialogic process through which more sustainable realities can emerge (Pendleton-Jullian, 2019). Innovation ecotones are third-way systems in between places where two ecosystems collide, often with specialized adapted life that can thrive in either system.

RHE is strongly linked to local transition challenges rooted in place; each place has its own rich context for personal and systemic learning-based transformation (Hauk, 2017; Ives et al., 2019; Pisters et al., 2019; Pisters et al., 2022). One example of this is the transition of Amsterdam into a 'doughnut city' as a rich place for learning for RHE. This unfolding transition is part of the municipalities plans of ensuring that Amsterdam can thrive within the social-ecological planetary boundaries (Raworth, 2017).

RHE is founded on a relational perspective to learning, in which knowledge, understanding, meaning, and competence are viewed as interrelated and emergent properties of the relationships we establish with others and the places of which we are part (e.g. Wessels, 2022; Walsh et al., 2020, West et al, 2021; Wals, 2019a; Wahl, 2016). From this relational lens, which mirrors developments in sustainability sciences, the educational task is seen as facilitating learning through participating in a broader ecology of practice and change (Barnett & Jackson, 2019; Wals, 2021; 2019b). This approach invites the critiquing and disrupting of resilient dysfunctional systems (Macintyre et al., 2018). It does so by connecting educational praxis to challenges, such as transforming Amsterdam into a 'doughnut city'. In this pursuit to regenerate destructive systems, it is important to highlight the words of King: 'Regeneration unfolds as adaptation to the demands of an apocalyptic present, healing from this effort to establish an ability for further change and evolving in dynamic and sustained ways. In the pursuit of sustainable futures, regeneration acts as both a means and an end' (King, 2021, 42). An application of King's (2021) perspective to RHE suggests that regeneration takes place when systems are disrupted or when one collectively peers 'beneath the surface of the system's iceberg' to challenge worldviews, mental models, and lived perspectives that are set on a destructive path. However, such transformations are challenging and confrontational at multiple levels, and they require actors entangled with RHE to expose and interrogate their being and becoming in the present world and to imagine alternative ways of being and becoming in a future world – namely, one that aspires to be more sustainable (Fenten et al., 2022; Ives et al., 2019). This could, for example, include acknowledging one's own roles in the current destructive systems and wrestling with what has been referred to as 'climate splits', a state where one is simultaneously involved in old and emerging systems and must find a way to deal with that lived duality. Indeed, in order to engage in regenerative approaches, with local expressions of transition challenges, one must incorporate active creation and destruction. Both are likely to provide opportunity for educators and other educationally entangled actors to pursue such systemic change. Indeed, as the

results of the subsequent chapters show, this is often the case and presents a key challenge for regenerative educational commitments.

RHE begins by accepting the proposition that engagement with societal change is (existentially) required and educationally valuable. In doing so, RHE goes beyond incorporating sustainability content into the curricula or encouraging the creation of new courses. Instead, it challenges what university education ought to be for and about. There are already signs of innovative forms of education, including case-based, lab-based, and challenge-based experimentations, all of which hold the potential to be more regenerative than older forms of education. However, while these innovations may comprise a more regenerative approach to education by pedagogically connecting with STs, educators are not necessarily committed to, say, caring for the Earth. For example, one could quite feasibly construct a lab-based educational structure with the purpose of constructing next-generation bioweapons. This structure could very well be exceptionally innovative in its use of educational technologies and pedagogies while still being destructive. Indeed, if we change educational practices without changing educational intentions – what education ought to be about – it seems quite possible that well-intentioned innovations could be co-opted by destructive forces and systems.

Throughout this thesis, I argue for RHE as *an ecological approach to education that connects with sustainability transitions locally with the intention of redirecting these systems towards more sustainable futures*. This view is informed by a relational and regenerative worldview (Wahl, 2016). This perspective on RHE includes actively challenging systems that are destructive – even when doing so comes with personal risks. It also adopts a lens of relationality, one which sees humans as just one of the many actors involved – and impacted by – these transition challenges. These commitments are evident in one of the key ethical challenges, which is raised in chapter 3 of this thesis – namely, how to make decisions when the well-being of other people conflicts with the well-being of more-than-human life in an educational setting. RHE suggests that regenerative education should be placed in ongoing debates about the ecological university as an entangled part of society, with a clear moral responsibility to contribute to healing human relationships and the environment (Barnett, 2017; Barnett & Jackson, 2019; Van den Berg et al., 2021a).

RHE also begins by making the following assumptions: (1) that we must go through sustainability transitions, (2) that HE can play a role in facilitating these

transitions, and (3) that there is educational value in such engagement. These assumptions are in line with the latest works of Biesta (2021)⁵ and Barnett (2017), on philosophy of education.⁶ The assumptions also align with calls for transformative change from leading scholars in sustainability and HE like Schlaile et al. (2021). Such a transformation of universities would make them more meaningful for living in times of transition (Verhoef et al., 2019; Wittmayer et al., 2021). It is likely that from an RHE lens, the ‘what’ of university education can be viewed either as a form of societal virtual reality (Braidotti, 2019) or as a societal playground – one that enables us to learn from alternative futures to inform our (collective) actions today.

As mentioned previously, innovative practices that hold a lot of RHE potential focus on connecting with local expressions of sustainability transitions (e.g. Holmberg & Larsson, 2018; Van den Heuvel, 2021; e.g. Overdiek & Geerts, 2021) and rely heavily on participatory approaches. Their purpose is to create intentional change, such as systemic co-design (Garcia & Gaziulusoy, 2021) or transgressive action research (Macintyre, 2019). In these (educational) innovations, the places in which the university is embedded comprise a rich basis for the curriculum (Orr, 2002; Pisters et al., 2022). It is not yet clear if universities can pursue such RHE roles. For some educators, the proposed RHE is a direct challenge to what university education is about – or perhaps more accurately, what the limits of HE ought to be. That older view believes that education ought to be somehow neutral and detached from politics or society. A counter position posited by educationalists is that universities are embedded within society and politics and therefore cannot be neutral (e.g. Wals, 2019a). This position was also expressed by the prominent philosopher David Orr (2002; p 150), who stated that the conservative position hinges ‘on the quaint belief that what occurs in educational institutions must be uncontaminated by contact with the affairs of the world and that we have no business objecting to how that world does its business’ (Orr, 2002; p 150). Indeed, I would argue that universities are already ecologically entangled. They do not exist in vacuums; they already act on, in, and with the world in a variety of ecologies, and

5 It is important to acknowledge that this latest book by Biesta zooms in on worldly engagement primarily with human-social challenges. While he does mention the climate predicament in the book, there are few if any signs of an ecological worldview outside the human one in his book. For this thesis, I read his work through a biocentric perspective.

6 It is important to acknowledge that this latest book by Biesta zooms in on a worldly engagement primarily with human-social challenges (Biesta, 2021).

the world acts on the educational institutions (Barnett, 2017). What may change by embracing RHE is the direction and clarity of the unfolding of these relationships.

Regenerative normativity may also result in changes in the relations between the university and society. Indeed, this is especially true as more sustainable futures may exclude those currently holding power – or may severely limit their power. In this, a regenerative commitment implies that sometimes the most educational thing one can do is to disrupt, challenge, and press systems where it hurts. To do so is to incite transgression in the broader innovation ecosystem. Such an approach – from a regenerative reading – can be considered an (educational) act of service towards the potentiality of more sustainable futures (Wahl, Personal Communications, 2021).

In other words, RHE is an activist answer to the question of determining the responsibility of universities in times of climate crises. RHE calls for universities to actively participate in the facilitation of the transition towards a safe, just, and equitable space for humanity in balance with the rest of life on Earth. In this, RHE also responds to policy and student-led calls for universities to connect with their local places as facilitators of co-learning for complex problems (Schlaile et al., 2021; Wittmayer et al., 2022). Similar calls have also been made by youth activists, such as Youth for Climate and Extinction Rebellion, and by leading educational thinkers, such as Biesta (2021), Barnett and Jackson (2019), and Orr (2002). They call for HE to look at the state of the world and act accordingly.

1.4 Scientific and Practice Gap Guiding the Research

In light of the recent emergence of regenerative higher education described previously, further exploration is needed. While scholarship has focussed on the conceptual potential, philosophical space, and practical need for more regenerative forms of education (including rough outlines for what RHE could look like in practice), the literature so far is exceptionally limited regarding how to implement RHE. This gap is apparent through two meta-reviews, conducted by Sanchez-Carrilo et al. (2021) and Gardner et al. (2021), which highlight a persistent knowledge–practice gap. The gap consists in knowing how to design and enact forms of education informed by radical sustainability. This thesis explores this gap, with a particular focus on the Dutch context. By doing so, I propose that through further understanding the ‘how’ questions of RHE, we may also learn more about the ‘what’ and ‘why’ of RHE.

To address this gap, the following research question(s) were formulated:

Main question:

How can regenerative higher education be designed and enacted and what resistances and enablers to this process must be navigated?

Sub-questions:

1. How are educational trailblazers seeking more relational and transformative forms of RHE?
2. What resistances and enablers do educators encounter, and how do they navigate them when engaging with RHE?
3. How do student experience engaging with RHE?

To answer these questions, three interrelated studies were conducted:

- A narrative mapping analysis based on a podcast-based inquiry of 27 educational trailblazers already engaged with emerging forms of RHE in practice (chapter 2). Q1 and Q2
- An embodied, design-driven (auto)ethnography about designing and enacting ecological education that connects with STs in and around The Hague (chapter 3). Q1 and Q2
- An interpretative phenomenological analysis of the lived experience of students (n = 21) regarding a course designed from a regenerative sustainability perspective (chapter 4). Q3

1.5 Research Methodology & Design

The key aims of this thesis are as follows: 1) to contribute to the further theoretical understanding of what RHE could consist of; 2) to highlight the major barriers, drivers, enablers, resistances, opportunities, and challenges that practitioners may face when engaging in such regenerative educating; and 3) to help make such forms of education easier to design and enact within formal HE. The following subchapters (1.5.1-2) describe the methodological choices made to fulfil these aims.

1.5.1 Research Methodology

To further explore the emerging RHE, this research is embedded in a relational constructivist paradigm (Walsh et al., 2020; West et al., 2020) and thus engages with a subjective reality that is dynamically and relationally co-constructed. This perspective aligns with the emerging paradigm of regenerative sustainability (Sonetti et al., 2019). Within this (design-based, practice-oriented, critically interpretive, relational, and activist) genre of research, reality can best be explored through in-depth and embedded research methods that capture inter- and intrapersonal experience(s). The proposed genre of research also has clear criteria for rigour and quality, such as maintaining reflexivity, using multiple methods for triangulation, distancing from the research context, and actively involving participants in the collection, interpretation, and analysis of data, which was followed herein (e.g. Le Roux, 2016). The constructive aspect of the relational constructivist paradigm of sustainability suggests that changing this reality requires the active involvement of those co-constructing the reality. In each of the subsequent empirical studies, particular attention was given to the quality criteria described, supplemented with an ethics of care to guide ethical decision-making (Ellis & Bochner, 2016; Kara, 2020).

To combine these different methodological commitments, an abductive (design-based) approach informed by a critical-interpretative stance was embraced (Schwartz-Shea & Yanow, 2013; Stompff & Smulders, 2021). This stance was taken to elucidate the most likely truths.⁷ In this thesis, these commitments are especially exemplified by engaging with research through design. I follow Wahl (2016), who proposes that regenerative forms of design are about intentionally creating change in destructive systems to simultaneously perform inquiry and create change. This form of design-based inquiry provides ample methodological flexibility to engage with the 'how' type questions proposed for this thesis.

In this thesis, high degrees of participation were built into the inquiry, exemplifying my strong commitment to open science. For me, open science goes beyond ensuring that data and papers are (immediately) available after publication. This stance also implies the necessity of actively including those I approach for providing input in the research and of taking measures to ensure that all results are

⁷ In this, I acknowledge that these are 'small t' truths, ergo situated, temporary, and necessarily incomplete truths that may provide glimpses of 'capital T' truths.

available and understandable to a wide audience. I achieved this, for example, by using podcasting as well as blogging during the data generation and dissemination phases of the studies in this thesis.

In line with the critical-interpretative stance that fuelled this abductive inquiry, the results presented in the conclusions were collated from the entire thesis. In this regard, it is important to note that the nature of my methodological commitments towards (design) science and the regenerative sustainability perspective of this research are highly contextual, place based, and unique. Therefore, my results may not be replicable outside of the very situatedness from which they emerged. Instead, I broadly follow the perspective posited by Le Roux (2016) – namely, that in this genre of research, the main indicator of quality is the degree to which another practitioner or scholar can meaningfully engage with the materials. Or the extent to which other educators can relate with the materials for their own praxis.

1.5.2 Positionality

In addition to those points regarding my methodological approach, it is important to acknowledge my positionality as lead data generator. I share this, to give an indication of the lenses and perspectives that I have inherited or cultivated, including ones I am not consciously aware of. I am a first-generation student and am ethnically Dutch (and white). For most of my life, I have been financially secure (however, with bouts of relative poverty and scarcity). I have lived a generally privileged life in the sense that I have, for example, always had access to electricity, and I have never had to seriously worry if I would not be able to eat. At the same time, I have never been debt free. I am well-travelled, having visited four continents. I am also neurodiverse (autism and ADHD) and disabled (ankylosing spondylitis since 2018), although I can conceal both these characteristics most of the time.

Throughout this research period, I balanced a triple role as lecturer, PhD candidate, and administrator. I was 24–27 years old at the time, which places me between the millennial generation and generation Z. In other words, I grew up with a mobile phone and digital technologies but did not possess a smartphone until my teenage years. During the research period, I also taught other courses at THUAS and other universities in and outside the Netherlands. I was an external PhD candidate at the Education and Learning Sciences Group of Wageningen University & Research. Furthermore, I was co-founder and member of the management team

of the transdisciplinary Centre of Expertise Mission Zero at THUAS, where I served as education coordinator and interim general manager during the research period.

1.6 Thesis Design and Reading Guide

This thesis consists of several chapters. Chapter 1 presents a conceptual basis for RHE and engages with nascent signs of RHE in the literature of educational philosophy, regenerative design, and sustainability sciences. The remaining chapters encompass practice-based inquiry into how such conceptual innovations are bubbling to the surface of educational reality. Chapter 2, through podcast ethnography, examines how 27 regenerative forms of HE are enacted in practice by educators as well as the challenges and opportunities they face in engaging with such RHE. Chapter 3 explores the design and teaching of regenerative forms of HE through my experience as a teacher-researcher-administrator in The Hague (the Netherlands) over a two-year autoethnographic study. Chapter 4 zooms in on the lived experience of 21 students engaged in the course that was co-designed throughout this research (chapter 3). Chapter 4 uses interpretative phenomenological analysis of arts-based reflective learning journals. This variety in methods was purposely designed to explore the 'how' questions of RHE and to achieve triangulation in the conclusion, chapter 5.

I engage with design research from an activist (Lopes Cardozo, 2022), relational (e.g. Walsh et al., 2020; West et al., 2020), and embodied approach (e.g. Ellis & Bochner, 2016; e.g. Spatz, 2017). In this, I follow the perspective of Gardner et al. (2021; p 5): 'If engaged scholarship and similar approaches are about the production of knowledge, academic activism is about acting appropriately on it in an emergency context'. A large impetus for this research is a deep care for the natural world and disappointment with the lack of educational response to the seriousness of the planet's plea. For this purpose, I follow regenerative educator Daniel C. Wahl (2016); throughout this thesis, I have included regenerative invitations in the form of design or reflective questions. I have also included multi-media content. These choices were made in line with other creative examples of dissertation work that connected practice with scientific inquiry (e.g. Kara, 2020). Thus, the approach of this thesis and the variety in writing styles employed – particularly in my autoethnographic work – represent ways to connect research with practice. The RHE invitations throughout the thesis invite the reader to slow down and engage with this work, considering the conceptual and practical implications of the research for their own praxis.

1.6.1 The Sailing Metaphor

As in any scientific field, the emerging field of regenerative sustainability (including design, education, and business) is rife with metaphor. For example, I asked 27 educators on trajectories towards more regenerative forms of HE what metaphor they would use to describe their vision of the potential of RHE (see chapter 2). These metaphors can be powerful aids in thinking and meaning making, but they can also be limiting if they are held too tightly. This tension presents an interesting dichotomy where, on the one hand, structuring my thesis based on a metaphor makes narrative sense, but on the other, doing so may risk making certain insights impossible to find. Thus, I carefully considered which metaphors to include in this thesis.

I chose two such metaphors. The first was the metaphor of gardening, (e.g. Macintyre, 2019; e.g. Biesta, 2021) elements of which can be found throughout the thesis as part of my general understanding of RHE. In this metaphor, RHE is compared to caring for a multi-species garden, helping one think through the relationality of learning towards regenerative futures. As gardening is an art that requires care and attention to multi-species relationships. However, for the purposes of discovering how such RHE can be designed and enacted more clearly, I lean heavily on the metaphor of sailing, which I used throughout the thesis to anchor the narrative. The three main reasons I chose this metaphor were as follows: (1) sailing is a complex journey that requires adaptation and shifting; (2) sailing is a multi-species, relational, collaborative activity; and (3) sailing was used by Scott Barry Kaufman (2020) in his book *Transcendence*, which is about human potential. I would like to, through a regenerative reading, see human potential as stepping into a role of appropriate participation with the rest of the natural world. And I use sailing to make sense of how educators can take steps towards that engagement. In other words, if the purpose of RHE is ‘planting the seeds of more regenerative sustainable futures’, going sailing may be how we learn to do so.⁸

Learning on the sailing metaphor, however, requires further argumentation. First, while sailing can be relatively straightforward (e.g. on a warm summer day on a lake), it can also include cross-continental adventures with heavy rains, accidents,

⁸ One may state that gardening is a more appropriate for ‘what’ and ‘why’ questions pertaining to RHE, while the journeying involved with sailing fits more appropriately with ‘how’.

storms, and mutinies. In other words, sailing can be messy.⁹ The sailor may have a direction and route in mind, but the wind may say, ‘Bad luck today; you’re staying put’. Second, sailing is informed by currents, winds, materiality, and luck, among other factors. In short, it is an act of participation in dynamic and shifting contexts. As our understanding of the interconnectedness of the living world increases, it becomes increasingly clear that even solo sailing is a multi-species affair. For example, recent evidence in the biological sciences highlights how living things not only are influenced by ocean currents but also play an active role in shaping them (Nicholson. 2022). Third, I was inspired by Kaufman’s (2020) work on human flourishing, where I found great explorative power for RHE in the way he uses the metaphor of a sailboat. He emphasizes the interplay between the sailboat’s dynamic parts (the sails) and its sturdy base (the hull) in a dynamic environment (the sea). Throughout this thesis, I refer to sailing to analogize narrative and design choices.

1.6.2 Suggestions for Reading the Thesis

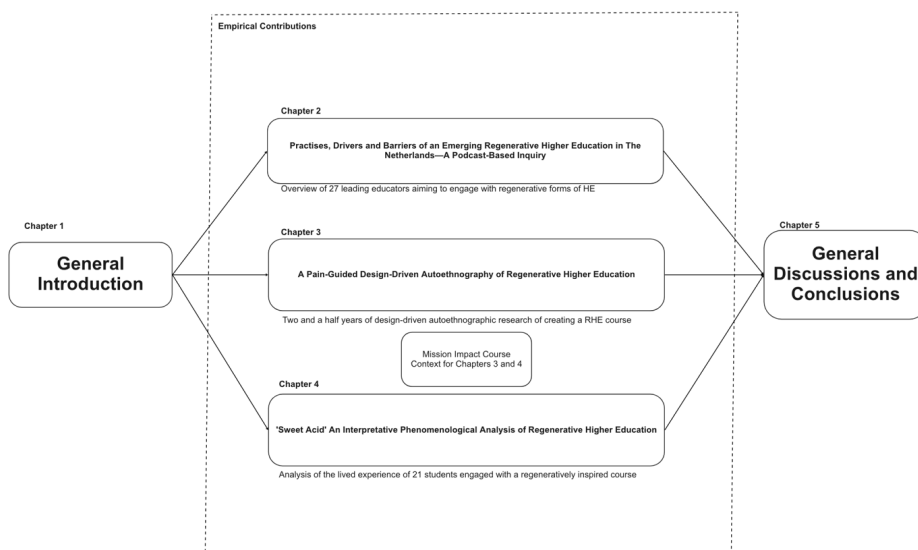


Figure 1: Overview of this thesis in schematic form.

⁹ I acknowledge that sailing may generally not be considered as a collaborative affair with more-than-human life and that sailing has connotations associated with acts of colonization, which I do not support. I opt to read sailing through an ecologically informed lens, one that uses the metaphor primarily for a sense of journeying and discovery, not as a technology for conquest or domination.

This thesis is structured to be read for multiple purposes. These depend primarily on the identity and interests of the reader (see Figure 1 for the overall structure). Below are several paths and profiles.

- **The Scholar:** If you are a scholar and primarily interested in the concept of RHE, I recommend reading chapters 1 and 5.
- **Teacher's Itch:** If you are a lecturer who is interested in learning how to (re) design the courses you teach, I recommend reading chapters 2, 3, 4, and 5.
- **Busy Educators:** If you are an educator who would like an overview of the thesis highlights, I recommend reading the results of chapters 2 and 5.
- **The Listener:** If you have more time, I recommend listening to the podcast episodes and engaging with the accompanying reflective questions between the chapters of this thesis.
- **The Story Lover:** If you are interested only in reading about my experience as an educator attempting to design and enact regenerative forms of HE, you can skip straight to chapter 3.

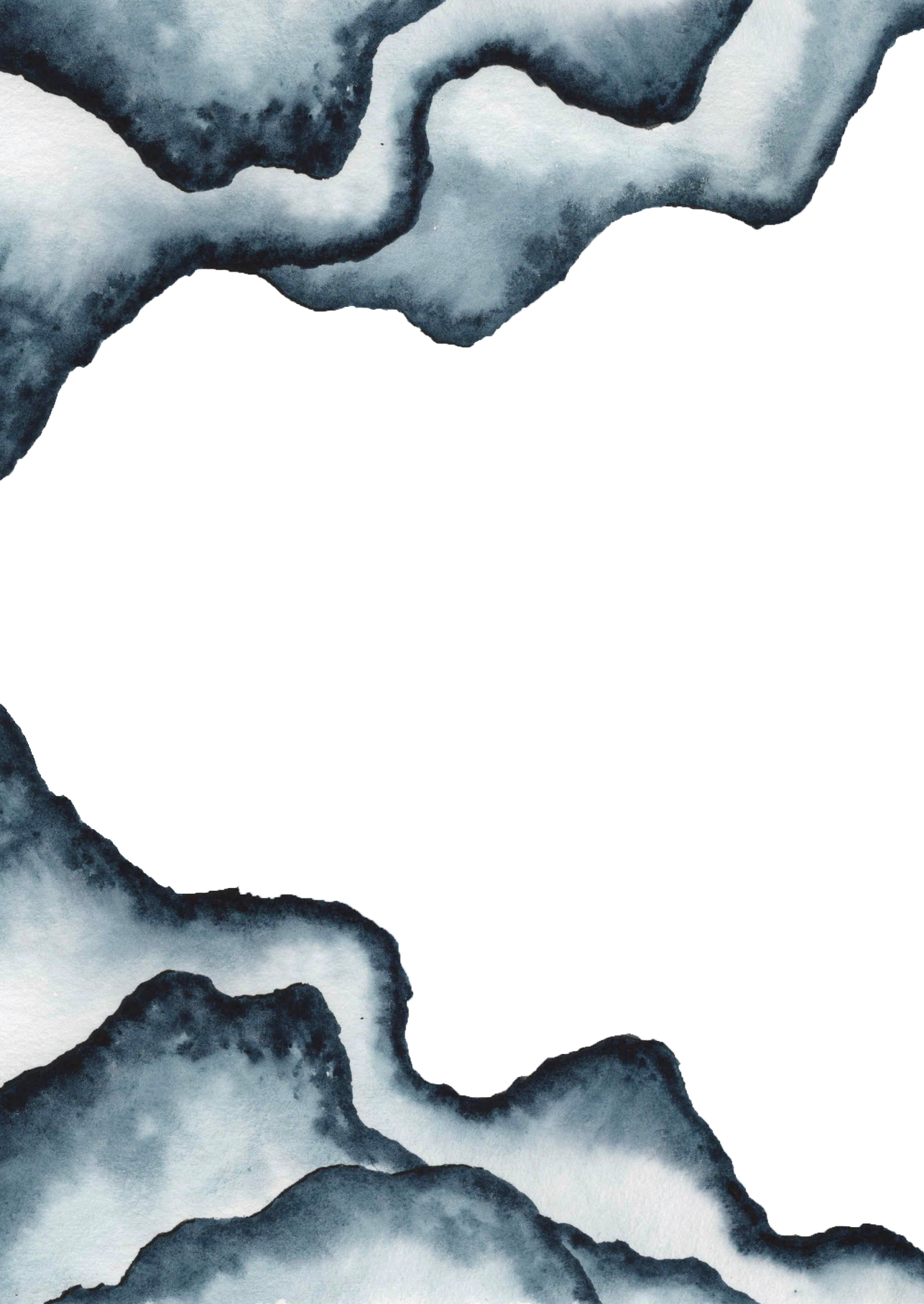
Regardless of which of these profiles fits you the closest, I hope that the read is meaningful, insightful, and above all hopeful.

Challenge Lab – Where Learners Lead and Leaders Learn
With Dr Johan Holmén



Reflective Questions:

- *How can you create space to engage with the complex sustainability challenges in society today?*
- *How can you incorporate mentorship in transformative ways in your educational practice?*





2

PRINCIPLES, RESISTANCES AND ENABLERS OF AN
EMERGING REGENERATIVE HIGHER EDUCATION IN
THE NETHERLANDS – A PODCAST-BASED INQUIRY

Chapter 2 - Principles, Resistances and Enablers of an Emerging Regenerative Higher Education in the Netherlands – A Podcast-Based Inquiry¹⁰

2.1 Introduction

As highlighted in the general introduction (chapter 1), the need for an educational response to the state of the world is clear. Indeed, I argue that this ought to be informed by a normative approach of regenerative sustainability. Such an approach would help ensure that educational responses are driven by a commitment not only to connect with STs but to do so in ways that may transform the systems with which we are educationally entangled. While this need for educational connection with STs is clear in the literature, a persistent knowledge–practice gap has remained. At the same time, innovative educational trailblazers are rapidly moving ahead in practice, and their work warrants study. In this chapter I explore how 27 leading educators, primarily in the Netherlands, are moving in such regenerative directions – namely, by connecting a myriad of STs with regenerative intentions. This exploration was done through podcasting as a form of data generation (see section 2.2). In the sections that follow, I propose a design tool that simultaneously helps practitioners in further (re)designing their RHE and that highlights a number of insights for what RHE may become. The resulting tool (The Regenerative Education Design Tool, or REDPT) includes key design principles, resistances, and enablers for educational design teams to consider when engaging with RHE and STs. This first study set out to answer SRQ1.

To do so, the following subquestions were formulated for this study:

- *What are the ST-connected design principles of educators actively moving towards RHE in Western Europe?*
- *What resistances and enablers forces are experienced by educators when engaging with these educational practices?*

¹⁰ This chapter has been published in Van den Berg, B.; Poldner, K.A.; Sjoer, E.; Wals, A. E.J. Practises, Drivers, and Barriers of an Emerging Regenerative Higher Education in the Netherlands—A Podcast-Based Inquiry. *Sustainability* 2022, 14, 9138. <https://doi.org/10.3390/su14159138>.

In section 2.2, I engage with the methods that were employed in this study – focussing on podcasting as qualitative inquiry (section 2.2.1) as well as the research context and procedures for recruitment (section 2.2.2). Next, I explore the ethics, technology, and participants (sections 2.2.3-2.2.6) before engaging with the results of this study (section 2.3). Section 2.4 discusses the findings and potential limitations of this study. Finally, section 2.5 explores the conclusions and potential avenues for continued inquiry.

2.2 Method(s)

The following subsections present the methods I used to conduct this study. First, section 2.2.1 introduces podcasting as a form of qualitative inquiry. Second, section 2.2.2 provides the research context and the procedures for recruiting participants.

2.2.1 Podcasting as Qualitative Inquiry

Podcasting as Qualitative Inquiry | Generalized Overview

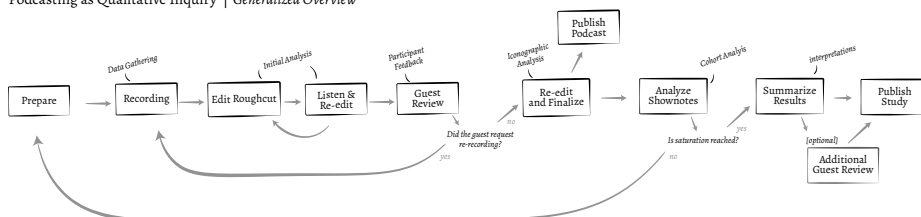


Figure 2: Schematic representation of podcasting as qualitative inquiry

Podcasts have been increasing in popularity for a number of decades now, and this popularity is projected to increase further, by up to 25–30% annually (Deloitte, 2020). Inspired by this popularity, a number of scholars have explored the potential of podcasts as a method, particularly in ethnographic research (e.g. Cook, 2020; Ratcham & Zhang, 2006; e.g. Lundstrom & Lundstrom, 2020). Reasons for these explorations include (1) increased accessibility of research (Day, 2017; Singer, 2019); (2) inclusion of more non-formal data from specific (sub)cultures (Lundstrom & Lundstrom, 2020); and (3) the use of podcasts as a geographic research tool (Kinkaid et al., 2019). A relatively large subset of podcast-based research includes the usage of podcasts as pedagogical-didactical tools (e.g. Drew, 2017; Celaya et al., 2020). These uses of podcast-based inquiry have so far been partial (e.g. using

existing podcasts as data or creating podcasts as an output of research). In my review of the literature, I did not find podcast-based inquiry (see Figure 2) with the intention of simultaneously gathering data and creating output.

To engage with podcasting as a form of data collection and output generation, we followed the perspective proposed by Fronek et al., (2016) that podcasting sits ‘in-between entertainment and education’. More than that, we argue that podcasting, as a creative research method (see Kara, 2020), holds the potential to blur the lines between data, research, entertainment, communication, and education. As such, podcasting was throughout the research process for data gathering, analysis, and public engagement. The use of podcast-based inquiry also resulted in several unique benefits for participants (called ‘guests’ from now on), as it gave them a platform to share their experiences and the stories of their alternative practices and perspectives on HE. In doing so, they helped create a digital artifact that they can use in perpetuity – didactically, for tenure/promotion, or to share their vision. To do so, however, it is important to engage with the process in a co-constructed manner, seeing the method more as a conversation in which information is co-created instead of extracted (Kara, 2020; Kvale, 1996). This co-constructed perspective aligns with the relational paradigm of sustainability, which also informs RHE (Walsh et al., 2020; West et al., 2020). In fact, that alignment was highlighted by numerous guests during or after the recording. For example, one guest posited that their experience felt more like a genuine conversation than previous interviews. Therefore, this podcast format was suitable for studying RHE and its main resistances and enablers.

2.2.2 Research Context & Recruitment

In order to recruit participants for this podcast-based inquiry this study used purposive sampling with the following selection criteria: (1) Guests had to be practitioners in HE who in the last three years had been involved in connecting their educational practice with a transition challenge in their region, with the intention of facilitating learning-based change towards more (regenerative) sustainable futures. (2) These activities had to be in the European Union to ensure relative comparability. The first round of invitees was recruited from the authors’¹¹ existing network. Each of the guests was

11 N.b. that this study – including the analysis - was conducted with the supervising team. This team consisted of three (Dutch) professors in (1) circular business, (2) sustainable talent development, (3) and transformative learning for socio-ecological sustainability respectively.

also asked to recommend one or two others based on the selection criteria. Finally, an open invite, including the selection criteria, was shared on the LinkedIn profiles of the researchers. This resulted in a total of 52 invitees, of which 31 agreed to participate. As a result, 27 episodes were produced and published as *The Regenerative Education Podcast* on all major streaming platforms.¹² These interviews were recorded in April through June 2021 and published from August through October 2021.¹³ The recording and editing were done by the first author. The 27-episode podcast features 21 guests active in Dutch Universities of Applied Sciences, one in Sweden, one in Germany, one in France, and three who move between different countries. Of these latter three, two work for digital-only universities, and one works across several educational institutions. However, in their educational practice, these participants connect strongly with a local place. For this study, we did not limit this connection to places that were necessarily geographically close to the university involved; instead, we considered any educational institution that bound itself to a particular locality. The episodes ranged from 30 to 70 minutes and included both English (14) and Dutch (12) interviews. A semi-structured interview guide was created that served as the basis for each episode. This guide was shared with each guest a week in advance, in line with podcasting best practices. The guide followed roughly a four-part structure: 1) the journey to now, 2) the educational innovation, 3) resistances and enablers, and 4) futures. The episode guide can be found in the appendix to this paper. The resulting episodes were minimally edited. General audio-quality improvement work was done, like removing background noise, and the only other alterations comprised specific requests for changes or removal by the guests. Therefore, the time of the episode is representative of the conversation. The results were analysed with the supervision team, who were all native Dutch speakers. This resulted in a bilingual analysis of the data. Only when necessary, have direct quotes used in the results been translated to English. The study resulted in a total of 19.4 hours of audio, with an average run-time of 00:44:65 per episode. Each of the participants was asked to describe their vision of a preferred future through a metaphor, which served as the basis for Figure 3 as well as for communicative purposes in the sharing of the podcast.

12 A few of the guests who had originally agreed to participate had to drop out for a variety of reasons. After launch, other potential guests were asked if they could participate in the podcast.

13 Because of the unfolding COVID-19 pandemic, considerable flexibility in recording conditions was required. This resulted in a combination of technologies being used for the interviews.

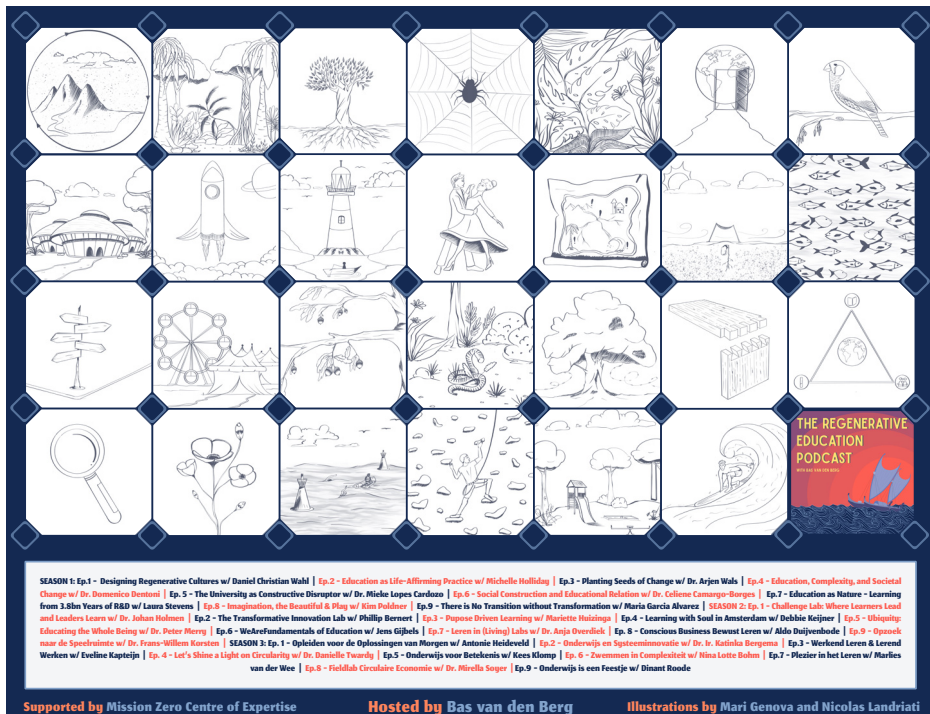


Figure 3: Overview of The Regenerative Education Podcast. Extended visual overviews for individual seasons can be found in appendixes B-D.

2.2.3 Participants

The guests were educators involved with, or invited to participate, with formal HE in Europe. They were designers and or teachers responsible for designing courses that connect with local transition challenges, and they had the intention of acting upon these challenges to work towards more sustainable futures. They had at least two years of experience in co-designing and teaching such courses. The focus of these interventions was not limited to specific STs and ranged from the circular economy to food to renewable energy. The majority of the participants had PhDs, and those who did not are working towards one. Because of the variety of contexts and transitions included, the variety of the backgrounds of the participants was quite large including art, engineering, and business educators.

2.2.4 Technology used

To conduct this podcast-based inquiry, a number of technologies were required. For the recording, SoundTrap, Zoom, or the dedicated podcasting studio facilities at The Hague University of Applied Sciences were used, depending on the distance and availability of the guests and on the COVID-19 regulations in the Netherlands. No significant differences were experienced based on the recording technologies used or based on in-person or virtual interviews. For editing, Soundtrap and Audacity were used for background noise reduction, filler-word removal, structuring, and the addition of intro and outro music. Buzzsprout served as podcast host and pushed the episode to Spotify, Google, and Apple podcasts, the three main podcast hosts by popularity. All of the guests were comfortable and skilled with the use of the technological platforms.

2.2.5 Ethical Challenges

The podcasting-as-inquiry approach represents a particular ethical challenge in anonymization. While there has been a critique of the ability of interviews to be truly anonymous in the first place (e.g. Saunders et al., 2015) anonymization was impossible in this study because the voice of the guest is audible in each podcast episode. It is technically possible to distort voices to be unrecognizable; however, many of the guests indicated they participated partially because of the exposure they would receive. That is, they participated precisely because the interview was not anonymous. Thus, podcasting as a form of qualitative inquiry is most fitting for projects where people want to engage in public debate about a topic. To navigate this ethical challenge, written informed consent for participation, including for the publication of names on the platforms, was secured. Alternatively, a few the participants later told me that they used their episodes pedagogically as well. Descriptions of the ethical risks of participation were shared in the invitation to participate in the study. In line with recommendations for arts and creative research, a process approach to a relational ethics of care guided this inquiry (Kara, 2020). This included asking for consent multiple times throughout the research process, including at the start of recordings and after the rough cuts were sent for review. A draft of this paper was also shared for review by the participants. The recordings were saved and processed in accordance with the *Wageningen University & Research* guidelines on data management, which take all relevant Dutch and EU legislation into account.

2.2.6 Method for Analysing the Podcast Episodes

The analysis of the final episodes was done through transition mapping (Van den Berg et al., 2021a). This approach drew from transition design (Irwin, 2015; 2018), with an applied narrative (Moenander, 2018) focus, and utilized abductive analysis to identify relational patterns across the 27 collected stories (Tavory & Timmermans, 2012). To find these patterns, each of the episodes was mapped on a transition map, with a time- and system-level axis. This mapping was done in two rounds of coding. First, the verbatim elements from each story were mapped before interpretations were added. During these rounds of coding, the research questions and principles of RHE guided the process. These coded maps were then clustered and combined into a meta transition map, which combined the insights from each of the separate stories to identify and cluster relational themes. The final step of this analysis included identifying possible relationships between the clusters and story elements of the participants. These relational themes were then translated through four rounds of internal review with the supervision team. The final step of this analysis included a sharing of the draft version of this paper with the participants of the study for a period of two weeks. During that time, they could review the manuscript and offer commentary before submission. These internal and external review rounds resulted in the seven design principles presented in table 1.

2.3 Results of the Podcast Analysis

The analysis revealed seven regenerative education design practices that the participants advocated and enacted. Because of the richness and narrative availability of the dataset and because of pragmatic limitations in word count, the choice was made to present the majority of results in the form of a table, presented here as Table 1. This table presents the design practices, resistances, and enablers that pertain to RHE. By considering these elements, educators may be able to transform their educational practice and secure the institutional support required to do so. Furthermore, these results have also been translated into an initial version of a design tool for practitioners to design their own form of RHE, one that connects with STs. Finally, the resistances and enablers identified are presented in 2.3.2 (systemically) and 2.3.3 (personally).

Table 1: Overview of design principles, resistances, and enablers for regenerative higher education design.

Regenerative Education Design Principles	Description	Resistances	Enablers	Design Questions	Indicative Quote(s)
Tackling Relevant and Urgent Transition Challenges	Ensuring that the societal transition challenges that are chosen are part of learner's reality.	<p>A disconnect between institutional reality and larger societal challenges.</p> <p>The unpredictability of complex problems and assessment of unintended learnings.</p> <p>The educational practice of planning a year or two ahead, which limits flexibility.</p>	<p>Potential to create positive change and to link HE to society and subjective well-being.</p> <p>An ongoing change in funding bodies to a focus on impact beyond just bibliometrics.</p> <p>The emerging movement within universities for educators to rethink their role in society.</p>	<p>Which societal challenges intrinsically motivate learners?</p> <p>What transition challenges are particularly impactful in a local place you can connect with?</p> <p>How can you continuously invite critical external stakeholders into this educational experience?</p>	<p>'It starts by giving space for students to express their own concerns, but also their curiosity and to use what I call existential questions and challenges as a starting point for learning.'</p> <p>'We always need something that is urgent and relevant, so it needs to be important, and it needs to be important now'.</p>

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<i>Regenerative Education Design Principles</i>	Description	Resistances	Enablers	Design Questions	Indicative Quote(s)
<i>Embedding Locally with Systemic Awareness</i>	Connecting your activities purposively with your local communities in place facing those challenges.	<p>The time it takes to build and maintain a local community as well as lacking financial resources and power within HE cultures for such activities.</p> <p>The fragility of trust within such communities.</p> <p>The openness required to engage with such work and the frustrations that come from collaboration with multiple stakeholders.</p>	<p>The interest in the creation of highly situated and contextualized knowledge relevant to one's own reality.</p> <p>The chance to connect community and engagement to your professional practice.</p> <p>The opportunity to enlarge your own professional network.</p>	<p>What local communities are already interested or involved with the transition challenge, and how can you strengthen them through your educational practice?</p> <p>What forces perpetuate this unsustainable system?</p> <p>How can you use the richness of the world all around you as places of meaningful learning?</p>	<p>'I kind of hope that something . . . that this way of working in partnership with other partners. That . . . is carried more warmly within the universities. I don't mean it in the way that I think that this form of education "is the future" or that it replaces all other forms of education. But that it offers universities something to work more with society on grand challenges. Together with students, and in this case with people in the city but that could also be other places.'</p>

Regenerative Education Design Principles	Description	Resistances	Enablers	Design Questions	Indicative Quote(s)
Nurturing Supportive Innovation Ecosystems	Creating a supportive innovation system within your practice or institution.	The culture of HE and whatever agents within HE seek to stop more regenerative forms of education, such as accreditation boards, administrators, exam boards, curricula committees.	The potential to redefine higher education and the relationship between the university and society.	Which internal stakeholders are in favour of RHE, and how could they be invited to contribute to RHE's co-emergence? What limiting forces must be navigated in the (educational) innovation ecosystem (e.g. administrators, colleagues, students' backgrounds, policy)?	'Right. So, we're all very much restrained in the current system. Well, aside from the fact that I find that really sad. I think there are cracks . . . you know, so I think it also has to do with a mindset and an attitude of trying to see the positive within the restraints that are currently there. So, can you how far can you go? How much can you do things different? In what way do you get support from your leaders to do it that way? In what way can you gain visibility for that?'
	The history of students who have been shaped by the educational culture, which imparts a consumerist approach to learning.	The lack of space within educational design, which can slow inquiry.	Emerging educational technologies that facilitate the flourishing of more ecological forms of education (particularly digital technologies that allow broader communities to be included).	How can you spread RHE through the strategic use of evidence, impact, and excitement – and through what media?	

Regenerative Education Design Principles	Description	Resistances	Enablers	Design Questions	Indicative Quote(s)
<p>Cultivating Personal Transformations</p>	<p>Including the inner or personal dimension of sustainability, or even regeneration, into your educational activities. Bringing your whole self and inviting learners to be psychospiritually and socio-emotionally vulnerable with both positive and negative emotions.</p>	<p>A fear, or lack of experience, of engaging with the psychological-spiritual and/or socio-emotional dimensions of learning.</p> <p>The strictness of assessment as 'objective' measures of learning.</p>	<p>The potential to influence the deepest leverage points for systemic change (e.g. human values, perspectives, and worldviews).</p> <p>A more meaningful experience as an educator, including space for personal transformations. That is, changing the world also changes us as people, and by changing ourselves, we change the world.</p>	<p>How are you including the inner dimensions of sustainability in a safe and meaningful way throughout the course?</p> <p>Where can you press so that it hurts just enough to trigger transformation?</p> <p>How should you meaningfully assess this inner sustainability work?</p>	<p>'We have a motto . . . "to think big and to act now". And in that action, we want to fail fast and then we also want to learn fast. So, when we work with sustainability as a lighthouse that provides the direction of where we want to go and why. And then you realize that navigating sustainability transitions, it is a bit about going into uncharted water, uncharted terrain. And you may have a lighthouse, but you have no idea what the waters look like on the way.'</p>

Regenerative Education Design Principles	Description	Resistances	Enablers	Design Questions	Indicative Quote(s)
Holding Healing Spaces	The importance of hosting spaces for deeper engagement that may nurture a sense of safety for transgressive dimensions of learning.	<p>Not establishing, or disrupting, the safety learners need to engage with the personal dimension, described above.</p> <p>A personal immaturity to acknowledge when professional help for hosting healing spaces is required.</p> <p>A financial limitation in the type or amount of support that can be offered for this hosting.</p>	<p>Freedom to engage with the richness of a place (e.g. forests, buildings, cafés, etc.) as educational spaces within your practice.</p> <p>The creation of a sense of community, within and beyond the course.</p> <p>The possibility to practice hosting safe spaces for transdisciplinary learning.</p>	<p>Which actors, and experts do you need to invite into this education to nurture healing spaces?</p> <p>How can you nurture a sense of safety in any surrounding?</p> <p>How are you inviting a sense of slowness into education to focus on meaningful challenges and transformations?</p>	<p>'You can only feel the spear in the chest if you are willing to catch it. That's the tricky thing of the spear-in-the-chest. You can throw them! But if no one is willing to catch them they don't arrive and you don't get the vulnerability, the crack, the chink in the armour that is needed to help people transform beyond something. So, we really focus in our education on nurturing people's willingness to catch the spears that we throw.'</p>

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Regenerative Education Design Principles	Description	Resistances	Enablers	Design Questions	Indicative Quote(s)
<p><i>Shaping Affirmative Imaginaries</i></p>	<p>Critically tackling systemic barriers and crafting more regenerative futures.</p>	<p>The lack of systemic and future-oriented educational programmes.</p>	<p>Personal satisfaction in working towards a more equitable, sustainable, and just society.</p>	<p>How can you challenge destructive mental models, values, worldviews, and practices in ways that are tangible and experiential and that incite an emotional response?</p>	<p>‘Because ultimately the message that we try to bring in our education . . . is that it’s the daily action of connecting others or connecting pieces of knowledge that were previously disconnected that can make an impact . . . an actionable impact on an everyday basis on the problem that you’re interested to address. So that’s the action part. . . to act because the underlying assumption being we have short time to know, pretty much left on Earth, and we’ve got to act now more than ever’</p>
		<p>The tension of maintaining relationships with existing systems while also disrupting those systems for alternative futures.</p>	<p>A chance to help develop the knowledge and practices needed to drive global challenges within your locale.</p>	<p>What are the potential leverage points by which you can intervene in the innovation ecosystem to realize regenerative futures?</p>	
		<p>The difficulty of acting on societal challenges within ‘normal’ time of HE courses and programmes.</p>	<p>The possibility of challenging your own perspectives and futures, and the rich learning that can result.</p>	<p>How can you create systems that reward students for engaging in critically creative actions, including protecting students when they offend or transgress the status quo?</p>	

Regenerative Education Design Principles	Description	Resistances	Enablers	Design Questions	Indicative Quote(s)
Openness for Emergence	<p>Being receptive to adapt the educational approach, structure, and design of a course as it unfolds.</p>	<p>Receiving approval from the appropriate boards to engage with an open attitude and co-design courses.</p> <p>Dominant views of what may be considered 'good' education.</p> <p>A lack of epistemic and ontological humility. Such humility can transform the role of the educator from expert to co-designer.</p>	<p>An opportunity to learn more about 'education' and your role in it.</p> <p>A (strong) intrinsic motivation to link your educational practice to the task of tackling systemic challenges.</p> <p>The possibility of learning more about transition challenges.</p>	<p>How much of your RHE can be left open for co-designing?</p> <p>Who are you involving, and who are you not involving, in the design and enactment of your RHE?</p> <p>What are the non-negotiables in your design of RHE, and why are they non-negotiable?</p>	<p>'I think that trust is definitely a big one and it's not easy. I sometimes literally feel my heart race when I come up with ideas of letting go of parts of control and keeping half of my curriculum open and undesigned when going into a course handing over the design of a final roleplay assignment in my master course into the hands of three or four students, who will completely design the final assessment and evaluation, including the form together with me. But it's really in their hands. And letting go of that control is . . . it's a leap of faith every time again.'</p>

2.3.1 The Regenerative Education Design Principles Tool

Table 1 has been translated into the preliminary Regenerative Education Design Practices Tool (REDPT), presented in Figure 4. Practitioners can use the REDPT, together with Table 1, to (re)design their own RHE. This preliminary tool emerged through several iterations. The practices to consider as an educator form the outer ring of the REDPT, and the inner ring presents related design questions. The design tool was inspired by other examples of design-based templates and tools, such as the Business Model Canvas (Osterwalder & Pigneur, 2010), the Triple Layer Business Model Canvas (Joyce & Paquin, 2016), the Circular Business Model Innovation Tool (Van den Berg et al., 2021a), and the Biomimicry Design Lens (Biomimicry Institute 3.8). Further validation and iteration of the REDPT is required. In subsequent projects, we will work to validate and further iterate on the REDPT.

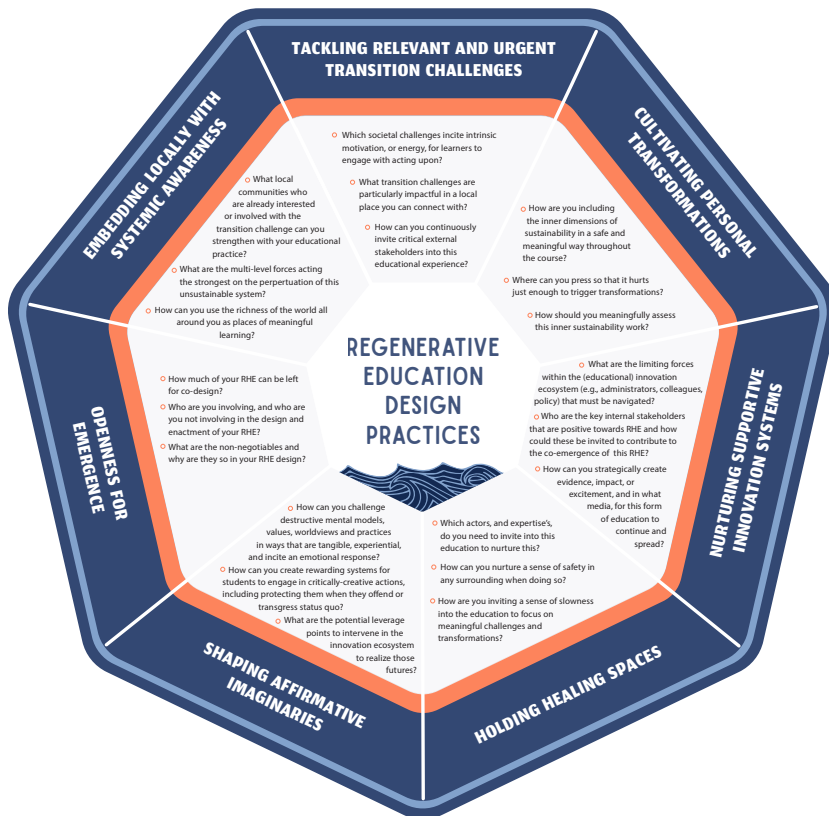


Figure 4: The Regenerative Education Design Practices Tool (REDPT) - Visualized by Nicolas Landriati

2.3.2 Systemic Resistances & Enablers

The guests highlighted several key resistances and enablers to design and engage with RHE. The following are the major systemic resistances and enablers identified through the analysis of the podcasts. A major resistance that emerged from this study was the importance of supportive ecosystems within the university to provide the space and resources (e.g. time and money) required for RHE. In particular, the guests highlighted the need for more time for RHE compared to more traditional forms of education, and they pointed to the tension this need creates. Some described feeling ‘trapped’ in the existing system while trying to move towards an alternative one. However, a few of the guests said they felt supported in engaging in this boundary-crossing endeavour. This result is in line with the results of recent reviews by Schlaile et al. (2021) and Weiss et al. (2021), who highlight the lack of top-down support needed to connect universities to real world challenges. A lack of visible support from the institution was also identified by the guests as undermining the success of RHE; they said students become disassociated when their surroundings in universities that do not (visibly) convey an ethos of regenerative sustainability.

The difficulty of navigating university bureaucracy and, in particular, existing educational practices was also identified as a powerful resistance. This view aligns with findings in the literature by Weiss et al. (2021) and Schlaile et al. (2021). The guests emphasized dealing with the boards and committees responsible of assessment. They highlighted that assessment is difficult because of the openness required for ecological forms of HE, which place transition challenges in context as central to educational design (De Greef et al., 2021; Fenten et al., 2022; Van den Berg et al., 2021a). The guests also highlighted a general lack of appropriate ways to judge the different dimensions of learning (such as learning-as-caring, -knowing, -feeling, -anticipating, -transforming, -transgressing, -being) that occur in ecological forms of education (Wals, 2019b). This includes finding ways to assess learning that takes forms that are other than cognitive (see De Greef et al., 2021, for a recent overview of meaningful assessment forms for these other forms of learning).

The guests frequently highlighted the importance of choosing and using biophysical spaces within and outside campus that are safe for RHE. They specifically mentioned the need for natural spaces in the local environment to be an active part of the curriculum. The need to actively nurture a sense of safety relative to the subjective dimensions of learning (spiritual-psychological and socio-emotional), as well as the

personal transformations dimension of working with transitions, was also highlighted. The personal dimension as mentioned by the guests included both learning how to navigate the challenges of wicked problems like uncertainty, but also engaging with the more positive aspects of being able to see regeneration as something worthy of awe. This need is in line with scholarship in the (positive) psychological literatures (e.g. Kaufman, 2020; Ives et al, 2020). However, to be able to engage with either side of the personal, a sense of safety in the RHE context was considered essential by the guests.

A practical way of creating this safety was stated by the guests to be in structural changes to HE – namely, creating time for longer and deeper engagement with a particular challenge faced within an RHE context. Examples of these included bootcamps; short, intense courses; or even entire semesters. These pedagogical choices towards longer contact was supposed to be particularly powerful if learners are encouraged to deeply explore a given question ('to find the questions behind the question') and if frequent use of non-campus spaces is included. This approach is in line with recent discoveries in (living) lab-based education, which propose that long-term engagement later in the development of a student (primarily in year three and beyond of undergraduate programmes) is best for students to engage with ecological forms of education such as RHE (Sjoer & Hensel, 2021; Van den Heuvel et al., 2021).

2.3.3 Personal Resistances & Enablers for those engaging with Regenerative Higher Education

Of course, in addition to systemic challenges the guests highlighted personal resistances and enablers for engaging with RHE as well. A large shift in the perspective of the role of 'teacher' was highlighted by the guests, moving away from an expert who stands in front of the classroom towards a caring gardener, or steward, who nurtures the fertile soils of regeneration (see also Macintyre, 2019). The proposed shift includes moving away from seeing teachers as experts to viewing them as co-designers of entanglements through which learning-based change can emerge (Sanford, 2020). In the language of transition design, this is a focus on designing alternative systems (Garcia & Gaziulusoy, 2021; Irwin, 2018). The guests also highlighted the courage and relational risk to which educators expose themselves – namely, how they are required to transgress, and keep transgressing, the dominant educational paradigm (Lotz-Sisitka et al., 2015). A professional desire to move towards this alternative role as an educator was identified as a main driver for (personal) change towards experimentation with regenerative forms of education.

This transformation of the role of the educator also comes with additional knowledge requirements, such as being able to guide students through the challenging psychological work that is involved in tackling sustainability problems (Fenten et al., 2022; Ives et al., 2019; Kaufman, 2020). The guests spoke about a strong tension between the need for security and growth (Kaufman, 2020) in the sense that working with STs asks for a degree of openness that can be quite uncomfortable for students who are not used to navigating education that embraces such openness (e.g. Van den Heuvel et al., 2021). Many of the guests highlighted feeling tension between wanting to intervene to make learning simpler for the students and valuing the difficulty students face in navigating RHE. Several of the guests referenced the sense of personal fulfilment they felt when they were able to help students in navigating this form of learning and personal transformations, which made their work subjectively more meaningful. A pragmatic way to navigate this tension was the inclusion of more diverse educational teams, with at least one member having experience with this psychological dimension of learning. However, forming such teams requires a supportive ecosystem inside the university as well as a strong financial position.

In general, the guests also highlighted the importance of embracing the personal dimension of RHE, while also suggesting that such a practice is lacking in current educational practice. And while there is quite extensive scholarship on eco-social forms of learning (e.g. Barnett & Jackson, 2019), the inclusion of the personal dimensions in sustainability sciences is limited (e.g. Ives et al., 2019). The guests generally agreed with this line of scholarship, stating that such personal sustainability was key for working on transitions. The guests also highlighted that these personal forms of learning are not limited to students but also include educators. Subsequently, they frequently mentioned the importance of taking a reflexive approach to the unfolding RHE, which is in line with calls for more transformative and ecological approaches to being a scholar–practitioner (Wittmayer et al., 2021).

2.4 Discussion

In this subchapter I explore the implications and limitations that rise from the analysis and study.

2.4.1 *Towards Regenerative Higher Education*

The findings suggest several key challenges for further movement towards RHE. In terms of pedagogical-didactical approaches, most of the guests said they included experiential, contemplative, and existential approaches and questions in their practice (Biesta, 2021). Examples of such practices included nature-based learning, walking exercises, and observational assignments related to the challenges that the students are tackling. For these pedagogical engagements, it is likely that RHE can draw from the field of eco-pedagogy (Misiaszek, 2020). These practices were considered important not only because of the embodied and existential nature of sustainability challenges (Ives et al., 2020) but also as part of the strategy to balance psychological safety and growth in designing RHE (Kaufman, 2020). However, a full exploration of a regenerative pedagogy remains needed.

Most of the guests' stories consisted of courses that could be seen as niche innovations at the fringes of education, such as minors or dedicated masters, that were designed from the start with a commitment to healing transgressive socio-ecological systems. Therefore, in most cases, the students flowing into these courses are attuned to the dominant neoliberal educational paradigm. This was highlighted by the frequent mention of the effort required to break down consumerist expectations of students (e.g. Wals, 2019a, for a discussion of unsustainability in education). A frequently mentioned example in this regard was the degree to which students are used to working on relatively simple problems that are tightly defined or bounded by their own educational programmes. Such students express strong frustration when asked to co-discover what needs to be worked on and how to go about doing so (Winstone & Boud, 2021). This means that a considerable amount of effort and time must be invested by the educators engaging with RHE to break down some of those learned behaviours, such as focusing only on grades instead of personal or transitional impact (Wals, 2019a).

The guests shared a commitment to nurturing different dimensions of learning – namely subjectification, socialization, and qualification (Biesta, 2021). They specifically

mentioned that those concepts should be rethought through a regenerative sustainability lens. The guests used different vocabularies and concepts to express these dimensions of learning, such as learning-to-care, learning-to-feel, and learning-to-transform (Wals, 2019b). While there were significant differences across the cases regarding how to pursue a balance between these dimensions, all educators focused strongly on facilitating connection and community-building within RHE courses as well as with the broader innovation ecosystem within which RHE is entangled. The focus on tackling regional challenges by connecting with local communities is also a key characteristic derived from ecological university literature, as proposed by Biesta (2021), Barnett and Jackson (2019), and others.

2.4.2 Using the REDPT

To be able to set steps towards a regenerative higher education the REDPT could be used by educational teams to (re)design RHE.¹⁴ To do so, these teams should involve a variety of actors from the community that will be the centre of this educational design. The REDPT could serve as the basis for a workshop or session where the team of educational co-designers collectively goes through the design-questions in an iterative manner. The resulting insights and ideas could be used as a starting point for further educational (re)design. Alternatively, we propose that the REDPT could be used as an analytical tool to collaboratively reflect on an educational experience and to propose improvements. An in-depth guide and examination of this process is the topic for another study (see next chapter). It is important to highlight the contextual and iterative nature of RHE, so more empirical validation of the REDPT and an accompanying workshop are required. The authors invite other scholar-practitioners to experiment and work with the REDPT in (re)designing their own RHE.

2.4.3 Regenerative Higher Education and Educational Technology

In addition to that opportunity to employ the REDPT, it is also interesting to consider what implications these results have for RHE and educational technology. One of the surprising elements was the relatively small emphasis placed on digital technologies across the 27 interviews. No one mentioned the techno-mediation of ecological forms of learning or of learning more generally in the twenty-first

¹⁴ Please see chapter 5 for a regenerative education design canvas and recommendations for educators based on the entire thesis.

century (e.g. Stein, 2019). This could indicate that technologies do not play a large role in RHE or that it is just not a high priority for these educators. However, given the degree to which education is technologically mediated (especially during the COVID-19 pandemic) and the likelihood of increased use of technologies moving forward, this seems unlikely. Instead, it is possible that more dedicated digital technologies must be designed to facilitate RHE. This presents a fruitful avenue for further research on the RHE perspectives of educational technologists.

2.4.4 Podcasting-as-Qualitative Inquiry

The doing of podcasting-based inquiry also revealed additional methodological insights into the potential uses and abuses of podcasting for qualitative inquiry. While this research engaged in a relational approach (i.e. identifying relational patterns across multiple levels and times), it is likely that podcasting-as-inquiry could also be used for more in-depth explorations of a topic, such as a single-design disposition, concept, or resistance. It could also be used to focus on the individual experience of an educator engaging with RHE over time. Of course, this would require methodological adaptations to the study design. As a form of qualitative inquiry, the use of podcasting adds an additional hermeneutical layer that the host (i.e. interviewer or researcher) must be conscious of. The use of podcasting includes acknowledging that one is gathering data and co-creating a communication and educational product for third parties. At times, this was experienced as challenging. We recommend, whenever feasible, to sit in or be a guest on a podcast before embarking on such an inquiry. A question remains regarding how and if podcasting-as-inquiry could translate to other topics of study. Based on the experience in this study, however, it seems likely that this translatability exists.

2.4.5 Limitations of the study

This study faced a number of limitations. A significant limitation of this study consists of the time commitment required for podcast-based inquiry, as each episode took approximately 10 hours of work in the form of preparation, recording, editing, and audio improvement. In addition, the cognitive intensity of hosting a conversation while considering third-party listeners may be a limitation. While there was considerable time allotted for each interview – about 90 minutes – it is possible that guests were unable to express everything they may have wanted to (e.g. about RHE and educational technology) and time could have acted as a limiting factor. Finally,

the technical know-how of recording, editing, and producing a podcast represents a steep learning curve. This learning curve could be partially circumvented through the inclusion of specialists, but doing so would come with methodological, ethical, and financial implications. It is important to add that in principle, only the host (interviewer) has to have relatively high levels of technological literacy and that the guest only has to be comfortable talking into a microphone. Potential avenues for further research, including ways to mitigate or adapt to the identified limitations, is presented in chapter 5 of this thesis.

2.5 Conclusions

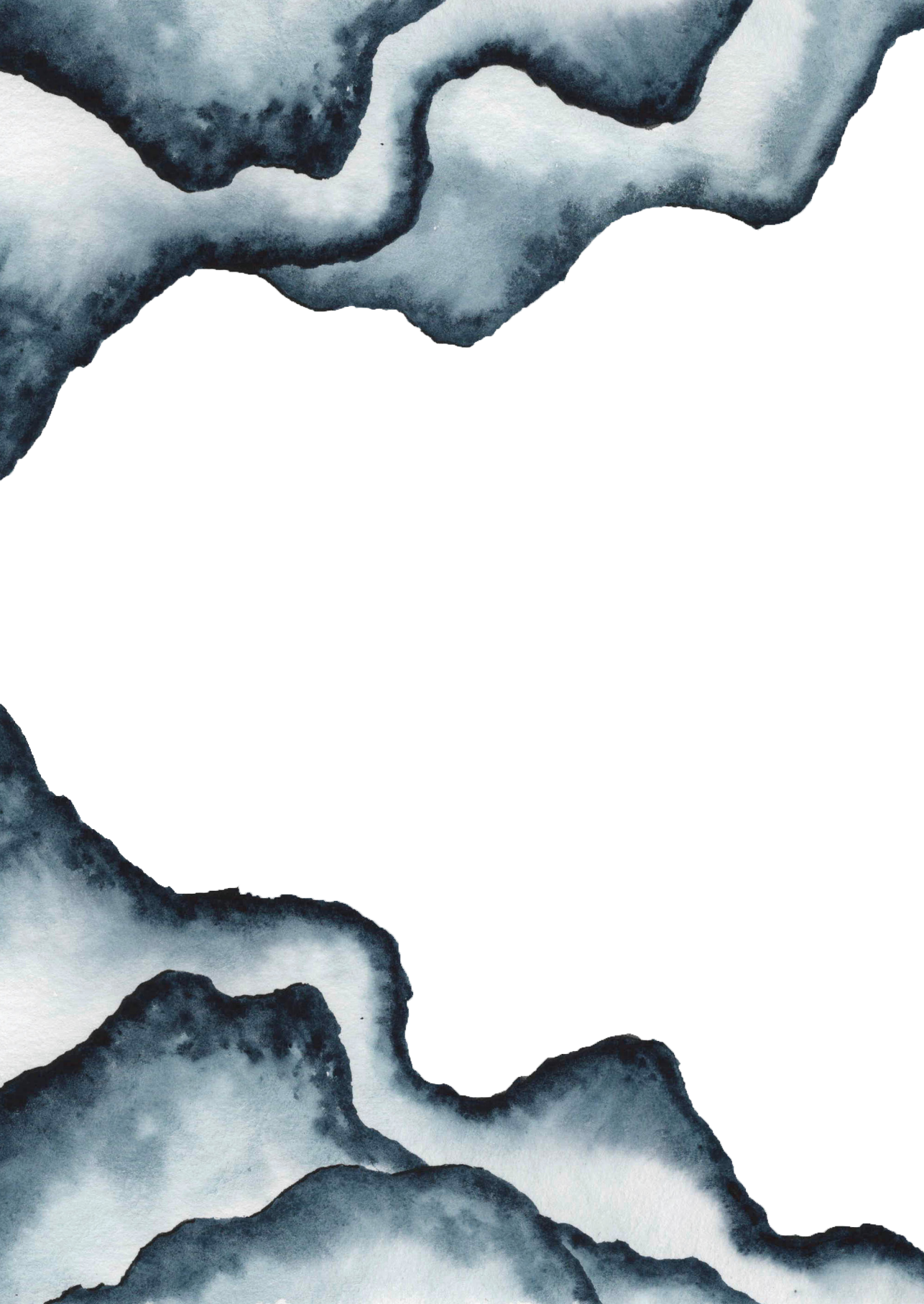
This study set out to identify the principles, enablers, and resistances experienced by educators who are already moving towards RHE. We identified seven key principles – presented in table 1 – that highlight these RHE design principles. The guests who participated in this study showcase the potential for RHE by showing that such redesign is, in fact, possible. In a way, the guests' comments show that the knowledge–practice gap highlighted in the previous chapter is already being crossed. The study presented in this chapter also highlights a number of personal and systemic resistances that call for personal and systemic change within HE. While the nuances of how to engage with these different elements are context-dependent, that is precisely where the artistry of education resides (Biesta, 2021). The REDPT provides a guide to engage with such (re)design and (re)doing.

The Co-Design Lab
With Jens Gijbels



Reflective Questions:

- *How can you nurture curiosity for systemic change in your educational context?*
- *How can you welcome the power of the biophysical spaces your education is entangled with?*





3

'WALKING A GENTLER PATH': A PAIN-GUIDED, DESIGN-DRIVEN (AUTO)ETHNOGRAPHY OF DESIGNING AND ENACTING REGENERATIVE HIGHER EDUCATION

Chapter 3. 'Walking a Gentler Path': A Pain-Guided, Design-Driven (Auto)Ethnography of Designing and Enacting Regenerative Higher Education

'Caminante, no hay camino. Se hace camino al andar.'

'Wanderer, there is no road. The road is made as you walk.'

Antonio Machado – Poet

3.1 Introduction

Where the previous chapter explored RHE principles, resistances, and enablers of other educators active in universities in The Netherlands (and beyond). This chapter explores my attempt as a teacher to design and enact RHE within the context of The Hague University of Applied Sciences (THUAS). This experiment was conducted from October 2019 through February 2022. The chapter contrasts and adds to the previous chapter by exploring the 'how' of RHE over a longer period than the previous study. In doing so, the chapter is a direct response to the challenge laid out in chapter 1 – namely, to engage with the 'how' of embracing more regenerative forms of HE that connect with STs. While the previous chapter presented a more systemic overview of principles, resistances, and enablers that educators face when engaging with RHE, this was largely limited to single conversations. In this chapter, the methodological choices allow a much more in-depth examination of the RHE design elements over a two-year period. This longer form of engagement allowed for a more personal exploration of how RHE can be navigated. Thus, it acts as a form of validation and further iteration for the REDPT. Before I explain the experiment, I outline the design-driven autoethnographic (DDAE) approach that I used as well as the context of the study. In doing so, this chapter lends strongly to answering sub-questions 1 and 2 presented in the first chapter. Namely, how educators are seeking forms of RHE, what resistances and enablers they encounter when doing so, and how they navigate these.

First, In section 3.2 I explain the approach of DDAE. Then, I highlight the context (section 3.2.2) of this study before explaining the embodied approach used to generate data for this study (section 3.2.3 and 3.2.4). Subsequently, the way the

data were analysed, utilizing the REDPT (chapter 2), is elaborated (section 3.2.5). Next, four collections of vignettes follow, as well as autoethnographic engagement in the results (sections 3.3-3.6). Each of these four sections is representative of a semester worth of DDAE, and each ends with a set of RHE invitations. In the discussion and conclusion sections (3.7-3.8), several possible additions (design practices, resistances, and enablers) for RHE are presented.

3.2 Background of Design-Driven Autoethnography

DDAE (Schouwenberg & Kaethler, 2021) engages with design as intentional action to change systems (Wahl, 2016). I follow the perspective that design-based research is a form of intentional action that is compatible with a variety of other methods, such as autoethnography (Allens-Collinson & Hockey, 2008; Ellis & Bochner, 2016). While no DDAE studies focused on RHE have yet been published, exemplary autoethnography work on RHE is available, such as that by Lopes Cardozo (2022) that shows that forms of autoethnography can be a valid way of doing research in complex educational settings.

3.2.1 *Designing Design-Driven Autoethnography*

DDAE was chosen for this research because the systemic and reflexive nature of autoethnography can be a powerful method for generating data while using design to create intentional change. Autoethnographic approaches, including DDAE, allow for engagement with embodied forms of data – namely, what it is like to live in, through, and with something. This feature makes DDAE particularly suitable for in-depth study of topics that are marginalized or emerging, or that go against established cultural norms, such as RHE.

This potential of DDAE to contribute to ‘how’ questions makes it ideal for exploring RHE, around which this thesis is framed (see chapter 1). DDAE’s combination of data generation with practice aligns with calls by leading methodologists of qualitative research methods, such as Norman Denzin, who states (2014; x), ‘There is a pressing demand to show how the practices of critical, interpretive, qualitative research can help the world in positive ways’. Denzin continues (idem; xi), ‘Our project is to interpret and change the conditions under which lives are lived’.

To engage with Denzin's perspective on qualitative research, I follow the arguments of Schouwenberg and Kaethler (2021), who propose that DDAE can interpret and change the world in a methodological, rigorous manner(s). From this perspective, DDAE engages with a form of scholarship that embraces a dialogical process (between personal and systemic change) to impact the world; simultaneously, DDAE conducts a multi-system level of inquiry (Ingold, 2018) to add to the scientific discourse. In other words, trying to change educational practice and reflecting on what does or does not work results in lessons about the potentiality and resistances of RHE in systemic change.¹⁵ Thus, I argue that DDAE takes a relational (Walsh et al., 2020; West et al., 2020) and interpretivist stance towards sustainability science (Schwartz-Shea & Yanow, 2013; p 110). This stance connects with the methodological commitments that I present in chapter 1.

It is important to highlight which design perspective I bring to this DDAE.¹⁶ I engage with design as an ecologically informed approach (e.g. Orr, 2002; Wahl, 2016; Van den Berg et al., 2021a) that also draws elements from speculative and transition design (e.g. Dunne & Raby, 2013; Irwin, 2018). In other words, for this study, I engaged with DDAE as a research-through-design practice that is committed to a more sustainable future for the system being co-designed. This is an interconnected, relational, and multi-level perspective on design interventions. It assumes that interventions generated through and in design generate knowledge across different nested-system levels; thus, it may provide insights into RHE structures as well as RHE pedagogy. So, while this study focuses on a particular course in a particular location (i.e. context), the insights may be indicative of larger tensions and opportunities for RHE.

This type of design-oriented inquiry, which aims to abduct contextual design insights for other contexts, is common in systemic design (e.g. Stompff & Smulders, 2021; Van der Bijl-Brouwer & Malcolm, 2020; Schouwenberg & Kaethler, 2021). While the way I propose to engage with DDAE is unique, there are valuable examples of engagements at the intersection of design and autoethnography, such as the work of Ceshin and Gaziulusoy (2016; 2020) and of Adams, Boylorn, and Tillmann (2021). However, it is important to highlight that any results taken from this DDAE must be adapted to local contexts (see also the distinction between principles and

15 Following Schlaile et al. (2021), this includes exploring the lessons from the nano perspective (a single teacher) through the macro perspective (the educational system).

16 There are many different 'types of design', such as system design, co-design, transition design, non-human design, and human-centred design.

local expressions in chapter 1). In this regard, Wahl (2016) argues that a connection must be made with the uniqueness of place to facilitate regeneration. Because of this localization, educators can read this chapter to provide a partial lens to (re)engage with their own practice(s), but they must keep in mind that the chapter does not provide a blueprint that can be adopted without fine-tuning for their situatedness.

3.2.2 *The Context of Mission Impact*

The course that served as the basis for this inquiry was the 30 European Credit Transfer System (ECTS) credits minor-course Mission Impact. This course (Mission Impact) was organized by THUAS, and I was the founder, co-coordinator, and senior lecturer.^{17,18} In the two iterations of the course, 27 students from 10 different educational programmes participated for five-month periods. A wide variety of other teachers, students, and practitioners were also involved with the co-designing and enacting of the course during the study.

During both iterations of the course, the participating students and I frequently engaged in creative methods that facilitated reflection on practice, such as arts-based workshops (Kara, 2020; Pearson et al., 2018). Throughout both iterations, the course interweaved personal and systemic change for the learners involved. In practice, the course load for ECTS was divided in a 80-20 split between working on transition challenges (24 ECTS) and personal development in engaging with this systemic change (6 ECTS). To highlight the connection between these dimensions of learning, there were generally one or two supporting workshops or sessions on a weekly basis that focused on topics like regenerative design and sustainability (Orr, 2002; Wahl, 2016), doing participatory design-oriented research (Stompff & Smulders, 2021), and facilitating personal and collective reflections on the processes of transformation that were (or were not) unfolding. These workshops drew on the transformative arts toolkit by Pearson et al. (2018) to do so. The reflections and other learning materials that

17 Throughout this study, many student–researchers, teacher–researchers, and external stakeholders were involved as (temporary) co-designers of this course. The resulting chapter presents an interwoven description of these contributions. Expressions of gratitude towards those who played a part can be found at the end of this thesis in the acknowledgement section.

18 Please see the podcast episode link in chapter 4 of The Future Learning Design Podcast to hear more about the context before continuing. Or you can find the course manual here: <https://landriati.notion.site/Course-Guide-Mission-Impact-9a658ff68a324b1cbacb2ff0559a258d>

the students co-created throughout the two iterations formed an integral part of the dataset that went into this DDAE. Additionally, these student-generated materials formed the basis for the subsequent chapter of this thesis, where I explore the lived experience of students engaging with a form of RHE.

For this experiment, I closely collaborated with regional actors and representatives from the Binckhorst area (first and second iteration of the course) and Greenport West-Holland area (second iteration of the course) in and near The Hague, the Netherlands. The Binckhorst area is an industrial suburb of the city that used to house facilities, like a cement factory, and it is currently being redeveloped into a circular living space by the municipality. The Greenport West-Holland area is situated roughly between the cities of The Hague and Rotterdam and is one of the primary hubs of agro-food production in the country, with a particular focus on horticulture in greenhouses.

The collaborations with these places emerged organically from previous projects they had conducted with the research centre Mission Zero, of which I was a member during this study. However, both relationships were initiated by representatives of the areas who saw the need for STs and who wanted the transformation of educational practice to play a part in these systemic changes. Throughout the process of engaging with this DDAE (e.g. redesigning and teaching Mission Impact), a broad community of students, teachers, and practitioners was actively invited and involved in co-designing and analysing the course. A full narrative account, given in 22 instalments of the study period can be found on Medium.¹⁹

3.2.3 Data Generation

An embodied approach to data generation was taken for this DDAE. My diagnosis with ankylosing spondylitis,^{20, 21} is at the heart of this approach. The disease primarily affects men, and symptoms generally start in the early 20s, as was the case for me. This

¹⁹ <https://medium.com/mission-impact>

²⁰ Ankylosing spondylitis primarily targets the spine and larger joints. For more information on the disease, please see <https://www.mayoclinic.org/diseases-conditions/ankylosing-spondylitis/symptoms-causes/syc-20354808#:~:text=Ankylosing%20spondylitis%20is%20an%20inflammatory,be%20difficult%20to%20breathe%20deeply>.

²¹ According to the McGill pain index, Ankylosing Spondylitis ranks 37/50. For reference, unprepared childbirth is 40 and amputation without anaesthetics 42.

disease causes physical pain in the spine and affects other joints connected to the spine, such as the hips and shoulders, as well as the smaller connective joints like the wrists and ankles. Additionally, several general symptoms occur, such as tiredness, insomnia, and vulnerability to infections, partially triggered or worsened by stress. In the words of another sufferer of the same disease, the condition feels like having the base of the spine and neck in a vice,²² and I experienced moments of encountering resistance to RHE as a tightening of the screw. Whenever I faced personal or systemic resistance to regenerative forms of education, I experienced a moment of increased physical pain, which acted as an embodied cue to sit down, slow down, and capture reflections in practice.

3.2.4 Pain as research tool

However, leveraging an embodied approach – particularly when engaged through a disabled body – requires further elaboration. For this embodied approach to DDAE I draw on the perspective of Tabor et al. (2017; p 993), who ‘propose that pain is an experience that is inferred from sensory, affective, and bodily cues that are interpreted within one’s current and evolutionary context’. In other words, pain emerges from a complex interplay of experience within context – emerging from the inside out and from the outside in – and thus is a relational construct (Walsh et al., 2020; West et al., 2020). In this respect, it is like the pain experienced when encountering (systemic) resistance to educational change in practice. It is from this perspective of pain that I make the case that pain can guide DDAE data generation. I used writing, audio, and video recordings to capture my reflections as close as possible to the moments they were experienced. My choice of media for the notes was guided by pragmatism (i.e. what was at hand), including the degree of pain in the moment and the joints in my body in which it was located (i.e. whether I could write that day).²³ When I encountered stress or resistance to educational choices, I experienced that resistance as an increase of physical pain. These cues acted as the impetus for observations. It may be arguable that moments of flow temporarily reduce pain and allow pain to be used in such a way as well.

It is my contention that disabled bodies, through this relational understanding of pain, may be able to access resistances and forms of data that may be invisible or

²² <https://www.youtube.com/watch?v=tnRcZ-t1D98>.

²³ While ‘the vice on the spine’ is the major source of pain for ankylosing spondylitis, the peripheral joints as well as secondary issues, like eye and soft-tissue infections, are part of the condition.

intangible to able-bodied researchers. Of course, pain could also have clouded my cognitive judgment and may have limited my observations to moments where the relational context felt off. In practice, I navigated this potential limitation through the active use of ongoing public and peer review of written materials, as well as the inclusion of (study) materials generated by others who were involved in the study period, like students and practitioners. I propose that in certain methodological situations, including DDAE, disabled bodies can potentially be leveraged as an asset since they provide a greater sensitivity to changes within 'one's evolutionary context' (Tabor et al., 2017; p 993) that may not be identifiable by able-bodied researchers. I also acknowledge that this perspective may be limited to research in contexts that are perceived as stress-inducing and thus triggering to pain.²⁴ Through this re-purposing of pain, this chapter adds to the established (but limited) autoethnographic literature on pain (e.g. Birk, 2013; Thompson, 2019). For example, Birk's (2013) seminal work argues for the inclusion of personal elements of living with chronic pain and stigmatisation²⁵ to address lived pain ignored by health research.²⁶ Thompson (2019) also argues for the inclusion of disabled researchers within the scholarly debate. This

²⁴ For example, a similar argument for extremely positive experiences may not hold.

²⁵ The author provides a strong case that is relatable for anyone living with disability: a sense of shame and guilt for being sick and requiring care (at times) in a world filled with people who epistemologically cannot truly understand what living with chronic pain or disability is like. I have experienced this, and it is one of the things that drives my work ethic, as I constantly feel I must earn a right to exist (in society). While writing this chapter, I found this experience to be especially difficult. While it may have limited me, if I were ever to supervise a chronically ill researcher, I would ensure adequate support to at least make this experience discussable with others who can relate. I also want to clarify that my supervisors have been incredibly supportive.

²⁶ The author also highlighted the performative nature of pain and the intensity of trying to pass as 'abled', which I have also experienced. For example, after disclosure at THUAS, one of the questions I have received was 'Why should I risk this [job] to hire you instead of hiring someone who isn't sick?' I was also asked a similar question about a potential financial grant: 'Why should we give this grant to you instead of someone who isn't disabled?'

chapter answers their calls for inclusion.^{27 28} Further discussions of methodological limits to personal research through a disabled body are included in chapter 5.

According to DDAE best practices, my observations and reflections during the experiments are supplemented by additional forms of data (see Figure 5 for a schematic overview), including student reflections and presentations and conversations with local stakeholders. Together, these data served as the basis for public, collaborative reflections during the study period, which were shared on Medium (Mission Impact). In total, I wrote 22 multimedia blogs consisting of almost 300,000 words. Throughout the DDAE period, draft versions of these blogs were shared with the participants of the study before being published online. Feedback from those involved in the study (e.g. the participating students, other teachers, and professional partners) was integrated as the study unfolded. Feedback from the (online) community was reflected upon and used moving forward. Through this ongoing weaving of perspectives, my approach to DDAE was akin to that of a rhizome (Deleuze & Guattari, 1987). This weaving – was not unlike the integration of patterns as they emerged – the final result being emergent. This chapter represents many interwoven branches that were part of the temporary ecologies of Mission Impact. Incorporating these participatory practices, principles of triangulation, and participation of the community into the DDAE was in accordance with my methodological commitments²⁹ (see chapter 1). It is this series of Medium articles – woven together with pain-guided inquiry and other materials and perspectives from the course – that functioned as the dataset for this study.

My approach to the vignettes aligned with the autoethnographic middle ground proposed by Wall (2016) – that aims to find a balance between evocative and

27 It is a well-established fact that women's experience of chronic pain is taken *less seriously in the medical world* and that women are more likely to receive improper care when presenting with chronic pain issues. I was lucky to not experience this, but the period of onset to diagnosis was still more than two years, including a roughly nine-month period in which the medical doctors thought the pain was related to my semi-professional sporting career (strongest man competitions) and/or mental health issues.

28 While this chapter argues for disabledness not only as a valid methodological consideration but also as a potential methodological strength, it does not claim to be a methodological contribution for this discourse. I invite scholars with more subject-matter expertise to explore implications for pain and health research through the inclusion of disabled (scholarly) voices.

29 Additionally, all didactical and pedagogical materials co-created in this study are available through this blog series.

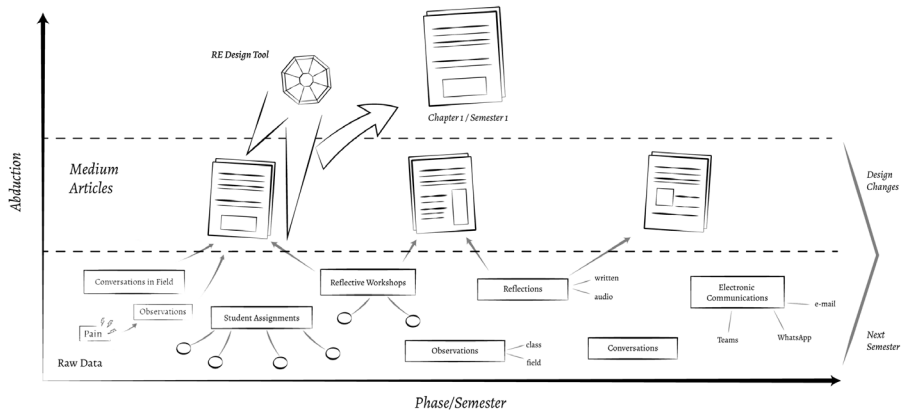


Figure 5: Schematic representation of the DDAE process for each semester, representative of the four vignettes presented in this chapter. The data that formed the basis for each Medium article was, in a way, a kaleidoscope of hand-written notes, digital notes, voice and audio recordings, student-created materials, and online engagement with the totality of these materials. My own observations were derived from moments of increased pain.

analytical writing. Of course, two-and-a-half years of autoethnographic experience cannot be captured in a single chapter. Hence, for each phase (roughly six months) the vignettes zoom in on notable examples that highlight numerous RHE considerations. This allowed for a variety of epiphanies to come to the fore.

However, the multi-directional complexity of the design work of this study ‘suggests the need for a text that is more interconnected than the classical linear presentation of a single “red thread” . . . while providing an interconnected and integral perspective that is more aptly pictured as a red thread woven into a network of meaning than in an untangled linear simplification of real-world complexity’ (Wahl, 2006; xvi). This aligns closely with writing styles that favour complexity at the expense of immediate clarity (e.g. Haraway, 2016). To do so, I follow the perspective of Robert Coles (1989; p 49), that ‘the beauty of a good story is its openness—the way you or I or anyone reading it can take it in and use it for ourselves’. Some of the scenes depicted include graphic engagement with living in, with, and through chronic pain and, in this, you may experience moments of unclarity – or even discomfort. This includes some of my stylistic choices, such as potentially disorienting jumps through time. I would like to warn you that the texts may be quite confronting – especially if you have personal experience with disabilities or living with chronic pain.

3.2.5 Data Analysis

To analyse the data that were generated over the two-and-a-half-year period, the REDPT (chapter 2) served as conceptual lens. The collection of Medium articles – which emerged from the pain-derived autoethnographic data – was examined through the REDPT. This allowed the REDPT to guide the way through the dataset to explore how I experienced designing and teaching a form of RHE. The tool also enabled me to explore the resistances that I had to navigate in doing so. I hosted a series of four collective analysis workshops from 21 March through 11 April, 2022. For each of these sessions, I analysed the data with a team of two students involved in both iterations of the course. The sessions were occasionally strengthened by an additional member of the community who was involved in the study period (including one of the co-promoters and a junior design researcher). In each of the sessions, the analysis team focused on the data from a single phase (a semester) of the study period. Each of the sessions started at 13:00 and ended around 20:00. This collective approach is in line with the methodological commitments outlined in chapter 1 and helped to achieve intersubjective agreements on the findings.

Each of the workshops used the following steps: (1) The analysis team highlighted data they thought insightful. Each source was independently assessed twice (as read through the REDPT). (2) In the second round of analysis, the marked elements were collectively placed on the REDPT, and we discussed why they should be included and where they ought to be (re)positioned. (3) This discussion resulted in several identified elements being excluded as well as the addition of data triggered by the discussion. (4) Some elements may have seemed less important in the isolation of a single text than in relationship to the broader analysis and vice versa. During this phase, notes and reflections were captured on Post-it notes. (5) The next round of analysis consisted of engaging with the codes and notes on the REDPT and narratively summarizing the main insights from each of the seven design categories of the REDPT, including any resistances to realizing the specific practice engaged with at that point. (6) In the final round of analysis, the insights from the entire analysis workshop were narratively summarised, and the subtitles for the emerging narrative were named collaboratively. These were indicative of the main lessons from each phase. This final stage of analysis, which was captured on film,³⁰ highlighted the major epiphanies and lessons of two years of experimenting with RHE. The resulting chapter was shared for review with members of the community who had been involved in the course twice – as well as alumni, professional partners, and other educators.

³⁰ These films served as reminders when I constructed the narratives presented in this chapter.

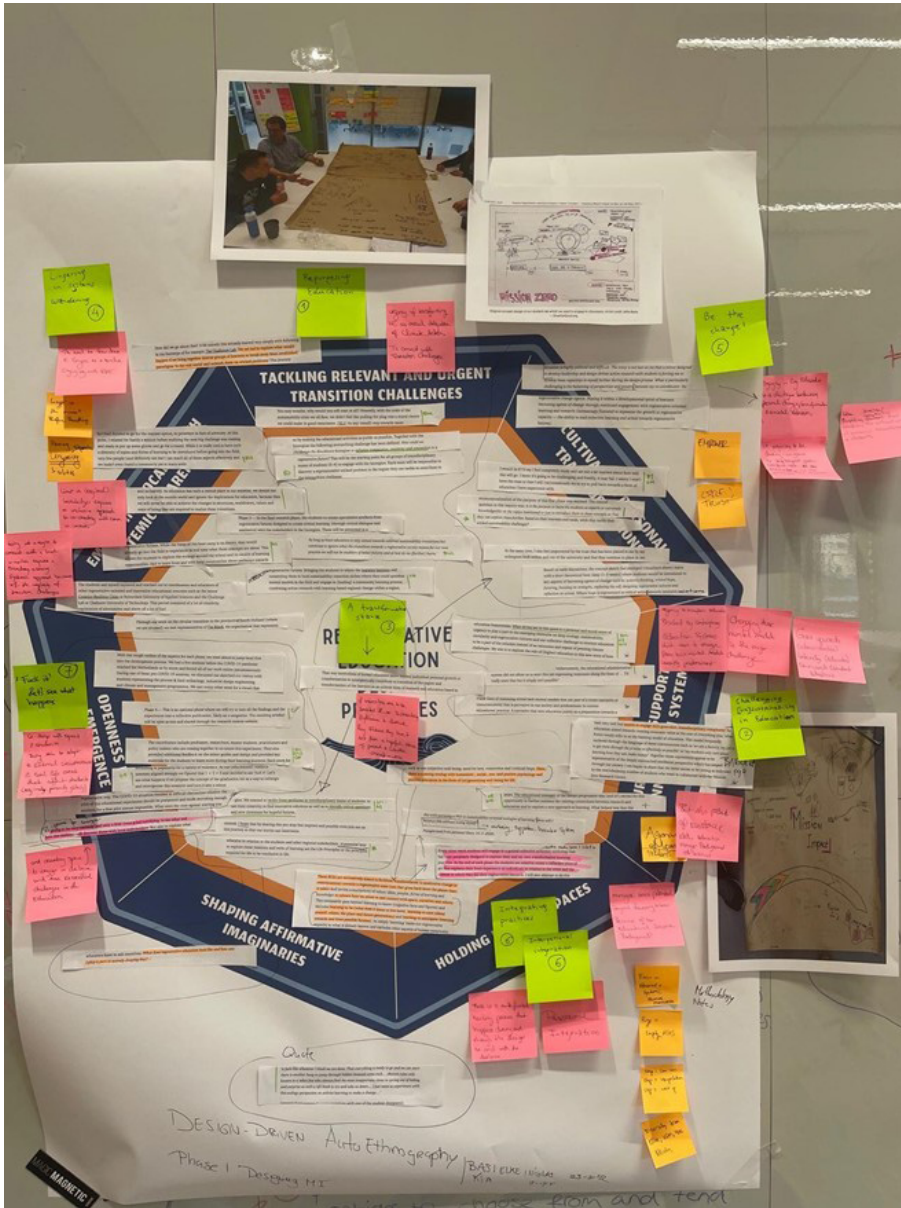


Figure 6: REDPT after the first analysis workshop of 21-3-2022 analysing the first phase of the study.

Figure 6 presents the results of one of the analysis workshops. The white bits of paper on the framework are excerpts from the Medium articles that I wrote in the corresponding phase of the experiment. Those excerpts were selected by the workshop team. If they were placed within the REDPT, they connected with one of the seven RHE practices

identified in chapter 2. If they were outside of the REDPT, their relation to the REDPT was unclear (either proposing alternative practices or principles that were left unidentified by the previous study or covering multiple practices). The Post-its represented highlights of the discussions of the sessions – exploring the implications and interpretations for RHE.

Each of the analysis workshops formed the basis for the vignettes presented in this chapter. *Italic text in the narratives indicates original materials from the dataset; if not otherwise specified, these reflections were my own.* Visuals and aesthetic materials from the corresponding study period are provided where these strengthen the vignettes. Each phase ends with a set of RHE invitations that were derived from the period of experimentation or that emerged directly in the conversation during analysis. The results of the DDAE are presented in four phases – each representative of a semester of experimentation with Mission Impact.

3.3 Phase 1: Preparing the Journey

The first phase is representative of the study period from October 2019 to August 2020, during which the initial seed for this project was planted. During this time, I first made attempts design a transdisciplinary, team-based graduation lab that focused on regional transition challenges. This morphed into the 30 ECTS, full-semester minor course, Mission Impact, which was co-offered by the Industrial Design Engineering programme and the Mission Zero Centre of Expertise.

3.3.1 *The first Resistance*

'I don't understand them, why do we all seem to agree that change is required – even agreeing on the direction of change – but simultaneously pretend that we are powerless to change it because of "the system"', I thought as I sat back down in my little office on the third floor of THUAS. Sitting next to two colleagues, they could visibly see the frustrations on my face. They couldn't see that my spine was on fire. They knew I was working on establishing a graduation lab modelled after the one at Chalmers University of Technology (Challenge Lab) (see Figure 7). 'What's wrong?' one of them asked. 'It's really fucking frustrating that it seems that so many see the need for change, fully acknowledge it's there, but then when you press them on it they pull back . . .' I replied.

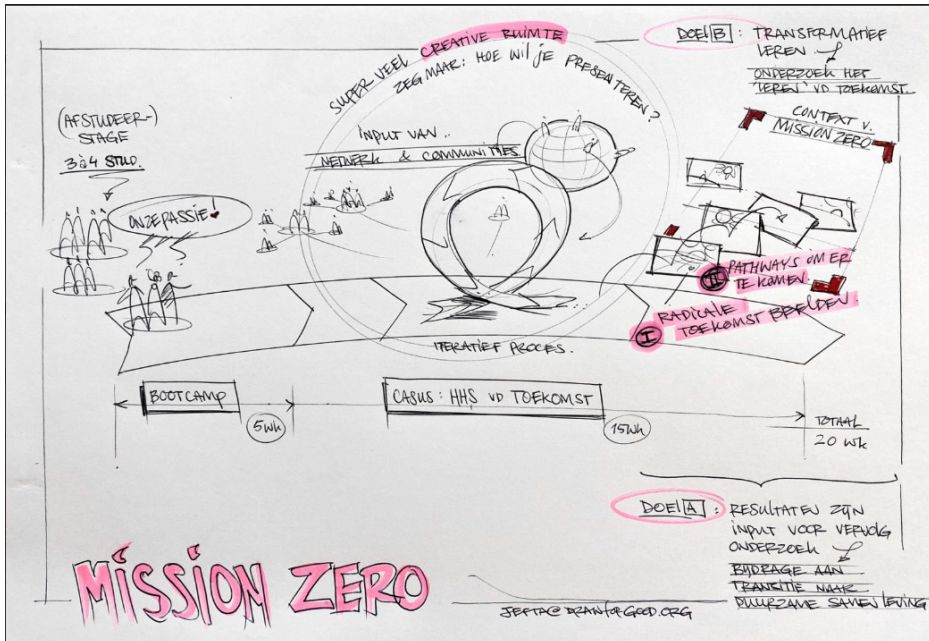


Figure 7: The sketch of our initial concept for a transdisciplinary thesis lab linked to STs in the local area around the university. The sketch was used for photo-elicited interviews ($n = 20$) to gather responses during the design phase. Visualized by Jeffa Bade.

At this time, I was working hard on what I thought was a relatively small and simple intervention into the educational system – to allow a team of graduate students to graduate together, with a shared transdisciplinary thesis related to a sustainability challenge. The idea would follow in the footsteps of colleagues in Sweden who years prior went on a journey to ‘set out to explore what would happen if we bring together diverse groups of learners to break away from established paradigms and unleash them on wicked problems’ (see Holmén, 2020). At the time, I didn’t realize yet that what I was facing was a form of systemic resilience. In private, educational actors were very happy to acknowledge some of the changes required – going as far as highlighting how needed such a structure was – but then relying on ‘the system’ to argue against its possibility.

I had spoken with about 20 people across the university, ranging from senior administrators to teachers and policymakers, and almost all of them said, ‘Great idea! But it’s not possible’. I remember thinking, ‘Huh? What do you mean? Why is it impossible?’ Their responses were ironically representative of the challenges that humans as a species face in transitioning towards a sustainable, regenerative presence on this

planet. The changes that were required to enact such a lab were indeed impossible from the perspective of the *current* HE system and culture (within the institution). For example, students had to meet specific learning outcomes for their graduation, within tight parameters. Thus, changing these requirements to embrace uncertainty was against the 'rules'. However, the pre-existing requirements were a systemic design choice, not an immutable law of nature like, say, the second law of thermodynamics. In this, I encountered the same mental models experienced in transition work outside the institution (e.g. establishing local renewable energy cooperatives or circular innovation ecosystems). The deepest layer of transition, the one that needs to be transformed the most (i.e. that of mental models of what systems ought to be – in this case that students *have to be* individually assessed to become 'an engineer') was so sacred within the university culture that those I spoke with would not allow themselves to perceive a change to the system as a valid place for design intervention, even though the vast majority of those I spoke with agreed with my proposal in principle. These proposed changes were not impossible; they were *perceived* as such. This limitation in perception seeped through multiple levels of the system, moving upwards through administration (e.g. '*it needs to be controllable, predictable so we can manage it*'), laterally in other teachers (e.g. '*we are a factory of learning; our purpose is to prepare students for the work field*'), and downwards in the students. The students had grown accustomed to this systemic choice to the extent that they were assumed to be unable, unwilling, or uninterested in participating in forms of education that hold more regenerative potential, such as a transdisciplinary lab of team-based graduations. While it is impossible to infer why this impossibility was so strongly present, from the study of systems, we know that changes at the level of perception of systemic choices are the hardest to change (Maedows, 1999).³¹ I think this may be because they can be threatening to what Kaufman (2020) would consider the 'hull of the sailboat'. For educators aiming to work on RHE, this implies a need for a systemic sensitivity – an ability to intuit which 'elements' are held to be sacred in the educational context one may find oneself in and where the space for stretching the systemic boundaries can be found.

31 In system's sciences this layer refers to mindsets, worldviews, values, and mental models (e.g. Ives et al. 2019) – essentially, the deepest-held beliefs that someone has about 'the truth of a system'. Generally, when one challenges these, it results in a sense of existential discomfort for those who hold these sacred (or outright resistance). Another example within the educational system would be to question whether you need assessment at all within education.

3.3.2 Meeting Resistors within the University

I didn't give up on the idea entirely, although for a while I walked around the artificially illuminated lights of the university corridors out of frustration. With each step, a small lightning bolt shot through my Achilles heels. The physical pain was strongly linked to a personal sense of *ikigai* that I then (and still) feel. That education must be transformed given the state of the planet. Luckily, the pain quickly transmuted the frustrations into energy for further action. I was lucky that, almost by happenstance, I spoke with a colleague who was part of the same research centre as I was. We were talking with cups of tea as we walked through the design faculty's colourful building. They were looking for a way to transform a semester-minor that had been dormant for a few years. This raised my hairs because even though it was dormant – the course had already met all the requirements to get through the curriculum creation and assessment committees. Indeed, in a way it was something that could be regenerated by breathing new life into the course. This potentiality that laid dormant – hidden deep in only the living memory of a few educators who knew about the course – provided a key place for a RHE intervention. We quickly sensed this room for regenerative action as our conversation flowed. A few minutes later we were already slapping Post-its and other titbits of papers on the big oak table in the faculty teachers' lounge.

This educator encountered an internal pocket of resistance that flowed against the direction of typical education within the university – namely, interest in exploring ways that HE could meaningfully connect with STs. However, a single educator alone was not enough. The minor fell under the (financial) responsibility of the programme manager. We very quickly arranged a chat with the manager, who happened to have a background in educational sciences and warm ties to our research centre, which had been built over years of collaboration (prior to my time at the university). This manager was willing to risk, and able to see, that RHE was worth taking a shot on. In finding this supportive programme manager, I struck proverbial RHE gold; their support proved paramount not only in continuing our research – albeit in the form of a minor – but also in providing a legitimized experimentation space within the university ecosystem. In sailing terms, I might say that the winds were in our favour. Indeed, it became part of the fringes of the innovation system in which we were acting, instead of something that I was proposing that stretched beyond the systemic boundaries of the university at that

time (e.g. a transdisciplinary graduation lab). This meant, essentially, that while it was still a fringe project, it was no longer a direct threat to the university system. This lesson, of a sense of systemic awareness and sensitivity to where and when the boundaries of the university system could be pressed, stretched, or transgressed, became a key part of my journey with RHE. And it represents a major attribute to consider when establishing, nurturing, and facilitating RHE within formal university settings. Multiple times through the design phase of the pilot of Mission Impact, this manager showed a willingness to embrace the uncertainty and risk associated with moving forward.

I was waiting in this little meeting room on the second floor, hidden away from the engineering faculty, with a few slides of pros and cons and scenarios about what the logical next steps were. I felt defeated at that point after all the work we had put into the course, designing it, trying to communicate it, that only so few students had decided to participate. I was ready to propose waiting another year as I expected would be the only course of action that was feasible. Luckily, the manager was steadfast.

Later, the manager showed that for them, the experiment presented a chance to create systemic change throughout their programme(s). The potential of the course as such, was not limited to the 'success' of a single course. But the course acted as a place to learn about and experiment with RHE in a way that may be translatable to the other courses under their management. However, while the support of this manager was essential, it was not enough; I faced the difficult task of transferring regenerative concepts, like Wahl's (2016), into practice in an environment where established cultural norms were being actively transgressed. For example, how was I supposed to navigate assessment when our RHE was going to be built in an unfolding fashion based on how the problem we connected with unfolded? I decided to not include intended learning outcomes. While I was eventually forced to incorporate 'assessment', the act of attempting to run the course without it caused discussions and debate that are perhaps representative of small-scale RHE interventions. I decided to navigate the issue of assessment by essentially pretending. In this, I believe lie two key epiphanies for educating and teaching RHE: 1) that sometimes, in this journey, just challenging something towards the edge of the system boundaries (like assessment's necessity or fitness for RHE) can already be an act of RHE. And 2) that sometimes the most regenerative act is to pretend to do something for the system when you have plans for something else under the radar.

3.3.3 *Becoming the Change*

'I know it's going to be challenging and frankly, it may fail. I worry I won't have the time or that I will (un)consciously try to pull back towards a form of education I have experience with'. – from my notes.

With the decision to continue for now – regardless of the low registration numbers – being officially made, my attention quickly moved to 'the messiness of getting going'. While I had quite some experience in the design of courses before this – including semester-long courses – the RHE commitment was something I felt strongly but had no experience in doing. There is something extremely disarming about this sense of not knowing. In part, this was also strengthened by a desire to not 'fail' the people who had placed trust in my ability to do this including the future students who had decided to join us in this endeavour after the summer.

To navigate this unknowingness, and in line with regenerative design's approach to community-based design (Lyle, 1994), I embraced a more democratic approach to educational design – where the decision-making process was shared across a collective of (future) students, teachers, and practitioners to explore what an RHE-inspired course could be like as a collective. Throughout this process, engaging in a co-design process with students, teachers, and local actors proved important for adapting to the continuously shifting external forces present both within the educational system (e.g. exam committees who did not understand why our course did not have intended learning outcomes, as if meaningful or significant learning becomes impossible without these) and outside the university. At the same time, on occasion this made working together more challenging, as I had to hold lightly to my convictions when presented with alternative perspectives. It was very tempting to steamroll others and push my own ideas through, representing a sense of humility that comes with an RHE stance that for me at times felt alien and indeed painful. It was important for me to distinguish in these moments between design choices that felt alien and those that felt wrong. With the former, they may trigger weird feelings in my gut or a sense of anxiety – for example, allowing students to choose the order through which they learn the competencies we were deciding together. That felt different, but not wrong. Other suggestions – such as having to do tests – immediately shot pain through my spine. While I wasn't always able to put words to why these suggestions caused this pain, making these feelings discussable integrated them into the design process and changed the vibe in the space we were working in.

In my experience, this resulted in a sense of being at ease with each other as well as being willing to be open to alternative educational designs.

The most powerful intervention on the experiment, however, was the profound disruption due to the COVID-19 pandemic in March 2020, which abruptly transformed HE in the Netherlands. I remember vividly how less than a week before the virus hit the Netherlands, we did not expect the gravity of the pandemic to come. Suddenly, there was our prime minister, live on TV, sharing that all HE was going to be closed in less than an hour for the foreseeable future. Like for everyone else, this thrust us even more deeply into uncertainty. However, I believe that the direction towards RHE we were already very gently leaning toward helped the design team considerably in embracing this uncertainty. Or at least, to be less impacted by it than many of my colleagues seemed to be. Indeed, one of the major advantages of the pandemic was that it allowed our experiment to 'stay under the radar'. I am not sure we would have been allowed to push as far as we did against the edges of the system if it were not for this place of stealth. This stealth was a major advantage as it also meant we were not locked into particular choices that were made impossible by the uncertainty of the virus (e.g. linking to a specific physical building as the centrepiece of our design). We even jokingly shared we were getting to the point of comfortability in unknowingness.³² However, getting there was not easy. For the first time, I asked if I would lose myself in the process of being an educator and performing my educational tasks because of the fuzziness of moving towards RHE. It is important to highlight that while embracing the openness for what could have emerged induced feelings of anxiety, it did not cause pain in my spine. I later realized that being willing, and daring, to risk exactly that, to lose who I was as an educator for whom I may have become, is exactly what can allow regenerative systemic change to occur (Arao & Clemens, 2013). This unease, or transformative uncomfortableness, is also highlighted in the emerging field of transgressive learning, which connects strongly with the nurturing of regenerative cultures (Wals, 2022). One of the key abilities to develop as a regenerative educator may very well be a radical commitment to embracing the transformative potential of unknowingness.

³² My colleague Laura Stevens calls this state of being 'confusiaism' – being confused but excited about it at the same time.

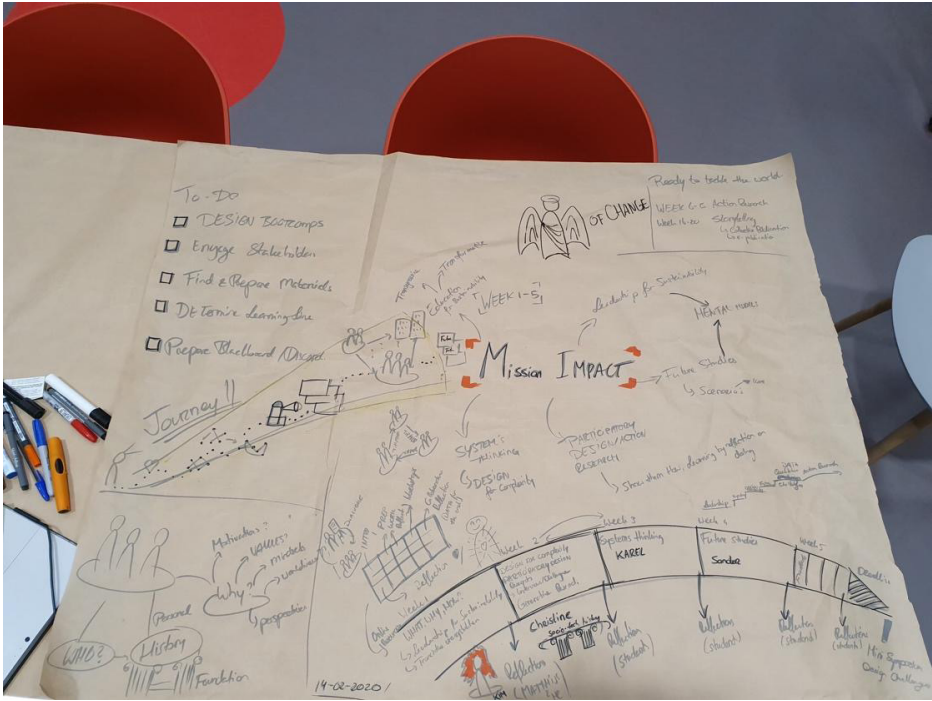


Figure 8: Images from co-design workshops with students. The texts are difficult to read, the main intention of sharing these is to show a glimpse into the community-based design process.

3.3.4 Going for a minor

With the educational manager and a few students, I made a pros and cons list regarding the pandemic and other resistances experienced in designing the course. Frankly, the cons far outweighed the pros; academia is not particularly quick, and waiting a year in the world of academia is fairly insignificant. This raised several concerns about whether we should continue the plan amidst a hopefully once-in-a-lifetime pandemic. We concluded that the pandemic did not eradicate the need for transitioning the human presence on Earth (Wahl, 2016); thus, we collectively decided to continue. In the context of the university, the investment in this experiment was relatively modest (0.4 FTE), but the manager lost capacity in other courses to be able to, in a way, take a leap of faith (Lopes Cardozo, 2021). They risked not having enough teaching hours in other more established courses in favour of experimenting with RHE. Without their support, this study would have been impossible. In under six months, the project had shifted from a graduation lab for tackling problems into a full-semester minor to a full-semester minor pilot being conducted during a global pandemic. In the end, we said, *'Fuck it; let's see what happens'*.

RHE invitations

- *How can you ensure that the required institutional support essential to the success of RHE is present?*
- *How will you navigate the (strong) resistance you are likely to face once your RHE journey begins challenging, or transgressing, (some of) the fundamental systemic assumptions of the current HE system?*
- *How can you nurture the courage and vulnerability required to be 'willing to lose who you are for who you may become'?*

3.4 Phase 2: An Expedition

The second phase is representative of the study period from September 2020 to February 2021, when we ran the first full pilot of the course with 17 students from 12 different undergraduate programmes. For this pilot, we connected with the Binckhorst area of The Hague, the Netherlands, which is a historically industrial area that is rapidly being (re)developed into a circular-living and creative-working hub.

3.4.1 *Dealing with Culture*

We Are Not Okay

'We cannot really reach out to the people we want to reach . . . they just aren't responding' I heard in the background as I was looking through some e-mails in the innovation lab at THUAS. This space that, for parts of the course, has been our community home when we were in the university. I stopped reading my e-mails as I heard that and listened more intently to the conversation of the group of students struggling to the right of me. It seemed that during the course, frustrations amongst the students were rising, like water close to a boil. Connecting with the local stakeholders wasn't as easy or smooth as they'd expected; people didn't answer e-mails and ignored them, sometimes even actively working against what the students were trying to do—all experiences they didn't normally deal with, as external communications tend to go through their teachers. This pressure exploded after one of the planned presentation and update sessions, for which the external stakeholders were invited to come to the university as the community involved with the project. When I invited the external partners, I knew these contentions were rising not only for the students but for our practice partners in the field as well. A couple of them had e-mailed or called me to express some of their concerns. As I welcomed them into the same innovation space, I listened in to the students sharing their frustrations a couple days ago. I sensed a feeling of discomfort rising through my nerves. I wasn't entirely sure how I was going to deal with these forces seemingly on a collision course. My neck felt quite stiff in the minutes everyone walked into the room and the first presentation was being set up. In the second presentation, it was clear, the students had not connected much (or at all) with the local community up to this point (about 10 weeks into the course).

Quite frankly, I failed in my regenerative task, as I sided with the external network instead of exploring the disappointing progress from the perspective of the students. I berated one group quite harshly. While I regret that action, what unfolded from it was a sign that, within the larger context of the course, the inklings of a regenerative culture could be found. The students called for a collective reflection session with us after I failed in my RHE task at their update presentation, switching their roles quite considerably in doing so. In this session, they expressed their challenges and frustrations with the local communities we were encountering. Namely, they felt they weren't being taken seriously, listened to, or aided in any way. This further highlighted how I had failed in that regard. Sitting there and listening for more than an hour was painful. Although unlike the spinal pain that plagued me throughout, this type of pain was more like a punch in the gut. It's never fun to listen to people giving feedback regarding your failings, and it would have been easy to nod and let it go, rather than turning the feedback into (re)action. After space had been surrendered to discuss the students' frustrations, to 'air them out', the students also asked for our perspectives before guiding us as a collective towards ways we could recalibrate and renavigate as a community. Ironically, I strongly felt the element of regeneration being practiced by the students who were in my temporary care. In their collective action to make discomfort discussable and guiding us towards alternative ways forward. While I am not proud of the actions that acted as a catalyst for this student-led collective reflection session, I am proud that they felt safe enough to take that action.

Throughout the course, one of the major difficulties I navigated was maintaining a culture that was conducive to regeneration, both systemic and personal. The major resistance in this was my own commitment to hold on to choices that we made. For example, trying to not intervene in the way the students connected with local stakeholders after introductions had been made. Another example of this tendency to hold on too tightly to design choices consisted of an overemphasizing of assignments we had previously formulated. Even though the unfolding of the course made it clear that the way they were formulated was not conducive to regeneration, I was not yet comfortable enough with openness to adjust them on the fly. In this, my previous educational design choices (or more particularly the conviction to enforce them) became uneducational from an RHE perspective. Namely, these convictions stood

in the way of accepting more regenerative paths when these emerged. I believe that I held on to these so strongly out of fear of fully embracing the type of openness required for RHE. At the time, this felt like a nagging pain in my neck that did not relent until I leaned more into emergence as an educational design choice. By this very act of boundary setting, and holding, I robbed the students of the RHE value of openness to emergence (see chapter 2). It is important to highlight that I wasn't entirely closed – and changes did occur at the level, for example, of deadlines, but not fundamentally what we asked them to do and how they did so.

As an RHE teacher, I struggled with embracing the type of openness required to adjust on the go across all facets of educational design. I was not alone in struggling with engaging with it. I expected the students to take advantage of the limited openness to redesign elements of the unfolding RHE, like the assessments, if they experienced their design as limiting personal or systemic regeneration. However, at one point, I reflected, *'I have been a bit surprised by the focus of the learners on doing what the assignment says. Perhaps I have underestimated the force of the education system they are used to, which places a lot (too much) focus on measuring outcomes of learning, instead of focusing on the process and evolution of capacity'*. Even when presented the opportunity to assume another role (as co-designers), the students were unable to do so (at least initially) because they had become so accustomed (perhaps, indoctrinated) to not participating in their educational experience at the level of actively co-designing the rules of the game. Indeed, the students were unfamiliar with being asked how they felt they should be assessed, what they wanted to focus on learning within the context of regeneration and proposing topics for workshops and masterclasses. Nevertheless, some students were excited for the opportunity and *'saw the beauty in unfolding potentiality, the beauty and wisdom locked behind possible futures'*. This engrained reluctance or difficulty of transgressing the roles the students had become accustomed to in previous educational experience presented as a major resistance for further developing RHE. Some of the students never adapted entirely to the new roles they were invited into (within the time scope of the minor). During the study, I experienced the task of simultaneously being open to educational redesign and guiding them to a place where they felt empowered as co-designers of such changes *'as a very intense dance between two goliaths'*. On one hand, I was committed to engaging with RHE through a lens of openness towards co-design as it unfolded, but on the other hand, I struggled with staying true to my educational responsibility to ensure the process did not exceed the capabilities of those involved (Biesta, 2021).

3.4.2 A Healing Space

When one of the teams of students in the course was taking advantage a bit of the COVID-19 situation and not really participating actively with the course, I shared how much physical pain I was managing to be able to be there for them. And I said that I felt like they didn't care or appreciate the effort we as a team (physically or otherwise) put into the course. Much later, I questioned myself whether my response would have been more regenerative if I had engaged from an empathetic perspective – and asked what was going on in the rest of their learning ecologies that may have played a part in their seeming disinterest. However, this sharing, while extremely difficult in the moment, did lead to some of those challenges in the rest of their lives bubbling to the surface. By allowing those challenges to be discussed, it allowed a reframing of what I expected and invited from this team in the remainder of the course. In a way, that shift allowed us to negotiate as equals how much they were able to engage with the course in balance with the other forces acting upon them in their lives. This act of sharing 'power' in a way shifted – and challenged – my professional self-identity as educator as it felt personally threatening to some of the ways I had conceptualized an 'educator's' role. This shift in roles – for example, to open up course design to a community – reduced my own 'power'. That experience was confronting.

One of the ways to incorporate the broader community into the role of educator was including bi-weekly sessions, where we dedicated educational space for the sharing of personal experiences as the course unfolded. These included sharing my own difficulties and successes, including sharing about my physical health status if it interfered with or influenced the course (e.g. some classes I had to teach sitting down because of pain or move something last minute to online). However, I found value in the act of embracing a structured space for vulnerability in my educational praxis, one that extends beyond what is regularly expected, invited, or welcomed in formal educational settings. At times, engaging in this vulnerability felt extremely uncomfortable as it indeed required me to be vulnerable as someone who was a part of the community of the course. Sharing something like frustration with the speed of inquiry or moments of heightened influence from the ankylosing spondylitis felt like a tightening of the vice of my spine, which, while the vice let go of some of the force when the attitude of vulnerability was reciprocated, never really left until a few hours after the event. Several of the students later commented that they felt comfortable engaging with their own vulnerabilities – not just to share them but to actively work on them (see chapter 4 for an in-depth study of their experiences) – because of the openness I brought in that regard. Their response

implies that for the educator involved with RHE, one of the activities that can facilitate the ‘cultivation of personal transformations’ (see chapter 2) may be to share one’s own transformations as they unfold.

3.4.3 *Caring for Self*

‘I looked to my right, my alarm clock sitting two meters away from me as my neck bent on the normally soft pillow now stabbing my spine. Light tears were running down my face from the pain. “Why do I deserve this?” I thought as I was dealing with the flare-up of my arthritis. My normally supporting and regenerating bed turned into a board of boredom and sincere discomfort. The clock showed it was three A.M. as I turned on my side, instantly feeling a heaviness in my lower back set in as I made the move. There was nothing I could do as I watched every excruciating minute run down the clock. 03:01 . . . 03:02 . . . 03:03. Hoping in vain that the pain would relent, and I would get some sleep that night. 03:42. Torn between knowing that movement helped – like icing a bruise – to take the edge off. And being exhausted from having laid there for hours. 04:13. I accepted I wasn’t going to get more sleep that night as I twisted one of my legs onto the wooden floor of my bedroom. I turned around and rolled out of my bed unto the floor. My leg unable to support me as I did so. I tried to get up. 04:52. I crawled to the bathroom and pulled myself up by one of the handles. The sweet release of heat as I felt the hot water dribble on my aching bones felt liberating. I could not hold on to a towel well enough to use one, so I waited until I airdried. Leaning against the shower wall as I did so. One of our family dogs noticed I was awake and walked up to me (I forgot to close the bathroom door). This little yellow furball of empathy could sense I was struggling as he moved close enough for what would normally be petting range. I couldn’t bend forward enough to reach him. He sat against my legs as I struggled towards my medicine cabinet and took some emergency pain killers and sat gently behind my desk. “If my students could see me now, they would see a 80-year-old man,” I thought to myself. My thoughts drifted to a place of darkness “Why am I so weak?” The bright blue light of the monitor caused my eyes to flinch. 05:48. I wanted to be productive but ended up watching *Too Hot Too Handle* on Netflix. Tears were flowing down my face as I stared aimlessly at the screen. I went to the office at 06:43. My class would start at 09:00.

The care and kindness I would extend towards my students as they engaged with their own tensions between regenerative change and unsustainability in practice were things I did not so easily extend to myself. This was and remains (for me) a strong obstacle to becoming a more regenerative teacher. For example, *'I was constantly deriding myself for any small "mistakes" or perceived "disappointments" in the course'*. For me personally, this is largely related to a sense of guilt over being disabled. There lies a deep sense of lived guilt within me for 'taking' so much from society through expensive and complex medicine; it weighs as a heavy shadow around my neck. While this lived guilt is complex and, in a way, wicked – and perhaps working on it is part of my own regeneration – this unkindness is not something I would rationally express onto others. If others are sick or frail or old, I would never consider them less-than. But with myself, I do.

If I were to do this journey again, I would actively include self-care practices as a valid part of the educational work to ensure that I remained able to provide the kind of caring work required throughout the course, without burning out. Indeed, how could I have given as much space to my own struggles in becoming a regenerative teacher as I gave (much more naturally) to my students in engaging with RHE. Furthermore, these practices could afford the patience and slowness that should be instilled in RHE for students (chapter 1). These qualities are essential when engaging with STs. While it may be hard to give this gift to myself, perhaps it is easier with a team who is and remains committed to giving that gift to each other.

One of the reflections of the students about this tension, in the form of a short poem, captured this difficulty in a more beautiful way than I could:

I feel like I'm walking on a tightrope
My heart is beating out of my chest
I'm holding on to hope
To get me over to the north-west
And I've got my eyes closed
As long as the wind blows
I'm counting on high hopes
I feel like a child on a wire
I walk that line
Hoping it will bring me somewhere higher
A place where everything will be fine
I know the consequences and
I feel like I'm walking on a tight road
My heart is in my throat
The higher I get the more I miss the ground
There are no safety nets, I found
So I have to keep going
For me to keep growing
I don't want to fall down
And get back into my old town
I've got my eyes shut
Trusting the wind will be my guide
I have to trust the feeling in my gut
And hope that luck is on my side
Hoping that hard work bears fruit
And I can step back in my boot
Back on the ground
With these new insights that I found.

– Student poetry from the course

This poem mirrors some of my own written reflections from that period: *'I berated myself for a failure in foresight. I got so lost in creating perfection, I forgot to reflect the caring ethic that is central to regenerative learning to myself. To allow myself to care for my own well-being as someone who is trying to push towards new constellations of education while being part of the academic rat race'*. While I was hopefully able to provide the support the student needed to maintain this tension and *'to keep walking on this tightrope without falling to either side'*, I felt a sincere lack of such a balancing force. At times, this neglect of self-care acted as the very screw that was tightening the vice that trapped my spine, and on multiple occasions, it led to unnecessary burdens of increased (physical) pain.

RHE invitations

- *How can you actively welcome the 'dark' into RHE?*
- *How can you design structures and processes that nurture the expression of self-love and self-care?*
- *How will you engage with the broader task of playing a role in the innovation ecosystem in which your RHE is contextualized?*

3.5 Phase 3: Waiting for the Winds

The next vignettes are representative of February 2021 to July 2021, during which I analysed and redesigned the pilot. This analysis was presented at the IAFOR European Conference on Education (July 2021), hosted by the University College London, United Kingdom.³³

3.5.1 Local Attunement

“You know, this may sound silly, but it doesn’t feel like I’m going on an adventure” I reflected with a fellow education PhD as we sat next to the Hofvijver in The Hague. The Hofvijver is a large pond next to our political capital buildings talking. As my legs hung over the edge of the bank above the cloudy water, we were talking about our experiences with RHE so far. “I know that the intention of RHE is to connect with sustainability transitions. But is it bad that I kind of wanna . . . just . . . you know . . . explore an entirely new context?” My companion nodded before taking another bite of her falafel. “No of course, there is almost an assumption that you go from one research context to the next . . . to explore novelty in the broadest sense of the word . . . “. I looked at the reflections of the water on this warm summer day as I heard her add to my reflections.

For my generation, it feels like physical movement – for holidays but also careers – is almost a prerequisite to be successful. However, if you truly have the intention of contributing to transitions, which can take decades to unfold, longer-term commitments are needed. Through my ankylosing spondylitis and through engaging with this DDAE, I gradually learned to appreciate this potential of connecting deeply and meaningfully with a place – and in doing so building many beautiful relationships with local actors that even moved towards the realm of friendship. A tendency to move beyond where we had left the previous iteration scratched at me in my subconscious. As many scholars are arguing, slowing down can be very fruitful indeed (e.g. Berg & Seeber, 2017). One way this slowing can happen, as in the case of this DDAE, is by, in a way, rooting yourself into a community and gaining a degree of sensitivity that is attuned to that location. This is especially

³³ https://papers.iafor.org/wp-content/uploads/papers/ece2021/ECE2021_60139.pdf

true in the context of RHE, where what is appropriate for a particular context often is something that can only be sensed through such attunement. Thus, a particular challenge for educators committed to RHE is to remain locally attuned to gain a sense of appropriate methods for intervening in a particular context. For educational systems, this may imply rethinking how they design education – doing so in a way that establishes and maintains such longer forms of collaborative relationships.

More broadly, I experienced the need to build long-term commitments to places, setting down roots; however, for many academics, this is a transgression of academic culture.³⁴ Most modern academics travel quite frequently (for conferences and such) and only engage with places for a short duration because of their short-term research funding. In this sense, my disability acts as a natural, physical limitation against traveling to many places and thus in some ways forces deepened engagement. I also noticed a shift in my perspective, preferring slower and longer commitments as the study unfolded. This interest in longer-form, slower inquiry is not exclusively the result of my disability but also a way for me to avoid engaging in what Kirchherr (2022) would perhaps call ‘scholarly bullshit’.

3.5.2 *The Importance of Structure*

The importance of creating and maintaining structures conducive to engaging with RHE was highlighted several times. In the initial pilot, ‘everything was unstructured/chaotic’, and the students enrolling in this course in the third or fourth year were not able to engage with openness, coming from a more traditional educational system. So, I decided to add more structure to the course in the form of required readings, live-reflection sessions, and assessments. I initially believed that ‘adding any structure diminishes the complexity of reality’ and is thus uneducational from a regenerative view. In this context, that uneducationality implies that educational design choices I made were actively making learning harder. However, my perspective had a contraindicative result; the degree of openness exceeded the students’ ability to cope with complexity to such an extent that it reduced the scope through which the students dared manoeuvre. In educational language, I quite drastically exceeded the

³⁴ For most fields, the places academics work are dependent on research grants, which are almost exclusively short-term commitments. Perhaps the most notable exception to this is the field of anthropology, in which longer studies are more common.

zone of proximal development for the students (Vygotsky, 1978; Wertsch, 1984).³⁵ Conversely, ensuring that structures do not become limiting forces, or ‘become rock solid’, must also be avoided. Too much structure, or a structure that is too restricting, may make it harder for participants to engage with transition challenges and personal transformations, which both are inherently unpredictable and require a certain degree of moveability. A dynamic approach that begins by erring on the side of caution may present the best place to start while ensuring that the structure is held lightly enough to be adaptable through the RHE experience. This adaptability is key to seeing the learning-based change ‘*as an emergent property of the dynamic relationships between learners, context, and educational design*’, in which each relationship unfolding constantly asks for an educational response.

In this respect, Lopes Cardozo (2022) provides a poignant example of regenerative educating. She works with her students to decide on the initial course structure and assessment. However, together with the students, if it unfolds in ways that make the earlier structures destructive, they collaboratively adjust the direction. However, finding this balance is a challenge, and the conditions of that balance likely differ significantly between her postgraduate context and my undergraduate engineering context. It is important to highlight that exceeding these limits (too much or little structure) does not threaten ‘learning’ in the sense that extremely structured courses (like a massive open online course) can be quite useful for gaining knowledge; likewise, quite a lot can be learned in an entirely open structure. Exceeding the balance, though, makes it much harder to do the educational task of ‘pointing’ at elements that are worthy of learner’s attention (Biesta, 2021). It is in the balance between the two that the overwhelming uncertainty of STs can be navigated (Fenten et al., 2022).

As a teacher, embracing this middle ground however required me to shift my perspective from ‘steering’ education to being a ‘*guide in a co-learning context*’. Such an approach did not diminish my educational task but rather strengthened it – and the responsibility that comes with it. For example, I may have had educational plans prepared but then I found in the practice of educating that these plans must

35 The zone of proximal development is a perspective on learning by the psychologist Vygotsky that posits that learning potential is limited to learnings not too far beyond the current base of an individual learner. E.g. going from Algebra 1 to 2 may be challenging but possible while jumping from calculus to real analysis is not. The theory posits that exceeding this zone of proximal development is detrimental to learning processes.

be set aside for something more pressing. Developing both a sense for when such adaptations are required and the personal agency to implement them is a considerable challenge for educators. This constant negotiating between different forces considerably increases the intensity of RHE for teachers in my experience. My own experience of navigating these tensions made me feel like a ‘failure’ at times because of the strictness with which I was looking at openness and structure as a dichotomy, rather than as a dynamic continuum. This culminated in one scene where students directly told me a particular assignment was in some ways harmful, and I didn’t change it until the next year iteration. For a time, I experienced these forces as oppositional. I had not yet learned that the more regenerative direction may be a third way, which dances between opposing powers. The sailing metaphor may serve here in a beautiful way, when you are steering towards the left, you may have to initially lean in the same direction. However, if you lean too far, too heavily, or too long, you risk capsizing the boat. So, one needs to counter steer at the appropriate time.

3.5.3 *Balancing Acts*

‘Man always travels along precipices, and, whether he will or no, his truest obligation is to keep his balance’ – José Ortega y Gasset

“The students are rushing towards solutions without exploring the question or system . . .” I said to my co-coordinator of the course. “Yeah” she said before continuing “but we have to remember they are trained to find solutions – not to question the question”. We decided to incorporate a transition design exercise – to map out the different forces and relationships with the challenge – and to dedicate a full week to that activity. In the class some of the students raised concern that “they would run out of time to finish” which caused me to laugh. “You aren’t going to finish” I said. Resulting in visible shock from the student’s face. “How will we pass if we don’t solve it?” she asked bewilderedly. I responded: “You aren’t going to solve it because we aren’t searching for solutions.” That day we explored some of the political actors and forces that played a part in the energy transition in the Binckhorst (The Hague) and I asked them to read a chapter of Wahl (2016). The next day the same student came back and stated, “I think I get it . . .” “Oh yeah?” I responded. “Yeah, we are searching for better questions to ask”.

The experiment revealed that some of the educational responsibility with RHE lies in actively ‘slowing down’ the learning and inviting students, within the safety of educational structure, to engage with slower forms of inquiry that examine, or even amplify, complexity (Wals, 2021). I find this need to slow down difficult to accept as I am driven and passionate about contributing to regenerating the world. However, I try to remember that *‘perhaps counterintuitively, slowing down to listen to the world—empirically and imaginatively at the same time—seems our only hope in a moment of crisis and urgency’* (Tsing, 2017; M8).

The need for slower forms of inquiry that actively increase complexity was revealed by frustrations regarding the quality of some students’ work as well as complaints from partners in the field that we worked with. Both caused the upper part of my spine (neck) to stiffen, making sleeping and turning my head, amongst other activities, more difficult. The natural tendency for most students to simplify challenges to problems that can be solved acted as a major resistance to embracing the complexity of STs in an educational context.³⁶ The educational task, once sufficient structure has been achieved, is to add complexity to the contexts in and through which learning is achieved. However, the urgency of the transition challenges is, according to the IPCC and others, extreme (2022). This presents an apparent dichotomy between slowing down and embracing complexity or speeding up for the sake of the transition. I expect that speeding up is not conducive to the transitions, regardless, as it risks creating more challenges for every ‘fix’ that is identified (Wahl, 2016). In this sense, the slower route seems to be, ironically, the fastest (see also Stengers, 2018, on slow science). Much like the tightrope highlighted in subchapter 3.5.2, the greatest challenge as a regenerative educator consists of maintaining balance between slowing down and continuing, between moving towards complexity and towards simplicity, between conserving and transgressing. Finding and maintaining these balances is a difficult journey for all involved. However, these ‘third way’ spaces may be where the potential of regenerative commitment as an educator is found. If this is the case, other educators may face an internal resistance of a strong sense of urgency to act fast, thereby forgetting to slow down when they embrace a more regenerative path in service of climate action. This act of forgetting can harm both the students and the self (see previous examples).

36 Note that there is a strong case to be made that this resistance is inculcated into them through previous experience and not an innate resistance against complexity.

The complex balancing acts also make navigating RHE intense for students. The pilot highlighted the need for more pedagogical support to navigate these balances. Thus, with the (re)design team, we (students, researchers, and teachers) co-created a personalized learning journal as a component of the minor (see chapter 4). This learning journal was designed to aid in the personal dimension of RHE, and it included observational questions (e.g. What am I seeing? What am I running into?) as well as existentially oriented questions (e.g. What is this doing to me? What does this mean for my future?) with which learners could engage. Thus, the guide was not designed like a cookbook, providing the exact steps to perform (as predicting this would have been impossible) but rather provided frameworks, questions, and approaches to help navigate the complexity of RHE as it unfolded.³⁷ This guide was interwoven with the rest of the course design, both to ensure that students engaged with it (as assessment) and to provide opportunities for more collective forms of learning through dialogue and engagement with each other's experiences. The guide helped to make what normally remains under the surface – or at least parts of it – a part of our collective regenerative learning journey.

The reframing of challenges that were being worked with in the course presented as a challenge for many students, who did not experience, or perceive, it to be within the margins of their (normative) roles. They were unused to critiquing teachers or practitioners openly, along with their perceptions about a place, its future, or the regenerative aspects of those elements. This challenge presents an additional difficulty for educators involved with RHE – namely, that one acts as a guide while remaining adaptable to having their own perspectives transgressed by engaging with RHE. At times, the frames that are brought into the space by the teacher are those that ought to be reframed. For some educators, this adaptability is natural, but I suspect that for many it is not. My experience with this reframing prompted a key transformation in my view of educators' roles in such learning constellations. It is easy to 'talk the talk' about what one is learning with and from the students, but it is a lot harder to 'walk the walk' and change directions in practice. For me, the difficulty that students and educators face in making this walking navigable is captured beautifully by the following poem from one of the students.

³⁷ The same reasons to take the suggested approach for this learning guide also lend themselves to the RHE provocations offered throughout this thesis.

*I am climbing up this mountain
I do not know where the peak is
I am adapting to the environment
At times I fall
At times I crumble
I know it is part of it
What happens after?
Once I reach the top?
Is it over then?
Is it just the start?
I look back
I see how far
I have come
I see how far down
I was before... . . .
So far so good... . . .*

– student poetry

RHE invitations

- *How can you create the conditions that allow you to engage with RHE as transdisciplinary, engaged, committed, and slow science?*
- *How will you connect with and invite the spider-in-the-web people relevant to your context?*

3.6 Phase 4: Setting Sail

The vignettes in subchapter 3.6 examine the second iteration of the Mission Impact course, from September 2021 to February 2022. In this iteration of the course, 10 students from seven undergraduate programmes participated in RHE that was simultaneously connected to two different regions close to or in The Hague.

3.6.1 Getting the Start Right

A Trip to the Forest

One of the first things we did in the second iteration of the Mission Impact course was visit the woods in Scheveningen. Most students didn't seem to understand why they weren't at university, but the sun was shining, and I promised snacks. It was only the second day of the course (the first physical one after a digital meeting providing some required information about schedules and such). We chose the location because it's within the city but drastically different, a lush, green, semi-wild place. I brought little disks of wood and some markers, amongst other things, but we started by creating a sitting circle. This circle highlighted two things: 1) we were outside a controlled environment, as we were positively swarmed with dogs at first (one of them even knocked me from my seat before licking my face), and 2) the stress of getting to know new people left the students' faces. I'm sure both the dogs and snacks played a part in that. Before we got to work, I explained what we were trying to do in this course, in re-thinking and re-doing university; as we had learned from the pilot, continuous expectation management was important. After the initial questions had passed, the students were set in pairs of two or three with the simple assignment of getting to know each other while enjoying the weather and beauty of the forest. They were instructed to return in 20 minutes but got fantastically distracted by the situation; some did not return for more than double that time! Once everyone was back and freshly snacked, I asked them to introduce the person(s) they walked with. This shifted their focus towards trying to do justice to someone they only just met. Based on these shared stories, each student was given a wooden disk and marker and asked to write down an intention for themselves for this course.

For most, this was the first time they had attended a university class outside (in nature) or had been asked to write down what they wanted to learn and why (see figure 9). Sharing their intentions was visibly intimidating for the students, as it was their first time doing so in formal HE. However, they later remarked that starting like this was nice, not only because it was nice to be outside but also because the setting allowed them to open up with/to each other and the experience more than they normally would within the physical boundaries of the university building.



Figure 9: Student-created learning intentions for their participation in the course in a forest near The Hague, the Netherlands.

If one thing became clear for me in the fourth phase, it was that few things, if any, are more important than creating the right conditions for beginning RHE. It is the moment that the difference between their regular experience and RHE can be explained. While the difference will be lived for the next semester, this is the chance that we have as teachers to invite them to step out of their normal expectations and roles. This inviting could, for example, be done by providing particular regenerative frameworks (e.g. Lopes Cardozo, 2022).

While the requirement of scaffolding the beginning of courses³⁸ is not different from that of regular education, in the context of RHE, this requirement moves beyond providing the course outline and assessment structure. It is about challenging and inviting the educational cultures from which they came and about introducing a regenerative ethos on top of providing the standard structures and other elements of good educational practice. Thus, the start of the RHE is more critical than in other educational contexts.

3.6.2 COVID

I was super happy as I was cycling to the campus. For the first time in almost two years to welcome a new group of students. Now in real life! I was so happy I stopped at a local bakery and got a bunch of donuts to share with all. I arrived well over an hour before the class was going to start to land in the space. Moving around furniture to provide a circular space to sit in. I did feel some apprehension about the move back to physical education, particularly because my immune system is compromised by medication I use to treat my ankylosing spondylitis. And if I am being honest, a bit disappointed in the university in how little regard they had for that type of vulnerability. But overall, I was excited. I did not really miss the physical meetings or networking events and those types of things. Frankly, I can live the rest of my life without going to another one of those events. But there is something magical about being able to be close together with a group of people who are excited to learn. When the first students arrived, I welcomed them warmly. They did not know yet that we were going to the woods that day.

I was elated that we could start the second iteration of Mission Impact with few COVID-19 restrictions (although we were under full lockdown for the latter half of this course). The relatively unrestricted setting allowed further exploration of the challenges in connecting locally that were experienced in the pilot and, to some extent, a fuller examination of how much the lockdowns influenced these challenges. While reduced lockdown measures did facilitate our ability to connect with a place through

38 One could challenge the claim that these are truly the beginnings of courses, or indeed, if such a thing exists. For pragmatic purposes the beginnings here refer to when students start their experience in RHE.

RHE (notably, being able to conduct field trips and research), a more fundamental resistance existed in the degree to which HE working roles were ingrained.

In this iteration of the course, many of the parties in the places we connected with had experience working with universities, and this experience came with a certain expectation of the purpose of the collaborations and what they meant for those involved. Notably, some of the practitioners expected students to take on their particular difficulty and attempt to fix it; consequently, they steered the students in that direction. However, this shifted the collaborations away from a regenerative and place-based approach to one of systemic change, in which relatively simple challenges from individual organizations are not examined. Instead, a regenerative approach examines complex challenges with the goal of transitioning towards total systemic health. This may require actively transgressing current states (e.g. business practices) if these do not fit within a more regenerative future. As a teacher, I frequently discussed the more systemic and transformative nature of RHE with external stakeholders, but for many in the field, this approach seemed beyond their scope of adaptability. This is not to imply that they were not cognitively or relationally able to take on such roles or that I did all I could have done to participate in disrupting these perspectives (as I was limited in time). Simply put, within the context as it was experienced, the stakeholders, with few exceptions, did not adapt.

The difficulties in these role switches (e.g. students becoming co-designers of education and practitioners moving away from only being 'case owners') were also highlighted by some of the more vocal partners from the area. For example, they expressed that working with the students was difficult, as they did not feel that the students were doing what they wanted them to do. They did not ask themselves whether what they wanted the students to do was conducive to systemic health. Indeed, many of the questions that students raised targeted the deepest layers of systemic change, much like I did when I set out on this journey with a graduation lab. Some of the partners even retracted their support, which subsequently made connecting with the broader ecology of learning more difficult. This created tension between holding on to a regenerative commitment – even when this is perceived as threatening or dangerous by some of the stakeholders entangled with the STs that one is connecting with – and maintaining amiable relationships with the external world. With regard to this difficulty, it is important to stress that there is a fundamental difference between RHE and non-RHE education. The latter may also face resistance and difficulties like working in a non-RHE way, and that will mean the direction of change is almost automatically

aligned with the actors one is educationally connecting with. In the case of RHE, it is very possible that a regenerative direction of systemic change conflicts with existing power structures. For teachers, that means having to be willing to risk your professional relationships in pursuit of regenerative change of systems.

3.6.3 Challenging my Own Assumptions

One participant remarked, *'I wish to pass the minor; for that, I have to do all of my assignments on time. Read all the weekly materials in due time. Always try to achieve more than required'*. As a teacher, I can easily appreciate this statement as a strong work ethos (if nothing else), but from a regenerative sustainability perspective, I had to question whether this was the type of engagement I wanted to facilitate in the course. Indeed, my initial excitement over the remark very quickly turned sour as I collapsed to the floor. A lightning bolt had fired through my spinal nerves that shattered my balance in a moment. Would it not be more regenerative to highlight that transition challenges unfold in unpredictable ways, that life is messy, that RHE can adapt? Of course, requirements for adaptations to the context and education would be given to students as the course unfolds, but this calling for and inviting adaptation to RHE should not be one-sided. Perhaps the most regenerative thing to do in such contexts is to break away from the performance pressures rife within university education and to say, *'Hey, you know what? We are going to engage with this openly and with intent, and that is enough'*.

RHE invitations

- *How will you organize the start of your RHE so that the seeds of regenerative culture are planted?*
- *How will you keep inviting and empowering students within your RHE to be okay in engaging with transformative or even transgressive action?*
- *How can you be mindful of the 'regenerative' moments that may arise in your RHE?*

3.7. Discussion

3.7.1 A Just Regenerative Education?

'In a panel a few months ago, I argued passionately that unleashing the work of creating a regenerative future by connecting with and working on transition challenges in HE without providing the right conditions to engage with this existential work is at best ethically irresponsible and at worst morally reprehensible. This belief has been strengthened lately; we are shoving a lot of responsibility for the future into the shoes of those who have both the most to lose and the least formal power. As an educator, as well as a young person, I feel like I am caught in a dichotomy where I have to both provide this safe environment to do so while experiencing the full brunt of that force daily myself. So, in addition to raising ethical concerns for the students in the course, it also raises concerns related to an ethic of self-care that strongly reminds me of concerns raised in fields like autoethnography.'

To some extent, it is easy to reply to the question of whether RHE is just and required with 'Yes, of course, this is absolutely needed'. While the state of the world lends itself to that conclusion, a strong sense of (generational) injustice highlights the hypocrisy of those who came before. The intensifying impact of humanity on the climate has been known for the better part of a century, and shifting the responsibility of profound transformative change to those who have contributed relatively little feels ethically bankrupt. However, failing to provide RHE opportunities that aim to empower the change makers of the future is also untenable given the severity of the situation. For educators, this presents an uncomfortable conundrum that must be acknowledged. The students we work with, and their children, will have to do most of the work. This is not fair, but it is also not a matter of choice.

The realization of this intergenerational injustice (Duurzame rede, 2021) is painful, confronting, and can lead both to an angry response and to empathy when channelled in more regenerative directions. As the severity and science of climate change become clearer, we will be judged more harshly by those yet to come for our (in)actions. However, acknowledging this reality, as well as our own contributions to this reality, is not easy. Perhaps the most responsible action for teachers is simply creating a space that makes these challenges discussable.

'Like many other activists already working and donating their life towards climate action in whatever way, I constantly feel tension about working within education. Is it really a leverage point for more sustainable futures? Probably. Is it the most pressing one I can press right now? I'm unsure'.

3.7.2 Missing Regenerative Principles?

The analysis of this phase also highlighted that the REDPT (chapter 2) did not include discussions or elements that focussed on the content and structure of RHE (i.e. the methodologies, pedagogies, values, perspectives, skills, knowledges, attitudes, etc., that ought to be included in RHE). In other words, it did not include ways that people can engage with RHE or what they need to know, be, and feel to do so after the initial design phase. This omission raised two subsequent educational questions: 1) Is there a collection of qualifications that transcend the contextual? and 2) if there is, which I believe there is, what does such a collection contain? However, it must be acknowledged that 'design' by its very nature begins from an epistemological assumption that something can be designed. Ergo, it is possible that my own methodological commitments lead me to make this assumption when the empirical reality might be too complex for such a reduction. In other words, care may be needed in order to pursue further work towards such design principles and practices. Indeed, this DDAE shines light on several potential avenues for RHE principles, practices, and resistances that warrant further inquiry. These include the following:

- (1) Practicing (Self-)Care
- (2) *Engaging with Systemic Change with Empathy*
- (3) *Nurturing (Personal) Courage/Vulnerability*
- (4) *Welcoming the Dark/Shadows into RHE*
- (5) *Identifying 'Spider-in-the-Web' Actors*
- (6) *Being mindful in RHE*

For each of these, it is likely that a strong literature and practice base can be identified when one is drawing on and experimenting with RHE. A number of these publications are perhaps more strongly related to the 'teaching' of RHE instead of the 'designing' of RHE. However, both with these and with the identified practices in the previous chapters, there are likely elements of both related to all. This is

especially true if we take ‘being mindful in RHE’ as an example that can include both design and teaching considerations for RHE. One may ask in the design phase of RHE how moments conducive for mindful engagement may be incorporated into RHE. But I also ask how as a teacher I may remain mindful when I am engaging in teaching within RHE. For pragmatic purposes, the exploration of a joint RHE Design and Teaching Guide is warranted. Such a guide would allow educators to explore RHE while engaging in a design process of multiple iterations. Chapter 4, the final chapter of this thesis, proposes a starting point for such a guide. This chapter contributes directly to the development of such a guide by highlighting several of the ingredients that ought to likely be included therein.

3.8. Conclusions

One of the key epiphanies of this study was a shift in my perspective regarding the purpose of educating in a regenerative way.

‘I now see that while at one level there is artistry that resides in that exterior dimension of regenerative education, a much more fundamental, core, elemental artistry lies in the inner dimension. The artistry in regenerative education now lies primarily in the educator and students that through their engagement with regenerative education leave fundamentally changed. They, those that leave, and move on, much like the seeds of flowers being carried by the wind to other places, are the living embodiment of that practical art of education. As an educator, the art is in guiding, being with, supporting, nurturing the students on their path towards becoming that practical expression of living artistry’.

For teachers, engaging with RHE requires a great deal of courage and surrendering to the collective processes and dynamic unfolding of the transition context in which they are educationally entangled. They must have the courage to lean into emergence as an active pedagogical commitment challenge and as a shift of the teacher’s status within educational constellations, moving away from being the expert to becoming a member of a co-learning community. At the same time, educators must navigate certain tensions; for example, as a teacher in the current educational system, they decide whether to give credits or not, and it might be scary or even (culturally) impossible for students to raise disagreements about educational decisions.

The existing educational system and forces imply that radically transforming systems to be more regenerative is likely impossible within the confines of the current academic system, where education is still mostly organized in blocks, semesters, and year-long degrees. Although it is unclear whether meaningful forms of RHE could be implemented within smaller courses, both the interviewed practitioners in the previous chapter and my own experiment suggest that longer and slower forms of engagement are a prerequisite for RHE. However, a key RHE task, even in the context of shorter courses, is planting the seeds of change (Macintyre, 2019) and regenerative potential in people and in the ecologies with which those people are entangled throughout their lives. These seeds may play a part in transforming some of the systemic resistances to RHE within the educational system. However, this act also raises a concern for those educating regeneratively: to discover how we can position these seeds to thrive in the soils in which they are to be planted.

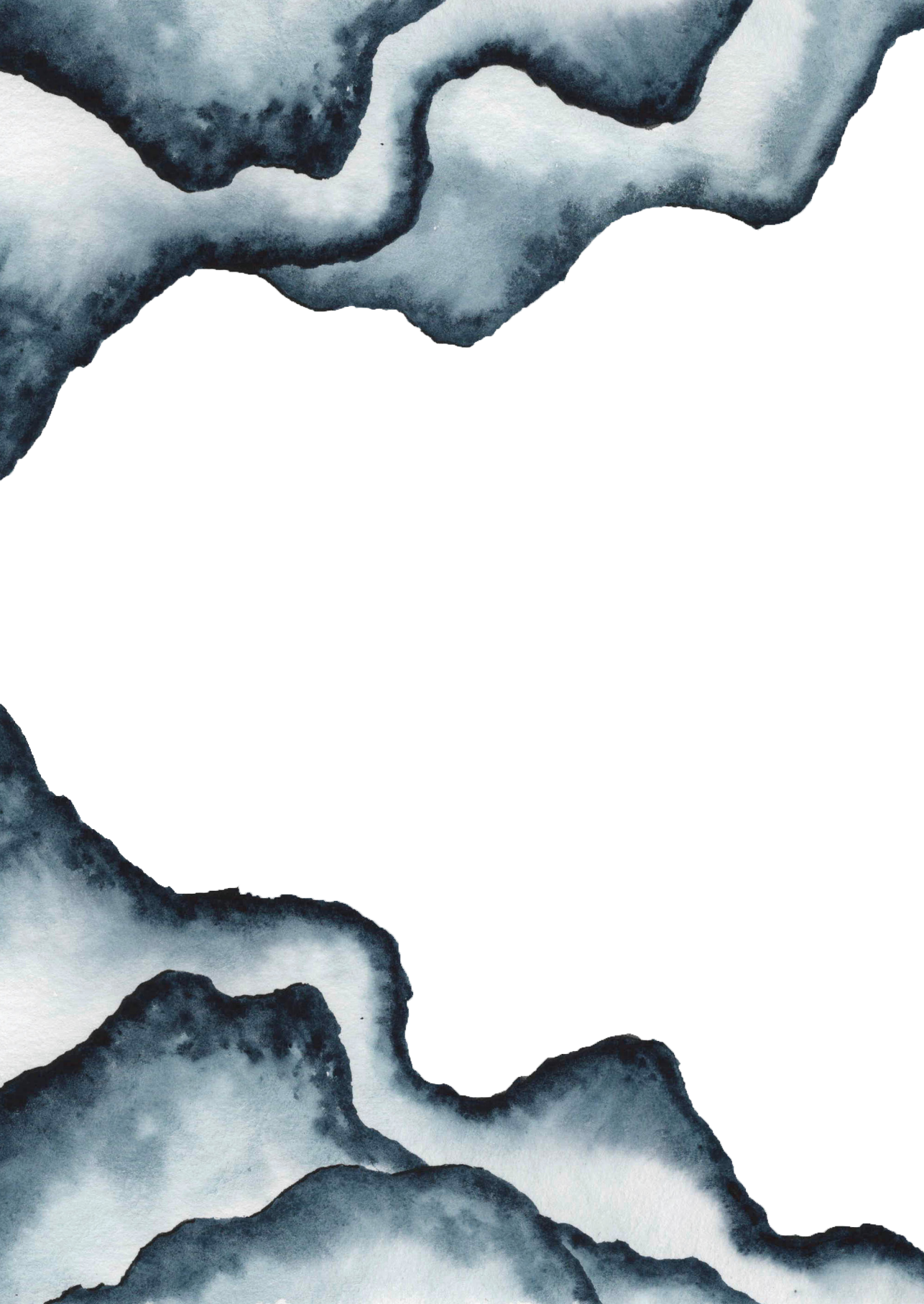
'As I am standing here, holding the release mechanism for the anchor to be lowered, I look back at the lessons of the students. I am both inspired and ashamed. I hope that those in the course realize they are more than objects of study, that the course serves a dual purpose that is forward-looking but hopefully also life-enriching for them. I certainly hope they realize I care about them. I also realize now, perhaps, how much heavier the burden of engaging with regenerative higher education is, as I get to share in both the beauty and the pain that are experienced along the way. And (un)fortunately, there have been plenty of both.'

There is no Transition with Transformation
With Maria Garcia Alvarez



Reflective Questions:

- *How do you actively challenge unsustainability in your educational context/system?*
- *How are you actively participating in deconstructing and reconstructing the university for times of transitions?*





4

'SWEET ACID' AN INTERPRETATIVE PHENOMENOLOGICAL ANALYSIS OF THE LIVED EXPERIENCE OF STUDENTS NAVIGATING REGENERATIVE HIGHER EDUCATION

Chapter 4: 'Sweet acid' An Interpretative Phenomenological Analysis of the Lived Experience of Students Navigating Regenerative Higher Education.³⁹

4.1 Introduction

While the previous chapters focussed on educators – others and myself – engaging with more regenerative forms of education, the question of how students experience engaging with RHE remained largely unanswered. To explore this knowledge gap, this chapter zooms in on the experiences of the students who participated in the Mission Impact course, discussed at length in the previous chapter. During their time participating in this course, the students created 21 living spiral frameworks (LSFs), which I analysed through interpretative phenomenological analysis (IPA) to answer the central question in this paper: *How do students experience engaging with RHE?* After sharing the results of that analysis, I subsequently reflect on what these experiences imply for the design, policies, and teaching of RHE, and I present this dialogical engagement with the student' experience in the results.

In section 4.2, I engage with the methods used for this inquiry. This includes diving into the LSF (section 4.2.1) and IPA (section 4.2.2). Section 4.3 presents the results of this study. Section 4.4 provides discussions based on the results as well as limitations of this study and the methodological choices. The final section (4.5) presents the conclusions from this study as well as possible avenues for further inquiry.

³⁹ This chapter has been published in adjusted form as Van den Berg, B.; Poldner, K.A.; Sjoer, E.; Wals, A. E.J. 'Sweet Acid' An Interpretative Phenomenological Analysis of Students' Experience in Regenerative Higher Education. *Education Sciences* 2022, 12(8); 533. <https://doi.org/10.3390/educsci12080533>.

4.2 Methods

In the next subsections, the methods used for this study and the how they were used is explained.

4.2.1 Data Generation: Living Spiral Frameworks

At the end of each iteration of the Mission Impact course (chapter 3), the participants were asked to create LSFs as an aesthetic and narrative-based reflective method to think through transformative lived experiences (Macintyre et al., 2018). An LSF uses the analogy of a living plant or tree to think through processes of (relational) transformation. While an LSF is flexible, it is strongly recommended to have between six and 12 pages of personal narrative writing for the depth of this approach. The decision was made to exclude the LSFs of those who failed the course (mostly because they didn't hand one in) and to include LSFs that didn't reach the six-page minimum if they were sufficiently meaningful. That is, the main inclusion criterion was the quality of the LSFs, not their length. This resulted in a total of 21 included LSFs out of 27 participants across the two iterations of Mission Impact. In each iteration of the course, three dedicated sessions were hosted for the students to learn about the LSF approach, including the possibility of discussing their work with me as their teacher. Participation in the LSF was part of the assessment process of the course. However, the students were provided the opportunity to opt out of having their LSF included in the research but no student exercised that option. The two to three sessions that I hosted to help guide them through the LSF focussed roughly on the following elements: (1) Creating a timeline – choosing the main moments that impacted them in this course. (2) Structuring – deciding what subtitles and keywords were representative of their journey, in accordance with the metaphor of a living spiral. (3) Narrativizing – determining a story form that does justice to their experience. The LSF acted as the final subjectification element of the course (Biesta, 2021) and as the final personal transformation assignment for the participants. An impression of these LSFs can be seen in Figure 10.



Figure 10: A collage of some of the visuals created in the process of the LSF reflections.

4.2.2 Interpretative Phenomenological Analysis

To analyse the LSFs that the students generated during this study, IPA was used. IPA is an approach to qualitative inquiry that is particularly well suited to the study of lived experience amongst relatively homogenous groups. IPA has roots in (health) psychology but is also frequently used in related fields, such as human, social, and health sciences (Smith, 2011). The phenomenological aspect of IPA describes the focus on investigating the individual experience as the central aspect of inquiry. IPA is based on the concept of phenomenology, proposed by the philosopher Edmund Husserl (Smith et al., 2009, p. 12), who emphasized the importance of going ‘back to the things themselves’. The goal of IPA is to break through the ‘hierarchy of experience’ (Smith et al., 2009, p. 2), which starts with the most elemental level, the unconscious, the rather passive flow of experience. The real focus of IPA, however, is to engage with the experience point when everyday events become meaningful forms of living. These more complex types of experience usually occur when something important or impactful happens to us – this can be a negative or positive experience. In other words, IPA zooms in on when experience becomes ‘an experience’. This change in quality is usually accompanied by elevated levels of awareness and consciousness, and hence, the richness of details. For this analysis, I hypothesized that engaging with RHE-inspired courses like the Mission Impact course constitutes a meaningful ‘experience’ for the purposes of IPA.

IPA is done systematically through individual engagement with the data before the identification of relationally occurring thematic patterns. IPA generally uses between 2 and 20 participants (Smith et al., 2009), largely depending on the experience under inquiry, and it has successfully been used in a variety of fields, including educational sciences because it ‘gives researchers the best opportunity to understand the innermost deliberation of the “lived experiences” of research participants’ (Alase, 2017; and Crawford, 2019; see also Holland, 2019). A relational perspective was used for the IPA in this study to identify and examine the ‘lived experience’ of the individual learning ecologies of participating students. This perspective was appropriate to highlight implications for designing, teaching, and navigating RHE. According to Barnett and Jackson (2019), an individual’s learning ecology encompasses whatever contexts, relationships, and interactions provide opportunities and resources for learning, development, and achievement. This ecological perspective to learning served as the basis for a systemic abductive inquiry through IPA (see also Van den Berg et al., 2021a). This includes abducting from the direct written experience towards a focus on implications for students, teachers, and HE more generally. In other words, this approach makes it possible to probe into the multi-level systems that the students were relationally entangled with through in-depth engagement with the experience of individuals. The standard recommendation of a 50% inter-participant occurrence rate was maintained in accordance with established IPA guidelines (Smith et al., 2009).

4.2.3 Analysis of Living Spiral Frameworks

The LSFs were analysed according to the following steps. (1) First, I conducted IPA, resulting in six (third-order) meta-themes and two sub-themes. This first round of IPA included four rounds of coding: a) initial coding of each individual, b) interpretative coding of each individual, c) identifying emerging themes of each individual, and d) identifying meta-themes across the dataset. (2) These initial results were then discussed with the supervision team for intersubjective alignment, which was done through an iterative analysis process, where dialogue across the author team led to re-analysis and re-examination of the data. (3) This dialogical process was repeated twice, once with the daily supervisor and once with the entire research team. This resulted in four meta-themes (*Opting in – Choosing RHE*, *Learning in Regenerative Ways*, *Navigating Resistances*, and *Transformative Impacts of RHE*). (4) Next, these meta-themes were read through the research questions of this thesis to identify the implications for RHE more broadly. These implications were collated in narrative

form. Finally, (5) the resulting narratives were shared with the supervision team for intersubjective alignment. Through this process of creative inquiry, we attempted to find balance between the iconographic commitment of IPA and the broader inquiry into RHE as an emerging educational concept. The results highlight the commonality, or convergence, of the participants' experiences. This commonality also implies that very divergent individual experiences may have been lost because of this methodological choice. Because of the richness of these narrative results, and in line with standard practice of IPA that tends to give more space to the direct language of the research participants, the discussion section of this study is limited. The narratives are interwoven with a variety of representative participant quotes, which have been anonymized. In the results, anonymous indicators are used to highlight which quotes came from which participants.

4. 3. Results

In the following subsections the results of the four identified meta-themes are presented.

4.3.1 *Opting in – Choosing for Regenerative Education*

Throughout the LSFs, strong indicators were identified of why the participants chose to participate in this RHE over the myriad of other choices that were available (the university offers more than 100 minors, and students can also enrol in courses at other universities with this free space in their educational programme. It was clear was that many participants (see also Figure 11) purposely engaged with this course because of its strong focus on regenerative sustainability and ecological justice. One said, '*I desire to work on future-oriented projects that are solving complex environmental, social, ethical problems*' (A1). What connected these motivations was a commitment to living in service to the potentiality of a regenerative sustainable future. This sense of moral obligation was already present in most of the participants before coming into this course. In fact, one of the main reasons the students picked Mission Impact was feeling this moral obligation while having to navigate a neoliberal education system. This lived sense of moral commitment was (also) fuelled by profound previous experiences with the overwhelming beauty of the natural world and the injustice we inflict upon it, as powerfully described by one participant:

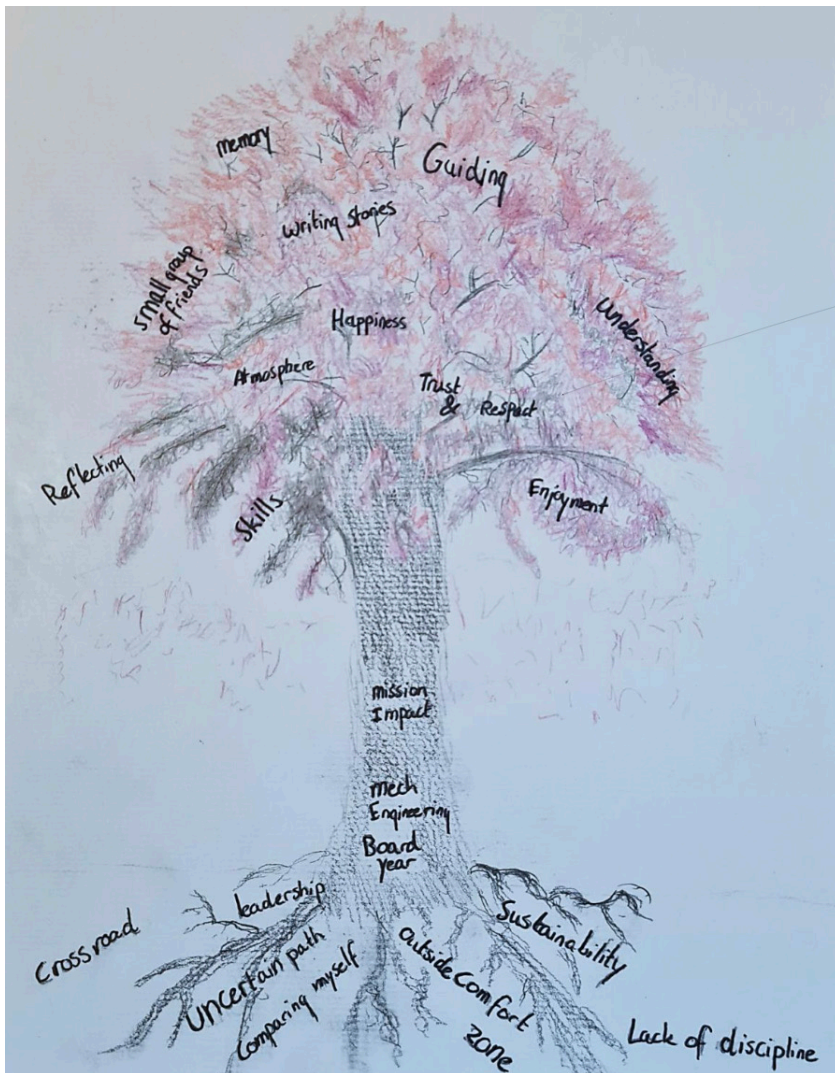


Figure 11: An LSF drawing of one of the participants. The roots represent a feeling of uncertainty, like being at a crossroads. But they also represent a commitment to and interest in sustainability, which was common across the participants. A notable tension existed between their commitment to sustainability and their feeling that they lack (enough) agency to play a role in sustainability transitions.

'I think it kind of started during my time in Australia and New Zealand that I realized how beautiful this world is. In New Zealand, I hiked close to a glacier and on the hike, you could see signs that showed where the end of the glacier has been in past years. This hike really touched me because I realized that what we do really has an impact' (B2).

It is interesting that few students cited the social dimensions of regenerative sustainability (e.g. inequality, safety, inclusion) as their reason for opting for this course. This is remarkable because the university is based in The Hague, the international city of peace and justice, and because world citizenship is one of the key strategic pillars of the university. It is unclear from the data why this side of sustainability was underrepresented in this study. Throughout the course, the students gradually engaged with more and more socio-ecological challenges. The clarity of the underrepresentation of the ecological dimension of STs was strengthened by the challenges that the students ended up choosing to engage with. One team, for example, focused on the felt vulnerability of social and circular entrepreneurs and NGOs in the Binckhorst. These individuals had to face the prospect of leaving the area because the transition they were partially initiating was increasing the real estate value so much they could not afford to compete with developers. While there is a larger trend of rising real estate prices in the Netherlands, it is possible that student work intended to help a place may actively contribute to a further price increase and thus a faster exodus of more sustainable organizations. It is likely that such tensions may exist in other contexts. Another team engaged with the lack of inclusion of youth voices, and the lack of connectivity between inhabitants and growers (of agri-foods) in the Greenport. However, they eventually found out that this lack of social connection was representative of the difficulty the students faced in collaborating with the growers in that period. The difficulty that the students experienced in trying to connect with local growers was also presented in the perceived difficulty the growers themselves experienced in collaborating as a community. There were also strong responses to the amount of care work and unequal distribution of this work across genders, in the student's experience engaging with RHE.

However, those considerations were not strongly represented in the decision-making process to join the course, with only three participants mentioning social sustainability elements in their reasons for selecting the course. Engaging with this form of RHE broadened their perspective of the relationality of sustainability challenges and their potential roles to play in both the social and ecological aspects

of regenerative sustainability. It is likely that courses designed with RHE principles in different contexts, or housed within different departments, could attract people who are primarily interested in the social dimensions of regeneration. At the same time, there were also strong expressions of transformative shifts before choosing the course that led several of the participants to rethink what they wanted to do with their degrees. This included rethinking why they were becoming a designer⁴⁰ and, more importantly, what type of design they wanted to practice later in life. One expressed this shift by saying,

'I have discovered that my interest in design does not lay in making smart gadgets, but rather in the meaningful design . . . when I understood that the responsibility for the product within the whole life cycle . . . lays on the designer' (D4).

Some students were so disenchanted with the focus of their majors that they were on the brink of quitting university education entirely before seeing that something different, something more regenerative, was possible. One student expressed this feeling by saying, *'Sometimes I wonder if designing products is really the thing that I want to do for the rest of my life. I started to study design because I wanted to do something where I can use my creativity to protect the environment. However, I started to wonder if adding more products to this world is really the right way to protect it'.* That student continued, *'I was convinced I wanted to quit my studies. With all the expectations from assessors, clients of the projects, and established methodologies, I felt that I was unable to uncover and express my own values through my projects. I felt that there was something missing in the way we tackled the problems we were given. It was this feeling that was never much space given to talk about the problems we were tackling at their core. I felt the height of this during the pandemic, when industrious systems fell to a silent halt and gave space for crises after crises to surface. The thought of working for firms and clients whose values claim to "make things better" yet function by sustaining the consumeristic lifestyle that carry out the very destructive processes that cause these crises simply did not sit*

⁴⁰ Please note that in the regenerative sustainability discourse, being a designer is a broader concept than suggested by the mainstream design engineering education system. That is, anyone who is working like a designer on creating change in the world is seen as a designer; this framing of the term 'designer' could be compared to seeing design as a way of engaging with transitions instead of as a discipline (Wahl, 2016).

with me well . . . struggling with this . . . I had a conviction to return home' (E5). For others, the main reason they chose Mission Impact was to do something completely outside their comfort zone, implying that they saw the course as sufficiently different to 'scratch that itch'. One said, *'I wanted this semester to be different and to prove to myself I can do better. I promised myself to be brave . . . and strive for kindness.'* (F6).

4.3.2 Learning in Regenerative Ways

The participants highlighted that engaging with this course made them feel like they were making a difference. One said, *'You as a learner are the main agent of change, but that you touch many around you in your own life'* (G7). The participants highlighted that this was facilitated by certain pedagogical choices that are expanded upon subsequently. Because engaging with transition challenges entails working with wicked problems, which are inherently uncertain and unpredictable, working in RHE presents profound (psychological) challenges. Students found the scaffolding of their learning to be especially helpful for learning in regenerative ways. However, the adaptability of this scaffolding is important; the participants said that the unpredictable movements of the problems they were engaged with sometimes created tensions with the rigidity of the course design. The students highlighted a need to actively maintain, and build on, educational structures that provide a sense of control (as a basis for psychological safety), so that the otherwise overwhelming uncertainty of transition challenges can be anchored.

'A huge positive of the minor was the amount of support that was shown. By the tutors, by my teammates, by the other students. I felt very supported when I needed it and tried to support others when they seemed to be in need' (H8).

The participants implied that such scaffolding created friction for learning if certain balancing acts were not maintained by the educators. The strongest of these identified was the seemingly dichotomous requirement for an ongoing mainbuilding – as a dynamic equilibrium between maintaining and building new educational constellations – that balance psychological safety with openness for emergence to engage with wicked problems in regenerative ways. If there was too much rigidity, the ability of RHE and of the students to adapt to the challenge was threatened. However, if there was too much adaptability to educational scaffolding, the participating students would drown in uncertainty, as captured powerfully by one participant: *'It became hard then,*

to think about how we were to proceed without a “hard” problem definition. I think this was our first encounter with the complexities of such a transition and dealing with the ambiguity’ (I9). At times, the participants highlighted how the scale and openness of the problems they were engaged with was overwhelming, asking for additional guidance and structure from the educators involved. A key element of *mainbuilding* and learning in regenerative ways that we identified in a second balancing act of holding space for healing and pushing for transgression where learning has the potential to become regenerative. While it is important to note that there was marked individual variation in how the participants dealt with the complexity of the challenges they were facing, all stated that this balancing act was something they struggled with at times. They highlighted how they valued (and were unused to), being invited to slow down, reflect, and anchor in regenerative ways – that is, they struggled to engage with the transformative personal work that can emerge from tackling wicked problems.

The students also actively contributed to the co-creation of a regenerative learning culture within the course. One said, *‘another fond experience is the way we arranged catering for each lesson. An initiative from the students themselves, we came with the idea that every week a different person would bring food with them from their own culture’* (J10). This routine simultaneously contributed to a sense of community and invited cultural diversity and dialogue into the pedagogical setting.

The collaborative ethos that underpins RHE was highlighted as impactful. One student said, *‘It is beautiful to think that the results we had would be impossible without everyone’s collaboration’* (K11). The students highlighted several pedagogical choices included in the course that facilitated their experience, including nature-based approaches. One said, *‘The first day of the minor, one action happened that I want to emphasise that I think set the tone for every positive change that has happened in this time. This action to me wonderfully explains the old and new me. The moment I’m talking about is when our teacher gave us a wooden disk and a pen and told us to write down one thing that we would like to learn in this time. The energy he created led me to the thought that I could make a change for myself . . . and it felt liberating’* (L12). Another student said, *‘The forest and also the axe throwing walk were a good start and helped me to get into the group. I think the atmosphere in the forest contributed to that a lot as it did not feel like a university event’* (B2). Regarding the active inclusion of aesthetics and arts-based learning, one student said that such elements *‘surprised me, and it was to my benefit that the minor was very artistic oriented, I consider this another very strong point of my experience here.’* (M13). The participants also found the inclusion

of contemplative approaches helpful for dealing with the uncertainty. One said, *'The meditation sessions were very relaxing and made me feel peaceful'* (O15). They also found dedicated time for personal and collective reflection in action to be beneficial:

'I really enjoyed the Thursday morning sessions, they were a nice moment to reflect on yourself, others, and the minor. It made me less anxious to talk about problems that normally would ache me, it made me more open and made me realize that if I am struggling that there is a chance that someone else has that problem too' (N14).

However, several of the participants also noted that while there were many options within the course for collective reflection, inquiry, and learning, they also desired private moments: *'Nevertheless, I think that it might have been more valuable if we had had separate coaching sessions. Personally, I find it hard to communicate about team problems in front of the whole class'* (G7). This is likely related to a feeling of safety, which may be easier for some to cultivate in a private context.

The students highlighted the difficulty of adapting to a more emergent form of education like that found within RHE. One said, *'For teachers it is easy to say "just do what you think is right for the project". For me it is not always that easy. In the back of my mind, I keep thinking about grades and passing competencies. It feels risky . . . maybe even wrong or disrespectful to ignore that and just do something else'* (B2). The same student later continued that *'he actually said that the assessment letter was a bad idea but didn't consider to change it for us'*. However, openness to co-designing RHE does not exclude the educator's tasks, including when the less popular choice may hold more regenerative sustainability potential. For that, teachers sometimes must step out of their role as co-designer or co-learner into a more directive role – for example, to ensure the educational considerations highlighted.

4.3.3 Navigating Resistances

In this subsection, we unravel some of the resistances that were identified that emerged from participating in RHE. Some of these resistances can also be found in figure 12 – for example, personal doubts of the type of designer that this student wanted to become which may be different than what she was being educated towards so far. For clarity, these resistances have been split into internal, educational, and external resistances. The internal relates to the subjective resistances, including personal biographical traumas

and difficulties; the educational refers to educational systems and cultures that may clash with RHE; and the external are related to larger societal forces that may restrict or present resistance to students experiencing RHE. It is important to highlight that from a relational reading, these categorizations overlap. For example, if a resistance is meaningfully connecting with local stakeholders, it can cause both external and internal frustrations. For the purposes of this paper, these resistances have been placed where the impact was most commonly categorized by the participants in their LSFs.

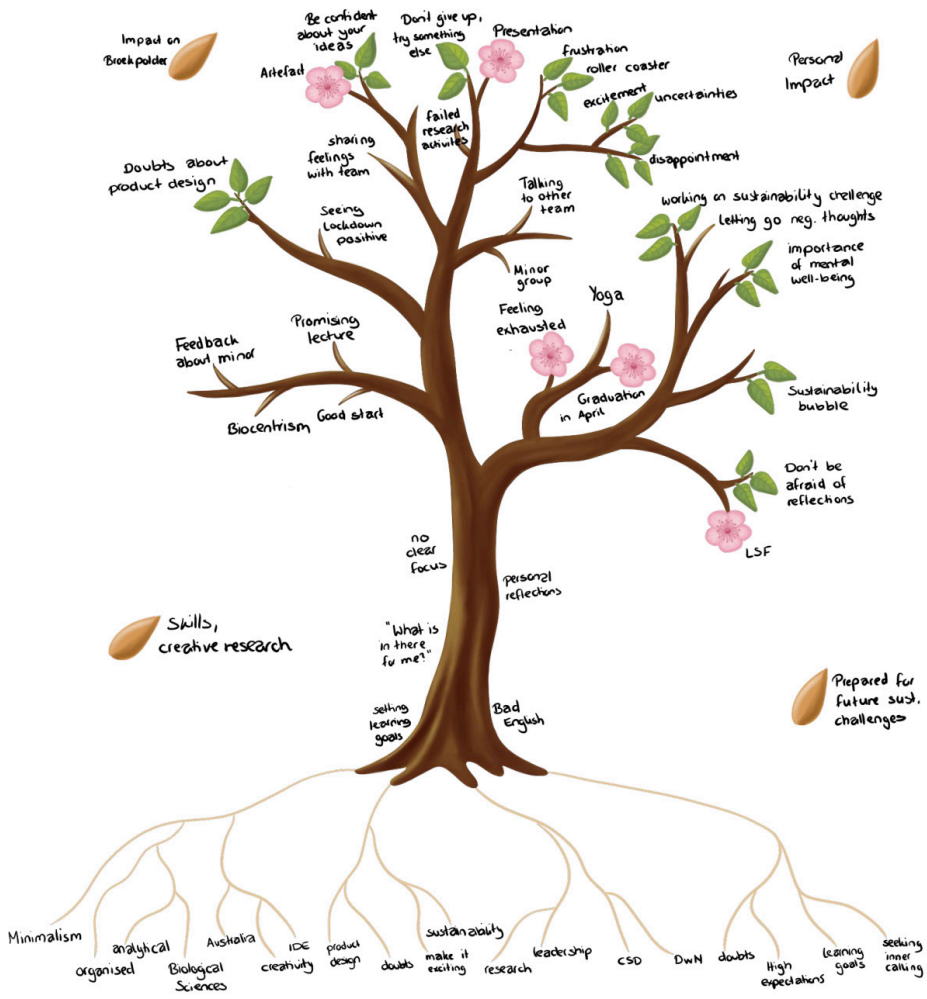


Figure 12: The LSF of one of the participants. This LSF highlights a balance between drivers and resistances, including 'feeling exhausted', 'disappointment', 'roller coaster', 'no clear focus', and the difficulty of 'sharing feelings'. Simultaneously, they highlight their increased confidence in working with the messiness of both internal and external resistances that come as a result of entangling with transition challenges.

4.3.3.1 Internal Resistances

The most challenging resistance that was experienced was an internal one – namely, fear of and inability to embrace uncertainty. One student said, *'After finding a large set of wicked problems in the area, there was a case to be made for every single one. Most wicked problems had underlying relations to one another . . . we were lost in the scale'*. The participants frequently mentioned this sense of 'lostness' as their subjective experience and the frustrations this summoned within them. Several of the participants highlighted a sense of fragility in their ability to trust themselves: *'Trust in yourself is a fragile thing, going just the slightest bit under the surface will show you how much doubt and fear most humans carry inside of them'* (J10). Others spoke about their ability to trust others: *'I rather silently fight my battles because I never want to allow someone to see me vulnerable'* (P16). Still others spoke about a fear of introspection more generally: *'I think I am afraid of the reflections, of the thoughts that will come out. Maybe there are things in my head that want to come out, but I don't want those thoughts to be spoken out loud because they are frightening or making me sad'* (B2). The participants noted how, the inclusion of reflective sessions and arts-based introspective methods in the course allowed some of these difficulties they experienced to 'bubble to the surface'.

There are also signs that many of the participants had been dealing with some of these fears throughout their life. And several highlighted such strong self-doubt that they did not expect to be able to be 'good enough' for the minor. One referenced *'the self-doubt, insecurity and fear that almost stopped me from participating in the minor at all . . . '* (L12). This perspective also emerged during the course, with the same participant saying that that feeling *'kept returning throughout the semester. I encountered it over and over. This constant feeling of not being good enough has been a huge obstruction'*. Throughout the course, the students highlighted a tendency to perceive resistances purely as negative to the learning experience instead of as moments of potential (transformative) learning.

4.3.3.2 Educational Resistances

As mentioned above in section 4.2.1 introducing the participants, the students had little experience with complexity in their university learning before this course. Thus, they highlighted the complexity of the challenges they were tackling in Mission Impact. This complexity acted, in a way as a resistance to overcome, with one student saying that *'it feels like when I'm working, I can move mountains. But starting to work feels like I have to climb a mountain first'* (O15). This also caused some difficulties

in the student teams, as some participants were more able and willing to take an integral perspective than others. One said, *'My personal standpoint at the time had always been to include the social aspect . . . effect on community . . . I know that opening this door would have broadened the research, and that we as a group might have had some fears about getting lost in such a big topic (including myself)' (I9).*

Many of the participants contrasted their experience in this course with their educational experiences more generally. One mentioned that *'I was oftentimes made to believe I wasn't valid. I was afraid to ask questions because people made me feel stupid for doing so. I am a very curious person, and I shut down that part of me for many years for that reason' (F6).* From an RHE perspective, such feelings are signs of degeneration within university culture. Both the presence of these doubts and the way resistances are perceived are potential places for regenerative educational interventions. Namely, how can we ensure people feel welcome and capable, and how can we help them reframe negative resistances as positive potential moments of personal transformation?

4.3.3.3 External resistances

In addition to those educational resistances, the students also shared valuable perspectives on external resistances. A notable one amongst these includes frustrations with the slowness of systemic transformations, particularly in the difficulty they experienced in 'simple' tasks, like bringing together different stakeholders and aligning their worldviews. Some students even developed a sense of apathy towards the possibility of regenerative sustainable futures. That feeling resulted from repeated failed attempts to actively connect with the stakeholders or to wield power in the places of inquiry. One participant noted that *'getting rejected by a lot of stakeholders was a pain. This happened multiple times and this had us sent back to the beginning very often. After we first sent out our invitations and we received no positive answers; we felt terrible. It felt as if all the work we do is not really necessary' (Q17).* For these students, this represented the first time they experienced not only the complexity of problems but also the messiness of such problems. At times, they even experienced active resistance from members of the community they were engaged with (i.e. those who could not see the need for systemic change). One of the participants noted, *'A roller coaster is a good way to describe my experience in the project. We started with excitement and were very motivated to have an impact on the area. But then step by step our frustrations and disappointment grew because a lot of things that we planned to do, didn't happen . . . It was very hard and stressful for us to get in touch with the people in the place. It always felt like running against closed doors and we do not how to open them' (B2).*

A unique, resistance took the form of COVID-19. One student noted, 'A very big barrier we had to deal with was the fact that we were able to meet with each other only online because of the pandemic. To work in a team with people you've never seen in real life is a difficult task' (G7). The pandemic also played a part in the difficulty of connecting with the places of inquiry as many were themselves also overcome by the severity of the lockdowns. A liberation from some of these resistances occurred when the students realized that conflict is part of engaging with RHE; not everyone will be happy with the transgressive nature of regeneratively engaging with STs (especially those who stand to lose power, prestige, or money). Indeed, it was not the students' responsibility to make particular people happy but to work in service of a regenerative future. This realization allowed teams to break 'out from the thought that we have to meet other people's expectations. It was painful and honest but it cleared a lot of things' (I9).

The participants highlighted that the focus on dialogue, arts-based methods, and vulnerable reflection in the formal RHE had potential not only to help them navigate the complexity of wicked problems but also to engage with the feelings that emerged from these resistances. Some of the participants even experienced those resistances as therapeutic. One participant went through a particularly tough time (losing a brother to cancer) and described his experience of participating in the course as follows:

'When we were reading about regeneration, I immediately related the term regeneration with healing, I don't know why. I found something during the creation of my artefact that has been surprisingly, a bit of help in a healing way. Even if it's a really tiny bit . . . I found it a bit therapeutic' (R18).

4.3.4 Transformative power of RHE

Overall, the students described their experience in Mission Impact as transformative, in the sense that it caused a shift in the students' understandings of themselves as well as in the relational roles and the potential that followed from these changes (also visually detailed in Figure 13 amongst other LSFs of personal growth). It was also highlighted that most of this transformation was still being nurtured within them and within their further engagement with the world. One student captured this idea by saying, 'I am not even sure if I can already reflect on the seeds of this journey, did I even reach that stage yet? I still feel in the middle of the whole thing to be honest. What I can say with certainty is that I know it will influence me, at least as much as my last job influenced my time in this minor' (C3). In part, it is also the responsibility of an educator engaged

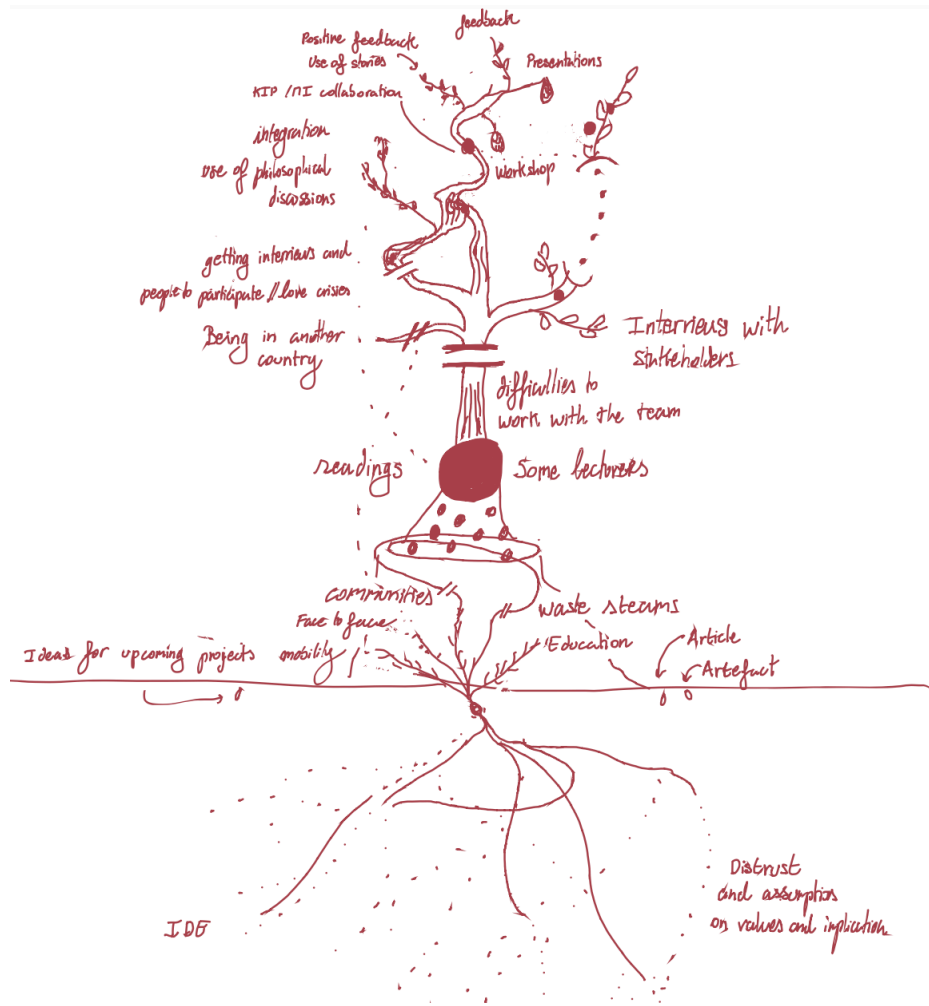


Figure 13: One participant's LSF highlighting different elements of the experience that played a part in facilitating transformations, including translating their research findings into artefacts in service of the communities they were working with.

with RHE to stay in touch and to continue to nurture those planted seeds as much as possible. However, some of the transformations that were already described include increased sense of self-confidence. One student said, 'I am now much more confident in who I am and what I am capable of. . . I think this is a life lesson that will be valuable forever' (O15). Others experienced a shift in their perspective on the relationship between self and the world, moving towards a more ecologically entangled worldview: 'I start to realize that what I am doing now is not enough. Humankind is developing rapidly at the cost of the Earth. If it want to create a safe future, not only for myself, but

for those that I care about now or in the future, sitting idly by is not an option' (J10). This feeling was complemented by a sense of no longer being caught in systems and instead being able to, at least in part, disrupt or transgress those systems: 'Most of all, I'm taking with me the experience that I got from working on a complex sustainability challenge. I think for future projects, I will be better prepared because I know that it can be very frustrating. It gives me strength to not lose the motivation to keep trying other things if ideas do not work out as planned. During the feedback talk with the teachers, I realized that those feelings will not disappear when you are graduated. It sometimes makes me doubt if it is the right direction for me, as I noticed how stressed I was during the minor. Is it really good for myself to work in a field that causes me to feel frustrated and stressed all the time? I think my will to have an impact on the world is too big that I would choose the easy way out. I really want to achieve something and make sustainability more accessible. Too often, I have chosen the easy way out.' (B2). Other students spoke about reduced fears of engaging with the unknown and of working towards regenerative futures: 'The understanding of vulnerability as a strength is also something I will carry on with me to the future' (M13).

Some students also mentioned content-specific learning. One said, 'I did not even know before like regeneration and biocentrism. The whole concept of biocentrism was really an eye-opener for me to change my mindset' (B2). However, most of the reflections focused more on the elements described above. Based on brief follow-up contacts, several of the participants made life-changing choices, which they (in)directly attributed to their participation in the course. Those changes included shifting fields towards sustainability-oriented master programmes, quitting their bachelor to restart a sustainability-oriented one, and quitting their education entirely to start working in sustainability-oriented non-profits. So, while mentions of content-specific sustainability learning were sparse, the elements of personal transformations did play a part in shifting (at least some) of their futures towards working on regenerative sustainability. The strong inclusion of the inner dimension of sustainability in relation to working on a transition challenge was highlighted as the major component for these transformations. One student reflected on their participation with the course, 'With all its ups and downs, I am happy I chose Mission Impact. It's chaotic and unclear in many moments but it taught me a lot. It is incredibly time-consuming if you want to do it right. It is nerve-wrecking and makes you want to drop or yell'. The same participant later continued, 'I saw an ad from NASA about dealing with the waste on international space station in a sustainable way – they give a prize to any noteworthy idea. I am actually thinking about entering! It's something I would not dare to consider half a year ago' (D4).

4.4. Limitations and Discussion

The following subsections discuss identified limitations for this study as well as how these were navigated by the research team as best we could.

4.4.1 *Methodological Limitations*

Noon (2018) investigated the appropriateness of IPA as a method for educational research and concluded that 'it has the potential to be a powerful tool in helping researchers to understand the lived experiences of those within the education system' and that 'findings of IPA studies can contribute to assisting educationalists in shaping future policy and practice around the needs and expectations of both students and educators' (Noon, 2018, p. 82). However, Noon also mentioned a few limitations and challenges, which also apply to our research. One limitation is the 'language barrier'. A language barrier refers to the fact that IPA assumes that 'language provides participants with the necessary tools to capture their experiences' (idem; p. 81). The richness of responses determines the degree to which it is possible to access the participants' experiential worlds. While some of the students engaged with educational programmes in English before this course, the quality of the LSFs in terms of English was quite diverse. In addition, the more general ability of the participants to write or reflect varied significantly. Some students were not comfortable expressing their lived experience through text (in English) or at all. It is important to note here that none of the participants (or the researchers) were native English speakers. It therefore might be possible that language limited our insight into participants' experiences. However, all participants were able to complete a third-year undergraduate minor taught in English, indicating a good level of proficiency. This pass rate provides grounds for the assumption that the quality of the data was sufficient for an IPA. A second limitation was that the LSFs were integrated into the formal course design. In other words, it is possible that some of the participants felt 'forced' to create an LSF based on their perceived expectations of the teaching team instead of based on what they wanted to share. However, based on a reading of the LSFs and the critical comments about the course (and my role at times), this risk seems minimal. It is, however, possible, that an exercise to gather data for the IPA outside the formal assessment structure may have allowed for more freedom in the participation and a closer look into the 'real' lived experience of the students. A third limitation was noted by the participants that many of the seeds of change were still unfolding and that follow-up inquiry could allow for a longer-term perspective on the impact of their engagement with this

form of RHE. Fourthly, Smith et al. (2009) highlight the tensions between idiographic and relational commitments of IPA. It can become difficult to sufficiently represent individual experiences while still generating common themes. Finally, IPA is based on relatively small sample sizes – in our case, the experiences of 21 individuals. It is important to highlight here that the methodological goal of IPA is building general insights of practical relevance through the slow accumulation of studies in similar contexts. It is for these reasons we consider these results indicative only.

4.4.2 Enablers and Resistances

4.4.3 Enablers

The results indicate that the students were primarily driven by three elements (excluding happenstance) to take this course: (1) Some took it because of a commitment to ecological justice, which was often inspired by previous engagement with sustainability (in education), highlighting the importance of incorporating different forms of sustainability education into formal educational processes. (2) Others took it because of an existential need to engage purposefully with the world (e.g. Biesta, 2021). (3) Still others took it from a desire to learn more about regenerative sustainability. While there was marked individual variation in how strongly these enablers influenced individual decision-making, a combination was present across the LSFs. These enablers raise questions about how educational designers can tap into these motivational forces to help students participate in RHE. The presence of these enablers indicates that the majority of participants were already interested in, or involved with, sustainability. Furthermore, these enablers merit a serious educational consideration – namely, how can educational systems be (re)designed to ensure the types of learning experiences that facilitate these enablers are incorporated more strongly throughout the educational system. And if this (re)design is possible, it is important to consider whether RHE would be meaningful and fitting for all students or whether it only would work for specific types of students. Thus, the appropriateness of RHE as part of required courses remains unclear.

4.4.4 Resistances

A number of resistances were identified in the study, including personal, interpersonal, educational, and systemic in nature. The largest personal resistances related to a sincere self-doubt and inability or fear of engaging with the complexity

of transitions (Fenten et al., 2022). A significant interpersonal resistance to action took the form of aligning different cultures or learning to speak a transdisciplinary language (Lotz-Sisitka et al., 2015). Indeed, this resistance has been echoed by professional researchers as well (e.g. the launch of the new Centre for Unusual Collaborations in the Netherlands is expending significant effort on establishing a shared transdisciplinary language). Educationally, the neoliberal culture through which the students are educated represents a significant challenge to overcome (Barnett & Jackson, 2019; Wals 2019a). Furthermore, systemically engaging with stakeholders in ways that are conducive to regeneration often constitutes a transgression, which often presents a major source of (personal) frustration.

4.4.5 Implications for Practitioners

The results of this study suggest possible directions for a pedagogy of RHE. While presenting such a pedagogy is outside the scope of this chapter, what seems to be important is the triple-balancing act that must be engaged with as a regenerative educator. It is important to stress that the pedagogical choices were made during Mission Impact as constellations of choices instead of as rigid dedications towards specific pedagogies. This flexible approach connects strongly to the regenerative perspective of King (2021). These pedagogical choices include a deep commitment to a dialogical, democratic, and co-creative approach to educating that was markedly different from what the students normally had experienced (e.g. Lopes Cardozo, 2022). This may link strongly to the work of pedagogue and philosopher Koen Wessels (2022), whose work on pedagogies of entanglement focusses on how teachers can respond to societal transition challenges in the here and now.

Like Wessels (*idem*) and like the participants seemed to identify, the main challenge for RHE practitioners may be getting an intuitive sense of when to lean in which direction. In this regard, RHE is characterized by multiple balancing acts required to engage with educational problems. This contrasts with the perspective of Blewitt (2010), who calls for a radical deschooling for regeneration and who argues that the role(s) of teachers within that triple-balancing act are deeply educational and that identifying ways, tools, and guides for this work is at the frontier of (regenerative) education science. Instead, a shift towards RHE broadens and sharpens the role of educators for the complexity of helping students engage with RHE. How such a shift impacts the roles and responsibilities for educators is a rich place for further inquiry.

4.5 Conclusions

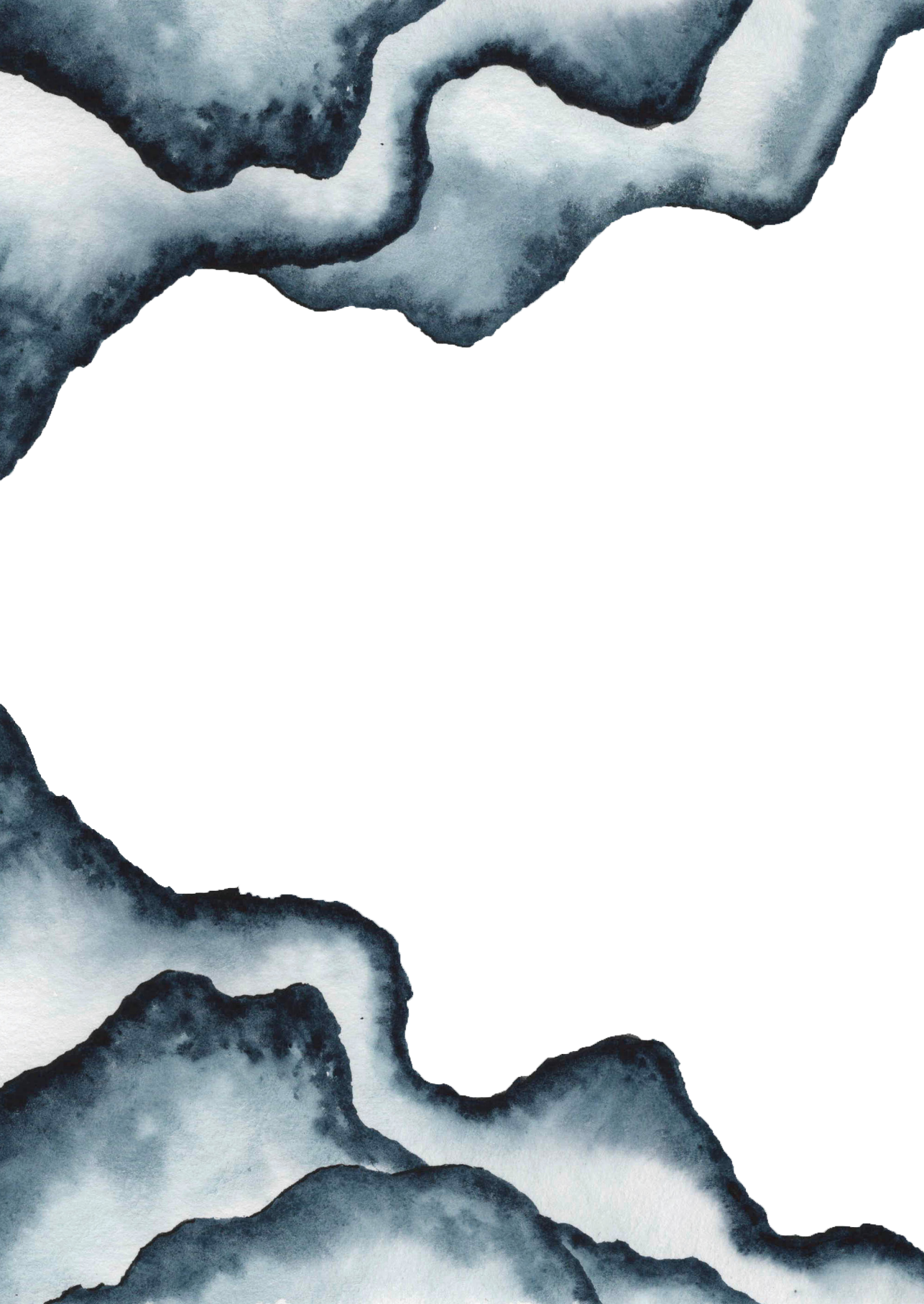
This research on the lived experience of students experimenting with RHE in the Netherlands provides an entry point to further investigate the ways students navigate RHE as well as how RHE can be designed in ways that make these transitions navigable. A particular interesting research avenue for this quest may be designing tools that can be used to make these transitions more navigable for learners involved with RHE. In doing so, this research responds directly to a growing need in theory and practice – namely, to rethink how HE can connect with, and actively participate in, tackling STs and how universities can become more regenerative. The results of this chapter add to the emerging discourse and practice of RHE by presenting the first in-depth study of students' experience of RHE. This research shines a light on three important areas: 1) considerations for educating regeneratively, 2) the resistances that are faced by students when engaging with RHE, and 3) the personal transformational impacts that these engagements can have. The results indicate that RHE has the potential to be transformative and that it could play a role in life-changing decisions related to sustainability. However, the results also show that engaging with RHE is (existentially and personally) challenging for learner. It is clear that engaging with the subjective in such complex and confronting learning experiences (which may even be transgressive of existing systems) is not an easy journey. The implications for educators and educational systems more generally in the context of these challenges is twofold: 1) there is a need to create spaces within formal curricula to engage with RHE, including the messy and difficult subjective dimensions of learning. 2) There is a need to provide support, both through pedagogical choices and professionally, to engage with the complexity of regeneration and to solve problems. For both of these challenges, contemplative, nature-based, and arts-based approaches towards collaborative inquiry may be particularly fruitful. More forms of RHE will likely emerge and flourish, and I applaud these efforts. However, much remains unknown about the (long-term) impacts of RHE on students (or STs). A particularly interesting avenue for study could be how participation in RHE unfolds in systemic and personal changes through in-depth longitudinal studies. I hope that the insights presented in this chapter can help other scholar-practitioners in (re)designing their own RHE. And I warmly invite more research into the designing, teaching, and experiencing of RHE.

On Regenerative Education
With Bas van den Berg



Reflective Questions:

- *How can you encourage courage within your educational institution to embark towards regenerative education?*
- *How can you stay in the shadows in strategic ways to allow your regenerative education to flourish?*





5

GENERAL DISCUSSION AND CONCLUSIONS



Chapter 5: General Discussion and Conclusions

In this thesis, three empirical studies examined how RHE can be designed and enacted. A practice-based approach was taken to supplement, critique, and add to the burgeoning literature on RHE. The aim of this PhD was to gain a deeper understanding of the ‘how’ of RHE as a possible response living in times of transition(s) and to gain an understanding of the (systemic) resistances against engaging with RHE and to illuminate how these resistances can be (circum) navigated in designing and enacting RHE. This research provides insights, including actionable pedagogical and didactical (design⁴¹) tools, so that more educators can engage in the art and practice of designing and enacting RHE.

The main research question was as follows:

How can regenerative higher education be designed and enacted and what resistances and enablers to this process must be navigated?

This chapter presents the conclusions of this thesis. In section 5.1, I answer and discuss the key findings from each of the sub-studies that support conclusions regarding the main research question. Section 5.2 provides the scope, methodological discussion, and limitations of the research, and section 5.3 discusses the scientific and societal relevance of the thesis. Section 5.4 provides possible directions for follow-up research. In the final section (5.5), I express how this research fuels my hopes for RHE in the context of living in times of transitions.

5.1 Main conclusions

This thesis includes three studies that explored how RHE has been, and can be, designed and enacted. These studies engaged with multiple places through systemic inquiry, including the existing literature (weaved throughout), the experience of educators already engaged or moving towards these practices (chapter 2), my experience as an educator navigating these practices (chapter 3), and the experience of students who

41 Please note that I follow the perspective of Wahl (2016), that design is any form of intention action to create systemic change. From this perspective, educational design includes both the preparation of course materials, schedules, and the like – and the choices made during teaching.

navigated a form of RHE at a university like The Hague University of Applied Sciences (chapter 4). In this section, I discuss the main results from each of these chapters to triangulate and derive the main conclusions. At the end of this section, the triangulated results are translated into a set of design canvasses that can help educators in (re) designing RHE. In Appendix E, an in-depth overview in the form of a table of all identified principles, design questions, resistances, and enablers can be found.

In the second chapter, I explored how forms of RHE are already starting to emerge through leading educational trailblazers. I engaged in 27 podcast conversations with higher educators within and beyond the Netherlands. In the conversations, I explored their experimentations with RHE and unravelled how these practices emerged. In addition, we zoomed in on what was enabling these educators to move towards a more regenerative orientation as well as how they were navigating the resisting forces – institutional or otherwise – that may stand in their path. Finally, I explored the dreams, hopes, and aspirations of these educators for RHE. Through an exploration of these narratives using transition mapping, I identified an initial set of seven design principles. While those principles were expressed in radically unique ways across contexts, there were shared by all these innovators. These findings were – together with the identified resistances and enablers – also translated into an initial RHE design tool. The study was, as far as I know, the first study aimed at education to use podcast-ethnography throughout the research process. In doing so, it showed the potential for podcasting to be used as a valid way of generating and disseminating insights. I am happy to report that the episodes have also led to further educational change across a number of universities as several educators reached out to let me know that they were inspired or empowered by the podcast to change something within their own institution.

In the third chapter, I explored my own educational design and enactment as teacher–researcher–administrator at THUAS. For this exploration, I utilized DDAE in the context of a 30 ECTS minor course, Mission Impact, from October 2019 through February 2022. Chapter 3 explores how I as a teacher in a specific context experienced designing and enacting a form of RHE and the (systemic) resistances that I navigated to do so. This study highlighted additional insights to those found in the podcast study. These insights have been integrated into the RHE design canvasses found at the end of subchapter 5.1. The most notable of these was a focus on the role of the educator in RHE itself, including responsibilities for acts of educational self-care that allow the intensity of RHE to be navigated by those responsible for co-facilitating it. Another valuable realization was that transitions and educational institutions and programmes

run on different timescales, placing necessary limits on what educators ought to focus on in RHE – namely, to leverage the inner development of the communities of learners connected to RHE so that the ‘seeds of sustainability change’ are planted in the actors. In doing so, they may continue to engage with regeneration well beyond their time in an RHE-inspired course.

The DDAE also highlights the potential that disabled – or otherly abled – bodies may present as a methodological strength instead of (only as) a limitation. In the study, I argue that embodied pain, which I (unfortunately) experience through ankylosing spondylitis, has the potential to act as a guide for understanding relational constructs through DDAE studies. I argue that this experience may have provided me deeper engagement with the resistances experienced and navigated throughout the DDAE than would have been possible with (only) an abled body. In this regard, I believe that bodies that deviate from the norm may be more sensitive to changes in relational social fields.

In the fourth chapter, 21 living spiral framework reflections of students who participated in one of the two iterations of the Mission Impact course were analysed to identify the resistances and enablers for students experiencing RHE. This analysis resulted in four main considerations for RHE, which are discussed below. The IPA showed that students chose to contribute to climate and ecological justice. Often, they were already touched by a sense of urgency to act on climate change – or more generally to make the world a more balanced place. The students’ experience also highlighted lessons for the role of the educator in the context of RHE. That role is primarily as a guide who points towards the different worlds in which students are engaged and the spaces in which these worlds are inviting the students to ask questions. This includes educationally pointing at imaginary, regenerative, worlds. However, the educator’s role is also to ensure that therapeutic or relational support is present for the complexity of the work with which RHE engages – like the myriad of transition examples offered in this thesis. The students also highlighted strong resistances to engaging with RHE including the fear of engaging with the uncertainty and complexity of the challenges faced within RHE – or more specifically, the fear of what engaging with these implied for the students as ‘selves’. This challenge was heightened by the lack of experience with complexity in formal educational contexts, which was highlighted by most of the students. However, despite – or because of – the challenges that the students faced participating in the RHE-inspired course, they described it as transformative – with several alumni

making life-changing choices, like applying for NASA space waste competitions, changing their master's programme, or dropping out of their bachelor's programme to work for an NGO. Importantly, the participants highlighted that most of the transformative work of their participation with the course was yet to unfold, further highlighting the importance of taking a long-term perspective with RHE.

At the beginning of this research, few empirical explorations of the 'how' of RHE had been performed. This thesis helps to fill this knowledge–practice gap. The following represents the main conclusions of this thesis:

1. Designing RHE calls for tailoring to the educational context, and the identified regenerative education design canvasses can help with this unique design challenge. However, a dedicated 'toolbox' or design guide that can help teachers with designing *and* teaching RHE is needed. While this toolbox is beyond the scope of this thesis, several of its possible constituents, including the canvasses and myriad of RHE invitations throughout this thesis, have been identified.
2. There are systemic resistances to engaging with RHE, most notably the sacredness of manageability that has seeped into HE and the difficulty of connecting with places in more regenerative ways. Most of the resistances to engaging with RHE, however, are internal within educators, students, and administrators. These include internalization of the instrumental purpose(s) of education (such as preparing for the workforce) and personal fears of engaging with the complexity and uncertainty that RHE entails. This indicates that the main way for educational leaders to cultivate the further emergence of RHE is by facilitating brave spaces to engage with these (internal) resistances.
3. Besides the resistances that have to be navigated when engaging with the design and enactment of RHE, key enablers – which may be leveraged – have also been identified. These include personal drivers such meaningful connection with the concepts of regeneration but also more systemic ones like identifying and connecting with (educational) system stakeholders that share a sense that change towards more RHE is required and possible.
4. While connecting with local transition challenges in a particular place may be one of the principles of RHE, transitional change at the systemic level (such as the energy transition) likely takes (much) more time than formal RHE allows. Therefore, the focus of engaging with RHE ought to be

engaging with these external transitions as rich learning places for planting the seeds of personal transformations. Such a focus will help those who have been touched by RHE to then create regenerative systemic change throughout their own lives.⁴²

5. To help students navigate the difficulty of engaging with RHE, educators can do the following: 1) *actively help students connect locally with stakeholders*; 2) *actively take students to external locations to invite inquiry*; 3) *incorporate contemplative and reflective pedagogies, or invite people capable of doing so, to help navigate the personal difficulty experienced when engaging in RHE*; 4) *continuously place attention on expectation management and how expectations may differ from what the students are used to in previous educational experiences*; (5) *commit to learning with the students about the relevant transition challenges in the specific place they are working and ensuring they spend as much time as possible doing so*; and (6) *actively work on continuously co-creating a (psychologically) safe/brave space within the RHE, in the sense that learners feel invited into such constellations and feel okay being uncomfortable together*.

Those main conclusions, and this thesis more generally, show that a more regenerative approach to HE is possible and that RHE is experienced as meaningful and transformative by both educators and students. This was the case in the contexts studied in this thesis, and similar results and impacts can likely be identified elsewhere. How (and if) RHE plays a part in systemic change – that is, in helping to redesign the human presence on the Earth (Wahl, 2016) to be within the social-ecological boundaries of the planet – remains unclear. Discovering the dynamics of how this does or does not occur requires a longitudinal study beyond the scope of a single PhD thesis.

In engaging with RHE, an educator is likely to run into several forms of resistance, including (1) systemic resistance, such as the *difficulty in connecting with a place for the far futures in the business of everyday life or existing higher educational policies within or beyond the home institution*; (2) personal resistance, *like how engaging with RHE can be terrifying as an educator, especially when they need to embrace much more trust in the process than one may be used to, or when more traditional colleagues do not understand or vocally share their disapproval of what they are trying to do*; and (3) resistance in students, *such as the resistance to being invited to engage with the personal dimension of sustainability*. These results and conclusions

⁴² As regenerative educator M. Lopes Cardozo (2021) would say, these, however, are 'leaps of faith'.

can be used by educators and educational administrators to (re)design RHE or to create conditions within the educational context that are conducive to removing some of the identified resistances.

The key results of this thesis have been translated into multiple regenerative education design canvasses, presented in figures 14-17. The first of these canvasses provides an overview of the eight design principles for RHE that emerged out of this research (figure 14). The following set of three canvasses were designed to be used during the design of RHE ('the design canvas') (figure 15), to evaluate the RHE as it unfolds ('the observation canvas') (figure 16), and to reflect on a piece of RHE that has been completed ('the evaluation canvas') (figure 17). These canvasses are based on the insights collated throughout this research, and they incorporate the resistances and enablers in the formulations of the design questions. The intention behind these canvasses is that they are used with the educational community who are – or will be – involved with the RHE that is being co-designed. This includes the educators but also students, community members, representatives from different organisations, and other relevant stakeholders who may be touched by the RHE as it unfolds. An overview of the key results from each chapter is presented in Table 2 in Appendix E for additional insights beyond the canvasses.

REGENERATIVE EDUCATION DESIGN PRINCIPLES

<p>TACKLING URGENT AND RELEVANT TRANSITION CHALLENGES</p> <p>Ensuring that the Societal Transition Challenges that you connect with are part of the learner's reality. These challenges should be considered as important for the learners involved in the educational context.</p>	<p>CULTIVATING PERSONAL TRANSFORMATIONS</p> <p>Including the personal dimension of regenerative sustainability into your educational activities. This includes creating space for feeling, being, sensing, and becoming for learners in the educational context.</p>	<p>TEACHING AS SELF-ACTUALIZATION</p> <p>Engaging with teaching through an attitude that is conducive to regeneration. This includes being mindful, empathetic, vulnerable, courageous, humble, and seeing your role as co-learner in an unfolding context.</p>	<p>NURTURING SUPPORTIVE INNOVATION ECOSYSTEMS</p> <p>Ensuring that appropriate levels of support for RHE are present within your educational context. This should include monetary/financial, and capacity support.</p>
<p>EMBEDDING LOCALLY WITH SYSTEMIC AWARENESS</p> <p>Actively connecting your educational activities – with purpose – with the local communities in the places that are facing the challenges you are connecting with. This includes additional attention to marginalized voices in those places such as minorities or non-humans.</p>	<p>OPENNESS FOR EMERGENCE</p> <p>Being receptive for adaptation to the educational approach, structure, and design, as the course unfolds. This includes being open to input from other learners into these educational design considerations.</p>	<p>SHAPING THRIVING FUTURES</p> <p>Critically identifying current systemic trajectories and locating strategic places for interventions (i.e., leverage points) to craft more regenerative futures.</p>	<p>HOLDING HEALING SPACES</p> <p>The importance of hosting spaces needed for deeper engagement that nurture a sense of safety for the personal dimension of learning. This includes hosting space for the shadows of transformative engagement with regeneration.</p>

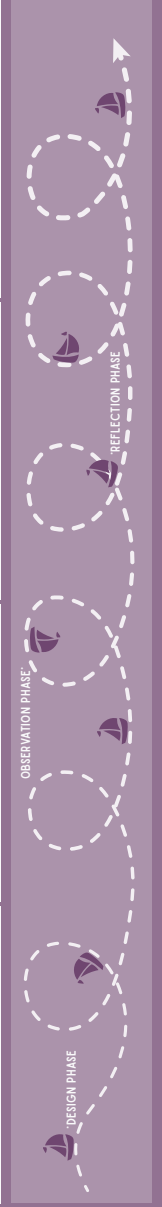


Figure 14: Regenerative Education Design Principles

REGENERATIVE EDUCATION DESIGN CANVAS

<p>TACKLING URGENT AND RELEVANT TRANSITION CHALLENGES</p> <ul style="list-style-type: none"> • What transition challenges are relevant in your context? • How do these live within your community of learners? 	<p>CULTIVATING PERSONAL TRANSFORMATIONS</p> <ul style="list-style-type: none"> • How can you invite the personal into your education? • How can you incorporate an ethic of caring for the learners involved with your education? 	<p>TEACHING AS SELF-ACTUALIZATION</p> <ul style="list-style-type: none"> • How can you structure processes to reflect on your role as an educator within the context? • How can you nurture your qualities of mindfulness, vulnerability, and courage within this education? 	<p>NURTURING SUPPORTIVE INNOVATION ECOSYSTEMS</p> <ul style="list-style-type: none"> • Who are the key stakeholders within your educational context that you need to get on board for this education? • How can you get and keep these people in your corner?
<p>EMBEDDING LOCALLY WITH SYSTEMIC AWARENESS</p> <ul style="list-style-type: none"> • Who are already active in the local community that you can connect with? • How can you use the richness of the local place educationally? 	<p>OPENNESS FOR EMERGENCE</p> <ul style="list-style-type: none"> • How can you remain open for co-design to the education before and through the education? • How can you meaningfully involve the community into the educational design? 	<p>SHAPING THRIVING FUTURES</p> <ul style="list-style-type: none"> • How can you (re)frame the destructive systemic conditions below the surface of the iceberg in your context? • How can you make an engaging with regenerative futures appropriate language for the learners in your context? 	<p>HOLDING HEALING SPACES</p> <ul style="list-style-type: none"> • How can you invite a sense of abnorness in your educational? • How can you nurture a culture of bravery and safety within your education?



Figure 15: Regenerative Education Design Canvas

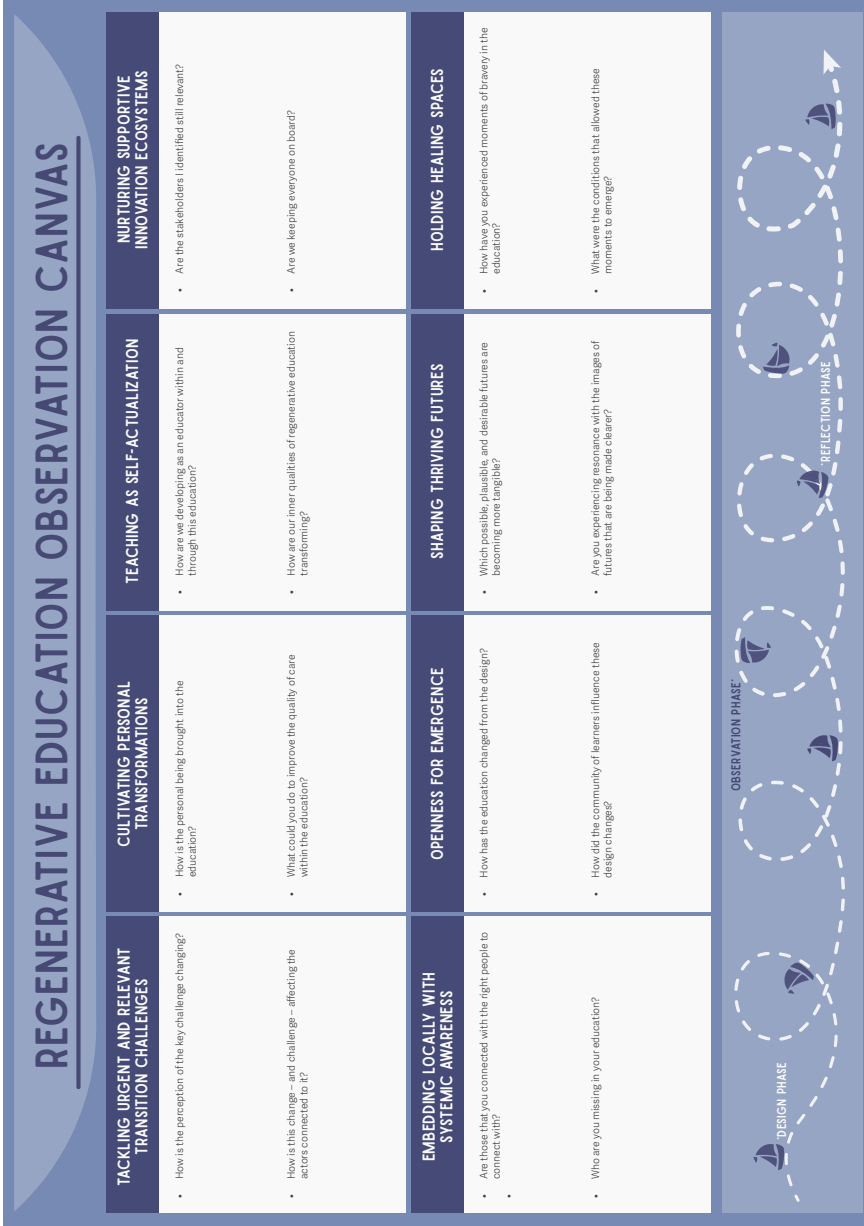


Figure 16: Regenerative Education Observation Canvas

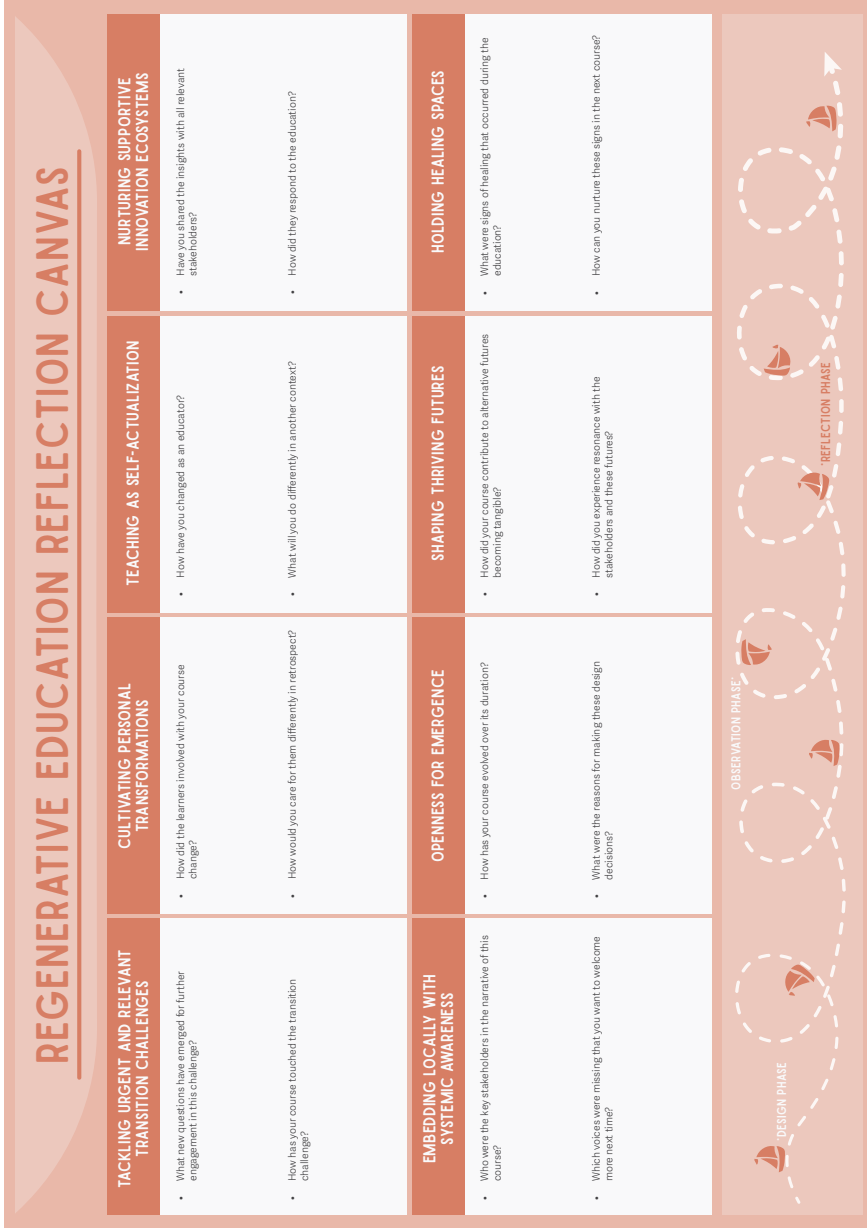


Figure 17: Regenerative Education Reflection Canvas.

5.2 Discussing the Research Limitations

In addition to the main findings, a number of (potential) limitations have also been encountered during this thesis research. In this section, I explore the key methodological discussion points for this thesis. I zoom in on the difficulties of balancing being a teacher, researcher, and administrator, and I discuss the strengths and limitations of a research-through-design approach that takes a critically interpretative stance. I also share the limitations in availability of RHE literature at the onset of this study, and I explore the use of personal research methods, like design-driven autoethnography, especially through a disabled body. Finally, I discuss how this research can be generalized.

The aim of this research was to explore the concept of RHE and make this emerging field more navigable for educators. Throughout the study, a participatory approach was used to validate (partial) results. This approach was inspired by the critical-interpretative and abductive stance that was maintained throughout the research process (see chapter 1). This stance embraces an approach to science that seeks to identify likely explanations within specific contexts that may be indicative for other contexts.⁴³ Nor do I make the claim that they are universally applicable. Regardless of where the findings are transplanted to, adaptation to the local (educational) context will be required. Indeed, it would be my hope that educators who are open for RHE that encounter this work may derive actionable insights from the work. However, an act of translating those insights to their individual context will be required. Therefore, the confidence in the conclusions and results presented in this thesis ought to be seen as nested within their context; outside that context, the results should be considered as indicative or conversation starters about RHE and its contextual design. The participatory nature of the research-through-design approach that was used because of the dearth of relevant literature at the onset of the study allowed me to weave together of a multitude of emerging (regenerative) perspectives into the thesis. I am happy to share that, partially because of the work in this thesis, there has been a notable increase in engagement with RHE since then.

⁴³ This commitment to the uniqueness of place is also why the results include design practices and principles that have to designed and implemented locally.

5.2.1 Navigating a Triple Role

The challenge of balancing the roles of teacher and researcher is well established as a potential source of conflict and tension (e.g. (Klingaman, 2012; Tabach, 2006; Tamayo, 2020), particularly when the needs of the researcher interfere, or potentially harm, the students in that teacher–researcher’s care. Less is known about balancing a tripartite role as teacher, researcher, and manager.

In the context of this study, this tripartite role has created feelings of extreme conflict. This was partly due to different time demands (e.g. thinking deeply to write when I had classes to teach *and* had to attend management team meetings, co-design the strategic course of a research centre, *and* participate in funding calls, *and* follow doctoral training courses). Furthermore, the tripartite role was made more challenging because of the heavy workload due to my involvement as a teacher, coordinator, and manager in a variety of (undergraduate) courses. It was difficult to balance different roles and responsibilities and to hold the space for the research connected to my PhD journey. At the same time, this tripartite role also allowed some unique perks not afforded to most PhD candidates. For example, if I needed a student assistant to help with something, there were financial resources available that I could allocate to myself. It is important to highlight that my management position was never about an educational programme so my direct influence to leverage that positionality for educational change was limited.

While I feel that I have gone through a process of personal and professional maturation, a process that over time has made me more competent in balancing the demands and expectations of these different roles, I have not always been successful. As chapters 3 and 4 show, at times I did not live up to my caring responsibilities towards the students engaged in the study or towards myself. To some extent, learning to navigate these complexities is a key quality of engaging with doctoral research and learning how to become an academic. I hope I will not fail in my duty of (self-)care again; however, if I do, I now hold the ability and confidence to learn reflexively from such failings. I suspect that the more traditional routes of being a full-time PhD student or simply a teacher–researcher are a bit gentler.

5.2.2 Research through Design

The methodological approach that guided this work differed from a more traditional positivist approach to science. I did not conduct hypothesized experiments but rather engaged in a practice of (re)designing as a form of inquiry (Stompff & Smulders, 2021).⁴⁴ In this research through design, an empirical challenge acts as the starting point for inquiry rather than a priori theoretical or conceptual frameworks. In this case, the work could be seen as a direct response to the knowledge–practice gap between conceptual, speculative, and theoretical knowledge about how universities can be more locally connected and respond to transition challenges with regenerative educational practices.

A limitation or, depending on one’s epistemological vantage point, a strength of such research-through-design is that I did not set out to deductively (dis)prove theory. Instead, I used abduction to intervene in practice and, through systemic reflections upon these interventions, built or added to theory from and through that engagement. Thus, research through design engages with a middle ground between testing and building theory, as theory is (re)built in the testing. Therefore, the results, design frameworks, and tools presented in this thesis should be considered as temporary at best but subject to change(s) as further inquiries are conducted. In other words, they should be ‘held lightly’ (personal communications with Daniel Wahl, 2022) depending on changing contexts and increased knowledge of those contexts.

5.2.3 Limited Availability of Literature at the Onset of the Study

At the onset of this study, in October 2019, the availability of literature dedicated to RHE was limited. Through this work, I have contributed to the increasing body of knowledge around RHE. However, to begin this PhD research, choices were made regarding which major sources of literature to use to establish and expand the emerging literature on RHE. The choices presented in this thesis were made after consulting the supervising team and the available literature on regenerative sustainability. I hope that other choices and fields could provide additional, conflicting, or challenging insights into RHE design and enactment. Because RHE is still emerging, more scholars, including those from non-educational science backgrounds, could cross academic boundaries

⁴⁴ Indeed, a substantial number of the references in this thesis do not come from educational scientists but rather from anthropologists, designers, sustainability scholars, psychologists, and others.

and use their perspective to further inform RHE. I am particularly interested in what the arts (in the broadest sense), indigenous forms of knowledges, and psychology may add to this emerging discipline. What is – to me – clear when examining the emerging scholarship of others like the latest paper of Lopes Cardozo (2022) is that there is much more about RHE that remains unknown. However, what they and other authors show is that there is still a necessity to deepen the identified design principles for RHE as well as potentially expand the set to include others. For example, mindfulness plays a particularly strong element in Lopes Cardozo’s work (2022) that may be a potential design principle or practice to bring with you into RHE.

5.2.4 *(Personal) Research with a Disabled Body*

Part of this thesis was conducted in an autoethnographic, personal way, which typically involves engaging with the direct lived experience of the scholar as a valuable form of data (Ellis & Bochner, 2016; Schouwenberg & Kaethler, 2021). In this specific case, the experience was conducted through a disabled body (ankylosing spondylitis, ADHD, and autism⁴⁵), and the experienced pain from living with disability was used as a cue for capturing (additional) field notes. Thus, a large degree of subjectivity can be found in this thesis.⁴⁶ This was by design because it provides a rich way of engaging with the ‘how’ questions representative of the knowledge–practice gap from which this thesis departed. However, I acknowledge that most educators working in HE are not disabled. In fact, it is notoriously difficult for disabled people to be employed, even at universities (Nature, 2021a; Nature, 2021b; Schloemer-Jarvis et al., 2021). Part of the difficulty also lay in dealing with research as a disabled scholar, which as chapter 3 highlights, was quite painful (literally) at times. My lived experience of living with chronic pain also implies that my experience is perhaps significantly different from that of other educators in similar situations, even beyond a general difference in individual experiences (Barnett & Jackson, 2019; Kaufman, 2020) therefore, an able-bodied researcher

45 Within the autistic community, autism is not seen as a disability but rather as a different, valuable way of experiencing the world. I concur with this position.

46 I would also like to acknowledge that at times throughout this process, I did not exercise enough self-care to give my body the space, time, and love it needed to function properly. This was largely fuelled by an intense lived sense of shame for being disabled and, through that, a burden on my interpersonal relations, larger society, and the world. If I ever supervise disabled researchers, I intend to take an active role in guarding their well-being.

may have found different results. However, throughout the thesis, I spoke with many educators at different universities (of applied sciences) who seemed to relate to my (preliminary) insights. Furthermore, several able-bodied teachers were involved in the research as participants and reviewers throughout the process.

To reduce some of the methodological limitations of engaging with research as a disabled scholar, community members were frequently included throughout the process and in line with best practices for autoethnography or (more generally) personal research (e.g. Ellis & Bochner, 2016) to review ongoing reflective blogs and other materials that emerged from the study. Furthermore, the writings constituted both direct observations from myself and artefacts from the field research. For validation, the drafts for the empirical chapters were also shared with those who were (in)directly involved, including more than 20 people for each study for a period of two weeks per chapter. Finally, the data in different chapters were analysed by multiple teams to reduce individual bias. The main conclusions for the thesis also involved triangulation of the results based on the experience of other educators engaged with RHE (chapter 3), on my experience in designing and enacting RHE (chapter 4), and on the experience of students navigating RHE (chapter 5). This triangulation lends further validity to the findings.

5.2.5 *The Generalizability to Education*

From the methodological stance through which I approached this research, generalizability is perceived differently than in more mainstream, positivistic, approaches to science (Schwartz-Shea & Yanow, 2013). In the context of this thesis, generalizability is seen as the research's relatability to others in similar contexts (Ellis & Bochner, 2016). In other words, can other scholar-practitioners engage with the research in ways that contribute to the further development of their practice, without the research imposing the uniqueness of the context from which it emerged? Alternatively, generalizability for this genre of research asks if other scholar-practitioners can engage with the 'how', 'why', and 'what' of RHE through this research. This perspective acknowledges that the research was performed in situatedness that may not be 'generalizable' in the more traditional sense. I do not seek this kind of generalizability or consider the lack thereof as a methodological weakness. In this sense, examples of generalizability have already been directly observed, such as the podcasts created in the second chapter, which acted as the impetus for educational innovation at the University of Amsterdam, where a new course, *Doing Diversity*, has been launched and designed

according to the practices presented in my podcast (Personal Communications, 2022). Furthermore, The Regenerative Education Podcast was used by the Rotterdam University of Applied Sciences Business School's faculty for professionalizing and reshaping their business education (Personal communications, 2022). Moreover, the built environment cluster (civil engineering, spatial design engineering and architecture) at THUAS have committed to moving towards RHE.

5.3 Discussion of Scientific and Societal Importance

5.3.1 *Scientific Relevance*

This work contributes to science in two ways: 1) advancing our understanding of how forms of RHE can be designed and enacted, and through that, what RHE entails, and 2) making methodological contributions in the realm of creative research methods and design-driven (auto)ethnography.

When this research began, the literature related to regenerative forms of HE was lacking, and the limited available work was almost entirely conceptual. While significantly more research is needed in, on, and for RHE (see recommendations), some empirical research is now available (e.g. Lopes Cardozo, 2022). This thesis contributes directly to this need by adding to this emerging empirical body of work. In this regard, the thesis shows not only that there is space to move towards RHE but also that there are flourishing innovative niches where RHE is (partially) being practiced. These are, unfortunately, still pockets of resistance that require significant increases in institutional support for systemic change to occur. In other words, the main challenge for the further emergence of RHE is both spreading awareness that such forms of education are a possible response to socio-ecological climate crises and ensuring that the contexts exist for educators to engage in this meaningful and regenerative work.

Second, the research indicated that some institutional, policy, and systemic resistances stand in the way of RHE, such as how education is designed and funded in small, hyper-specific, and pre-specified courses. However, it also indicated that most resistances to doing RHE are of a personal or cultural nature. From a relational viewpoint, these resistances always take the form of an interplay and dialogue across multiple system levels. Nevertheless, the identified resistances may provide leverage points for interventions and, thus, follow-up (action) research.

Methodologically, this research made four contributions: 1) exploring the uses (and abuses) of podcast-based inquiry for (activist) research, specifically within HE but with possible implications for other topics of inquiry; 2) combining narrative analysis with systemic co-design and exploring real narratives in a multi-level context to gain a deeper understanding of how changes in complex systems like HE are enacted, slowed, or stopped; 3) incorporating disabled bodies into DDAE – in this context, autism, ankylosing spondylitis, and ADHD – as diverse and inclusive ways for disabled scholars to present voices that may remain unheard or are much harder to sense for able-bodied researchers; and 4) further developing interpretative phenomenological analysis (Smith et al., 2009) and combining it with creative methods (Kara, 2020) as an approach to gain deeper insights into lived transformative experiences beyond those gained by more traditional methods, like (semi-structured) interviews.

Finally, this thesis, as well as the methodological choices behind it, present a gentle way of disrupting academic practice. Indeed, many who are reading this may – by convention – assume a doctoral thesis (in the Netherlands) ought to include four published papers that have been ‘stapled’. However, this is nothing more than a convention – there are no regulations or laws that formally require it – and it has been subject to much debate in the ongoing well-being crisis amongst graduate students (Attaye, 2021; Bont, 2018). I departed from this convention because I do not consider the publication of papers to be the only way one can or should conduct science, especially in the context of applied doctoral research. In doing so, I have embraced a multi-media approach to this dissertation that – in line with other creative approaches across the world (see Kara, 2020) – may prove more useful for changes in educational practice. This impact on practice – and in turn on my ‘becoming’ as a researcher – was not limited to the publication of peer-reviewed articles, papers, and chapters alone. Instead, it took the form of a rich engagement with practice throughout the research. While I do not wish to insinuate there is necessarily anything wrong with ‘traditional’ theses, I do believe that the state of the planet as outlined in chapter 1 calls for a different planetary response to engaging with research – including the doctorate – that prioritizes making a change beyond the academy.

5.3.2 Societal Relevance

The research was initiated from a clear knowledge–practice gap. The commitment towards bridging this gap was represented throughout the thesis in the methodological choices that leveraged real-world engagement and change – by way of research through

design. Throughout the research process, practice-based approaches were leveraged for research and dissemination (including 27 podcast episodes that were downloaded over 5000 times (as of November 2022); participation in other podcasts with global reach, including the Future Learning Design Podcast; and frequent participation in keynotes and workshops, like the National Conference on Circular Economy [2020 and 2021] in the Netherlands and the Dies Natalis Symposium of the Wageningen University and Research [2021]). In part, the tripartite role I navigated throughout the research played a part in the relative success achieved in public engagement for this research, as my role made it easier to network and share my work.

During the PhD, the work was directly impactful through the hosting of five educational (re)design workshops at different universities (of applied sciences) in the Netherlands – with more planned for 2023. At least one new master’s programme was initiated because of this work, as well as an elective at the master’s level. On a more indirect level, the research indicates a possible direction, one that is already emerging in practice, for universities to transform their education to contribute meaningfully and actively to socio-ecological climate action. In doing so, universities can live up to their moral obligation to serve as places of learning, with an orientation towards the future for all life. This pressing societal need is rapidly being acknowledged by more and more educators and educational institutions. This work thus responds directly to calls to transform the HE status quo to contribute towards more sustainable futures (e.g. Wittmayer et al. 2021;). I hope that this thesis can help in the formation of ‘narratives of change’ for universities in the context of climate action.

5.3.3 Recommendations for Educational Applications

The most important educational insight that this thesis can provide is that transforming educational practice to act as a regenerative force and connect locally with STs and personal transformations is (already) possible (at least in a Dutch - Western European context). Very real⁴⁷ systemic resistances make doing so challenging and, in some cases, likely impossible. However, educators must remind themselves that anything that has ever been designed – and, in this case, continues to be re-designed and enacted – can (at least in theory) be re-designed, no matter how difficult. The different educational tools, questions, and identified resistances herein can be used by educators and educational design teams to (re)design their own HE for regenerative

47 Real in the sense that they are experienced as such, not in a more-than-material way.

action. The greatest resistance that must be overcome to begin engaging with regenerative forms of HE is personal. As the results of chapters 3 through 5 show, engaging with RHE can require a significant amount of courage, and the process comes with no shortage of (self-)doubt. A collection of all RHE invitations in this thesis can be found in Appendix E and F. These invitations can be used with the regenerative education design canvasses by educators to (re)design their own RHE.

5.4 Recommendations for Future Research

The thesis contributes to the emerging field and practice of RHE. While empirical contributions exploring RHE have increased, further exploration and experimentation are warranted. The main recommendations for follow-up research are discussed below:

1. **Exploring RHE across contexts and conducting meta-contextual studies.** Although this thesis contributes significantly to the understanding of how RHE can be designed and enacted, the understanding it provides is largely limited to a Dutch context – and within that context a small subset of contexts. Similar experimentation ought to be conducted in various places, countries, and cultures, and meta-studies should be performed across these contexts to identify whether different contexts cause significant changes in RHE practices or the impediments that are faced when engaging with these practices.
2. **The further development of dedicated RHE design and navigation tools for educators.** While this thesis has begun developing tools through the REDPT, further tools for the entire (re)designing phase of RHE (i.e. from ideation to prototyping), as well as navigational tools to analyse and reflect on the designs in practice, are sorely required. This thesis took the first steps in this process; four co-design sessions were hosted using the REDPT and a first iteration of a deck of RHE design cards was made. However, development of these tools is still in its infancy. A toolkit to guide this process should be created for use by educators without the interventions of (external) facilitators so that multiple forms of RHE can flourish across universities.
3. **The (further) development of dedicated regenerative pedagogies and tools for students to engage with RHE.** Dedicated pedagogical tools that help learners navigate the transformational work of engaging with RHE are also required. Furthermore, these tools could be used to unravel the

psychological processes and developments that students undergo as they address urgent and relevant transition challenges within regenerative forms of HE. The tools should be designed in ways that support the personal transformations students may experience in the challenging work in which they are asked, or invited, to participate. It could be particularly interesting to explore more process-oriented perspectives and worldviews, such as those of Kintsugi, the Koru, and Ubuntu, who strive to participate with the (natural) world instead of exercising dominion over it.

4. **The creation of communicative educational materials to make these practices, and the ecological ethos that underpins them, more accessible to educators, administrators, and decision-makers in (higher) education systems.** Much can be learned from the arts and from investigative journalism to create accessible communication materials that could allow educators to become acquainted with regenerative practices for HE. Dedicated professionalization courses as well as massive open online courses aimed at educators could also be developed. Separate courses and interventions are likely required for educators, students, and administrators of RHE; thus, each demographic represents a potential area of further research.
5. **In-depth studies on how ‘nurturing supportive innovation systems’ (see chapter 2) can be co-created within formal HE institutions, including the creation of tools that may aid educational administrators and policymakers in engaging with this transformative work.** One of the major opportunities for interventions was identified at the systemic levels above educators (e.g. educational managers, faculty directors, board of directors, policymakers). These stakeholders wield significant power over HE culture and practice. What drives these individuals to act or not act in regenerative ways, as well as what impedes them in acting on their intentions, must be identified and used to create dedicated training sessions and tools that could help them play an active role in transforming HE.
6. **Systemic co-design studies on the leverage points of HE systems for removing institutional and policy resistances to the further flourishing and transformations of universities for regenerative sustainability.** Complementary to recommendation (5), a rich and emerging field of systemic co-design may offer useful ways to identify and pressure the leverage points of HE systems to create the conditions conducive for RHE to flourish. While the majority of RHE happens in educational practice, the level of policymakers is particular interesting for intervention as here the

conditions that may enable or resist RHE are enacted. This could connect with larger policy movements at the level of the European Union – for example, towards a green transition.

7. **Collaborative and boundary-crossing research into RHE inviting insights across disciplinary fields.** While I have attempted to take a transdisciplinary perspective to the concept of RHE and more broadly this PhD. There is a limit to the breadth of fields, perspectives, knowledges, and disciplines that can be explored from a single PhD thesis. In the Netherlands steps are already being set in the form of a community of practice that brings together a broader and more diverse array of viewpoints that is starting to shine a light on alternative, conflicting and additional RHE insights. However, there remains much space for creative, collaborative, and critical engagement with RHE from a variety of viewpoints like the arts, psychology, sociology, design, and indigenous sciences.
8. **Longitudinal studies into the above recommendations, particularly those engaging with RHE's effect on individuals and systemic transformations.** The research performed thus far explored a relatively short period of active engagement with RHE. A developmental, longitudinal perspective of the types, qualities, and emergences of transformations from such educational engagement may provide stronger evidence for the potential of RHE to meaningfully change university education and the participants' relationships with the broader world. Furthermore, such a perspective could inform long-term policy and educational innovations that could not be discovered with short-term forms of inquiry. Following teachers on their journey towards RHE in such ways and longitudinally exploring the dynamics of their practices and (world)views would be particularly interesting.

5.5 Final Words – An Expression of Hope

At the beginning of this research, few (scientific) articles had investigated RHE, and RHE remains in a process of emergence. As this thesis shows, however, RHE in practice is flourishing in certain niches. It is true that I have faced moments of hopelessness and languish in the process of completing this thesis, but I think that such an experience is common for all those engaged with a PhD. Nevertheless, regenerative education, this thesis, and all the work that went into and emerged out of it are expressions of hope that alternative, life-affirming, healing, and regenerative practices are possible for universities. While, in a way, this thesis represents the end of a journey, I consider this end as merely a stop to share my story before preparing for the next voyage. On a personal level, I carry a commitment to further design, unravel, understand, and critique (non-)regenerative forms of (higher) education that can help participate in the transformation of the human presence on the planet, as well as our relationships with each other and the rest of the (living) world.

Multiple times throughout this journey, I have been asked what my vision is for RHE. Here it is: I hope that this work, and that of others, helps transition HE across the Netherlands and beyond so that, by 2030, it will be standard practice for students to engage with regenerative forms of education in their educational journey. In my small way, I hope that this thesis can act as a seed of sustainable change for all those who have been, or will be, touched by it. For educators, happy sailing. Thank you for reading.

Education as Nature: Leveraging 3.8 Billion Years of R&D
With Dr ir.² Laura Stevens



Reflective Questions:

- *How are you actively inviting nature and her wisdom into your education?*
- *How are you actively nurturing cultures of cooperation within your course and with local places?*

Resources

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Acknowledgements

I strongly believe that this dissertation is the result of relationships with a multitude of people who have dedicated parts of their life to help lead me towards and on this path. While I cannot shine a light on all of them, I would like to thank them all from the bottom of my heart for their energy, passion, and constructive criticism.

My Family

I would like to start by thanking my family, especially my *mother (Mariska)*, *father (Marcel)* and *little sister (Elisa)*. Being the first of my direct family to go to university, and subsequently the first to have completed a doctorate, their support throughout my life to engage with my (intellectual) interests has been paramount in shaping who I am today. Particularly, my mom, who as the only neurotypical person in our household has had her share of struggles and has, through her relentless pursuit in nurturing my interests and curiosities, played a pivotal role in enabling me to write this thesis. Without all your warmth, care, and love in the house, especially in times of difficulty with health, I could have taken a much more destructive path. Even when you complained about how long the PhD process was, since you had no frame of reference nor fully comprehended what a PhD entails (I especially cherish the 'Yeah, duh, of course that makes sense' and 'oh, you are only looking at university education? That seems a bit limited?' type comments throughout this time), the love, banter, and support that you show(ed) play(ed) a massive part in keeping up my spirits and motivations to complete this work. I remember one moment vividly, when I told my family about the defence of the PhD and basically told them it would not really be worth their time as they would not understand most of it, and it would be quite far to travel for a relatively short moment (the travel time was about five times longer than the defence). The first response from my sister was, 'If you want us there . . . we will be, sometimes just being there for someone is all you need to do'. This is the way we show love to each other, not with words, but with actions.

In this time, I sadly lost *my grandfather (Piet)* and *grandmother (Nettie)*. They have always been supportive of my (academic) ambitions and have fervently and proudly shared my academic journeys—at least what they could understand—with their neighbours, friends, and anyone who would listen. My grandfather, who cared for his disabled wife for over 50 years with a stoic wisdom, may very well have been

the strongest man I will ever meet (having been a pretty good strongest man and powerlifter, that is saying something). He showed me that there is great strength in caring. The lesson he shared in caring for my grandmother is one that guided this research and that lives on entangled through me. I love you all.

Supervising Team

Kim, I do not know where to start. When I met you, both of us were relatively fresh at a new university, in new positions. I know I was intimidated to meet you; I vividly remember making sure I wore something that at the time I considered professional (an ill-fitted vest with a black t-shirt). Luckily, the intimidation was misplaced as it was a bit like meeting a kindred soul. Your presence instantly captivated me. I still am, at times, intimidated by you, but you have never stopped being someone I learn from. I hope that through this process, I have shifted from learning from you to learning with you. I am glad that I met you then, but I could not have predicted the journey that would have unfolded from there, nor how much our stories would become entangled! In that time, you grew into your role as professor of circular business, beginning and completing numerous research projects that have created societal and scientific impact. Of course, the most exciting of these was the *leadership for the circular transitions programme*, but I am clearly biased⁴⁸. During this time, I have had the privilege of seeing you become your professor-self, and I am inspired to now see how you engage in welcoming, and helping guide, new professors joining our community. It has been one of the great honours of my life to have been under your academic wings for those years, to have been under your temporary care, helping you where I could but mostly learning a lot. You have taught me not only how to be a researcher but also how to be a better, kinder, and more inclusive human being. I will never forget your eye for the aesthetic and the power of beauty for sustainability and regeneration, or your passion for (gender) equality. While it is now time for me to spread my wings, so to speak, and hopefully soar, there is nothing more powerful or truthful than I could say than *I hope our paths cross again; I hope our stories interweave again*.

Arjen, I remember when I first met you, which was at the Lighthouse Café of THUAS. Kim and I stole you away from those that were going to host you to get acquainted. I

⁴⁸ We developed this programme together, and it was the first of its kind anywhere in the world, crossing the boundaries of 10 organizations to connect students all over the Netherlands with transition challenges.

was nervous and a bit starstruck, which for me is a weird and rare experience. I remember this feeling vividly, because Kim even commented on it: *'It's kind of adorable to see you nervous, Bas'*. We were sitting in one of the small meeting rooms of the café at THUAS, and the two of you were throwing around complex academic words like *epistemology* that, at the time, went straight over my head. I remember being struck by your caring and kind attitude which showed even during that short, 45-minute meeting.

I do not have the words to thank you for the warmth you have shown throughout my journey of becoming a scholar. Before I started this PhD, you didn't hesitate to invite me to join in a physical get-together of your current PhD students at the WUR (right before the first lockdown). I was very late to this meeting, as I hadn't been in Wageningen in a long time and had gotten so used to living in the Randstad, where most universities are walking distance from the train, that I had walked from Ede-Wageningen station without thinking 'maybe this is farther than I am used to'. Now, several years later, I still don't understand why it's called Ede-Wageningen station. But what was characteristic of your approach as a supervisor, and I'd say as a human, was kindness. You didn't mind I was late; you understood mistakes happen.

During a break of this get-together, we were standing in line to get some drinks in the cafeteria of the Leeuwenborch, and we discussed some of my concerns about the academic system that were discouraging me from walking down this path. As you know, I am quite critical of the industrial academic system, particularly the PhD. I still believe that the format of the PhD is focussed too much on producing academic output and not enough on impacting society, although I like to think we found a decent balance in this thesis. I don't know if you remember, but the seemingly small thing you said as we stood in that line waiting for a soda was the final trigger for me to give it a go: *'Sometimes we work for systems, but sometimes, we can get systems to work for us'*. Particularly, I was willing to give this process a go with you. I cannot imagine having completed this work under the supervision of anyone else, and I owe you a debt of gratitude. Thank you.

Ellen, you were always there for me when I needed to have a chat, or when I was getting frustrated with the process. You were also there to talk about methodology and the importance of methodological clarity, soundness, and quality. While I may not have agreed with all of your methodological feedback throughout the thesis, I am extremely thankful for your critically caring voice. While I believe that all three of the promotors shared a commitment to nurturing me in becoming a scholar, with you it always felt like you truly wanted me to have and use the gift of time and slowing down during

this journey. I may not always have listened to your wise advice in this regard, but I can promise that I will carry your wisdom with me in my future scholarship and leadership. You embody a unique combination of providing constructive critique in ways that show that you deeply care about quality and a person. Perhaps, therefore, you always sensed when I was frustrated with the process of the PhD or life more generally, and on several occasions purposefully made time out of your busy schedule to check my concerns. I vividly remember after one of our regular PhD update meetings with the supervision team that you stayed behind after Arjen and Kim had already left and (correctly) guessed that I was struggling. I also know that while your involvement throughout this thesis was a bit less direct, as agreed, you held my research, and my becoming a scholar, with a warm place in your heart. Thank you.

As I am writing this, I cannot remember who said it or where I read it, but it was something along the lines of *'Good PhD supervision is about catapulting your students beyond where you could have gone'*. I would like all three of you to know that this journey with you has truly felt like that. Throughout this journey, you have given, and recommended, me opportunities beyond the realm of possibility for most PhD students. Some notable examples of this include being a keynote speaker at the National Conference on Circular Economy (2021); a speaker at the Dies Natalis Symposium of the WUR (2022); booking more than 10 public speaking engagements, including on national TV (*'Helden van het Onderwijs'*, 16 April 2022); being nominated for the 'Duurzame Jongeren Top 100—2021'; and being elected Fellow of the Royal Society of Arts and Sustainability Educator of the Year 2021 in the HE category. I consider myself lucky to have had you as my supervising team. Your continuous but kind invitations to go for another layer of analysis, to take that (intellectual) risk, are, from my perspective, life lessons. There is no greater or more sincere compliment I can give you collectively than that I would recommend anyone considering a PhD to do it under your caring supervision. I don't know if I will continue along the academic path. But, if I ever reach the point where I get to supervise others in similar journeys, please know that you have been excellent and loving guides.

My Colleagues

Oh, my dear THUAS and Mission Zero colleagues, who have enabled me by trusting in this work and helped create the conditions to work on it—I don't think I can put to words how much this partnership, and community, has meant to the realization of this thesis. In the years of my PhD, I have taken a non-conventional path, by and large

completing this work engaged as a teacher, researcher, and administrator. While this came with many challenges, I also feel that because of this combination, I was able to learn much more than ‘just to become a researcher’ from this process. Over the years, your grace and collaboration has allowed me to grow as a person, a leader, a scholar, speaker, and as an angel of change. I was able to write and successfully manage funded research projects, start, and nurture consortia and strategic collaborations, help (in a small way) build a research group (circular business) and a centre of expertise (Mission Zero), and even temporarily coordinate our collective craziness. While this latter job wasn’t for me long-term, and I am now much happier, and I’d say meaningfully impactful, as a teacher-researcher rather than an administrator, I am eternally grateful for this unconventional path. The experience the last few years with you all remind me of a poem by the Spanish poet Antonio Machado: ‘*Wanderer, there is no path, the path is made by walking*’. Thank you for allowing me to wander.

Of course, I also want to thank my extremely supportive colleagues, without whom this thesis would never have materialized, specifically my colleagues in the Mission Zero centre of expertise, *Sander, Nathalie, Anja, Baldiri, Karel, Mirjam, Rizal, and Katinka*. I would also like to shine a light on *Rolien*. Thank you for coordinating our research centre which such grace and care and thank you for the frequent chats when we were slightly fed up with the rest of the organization. I hope that I did you justice when I temporarily stepped in your shoes. I still think you are crazy for liking the job so much, but I am happy that you do. The centre is in extremely capable hands with you.

There is one more person whom I cannot forget. *Christine*, you and I met three-and-a-half years ago when I wasn’t sure yet if I wanted to stay within education or how (if) I could have an impact within education. With you, I have co-designed the strategic vision and mission of the research centre Mission Zero. For all your lessons, your undying support, the laughs, the dinner dates, and the cheeky jokes, thank you.

Outside of the Mission Zero management team, I would also like to express gratitude to *Wianda* and *Gabriela* for the partnership over the last years of the Mission Impact course, without which this thesis would not have been possible. Without the financial commitment of the Industrial Design Engineering programme, this PhD would have been very different indeed. Additionally, my faculty directors *Nellie, Simone* and *Deborah* supported me in times of need and celebrated the highs with me. I would also like to express thanks to *Laura*, colleague, friend, and one of the few people I know who is crazier about the natural world than me. Outside of my direct colleagues

at THUAS, others left a lasting mark on my becoming a scholar. For various emotional, methodological, spiritual, and other types of support, I extend gratitude to professors *Laurence, Naomi,* and *Jacco*, as well as the members of the circular business research group. Finally, I would like to acknowledge the mentoring of *Mark* who introduced me to research in the chemical engineering labs and who has become a true friend for life.

The Expertise Network Systemic Co-Design

As is natural when one journey ends new ones begin. The last few months of my PhD journey I have had the privilege of becoming a member of the SPRONG research group about systemic co-design. An extra-university group of design, systems, and transition scholars with a passion for making the world a more just and sustainability place. Beyond being a community with whom I am learning a lot, including about myself and my aspirations. It is a community in which I have felt welcomed. I consider it an honour to be a member of this network and experiencing the joy of exploring new ways of being a designer to make the world a better place with you all. Thank you, *Petra, Emma, Frank, Joep, Youetta, Remko, Guido, Wina, Jurg, Peter, Thomasz and all others.*

Students

Many students (such as *Joeri, Tim, Eefje, Dana, Dino, Mari, Vladimir, Luciana, Ping, Nicolas, Marieke,* and *Elke*) have been deeply involved in the realization of this thesis, playing a part as participants or temporary co-designers. Many of these I now consider friends and some I am lucky enough to call colleagues. I hope that you all, including those I cannot name, realize, and feel my intense gratitude for your support, participation, and help. I greatly enjoy seeing you all flourish through continued studies and change-making in a variety of transitions towards a more sustainable world.

Friends

Throughout this journey, even though they really didn't care much for or understand the research I was engaged in, I could rely on a close group of friends to distract me and lift my spirits whenever needed. In times of a global pandemic, this was quite often. There is something powerful about being able to go on bike rides, throw some

axes, or simply log onto Discord to play some games after a busy and stressful day. I don't think I could've completed this thesis without such a supportive community that, importantly, didn't take my work too seriously. I believe this played a part in not getting swept away by the PhD process and turning the PhD into the entirety of my life, and it kept my feet firmly on the ground as I went from one podcast to the TV studios. It feels like the universe has planned our trip to Croatia just before I defend this. Love you all. Thank you, boys.

External Colleagues

I also want to thank external partners and guides whom I have met along the way, such as *Antoine* and *Dianne* from Het Groene Brein, *Else* from Greenport West-Holland, *Irmgard* and *Harrie* from I'm Binck, *Judith* and *Evelien* of Accez, and the entire regenerative education community of practice that we built during this journey (*Michaela*, *Mieke*, *Koen*, *Debbie*, *Daan*, *Naomie*, *Marlies*, *Linda*, *Rosanne*, and *Roosmarijn*). Finally, I would like to thank *Daniel Wahl* for initially providing the academic catalyst that set me on this path and for walking parts of this path with me.

I'd like to highlight the restorative walking chats with *Nina*, a fellow PhD student, education nerd, and friend who I'm sure will defend her own thesis soon. When I started on this journey, I didn't expect to come out of it with a great friend, but that's what happened. I love our talks, I love our walks, and I love our friendship. Thank you for your support, and I look forward to our next walk. Perhaps we'll be able to do a proper hike someday. I am still excited about our idea of going on a hiking-writing retreat where we spew out all our crazy ideas.

Guests of The Regenerative Education Podcast

A big part of this thesis consists of The Regenerative Education Podcast, and without the guests, this would have been impossible. I cannot thank you enough, not only for your participation, but also for your grace, generosity, and kindness in sharing your time, practices, and stories with me to weave into this thesis.

Finally, I would like to thank the reviewers and the thesis committee members for the time and effort they placed into their work.

About the Author

During his PhD, Bas van den Berg worked as teacher, researcher, and member of the management team of the Mission Zero centre of expertise at THUAS, the Netherlands. In this time, he was primarily responsible for the relations between the centre and the educational programmes, but he also contributed as acting general manager and co-created the multiple-year plan. In this time, he also helped guide the centre successfully through an external visitation and internal evaluation. Furthermore, he was the principal investigator for the leadership of the circular transition talent programme, as well as the national hackathon circular economy, which are now in their



ABOUT THE AUTHOR

second and third iterations, respectively. Additionally, he was actively involved in public science and engagement, a passion that he intends to continue exploring. During the time of this research, he was nominated for the DJ100 (2021) was elected the royal of society of the arts, named the Sustainability Higher Educator of the Year 2021 in the Netherlands and 'hero of education' by SBS6.

Bas currently works as Senior Researcher/Assistant Professor in Regenerative Education for Systemic Co-Design at THUAS (in an expertise network that also includes Inholland, Rotterdam, and Utrecht Universities of Applied Sciences). And as senior policy advisor sustainability in education where he leads the development of the sustainability policy for THUAS. He continues his mission of transforming HE to actively participate in transitions towards a kind human presence with life on Earth. Towards this purpose, he is also working on a number of books for educators aimed to help them transform their practices. He is also looking forward to further fruitful collaborative inquiry with the Dutch community of practice on RHE. In his free time, he enjoys participating in creative arts workshops, vegan cooking, nature retreats, hiking, and lifting weights.

Appendix

Appendix A – Consent & Information Form

Dear [GUEST_NAME_HERE],

I'm excited to get the chance to chat with you soon for our scheduled podcast episode on [DATE_HERE].

Here are just a few tips and suggestions to ensure we both get the most out of this time together:

- If you have one, please be prepared to use a podcasting microphone for this interview.
- If you can't do this, please use a set of earbuds like the ones that come with your smartphone. They provide higher quality sound than your computer's native microphone.
- Please be in a quiet room for our call where you're not likely to be interrupted. Ideally this is NOT a conference room or other large space with a lot of hard, flat surfaces. These create more echo and reverb than a smaller space with things like a couch or other soft surfaces.
- Please turn off your cell phone and notifications on your computer for our call.
- Our call will last approximately 90 minutes with time for a bit of prep ahead of the interview and to wrap things up at the end.
- Please note that the software only works in the CHROME browser.

Here are the topics that I'd like to cover during our interview (also see the structure of the final episode below for an indication of the questions). We'll likely digress a bit, but this is a general feel for where I'd like to take things:

- The story of your education that connects to sustainability, regeneration and/or place.
- What this experience was like for learners and the impact it had on you and your students.
- The barriers and opportunities you experienced during this story.
- Your vision of higher education in 5-10 years based on this story.
- A metaphor that represents the purpose of your education.

I suggest you prepare your thoughts and answers based on the above topic in advance, as it will improve the quality of the recording.

I will follow up after our episode and ahead of when this episode will go live to provide you with a link to share our episode and some social media assets that you can use to best help promote your episode. If you have any questions or need anything ahead of our interview, please let me know here via email. Thanks so much and looking forward to talking on [\[DATE_HERE\]](#).

Warm regards,

Bas van den Berg

Please note that this gives a generalized overview of the structure of an episode of The (Re)generative Education Podcast.

Metaphor Tease (2 minutes or less):

Each episode will open with a metaphor that you will use in the podcast episode to describe your higher educational practice.

-----MUSIC INTRO (15 seconds or less) -----

Introduction: Hi and welcome to *The (Re)generative Education Podcast with Bas van den Berg*, where we talk to leading higher educators that connect their education with sustainability transformations. In each episode, we will explore a story of inspiring and purpose-driven teachers who are challenging our conceptions of education in times of profound societal and systemic change. Thank you for listening and enjoy the podcast.

-----THEME SONG (10 seconds or less) -----

Expert/Topic Introduction (10-15 seconds): In this part I will introduce you as a guest, If, there are specific parts, books, articles, videos and such you'd like to be mentioned here please let me know. I will base this on materials supplied by you and/or what can be found online based on your digital presence.

Interview, Part 1 (5-10 minutes).

- How would you describe your education that connects Higher education to place and sustainability/regeneration?
- What is a week in this education like?
- How did you become involved with this education?
- How did this education become reality?

-----THEME SONG (10 seconds or less) -----

Interview, Part 2 (5-10 minutes)

- What is it like to be a learner in this education?
- How has this education impacted you and the other learners?
- How would you describe this as metaphor?

-----THEME SONG (10 seconds or less)-----

Interview, Part 3 (5-10 minutes)

- What are the most important mechanisms and qualities that make this type of education work?
- What were the (systemic) challenges you face(d) and opportunities you explore to do this?

-----THEME SONG (10 seconds or less)-----

Interview, Part 4 (5-10 minutes)

- How would you describe your educational dream in 5-10 years?
- What is needed to make this hope new educational reality?

Thank you to the guest for your time and energy today.

Show Goodbye (15-30 seconds)

That wraps up our show for today. Thanks for listening to The Regenerative Education Podcast with your host Bas. If you enjoyed this episode, please share and subscribe. Till the next story!

-----MUSIC OUTRO (15 seconds or less)-----

Appendix B – Visual Summary of Season 1 of The Regenerative Education Podcast

SEASON 1

on Spotify, Google and Apple Podcast

29.08.2021

Ep.9 - There is No Transition without Transformation
 In this chat Maria Garcia Alvarez proposes a value-based approach to engaging with regenerative sustainability. She argues passionately for a re-association of our relationships with the rest of nature. She offers us a new paradigm for education that is not just about preparing students for life. To help us learn to care for and steward the ecosystems of which we are part and expressions. From Maria's perspective, reweaving this connection is the principle challenge of the ecological university.

Ep.1 – Desjigging Regenerative Education

In this chat Dr. David Griesbach asks whether for a shift from education as problem solving and becoming locally returned to the uniqueness of place, we need to be able to act in the face of dynamically changing contexts. He sees the heart of regeneration as integrating human patterns with conditions of nature. He argues that following the patterns of life can allow for education to play an active part in restoring this connection. This, he argues, is a destination without arrival.

Duration: 1:00:58 | | Language: English

Ep.2 - Education as Life-Affirming Practice

In this chat, the co-hosts explore what life-affirming practice means in the context of higher education. They discuss the importance of being present in the moment, and the process of allowing life to inform, rather than being driven by it. And a clear intention from educators to bring their own humanity to the table. They argue that following the patterns of life can allow for learning environments that are more empowering and more collaborative. They also discuss the importance of and make practice play in a collaborative process of reimagining.

Duration: 47:17 | | Language: English

Ep.3 – Planting Seeds of Change

In this chat, the co-hosts explore the role of educators in helping to plant seeds of change. They discuss the importance of educators to help more society towards a trajectory of life that is just, equitable and sustainable for all humanity. They also discuss the importance of educators as a designer and enactor of structures that support learning that can be gained from the context, contexts that we have our environment.

Duration: 48:17 | | Language: English

Ep.4 - Education, Complexity and Societal Change

In this chat, Professor Dr. Domenico Dattoma argued for the importance of cultivating the relating process so that learners can engage with the complexity that comes through this process. He discusses the importance of educators to be present in the moment, to be curious, and their relationship to systemic sustainability as central in the relating process. He proposes an ecological approach that moves students to act as co-learners in creating a just change, with the potential for co-creating.

Duration: 52:26 | | Language: English



Ep.8 - Imagination, the Beautiful & Play

In this chat, professor Dr. Kim Bullard makes a passionate case for the regenerative work. She argues that this requires an experiential and embodied approach to education. She discusses the importance of play and imagination in learning environments. Playgrounds in which alternative, more regenerative, futures can be identified, tested and brought into being. Kim sees the challenge that we face as one that requires us to learn towards a regenerative society.

Duration: 35:48 | | Language: English

Ep.7 – Education as Nature-Learning from 3.8bn years or R&D

In this chat, leading biomimicist, Lara Stevens argues for leveraging the 3.8 billion years of R&D that life has used to create and co-design more regenerative. Human education is the way we design and teach university principles into the way we design and teach university education. In her own practice, she draws heavily on nature as a source of inspiration. She sees the purpose of education as being in service of the natural world.

Duration: 39:33 | | Language: English

Ep.6 – Social Construction and Relational Education

In this chat, Professor Dr. Catherine O'Connell argues for a designed social constructionist approach to bring together higher education and systemic change towards more regenerative. She discusses the importance of relationships in learning environments. She also discusses the importance of relationships with place, students and other learners.

Duration: 39:33 | | Language: English

Ep.5 - The University as Constructive Disruptor

In this chat, Dr. Meike Lopes Cardoso passionately for a more life-affirming approach to the university that places a focus on local transformation with deep critical thought and engagement. She discusses the importance of relationships in learning environments. She also discusses the importance of relationships with place, students and other learners.

Duration: 34:21 | | Language: English



Supported by Mission Zero Centre of Expertise

Hosted by Bas van den Berg

Illustrations by Mari Genova and Nicolas Landriani

Appendix C – Visual Summary of Season 2 of The Regenerative Education Podcast

SEASON 2 19.09.2021 on Spotify, Google and Apple Podcast

Ep.1 – Challenge Lab: Where Learners Lead and Leaders Learn

In this episode of The Regenerative Education Podcast, chat with Dr. John W. Bransford, a professor at the University of Wisconsin-Madison. He is the author of the book *Assessing Student Learning*. In this episode, Dr. Bransford and I discuss the Challenge Lab, major students engage with solving wicked social problems. He shares his insights on how to design a challenge lab that has recently been appointed to serve as the head of the Swedish NGO for Climate, Environment & Energy and The Free University of Amsterdam. We explore the principles and guiding collective learning processes in the times of wicked problems.

Duration: 45:37 | Language: English

Ep.2 – The Transformative Innovation Lab

In this episode of The Regenerative Education Podcast, chat with Dr. Peter Mery, a PhD student at the Institute of Ethics and Philosophy at the University of Applied Sciences in Germany. Here he discusses the transformative innovation lab with the University of Applied Sciences in Germany. He shares his insights on how to design a transformative innovation lab that can be applied in multiple cities across the country, all working on the same problem. We explore the principles and guiding collective learning processes in the times of wicked problems.

Duration: 43:16 | Language: English

Ep.3 – Purpose Driven Learning

In this episode of The Regenerative Education Podcast, chat with Dr. Peter Mery, a PhD student at the University of Applied Sciences in Germany. Here he discusses the purpose driven learning lab with the University of Applied Sciences in Germany. He shares his insights on how to design a purpose driven learning lab that can be applied in multiple cities across the country, all working on the same problem. We explore the principles and guiding collective learning processes in the times of wicked problems.

Duration: 38:04 | Language: English

Ep.4 – Learning With Soul in Amsterdam

In this episode of The Regenerative Education Podcast, chat with Debbie Keizer, co-founder of Soul.com and teacher at the University of Amsterdam where she teaches a course, Beyond Capacity Building Training that allow people to develop their soul-driven leadership capacity. She shares her insights on how to design a learning lab that can be applied in multiple cities across the country, all working on the same problem. We explore the principles and guiding collective learning processes in the times of wicked problems.

Duration: 33:00 | Language: English

Ep.9 – Opzoek naar de Speelruimte

In this episode of The Regenerative Education Podcast, chat with Dr. Peter Mery, a PhD student at the University of Applied Sciences in Germany. Here he discusses the search for the play space in the times of wicked problems. We explore the principles and guiding collective learning processes in the times of wicked problems.

Duration: 01:05:34 | Language: Nederlands

Ep.8 – Conscious Business Bewust Leren

In this episode of The Regenerative Education Podcast, chat with Dr. Peter Mery, a PhD student at the University of Applied Sciences in Germany. Here he discusses the conscious business learning in the times of wicked problems. We explore the principles and guiding collective learning processes in the times of wicked problems.

Duration: 50:33 | Language: Nederlands

Ep.7 – Leren in (living) Labs

In this episode of The Regenerative Education Podcast, chat with Dr. Peter Mery, a PhD student at the University of Applied Sciences in Germany. Here he discusses the learning in (living) labs in the times of wicked problems. We explore the principles and guiding collective learning processes in the times of wicked problems.

Duration: 46:30 | Language: Nederlands

Ep.6 – WeAreFundamentals of Education

In this episode of The Regenerative Education Podcast, chat with Dr. Peter Mery, a PhD student at the University of Applied Sciences in Germany. Here he discusses the fundamentals of education in the times of wicked problems. We explore the principles and guiding collective learning processes in the times of wicked problems.

Duration: 46:35 | Language: English

Ep.5 – Ubiquity: Educating the Whole Being

In this episode of The Regenerative Education Podcast, chat with Dr. Peter Mery, a PhD student at the University of Applied Sciences in Germany. Here he discusses the ubiquity of education in the times of wicked problems. We explore the principles and guiding collective learning processes in the times of wicked problems.

Duration: 52:33 | Language: English



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Hosted by Bas van den Berg

Illustrations by Mari Genova and Nicolas Landriati

Appendix D – Visual Summary of Season 3 of The Regenerative Education Podcast

SEASON 3 on Spotify, Google and Apple Podcast

03.10.2021

Ep.1 – Opbeiden voor de Oplossingen van Morgen

In deze aflevering van The Regenerative Education Podcast ga ik het gesprek aan met dr. Danielle Tworzy, hoogleraar aan de Harvard Business School. We bespreken hoe we ons kunnen voorbereiden op de toekomstige uitdagingen die de wereld voor ons in petto heeft. We bespreken hoe we ons kunnen voorbereiden op de toekomstige uitdagingen die de wereld voor ons in petto heeft. We bespreken hoe we ons kunnen voorbereiden op de toekomstige uitdagingen die de wereld voor ons in petto heeft.

Ep.2 – Onderwijs en Systeminnovatie

In deze aflevering van The Regenerative Education Podcast ga ik het gesprek aan met dr. Maria Leticia Bohm, docent-onderzoeker bij de MSc in Business Innovation aan de Universiteit van Amsterdam. We bespreken hoe we ons kunnen voorbereiden op de toekomstige uitdagingen die de wereld voor ons in petto heeft. We bespreken hoe we ons kunnen voorbereiden op de toekomstige uitdagingen die de wereld voor ons in petto heeft.

Ep.3 – Werkend Leren & Lerend Werken

In deze aflevering van The Regenerative Education Podcast ga ik het gesprek aan met Eveline Krijns, docent-onderzoeker bij de MSc in Business Innovation aan de Universiteit van Amsterdam. We bespreken hoe we ons kunnen voorbereiden op de toekomstige uitdagingen die de wereld voor ons in petto heeft. We bespreken hoe we ons kunnen voorbereiden op de toekomstige uitdagingen die de wereld voor ons in petto heeft.

Ep.4 – Let's Shine A Light on Circularity

In deze aflevering van The Regenerative Education Podcast ga ik het gesprek aan met dr. Danelle Tworzy, hoogleraar aan de Harvard Business School. We bespreken hoe we ons kunnen voorbereiden op de toekomstige uitdagingen die de wereld voor ons in petto heeft. We bespreken hoe we ons kunnen voorbereiden op de toekomstige uitdagingen die de wereld voor ons in petto heeft.



Ep.9 - Onderwijs is een Feestje

In deze aflevering van The Regenerative Education Podcast ga ik het gesprek aan met Dr. Ingrid Bode, hoogleraar aan de Hogeschool van Utrecht. We bespreken hoe we ons kunnen voorbereiden op de toekomstige uitdagingen die de wereld voor ons in petto heeft. We bespreken hoe we ons kunnen voorbereiden op de toekomstige uitdagingen die de wereld voor ons in petto heeft.

Ep.8 - Fieldlab Circulaire Economie

In deze aflevering van The Regenerative Education Podcast ga ik het gesprek aan met dr. Ingrid Bode, hoogleraar aan de Hogeschool van Utrecht. We bespreken hoe we ons kunnen voorbereiden op de toekomstige uitdagingen die de wereld voor ons in petto heeft. We bespreken hoe we ons kunnen voorbereiden op de toekomstige uitdagingen die de wereld voor ons in petto heeft.

Ep.7 - Plezier in het Leren

In deze aflevering van The Regenerative Education Podcast ga ik het gesprek aan met Marijn van der Weij, docent-onderzoeker bij de MSc in Business Innovation aan de Universiteit van Amsterdam. We bespreken hoe we ons kunnen voorbereiden op de toekomstige uitdagingen die de wereld voor ons in petto heeft. We bespreken hoe we ons kunnen voorbereiden op de toekomstige uitdagingen die de wereld voor ons in petto heeft.

Ep.6 - Zwemmen in Complexiteit

In deze aflevering van The Regenerative Education Podcast ga ik het gesprek aan met dr. Ingrid Bode, hoogleraar aan de Hogeschool van Utrecht. We bespreken hoe we ons kunnen voorbereiden op de toekomstige uitdagingen die de wereld voor ons in petto heeft. We bespreken hoe we ons kunnen voorbereiden op de toekomstige uitdagingen die de wereld voor ons in petto heeft.

Ep.5 - Onderwijs voor Betekenis

In deze aflevering van The Regenerative Education Podcast ga ik het gesprek aan met dr. Ingrid Bode, hoogleraar aan de Hogeschool van Utrecht. We bespreken hoe we ons kunnen voorbereiden op de toekomstige uitdagingen die de wereld voor ons in petto heeft. We bespreken hoe we ons kunnen voorbereiden op de toekomstige uitdagingen die de wereld voor ons in petto heeft.



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Appendix E – Regenerative Education Design Process & Canvas

Table 2: Overview of the main results from this thesis. Please note that the results are abridged for brevity and the full results can be found in the corresponding chapters. Chapter 1 has been excluded as the introduction chapter only sets the scene for this thesis. The results should be seen as a totality of considerations that are expressed in each unique educational context. In other words, the practices, enablers, resistances, and questions may overlap and interweave within educational design and teaching. The table can serve as a basis for the development of a RHE Design and Teaching Guide. ‘You(r)’ in the table refers to educators.

RHE . . .	Design Principles ⁱ	Enablers ⁱⁱ	Resistances ⁱⁱⁱ	Design Questions ^{iv}
Chapter 2: Podcast-based Narrative Mapping	<ul style="list-style-type: none"> Tackling Urgent and Relevant Transition Challenges. Embedding Locally with Systemic Awareness. Nurturing Supportive Innovation Ecosystems. Cultivating Personal Transformations. Holding Healing Spaces. Shaping Affirmative Imaginaries. Providing Openness for Emergence. 	<ul style="list-style-type: none"> The emerging movement within universities and for educators to rethink their role in society. The potential to participate in the (re) definition of higher education and the relationship between the university and society. The potential to influence the deepest leverage points for systemic change (those within us such as our values, perspectives, and worldviews). Personal satisfaction in working towards a more equitable, sustainable, and just society. 	<ul style="list-style-type: none"> A disconnection between institutional reality and larger societal challenges. The openness required to engage locally and the frustrations that are part of collective inquiry-processes The lack of space within educational design for more emergent forms of RHE. The strictness of assessment as ‘objective’ measures of learning. Tensions of having to be part of existing systems and maintaining relationships between them while disrupting them for alternative futures. 	<ul style="list-style-type: none"> What transition challenges are particularly impactful in a local place you can connect with? What are the multi-level forces acting the strongest on the perpetuation of this unsustainable system? How can you strategically create evidence, impact, or excitement, and in what media, for this form of education to continue and spread? What are the potential leverage points to intervene in the innovation ecosystem to realize those futures?

RHE . . .	Design Principles ⁱ	Enablers ⁱⁱ	Resistances ⁱⁱⁱ	Design Questions ^{iv}
Chapter 3: DDAE	<ul style="list-style-type: none"> • Adaptability to external forces • Willingness to subvert the dominant powers, cultures, and practices in your organization. • Actively empowering students to disrupt destructive relationships, including in the educational design. • Practicing self-care as an educator involved with RHE. 	<ul style="list-style-type: none"> • Desire to participate in healing damaged and destructive relationships. • Connecting with Local Challenges in Your Professional Work. • Transforming yourself as a teacher. • Desire to host healing & brave spaces. 	<ul style="list-style-type: none"> • The ego as a teacher to see yourself as an expert and corresponding activities associated with that position. • The difficulty of those caught in the current HE system to see the space for fundamental changes. • Difficulty in transgressing own professional identity and established corresponding roles. • Fear of leveraging, risking, and/or losing your own professional network. 	<ul style="list-style-type: none"> • How can you ensure that the required institutional support essential to the success of RHE is present? • How will you navigate the (strong) resistance you are likely to face once your RHE journey begins challenging the assumptions of the current degenerative HE system? • How can you nurture the courage and vulnerability required to be 'willing to lose who you are for who you may become?' • How can you actively welcome the 'dark' into RHE? • How can you design structures and processes that nurture the expression of self-love and self-care?

RHE . . .	Design Principles ⁱ	Enablers ⁱⁱ	Resistances ⁱⁱⁱ	Design Questions ^{iv}
Chapter 4: Arts-based IPA of LSFs	<ul style="list-style-type: none"> Reasons for students to participate with RHE Learning in Regenerative Ways Navigating Resistances Transformative Impacts of RHE 	<ul style="list-style-type: none"> Previous experience with the ‘overwhelming’ beauty of nature and a desire to be in service of restoring and conserving this beauty. Space within formal education to consider their own futures in relation to STs. Increased self-confidence and believe in own agency to be agent of sustainable change. Space within formal (engineering) education to engage with subjectification (through creative and playful ways). 	<ul style="list-style-type: none"> Educational risk of investing significant amount of time (semester) in ‘alternative’ form of education outside their regular programme. Existential and psychological difficulty engaged with in challenging who they are (becoming). Increased frustrations of systemic inaction. Difficulty of connecting with local stakeholders with opposing interests for STs. 	<ul style="list-style-type: none"> How can RHE be meaningful and impact for students without the privilege of rich personal histories with nature? How can you invite pedagogical choices for subjectification in broader HE contexts? How can you reduce the ‘educational’ risk of spending a semester on RHE? How can you support the transformative work within RHE?

I Principles are design considerations that may be relevant across educational contexts. The way they are expressed however are unique to each context.

ii Enablers are ‘pushing’ forces that facilitate the emergence of RHE at the personal and/or systemic level.

iii Resistances are ‘pulling’ forces that (may) work against the emergence of RHE at the personal and/or systemic level.

iv Design questions can help guide educators and educational design teams when engaging with RHE

Appendix F - Collection of RHE Invitations found throughout the Thesis

What would your regenerative education be like if you placed community at its core?

What would your education be like if it focussed on finding better questions to ask instead (collectively) of answers?

How can you create space to engage with the complex sustainability challenges in society today?

How can you incorporate mentorship in transformative ways in your educational practice?

How can you nurture curiosity for systemic change in your educational context?

How can you welcome the power of the biophysical spaces your education is entangled with?

How can you ensure that the required institutional support essential to the success of RHE is present?

How will you navigate the (strong) resistance you are likely to face once your RHE journey begins challenging, or transgressing, (some of) the fundamental systemic assumptions of the current HE system?

How can you nurture the courage and vulnerability required to be 'willing to lose who you are for who you may become'?

How can you actively welcome the 'dark' into RHE?

How can you design structures and processes that nurture the expression of self-love and self-care?

How will you engage with the broader task of playing a role in the innovation ecosystem in which your RHE is contextualized?

How can you create the conditions that allow you to engage with RHE as transdisciplinary, engaged, committed, and slow science?

How will you connect with and invite the spider-in-the-web people relevant to your context?

How will you organize the start of your RHE so that the seeds of regenerative culture are planted?

How will you keep inviting and empowering students within your RHE to be okay in engaging with transformative or even transgressive action?

How can you be mindful of the 'regenerative' moments that may arise in your RHE?

How do you actively challenge unsustainability in your educational context/system?

How are you actively participating in deconstructing and reconstructing the university for times of transitions?

How can you embrace complexity within your regenerative education?

How can you support those within your educational entanglements to navigate the complexity of wicked problems.

List of Publications

Academic Peer-reviewed publications

Moenander, S.J., Pavlovic-Beerends, S., Van den Berg, B., Coughlan, G. (In Press). A Brave New Internet? Hacking the Narrative of Mark Zuckerberg's 2022 Introduction of the Metaverse. Narrative Works. Expected in 2023.

Van den Berg, B. Poldner, K.A., Sjoer, E. and Wals, A.E.J. (In Press). Regenerative Education for the Ecological University. Book Chapter in Entangled Im/materialities. Edited by Adam, S. & Gold, E. University of British Columbia Press. Expected in 2023.

Van den Berg, B.; Poldner, K.A.; Sjoer, E.; Wals, A. E.J. 'Sweet Acid' An Interpretative Phenomenological Analysis of Students' Experience in Regenerative Higher Education. Education Sciences 2022, 12(8); 533. <https://doi.org/10.3390/educsci12080533>.

Van den Berg, B.; Poldner, K.A.; Sjoer, E.; Wals, A. E.J. Practises, Drivers, and Barriers of an Emerging Regenerative Higher Education in the Netherlands—A Podcast-Based Inquiry. Sustainability 2022, 14, 9138. <https://doi.org/10.3390/su14159138>.

Van den Berg, B. den Hoedt, T. & van den Eijk, E. (2021). Learning Towards a Circular Ecosystem – Designing Ecological Education for Circularity'. Published in Poldner & Kopnina's (2021). Circular Economy: Challenges and Opportunities for Sustainable and Ethical Business. Routledge.

Conference Papers, Talks & Presentations

Participant in the 2nd International Conference on Emotions in Engineering Education. Umea University, Sweden. 2022.

Regenerative Higher Education – Connecting University Education with Societal Transition Challenges. Dies Natalis Symposium. Wageningen University & Research, Wageningen, the Netherlands. 2022.

Navigating Personal and Systemic Barriers to Enact Regenerative Higher Education for a More Sustainable World. Circular@WUR. Wageningen University & Research, Wageningen, the Netherlands. 2022.

Regenerative Education for the Ecological University in Times of Socio-Ecological Crises – Educational Design Dispositions, Qualities, Opportunities & Barriers. 2nd Barcelona Conference on Education. IAFOR/ University of Barcelona, Barcelona. Spain. 2021.

Learners Engaging with Complexity and Uncertainty in Sustainability Transitions in Higher Education. 2nd Barcelona Conference on Education. IAFOR/ University of Barcelona, Barcelona. Spain. 2021.

Towards Regenerative Cultures and Metanarratives in Girona: A Transition Narrative-Design Case Study. 2nd Barcelona Conference on Arts, Media & Culture. IAFOR/ University of Barcelona, Barcelona, Spain. 2021.

Mission Impact: Higher Education as Catalyst for Sustainability. 9th European Conference on Education. IAFOR/University College London, London, United Kingdom. 2021.

Learning Towards a Circular Society: A New Direction for Circular Economy Research? 5th International Conference on New Business Models. Radboud University Nijmegen, Nijmegen, the Netherlands. 2020.



Completed Training and Supervision Activities

Bas van den Berg

Wageningen School of Social Sciences (WASS)

Completed Training and Supervision Plan

Name of the learning activity	Department/Institute	Year	ECTS*
Project related competences			
A1 Managing a research project			
Writing research proposal	Wageningen University & Research, the Netherlands.	2020	6
WASS Introduction	Wageningen School of Social Sciences	2021	1
<i>'Learning towards a circular society: A new direction for circular economy research?'</i>	5th International Conference on New Business Models, Radboud University Nijmegen, Nijmegen, the Netherlands	2020	1
<i>'Mission Impact: Higher Education as Catalyst for Sustainability'</i>	9th European Conference on Education, IAFOR/University of College London, London, United Kingdom (digital).	2021	1
<i>'Towards Regenerative Cultures and Metanarratives in Girona: A Transition Narrative-Design Case Study'</i>	2nd Barcelona Conference on Arts, Media & Culture, IAFOR/ University of Barcelona, Barcelona, Spain (digital).	2021	1
<i>'Learners Engaging with Complexity and uncertainty in Sustainability Transitions in Higher Education'</i> <i>'Regenerative Education for The Ecological University in Times of Socio-Ecological Crises-Educational Design Dispositions, Qualities, Opportunities & Barriers'</i>	2nd Barcelona Conference on Education, IAFOR/ University of Barcelona, Barcelona, Spain (digital).	2021	2
A2 Integrating research in the corresponding discipline			
Summer School Hands on Anthropology & Ethnography	Vrije University Amsterdam, the Netherlands (digital).	2021	3
Winter school Narrative & Knowledge	Rijksuniversiteit Groningen, the Netherlands (digital).	2021	5
Summer school The Posthuman & New Materialism	University Utrecht, the Netherlands (digital).	2021	2

Name of the learning activity	Department/Institute	Year	ECTS*
Winterschool Digital Narrative	TU Twente, the Netherlands.	2021	2
General research related competences			
B1 Placing research in a broader scientific context			
Summer school What Makes Life Meaningful? Perspectives from Anthropology?	Oxford University, Rewley House, United Kingdom.	2022	1,5
Summer School The Philosophy of Well-Being	Oxford University, Christ Church, United Kingdom	2022	1.5
Circular@WUR	Wageningen University & Research, Wageningen, the Netherlands.	2022	1
The Regenerative Education Podcast		2021	0.5
Numerous sessions for NADO		2020-2020	1
Future Learning Design Podcast		2022	0.5
Dies Natalis Symposium	Wageningen University & Research, Wageningen, the Netherlands.	2022	0.5
Founder/coordinator Leadership for The Circular Transition Honoursprogramme and National Hackathon CE	National, the Netherlands	2021-2022	1
B2 Placing research in a societal context			
Extrem holder communiceren	Draw for Good (digital).	2021	1
Medium Blogs		2019-2022	1
Helden van het Onderwijs - SBS6		2022	0.5
Speaker National Conference Circular Economy		2021	0.5
RSA Journal. 1st Issue – Healing Education		2022	0.5
Career related competences/personal development			
C1 Employing transferable skills in different domains/careers			
Lecturing Mission Impact (30 ECTS)	The Hague University of Applied Sciences, the Netherlands.	2020-2022	1
Lecturing Designing Regenerative Futures (30 ECTS)	The Hague University of Applied Sciences, the Netherlands.	2022	1
Supervising MSc and BSc theses	The Hague University of Applied Sciences, Wageningen University & Research, Rijksuniversiteit Groningen, Leiden University, Rotterdam University of Applied Sciences.	2020-2022	2
Total ECTS			39

*One credit according to ECTS is on average equivalent to 28 hours of study load

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